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As We See It

Really Recommended

The very first "Recommended Components" listing appeared in Vol.1 No.5; this is the 16th time I've put the listing together since I took over the task from J. Gordon Holt in the November '86 philo. No other Stereophile feature seems to be as popular, or as misunderstood. While it might inform, it never fails to offend, particularly when it involves the dropping, or — horrors! — the not listing at all, of components that the magazine's readers own.

The listing is intended to be the central depository of the collective wisdom of Stereophile's industrious team of equipment reviewers — 16 at last count. It's the only place where the experiences of all of those reviewers are taken into account when deciding on the ultimate value judgment for a component, whether it be the mighty Class A or the affordable Classes D and E.1

But only if those components have been reviewed in Stereophile. "Recommended Components" can only be concerned with equipment that one or more Stereophile reviewers have used in their own systems. It seems self-evident that when no one on the magazine's reviewing staff has had any ears—on experience of a product, we have no opinion of its sound quality.

Obviously, not every component we review makes its way into "Recommended Components." Someone has to decide, therefore, whether a component lives or dies in print. That someone is me. When I compile the new listing—about 20% of the components change from one listing to the next—I re-read the original reviews, and consult all the writers to find out whether they still stand by their findings, whether they've had further experience of a product they've reviewed, whether they've used a component reviewed by another writer and have something to add, and to indicate what Class they think is appropriate for each contender. I also ask them to comment on products currently listed, to let me know if they think we should drop or continue our recommendation. Meanwhile, Copy Editor Kristen Weitz contacts every manufacturer whose product is mentioned or might be mentioned to check its availability and current price.

I then gather the reams of information, brew several pots of coffee, and retire to my listening room. A week later, I emerge with the text of the new listing. I also wear several new worry lines on my forehead, because I know that a good percentage of my work will provoke angry letters from "audiochondriacs."

While most products generate an easy consensus among Stereophile's writers, you will notice that a few show up sharply schismos: the Crown Macro Reference and Boulder 500AE amplifiers, for example. While I tend to give such products the benefit of the doubt and include them in the list, I suspect that, while they have great virtues, they also tend to have significant flaws. Some listeners will only hear the virtues; some will only hear the flaws. All will agree that everyone else is out to lunch.

The second problem people have with "Recommended Components" concerns products that are still current, but have been dropped. I feel that, given the rapid rate of change and product development in the High End, and without continued auditioning, it's generally not appropriate to continue our original review's recommendation for more than three years. Unfortunately, this means that, without renewed reviewer experience or enthusiasm, excellent but older products tend to be dropped from "Recommended Components." This does not invalidate the buying decisions of the many component's owners.

The third criticism concerns the Class rating given a component. Despite people's need for a simple index to define a component's goodness, it's actually impossible to fully describe a product in this way. Take loudspeakers: You can't have perfection in a loudspeaker at any price; all you can do is balance flaws. To put two speakers into Class B, or even Class A, for example, does not mean that they sound similar. It means that their different balances of flaws and virtues were judged to be similarly close to—or, more realistically, far away from—the real thing. Anyone who wants to make use of "Recommended Components" must audition products for themselves, therefore. It's even more important for them to define what they want or need in music reproduction so that they can weed out unsuitable contenders from the list. If you adopt our value judgments as your own without questioning whether the product truly fits your needs, it's unlikely that you will get a sound from your system that will satisfy you in the long term. Too many times I have seen audiophiles trying to ignore how much they dislike the sound of their systems and barely notice their music, because the components they bought were all highly praised by reviewers.

"Recommended Components," therefore, should be regarded as sonic triage—it helps you sort out a short list of products you should consider. But if you like a component and you hate it, or vice versa, what really counts is how the component sounds in your room and system with your music. The time to judge a component's true worth is when you listen to it under familiar circumstances with familiar ancillary equipment and recordings. We can accept that our tastes and desires are not the same as yours. But if you buy a product that's wrong for you, you have to live with sound that fails to satisfy, and that can be the real tragedy of High End.

1 Remember that we highly recommend all components listed. There are no "failing grades": Class D and E products offer good, musically satisfying sound at very affordable prices.

Stereophile, April 1994
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Music From Silence
Hank Bordowitz talks with composer and pianist Keith Jarrett.

Las Vegas '94
In the first of two reports from the revitalized WCES, Thomas J. Norton, Jonathan Scull, Robert Harley, Jack English, and Peter W. Mitchell report on loudspeakers and things both analog and digital.

Recommended Components
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LETTERS

STONED?
Editor:
Is *Stereophile* getting stoned?
I didn't bat an eye when Steven Stone joined our reviewing staff, but I raised at least one eyebrow when I saw the byline, Steven Stoner, in the February issue (p.88).

When will we complete the trilogy by hiring someone named Steven Stonest?  
J. GORDON HOLT  
Boulder, CO

STONES?

LIKE IT!
Editor:
*Stereophile* is one of the very few magazines that I actually read from cover to cover. The information I gain from reading *Stereophile* is both interesting and informative. I like the new size. It feels easier to hold, and the format makes reading the articles easier. The other nice thing about this format is, if I am reading *Stereophile* and the phone rings, I can simply put my magazine down open and not worry about the book closing on me and losing my page. On the down side, the corners get a bit crinkled in my mailbox since it no longer comes in a plastic bag.  
K. So  
Burnaby, BC, Canada

DON'T LIKE IT!
Editor:
In regards to the new size: No, I do not like it! I found the old size much more convenient to carry around (I hate wasting time in lines, etc., so I carry *Stereophile* with me) and to hold while reading. Why didn't you ask the readers if we wanted the size of the magazine changed? Without us, the magazine would not exist. It makes me angry to have you change something that I pay for.  
NORM LASKEY  
Ontario, Canada

SETTING THE RECORD STRAIGHT
Editor:  
Just thought I'd drop you a note to put in my vote on the new format (thumbs up) and to set you straight on Bruce ("As We See It," January '94). Jon Landau's infamous comments came after seeing Springsteen in concert, not after listening to the second record (which was already out and had already been positively reviewed by Landau). It was the 5/9/74 show at the Harvard Square Theater that inspired Landau's "I have heard the future..." statement; *The Wild, the Innocent* & the *E-Streets* Shuffle had been out for more than six months at that point.

I edit two magazines (the quarterly Springsteen fanzine, *Backstreets*, and the biweekly Northwest music magazine, *The Rocket*) in addition to having written a couple of books (including one on Bruce, *Backstreets*, *Springsteen: The Man and His Music*). But, my resume aside, I like *Stereophile*, and particularly like the new format.  
CHARLES R. CROSS  
Seattle, WA

THE BEST
Editor:  
Richard Lehnert's two articles he wrote about "The Maestro" ([Frank Zappa, in Vol.17 No.2]) are the best ever written for *Stereophile*.  
GEORGE BRANDT  
No address given

LOVE IT!
Editor:
Hi, amigos at *Stereophile*! I have always liked your magazine, but now I just love the larger format—it's great!  
FRANK BANYAI  
South Yarra, Victoria, Australia

CHECK YOUR LANGUAGE
Editor:  
*Stereophile* electronics reviewers are a shade too hard-hitting in their reviews, a little too colorful and sloppy in their use of adjectives—the opposite of Julian Hirsch, who is a little too restrained in his descriptions. Colorful language sells magazines, just as restrained language offends no advertiser. Both are commercially motivated. If *Stereophile* reviewers would shape their language more appropriately to describe the small differences in electronics assessed in a controlled environment, the readers would have a better guide to base their purchases on.  
YIP MANG MENG  
Singapore

CLARIFICATION
Editor:  
There are some technical issues raised in the January '94 *Stereophile* that I feel need clarification:
First, in his review of the Mach 1 Acoustics DM-10 Signature loudspeaker (p.131), Dick Olsher correctly perceived somewhat limited low bass from the DM-10, despite a respectably low measured system resonance at 24Hz. With a modest bass Q factor, fair in-room bass should have been available down to 25Hz if the woofer excursion was up to it. The reason for the discrepancy can in fact be seen in the individual response of the woofer and in the electrical signal actually driving the woofer motor coil, available thanks to the separated crossover design (p.135). The woofer drive signal peaks by nearly 3dB at 70Hz where, ideally, the response should be flat. This is presumably caused by the unwanted interaction between the woofer's motion impedance (the complex reactive electrical load presented to the crossover due to the moving-coil and diaphragm system in the cabinet) and the rather low crossover network frequency.

We regret that resources do not permit us to reply individually to letters, particularly those requesting advice about particular equipment purchases. (We are also unable to take telephone calls regarding equipment purchases.) Were we to do this, a significant service charge would have to be assessed—and we don't have time to do it anyway! Although all letters are read and noted, only those of general interest are selected for publication. Please note, however, that published letters are subject to editing, particularly if they are very long or address more than one topic. All correspondents should include their name, address, and a daytime telephone number.

STEREOPHILE, APRIL 1994
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of 250Hz. This upper-bass boost is relatively independent of the low-frequency resonance of the driver or bass damping. In design terms, if the 70Hz boost was suppressed—eg, by complex impedance conjugation or compensation—then the bass level could have been set higher and the true bass output would have then made its presence felt more powerfully.

In practice, the Signature designer may have legitimately rejected this approach on grounds of other aspects of sound-quality impairment.

Second, in Dick Olsher's report on the Cary 805 monoblock, he discussed the effect of an air gap on the audio transformers in this amplifier. An air gap actually reduces inductance, the converse of what was stated in the review, and the gap necessitates more primary turns to maintain an adequate low-frequency bandwidth. In electrical terms, this reflected inductance is the parallel source impedance driving the speaker load. It is the determining impedance for the low-frequency cutoff. More iron in the core helps reduce the peak flux density in the core, improving linearity and power handling.

Third, in John Atkinson's comments on the NHT SuperZero, he noted an apparent phase inversion imparted by a simple high-pass RC filter (fig.2, p.149). In fact, the capacitor cannot invert the phase—it causes a phase shift which only approaches 90° at the limit and only shifts by 45° at the nominal crossover point, 137.1Hz. On the graph, a 180° phase inversion is shown, due solely to measurement presentation. Allowing for this, the graph does show the predicted 45° lead at crossover. The corresponding low-pass network for the woofer could well lag by 45°—90°, according to the order of the crossover. The resulting system phase match is indeterminate, neither in nor out, and practical experiment with either phase connection is worthwhile to see which suits you and the listening room best.

**Stereophile, April 1994**

**Brendel & Liszt**

**Editor:**

In your November 1993 issue (Vol.16 No.11), Barbara Jahn reviewed Krystian Zimerman's version of the Liszt B-Minor Sonata. I agree that the recording quality is first-rate and that this version has fine moments. However, I think the true successor to Alfred Brendel is Alfred Brendel, on his 1992 recording (Philips 434 078-2). This benchmark interpretation and performance is splendidly captured... If Ms. Jahn is not already familiar with this recent Brendel recording, I think she has a wonderful listening experience ahead.

**Peter Bahr**

New York, NY

**SCULL & SATIE**

**Editor:**

I was ecstatic to read in Vol.17 No.2 that someone else—Jonathan Scull—has "discovered" *The Music of Eric Satie: The Velvet Gentleman*, and has enjoyed it as much as I. Although I've had the LP for quite a few years—mine is cataloged as Deram DES 18036—I've never grown tired of its lush sound. I wish some enterprising outfit would re-release it on LP or CD—my copy is beginning to show its age.

Of further interest to Mr. Scull may be a sequel to that recording, *The Music of Eric Satie: Through a Looking Glass*, Deram DES 18052. Though it doesn't sound quite so lush as *Velvet Gentleman*, it has the same obvious parentage. A re-release of this one would also be very much appreciated.

**Robert E. Robey**

Cincinnati, OH

**ANGELA & RICK**

**Editor:**

The address for Angelo Instruments in the September '92 issue, p.123, is in error. The correct address is: Angelo Instruments, 10830 Guilford Road, Suite 309, Annapolis Junction, MD 20701.

**Rick**

No address supplied

**RIGHT & WRONG**

**Editor:**

JA's comments about Radio Shack NiCad cells in his review of the HeadRoom headphone amplifier (January '94, p.163) are both right and wrong.

Most NiCad C and D cells are actually C and D cases with ½-C cells inside. (That's why they're so light.) This is "traditional," and started 25 years ago when GE began to actively promote NiCads as consumer products. In addition to these cells, Radio Shack has a line of more expensive "high-capacity" C and D cells that are supposedly full C and D size. They require a special charger that can pump enough current to recharge them in 16 hours. (This may be why regular C and D NiCads contain ½-C cells—full-size cells would take too long to recharge.) JA wasn't defrauded—he simply bought the wrong product.

**William Sommerwerck**

Bellevue, WA

**RIGHT ON**

**Editor:**

I was glad to see the positive review of the HeadRoom products in the January issue. What you may not be aware of is that HeadRoom's Tyll Hertsens makes the amp/processor module available to experimenters/tinkerers (Corey take note) along with the DC/DC converter which powers it. I assembled everything in a Radio Shack case along with some heavy-duty NiCads and can get many hours of enjoyment between recharge.

Hats off to Tyll.

**Charles King**

East Berlin, CT

Corey is currently experimenting with one of the HeadRoom modules, and may write his thoughts up in a future issue of Stereophile.

—JA

**A GREAT HOOT**

**Editor:**

I get a great hoot reading *Stereophile*. One guy writes an article and doesn't like an amplifier (Crown Macro whatever). His opinion sends the owners of this product into apoplexy, the manufacturer into a panic attack that sends his bankers into taking Maalox. I heard this amp. I never liked Crown stuff too much—it never hit the mark in musicality. So what? It's not the end-all and be-all, to create such intense controversy. I don't like it. You do, great! I applaud a less-than-recommended review. It's often more honest and refreshing to hear what you don't like than what you do. Martin Colloms hears subtle to humongous improvements using Combak materials (I do, too). He quantifies his experience and reports it. Everyone goes nuts. Corey Greenberg writes about a lot of things others don't. His style is his own—everyone goes nuts...

My point: I love the controversy you create among your readers. I have yet to find anyone's editorializing in poor taste or grossly erroneous. Most of the time there is a wealth of information to be had, if we only look for it. I usually agree with your evaluations, and when I don't, I don't freak out over your opinions. They are, after all, opinions, to endorse your collection of rogues, vagabonds, and bassoonists.

**Larry Marcus**

Linden, NJ

**THE END OF THE STORY?**

**Editor:**

The February '94 "Letters" carried a defense of the Crown Macro Reference power amplifier by Dr. Howard Sosna, in which he describes a visit made by Dick and Lesley Olsher to the Crown room (at the San Francisco High-End...
The Legendary MATRIX 801 & MATRIX 802 monitors have been revised for even purer performance. The permanent attachment of the bass and mid-range enclosures provides improved midrange and high frequency transparency. Cross-overs have been completely redesigned to avoid electrical and magnetic interaction between the drivers. And a new tweeter registers perfect response to well beyond audibility without the need for protection circuitry.

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Hi-Fi show) and ascribes the comment, "One of the best sounds at the Show," to us.

I suggest that Dr. Sosna get the dental floss out of his cars. While Lesley and I both remember auditioning the Crown system, neither of us was moved to compliments. Specifically, while we were listening to track 4 ("Lay All Your Love") of Lesley's album (VITAL 11), the Macro Reference shut down on one of the vocal peaks. The amp went into mute, no output. This happened twice. The rest of the time, the sound was bright and thin.

There was nothing left to do but leave quietly. No praise was offered.

For the record, let me say that I've heard the Macro Reference in my reference system driving a pair of Sound-Lab A-1s. I felt then that the coupling was quite decent—not ideal, but quite listenable.

Dick Olsher
Los Alamos, NM

What are the Rules?

Editor:

I just finished reading the unfolding saga on the Crown Macro Reference amplifier in February (pp.15-25 and p.165). These guys seem to write letters, and write, and write again, all three generations of letters from the same guy in one issue. Most of us never get printed. Is this guy LA's relative? What does it take to get printed in this magazine? No matter what JA says, the minute an editor selects (other than randomly) the letters to be printed, he censors the material. I have no problem with that, it's his magazine. But please spell out your rules of publication and be responsible about following them so that we can decide whether it is worth our time to write to you.

Nick Valkanas
Cambridge, MA

A magazine's "Letters" column is where its readers get to have their say and where, in the words of the infamous broadcaster, Paul Harvey, we get to discuss "the rest of the story." (Witness DO's letter above, for example.) However, Stereophile only has room to publish a small fraction of the total number of letters we receive. I try to select letters for publication that are representative of all those received on each subject, both for and against. I don't feel that this is censorship. In the case of the letters responding to Lewis Lipnick's November '93 review of the Crown Macro Reference, all had important points to make, even the two from Ronald Cook. The longer a letter is, however, or the more subjects it addresses, or the more it rambles aimlessly, the less chance there is that it will be selected. One subject and a simple, direct argument: That's the kind of letter that gets published.

-JA

Video Tweaks

Editor:

Just for the record, anyone seeking a videophile-quality, "3D"—like picture may find the following helpful:

First, start off with a high-quality set. A good metal rack is essential. Place Big-foot Sorbothane feet under the set and the VCR.

TDK noise absorbers (ferrite chokes) should be placed on TV and VCR power cords, and on each end of your video cable.

Use high-quality audio and video cables. Keep contacts clean—twice a year, at least, use regular rubbing alcohol. Don't forget to religiously clean that picture tube weekly, and keep your VCR heads clean. Use a separate rewinder.

If possible, don't plug video gear into the same dedicated outlet as your audio equipment.

Forget about S-VHS and even laserdiscs. With proper tweaking, a good-quality four-head stereo VCR can, and will, look just as good.

Finally, having your audio and video systems interconnected is really awesome. I'd rather watch Star Trek, an opera, or MTV through my A/V system than [listen to] surround-sound any day.

R. CYPHER
Dobbs Ferry, NY

Sanus Systems

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"Overall, however, the Sanus was the best looking of the units under evaluation. In the more important functional area, the Sanus Rack comfortably accommodated anything we wished to place on it."

"The CF45 is, however, the most suitable as the support for a full-up audio-video system (with two of the racks and the optional Video Bridge)."

Thomas J. Norton Stereophile
Racking It Up Vol. 14 No. 11 November 1991

"Even without the sand, it was very rigid and tolerated 6 large tube amplifiers without any problems."

"I can't believe I did not install this sooner. It is a very good unit. HIGHLY RECOMMENDED"

Bound for Sound #4 The Artful Roger No. 12a 1991

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**AUDIO TWEAKS**

Editor:

Controversy still abounds over the effectiveness of consumer tweaks. Technophiles often will listen to a tweak, hear no change, and declare it useless or even fraudulent. But perhaps they are judging only the marginal difference made by a single tweak—and ignoring the cumulative effect of multiple tweaks.

For the sake of argument, let’s assume that 20 tweaks will each improve the sound by 0.5%, and further, that the effect of the tweaks is cumulative. Most listeners using only one of the tweaks would probably not notice the 0.5% improvement in sound, but almost anyone would notice the 10% improvement if all 20 tweaks were implemented. And if tweaks improve the sound by more than 0.5%, and more than 20 tweaks are used, the size of the improvement goes even higher.

I believe the effect of tweaks is cumulative (someone could explore this), and I have tweaked my quality mid-priced system (the details of which are immaterial for these purposes) to give marvelous sound, from LP as well as CD.

It might be worthwhile to list these tweaks, which I have learned over the years from many sources, including *Sterophile*. Some were relatively expensive; most were moderate in cost; and some cost nothing. Here is the list:

- **CD player**: interior lights over CD covered with green plastic, and window provided for CD viewing covered; headphone, variable line, and TosLink outputs disconnected internally; Magic Brick on top; Discwasher Lens Cleaner; digital output jack terminated with 75 ohm resistor in RCA plug; player on Monster Cable Tranquility Base supported by Sims Navcom feet.
- **CDs**: AudioPrism CD Stoplight—it really works! Hint: When applying, support the CD on an old Stylus bottle stem, or something similar.
- **Turntable**: replaced springs with Navcom feet; unit placed on Arcadia Lead Balloon; arm base damped with Black-Tak damping compound; Sumiko cartridge demagnetizer; and Nitty Gritty machine with VPI fluid for records.
- **Preamplifier**: Holco 0.5% resistors to load down phono input; all unused inputs shorted with Tweak Shopshorting plugs (I know, I can make them cheaper, but these are cheap enough, stick out less, and use silver solder); unused tone controls turned to minimum setting; Navcom feet.
- **Amplifier**: Navcom feet.
- **Speakers**: 11-lb black rubber wheel chocks (yes, wheel chocks; they’re dead, solid, and they match the foam panels noted below), and black-covered lead cakes put on black speakers to add mass; driver screws checked periodically; Tiptoes. (Why is speaker color significant? See below.)
- **System**: Tweak; Audio-Technica cleaning tools; Spikemasters; VPI Magic Bricks; Ellix polarity tester; TDK or Radio Shack ferrite clamp-on devices on every cable and wire in the system, except speaker wires, which are too thick.
- **Room**: The Cutting Wedge black foam panels; Sonex (whose foam is getting less and less dense as time goes by); RoomTune CornerTrunces; all buzzes and rattles eliminated one way or another; speakers rendered as visually unobtrusive as possible (black speakers against black foam wall).

Finally, while listening sometimes, be sure to turn off the lights and close your eyes. We all know that the sound of the oboe seems to come from the oboe while you are watching an orchestra on TV, even with mono sound; similarly, the visual clues provided by the loudspeakers, from which you know perfectly well all the sound is coming, can overwhelm the inherent imaging of your system. Eliminate those visual clues, and you will notice the sound is emancipated if you have good speakers. I believe that speakers cannot be fully appreciated, or reviewed, if some of the listening is not done in a dark room with the listener’s eyes closed.

Marc Richman
Washington, DC

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**YOU HAVE TO BE KIDDING!**

Editor:

I tried your rag and found it to be useless. Your advice is the equivalent of the infomercials on TV hawking everything from breast-enlargement cream to become-a-real-estate-tycoon-investing-nothing courses. What color green magic markers do you recommend, by the way, for coating my CDs? Why aren’t you proposing using 0000-gauge copper power line for speaker connects? Where is your concern for RF interference rejection from your multi-megabuck system suggestions? (Whoops, I let a real suggestion slip into the sarcasm —sorry!)

Needless to say, with both your figurative feet firmly planted in the blue sky, I find your advice totally useless for someone like myself who must live in the real world and spend real, hard-earned cash on my system, and who needs a dependable source of information in sorting out the myriad choices. No thanks, and don’t expect a renewal from me.

Duane A. Calvin
Austin, TX

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**THE HIGH END CAN BE SAVED**

Editor:

The average music lover (read “non-audiophile”) is completely put off by assertions that speaker cables, specific CD players, different amplifiers, or, for that matter, green-ink CD tweaks make any difference. Most hardly know what a “soundstage” is. However, a large percentage would be very impressed with the difference between $700 Sony speakers and $1400 full-range Vandersteens. A small percentage of those would search for more and become dedicated audiophiles.

The way to save the High End is to encourage people to buy expensive speakers like Vandersteen 2Ces and Thiel CS2 2s and use their current equipment to drive them (as long as power/load requirements are met). This requires speaker manufacturers to appeal to a mass audience by insisting that their speakers sound great with almost any system. I have my Thiel plugged into inexpensive amplification. I love it. Only after a year, I am beginning to appreciate (or disagree with) *Sterophile*'s opinions. Perhaps a Melos or a Krell would make an improvement…

Gill Eisenstein
Ypsilanti, MI

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**THE HIGH END’S BLINDNESS**

Editor:

Well done, Jack English! Truc words have rarely been written in the pages of *Sterophile*. In the opening paragraph of your “R.I.P. High End Audio” in January, you nailed the culprit: PEOPLE. For all its brilliant scientific success, the High End has failed miserably at the most important science of all: that of human psychology. Since a good understanding of human psychology is the basis of successful marketing, nobody should be surprised to learn that the High End can’t market its way out of a paper bag. The people within the industry act like they’ve never met an average American consumer; and when they do, they recoil in terror.

If a picture is worth a thousand words, an American tragic novel is depicted on *Sterophile*'s gorgeous new cover. Just below the date, January 1994, is an amplifier that could have easily come from January 1934. Though 60 years apart, both ’34 and ’94 represent periods when the flashiest status symbol of all is a job! Has anybody within the High End figured that out? When corporations like McDonald’s to Mercedes Benz are announcing “value-pricing for the ’90s,”
THE FINAL FRONTIER

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we turn to the pages of Stereophile to discover that a pair of 30W retro-turds are going to set you back $7500.

Meanwhile, people with brains, with common sense, with a job, with an eye toward value, are doing this with their $7500. They’ve noticed that the price of 35" color tubes has actually come down in the past couple of years. (Does that ever occur in the High End?) They pick up a big-tube TV for $1200, figuring that’s a great start to a home-theater system. They might take Corey’s suggestion and add a trick satellite-subwoofer system from someone like NHT. Throw in a laserdisc player, add an electronics core from any number of manufacturers, and one could assemble an entire home-theater system for $7500.

And now for the basic lesson in human psychology: Listen up, you idiot-savants! There’s a reason they call this the home entertainment business: Girls just want to have fun, and guys just want to be cool (and impress the girls). So now it’s New Year’s Eve, and you have two choices: drop in on Skip and Buffy, party hearty to the Tina Turner laserdisc, grind hips with the hot little redhead certain to be at Skip and Buffy’s—after all, they’ve got that cool new Home Theater—or accept the invitation from that bed-wetting, propeller-head Poindexter with the two new 30W retro-turds.

Don’t all raise your hands at once, now. I want you to think carefully before making your decision. Remember, we’re talking about the probable behavioral patterns of real Americans. (Does anyone in the High End associate with anyone like that?) Jack, did I notice your use of the word “irrelevant”? Good choice!

In the final paragraph of JE’s article, he writes, “We aren’t effectively communicating the value of high-end audio.” Wake up and smell the coffee, Jack; there is no value to be communicated to the average American through a $7500 pair of 30W retro-turds! Or an $8900 Krell amp, or a $6300 Krell preamp (line only), or a $12,850 MFA preamp, or the $10,995 Mach I speakers, all of which occupy the first issue of the newly enlarged Stereophile. Too bad your concept of value isn’t newly enlarged.

Bruce Market
Coeur d’Alene, ID

The High End’s Success
Editor:
Jack English’s very well expressed article in January on why high-end audio does not penetrate the consciousness of its natural market addresses all the relevant issues, except perhaps the deeper philosophical one. Indeed, most musically sensitive, intelligent, and well-heeled consumers of reproduced music do ignore the world of high-end audio. If they have some fleeting contact with it, they recoil in repugnance at what they see as either simple charlatanism or complex self-delusion. I know, because I was a scoffers myself until a couple years ago, and I had more than a few good laughs about people listening to cables. (This is the apogee of absurdity to a non-audiophile. You might as well spend your time listening to the sound of your sofa for all the sense this makes to the unininitiated.)

The philosophical obstacle to even giving the High End a listen is based on unquestioning faith in Science. If anything, this faith is even narrower and more binding than the faith of medieval theologians in the orthodoxies of Catholicism. I think that one 100W

1 This uncritical faith in Science is examined in Harry Collins’s and Trevor Pinchin’s The Golem (Cambridge University Press, 1993). Professors Collins and Pinchin’s look at formal scientific method as practiced in a small number of classic experiments—Michaelson & Morley’s proof of the nonexistence of the ether, for example—and conclude that “objectivity” is more intimately linked with society’s and scientists’ expectations and needs than is generally appreciated. They also examine the general public’s flip-flopping between distrust of, and blind adulation for, Science. Regarding the latter, Collins and Pinchin point out on p. 143 that “It is no coincidence that those who feel most certain of their grip on scientific method have rarely worked on the frontiers of science themselves.”
receiver with less than 0.01% THD could sound different from some audiophile preamplifier with the same specifications is not just a novel opinion, it is downright heresy! It is almost as unthinkable as it would have been for Thomas Aquinas to disavow the divinity of Christ. If one admits either proposition, the whole edifice of Science or Christian theology respectively tumbles into chaos. To go to a listening session would be the equivalent of the Pope attending a black mass.

In my case, the conversion began by reading a couple of issues of Stereophile, to which I had subscribed without any comprehension of what I was getting into. I came aboard just as the controversy about Tice clocks was churning the "Letters" column. That was more theology than I could swallow, and I just about asked for a refund, except that a few of the articles seemed interesting and even sensible.

However, a dealer, frustrated by my continuing skepticism, administered the most telling blow: He commanded me to sit down and listen to two amplifiers. After about an hour of listening to BBarbra Streisand breathe ("Listen real carefully to the silbance when she takes a breath"), I stood up believing that a 50W amp could sound just as loud as a 100W amp, and that the differences in intonation that I heard really existed and sounded more pleasing on the lower-powered amp. (The sustained repetition also opened me the world of Streisand and Show music, which I had previously despised.)

Since that experience, Science has become science to me. I am no longer a true believer in the all-importance of measurement. It took the dethronement of a naive faith before I could hear the difference that the High End proclaims. I suspect that this same shift in belief—and it's a big one—must be made by anyone who enters the world of high-end audio.

Unfortunately, I doubt that there is any substitute for the dealer who spent so much time with me tidiously changing cables and cuing my attention. It is a time-consuming process with no guarantee of conversion; but then, that has always been the price of evangelization. A dealer must evangelize even knowing that some other dealer may become the beneficiary of his efforts. Perhaps he will be the beneficiary of another dealer's efforts.

But perhaps we as individuals can make the biggest difference by demonstrating our systems to visitors without becoming irritated at skepticism. Why not go to the trouble of pulling out some of your audophile gear and substituting that old Sansui receiver so your teenage son's friend can understand, too? If you truly love music, it is a joy to share not only the music, but also your knowledge of the means of enjoying it more fully.

LOUIS BENCZE
Brush Prairie, WA

THE HIGH END'S FAILURE

Editor:
Jack English mentioned the "High End's abhorrence of rock 'n' roll" in January. Sadly, I suspect this is a common attitude, and it irritates me to no end. The purpose of flawlessly reproducing recorded music is to enjoy the music, not the technology. The technophiles who seem to populate the world of high-end audio miss this point. They can't tell the difference between a delicate violin sonata and the Stereophile Test CD 1, provided they are played using equal technologies. On the other hand, one of my favorite artists, Lcd Zeppelin, is history's most sloppily recorded. They sound like crap, no matter what sound system you have. But I love their music just the same.

BRUCE D. GRETZ
Ann Arbor, MI

THE HIGH END'S DECLINE

Editor:
Jack English's January article, "R.I.P. High End Audio," built a case for the evident decline of the high-end audio industry on the lack of name recognition. There are others in and around "high-quality" audio, as we who have been around for many years prefer to call it. I would like to add the thinking of these people, and my self (who should be qualified, after 35 years or so of being a part of it all), to the reasons why this is occurring.

Thirty-five and forty years ago, the ruling names in music reproduction in the home that were known to the so-called educated public were Capehart, Magnavox, Scott-Ravenswood; later, Philharmonic Radio (which became Fisher), etc. Among the initiated, and owing to the early writings of those such as B.H. Haggin in The Nation and F. Scott Burke in The Saturday Review, the ruling names were Fisher, Brociner-Klipsc, Electro-Voice Patrician, Brook, etc.

These latter names were no better known in their day than are the high-end names of today. Yet back then, the industry was growing ever upward, with great excitement everywhere. The late, great Joe Marshall, an early commentator on the burgeoning "high-quality" industry, called the "hi-fi quest" the search for the ineffable, the better in life—it seemed a proper project for each day, as we approached what we thought was the "golden mean" of music reproduction.

Today, that search and its idealistic overtones seem ended. Why? It is more than a lack of name recognition, according to most worthy authorities with whom I have spoken. Most of them add, parenthetically, that the cause of the decline is not inevitable, that it can be reversed. I offer the various theories I have heard, with brief descriptions of each:

1) The victim is the culprit; it, the theory of it. Raymond Cooke, a giant in the art of the loudspeaker [and the founder of KEF], who in the past has done much for "high-quality" sound reproduction (he is now, unfortunately, quite ill), espoused this most directly in my demonstration room at the 1990 SCES in Chicago, and to a man well known to you all: Mr. Larry Archibald. Raymond spent approximately an hour berating Larry (I was completely silent during the trauma) for creating an underground publication which, like certain others both in the US and his native England, diverted the search for more realistic, accurate sound reproduction in the home—a subject, Raymond said, which is interesting to people with serious interests in music—into channels of interest only to hobbyists and the neurotically inclined. Something like the medieval argument regarding how many angels could dance on the head of a pin—it, completely alienated from any serious purpose, and devoid of any scientific verification! Raymond seemed to be saying that the publications had rejected the same music lovers who had originally formed the basis for the new "high-quality" approach!

2) The days of glory in the industry were back in the late '70s and early '80s. People no longer have an interest in higher-quality sound reproduction; those who stay in the industry are catering to a different class of thrill-seekers. (This theory was advanced to me by Raymond in a recent letter.)

3) Everyone is too busy these days. Several dealers have told me that their traditional customers, those who actually spend time listening to serious music, and who appreciate serious higher-quality reproduction (and were willing to pay for the equipment required for it), are no longer in the market because they are so busy in other ways that they don't have the time. The business is both professional and social, other leisure needs and pursuits taking precedence over serious listening to music. Symptomatic of
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The Audio Critic (Aug 93)

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IAR Hotline (Jun 92)

**RB980.** “The inexpensive, frill-free Rotel doesn’t fall short of the mark when it comes to playing music. It lives up to its promise of power, but its capacity for blood and thunder doesn’t make it an amp that impresses solely with its might. It’s lusty, but also involving and musically revealing.”

What Hi-Fi? (Sep 93)

“...the RB980BX proved to be one of those products reviewers dream of...more than just another modestly priced amplifier, competent but uninspiring. The Rotel...got up on the high-end high-wire without a net - and performed.”

Thomas J. Norton, Stereophile Vol.15, No.11, Nov. 1992

**RCD965LE.** “Sound quality was superb... Clarity, transient detail, and high-level punch all were exemplary. In short, Rotel’s RCD-965LE clearly delivers CD sound that approaches the highest standards of the day, for less - substantially less, in some instances - than many competitive alternatives.”

CD Review (Jan 94)

“...every aspect of the '965 has been optimized with a single goal in mind - sound quality. It is this preoccupation with the finest detail that is reflected in the player’s overall performance. Nothing, but nothing, has been left to chance.”

What Hi-Fi? (Dec 91)
the change is the emergence of Home Theater—translated as embellishments of the “bub tube”—as well as other leisure pursuits which were not relevant 30 or more years ago.

4) The day of the cultivated—ie, well-educated and sensitive human being, sensitive to the arts in all their manifestations—is in decline. Hans Fantel, a famous audio writer for the erudite New York Times, advanced this theory to me one late afternoon last summer on the porch of his home in the Berkshires, near Tanglewood (where, we both agreed, the arts are not in decline). He quoted a book with which I was familiar, The Revolt of the Masses, written by Jose Ortega y Gasset, a Spanish philosopher, in the early 1930s. This book foresaw the decline of the truly cultivated man under the onslaught of the masses and the commercial entertainments to come, wherein true culture and the arts were repackaged and brutalized for mass consumption by the rising group, rich in money rather than culture, which he termed the “new barbarians”!

5) The costs of “high-quality” sound reproduction zooming upward while the disposable income of the middle classes declined, along with their standards of living and their exposure to art forms, one of which might be termed the “high-quality” reproduction of serious music.

Kevin Phillips, political consultant to the Republican party in the late ’60s, describes just this situation in his recent book, The Boiling Point. Certain “elites” (financial, and definitely not the intellectual elites of Ortega y Gasset) have systematically and purposefully reduced the ability of the middle classes to involve themselves in art (such as music and its proper reproduction). According to these financial elites, the only purpose of these “middle classes,” who in the past purchased the majority of reasonably priced “high-quality” equipment, is the consumption of cruder (ie, cruder than art forms), mass-produced goods.

6) Our educational system—ie, that available to most people—has fatally failed our culture, as evidenced by the wiping out of classes introducing students to music and other art forms in the schools. While the removal of cultural education from most schools does not affect the financial “elites” described by Kevin Phillips (cf 5, above), who can afford to send their children to expensive private schools, it does have direct effects on all other children who, for instance, come out of school basically illiterate, and certainly without an abiding love for serious music of the sort for which the industry of “high-quality” sound reproduction originally formed itself. Therefore, these children do not now music—these functionally and artistically illiterate people have no need of, no desire for, and no idea of the art form that, in essence, is the “high-quality” reproduction of music in the home!

According to this theory, even the original godheads of music in the home, mentioned in my opening paragraphs, would have little relevance to, and therefore little prospects for sales to, these functional illiterates which our current educational system produces.

So much for theories: I could go on and on, to other people’s projections of the reasons why all art forms are in peril in our current social scene. For instance, the orchestras are suffering badly; ballet troupes are going bankrupt everywhere; even the Metropolitan Opera, I am told, is not as healthy as it would want to be.

But, as I have suggested, all the above theories predicate the possibility of being reversed. For instance, there are beginning attempts to reverse our educational system. Young children may again hear and love, in their schools, “in the Hall of the Mountain King,” which started me on my lifetime involvement in music and its proper reproduction. I offer these the-

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ories for what they are worth, and am willing to expand on them at length, if the need and the interest be among your readers. —Irv M. ("Bud") Fried
Fried Products Corporation

But is high-end audio declining? I don't think so, as the companies that constitute the High End are doing better than they ever have, and are forming a new Establishment. I think the problem is more one of limited growth potential, which is why the next letter, despite the whiskers it grew in my in-tray, makes an appearance.

—JA

WHERE ARE THE WOMEN?
Editor:
Every time I read in Stereophile or The Absolute Sound about the lack of women involved as customers in high-end audio, I think of the National Press Club bar, which was open only to men until 1972. Owing to the agenda of the times, it was decided to allow women members into the bar. A date was set for integration, and my paper, the long-gone Washington Daily News, decided to send our reporter, Judy Mann, to buy the first drink. The great day arrived, Judy bought her drink (I forget what it was), I got my picture, and news was made.

As a member of the club, I would look in the bar whenever I was there. Guess what? After all the fuss and feathers, it was still rare to see a woman member there. Most women members still preferred, it appeared, to sit in the lounge and order drinks from a waiter.

I attend live music pretty regularly, mostly the San Francisco Opera and San Jose Symphony. From time to time I count heads in the seats around me, and have noticed that women consistently outnumber men. I have a good friend who has season tickets to the SJSymph and our local opera. She often invites me to go along, because her husband wants to stay home and she doesn't want to waste his ticket. So far as I can tell, women are equally or more interested in attending live music as than men. The only reason for this is that women like to dress up and go out more than men. Maybe, but let's look further.

Do you know any women who listen regularly to recorded music at home who own more than one performance of a given work? I don't, and my sample group of women includes a surgeon's wife, a microbiology Ph.D., a lawyer, a photo retoucher, and a clinical psychologist who sings in amateur oratorio and opera. If they wished to, they could all afford more than one recording of a favorite work. This leads me to:

Do you know any women who argue the merits of two or more live performances of a given work of music? I don't. At the opera, my female friends will assert that they like a particular singer of the evening or don't like another. What I have never heard (and some of them have been going to the opera for 30 or 40 years) is, "She's okay, but do you remember how Tebaldi (Callas, Milanov, de Los Angeles—pick your own) used to sing that passage?" Opera-going men make these comments all the time. It might be worth noticing that nearly all the "Letters" [published in] Fanfare magazine, which is devoted almost exclusively to comparisons of recorded performances, are signed by men. In Fanfare, we are dealing exclusively with recordings, not speaker wire.

Ah yes, speaker wire. Perhaps we ask the wrong question. Instead of asking why women don't get into high-end audio, we should be asking what particular form of dementia drives men (myself included) to sink ridiculous sums into audio equipment. I have read of $2500 CD players described as "affordable." We live in the era of "basic" $5000 preamps, $50-$1000 foot speaker cables, and $2000 tonearmers. Cartridges? Ho-ho.

Not long ago, my microbiologist friend asked me to help her select a modest system. She had been thinking about one of the various mini-systems which contain an integrated amp, CD and tape decks, and dedicated speakers. I suggested she get entry-level NAD equipment with PSB Alphas, and she took my advice. She loves the system, and her total investment was about two-thirds the price of a Lyra Clavis. She and her six-year-old daughter (who knows Die Zauberflöte and Hänsel und Gretel by heart) listen to it constantly. If I were to tell her that I saw, at the 1993 San Francisco Stereophile High-End Hi-Fi Show, an 8' pair of speaker wires costing $15,000, she would a) not believe me, and b) not care. She likes her system because it lets her hear music she likes, and she doesn't feel any need to compare it to others.

Is this the key to the lack of women in the High End? Have men made the whole industry/hobby one of constant comparisons? It hardly seems that men can listen to music without doing this—Furtwängler vs Toscanini, Pavarotti vs Domingo, Heifetz vs Kreisler, ARC vs Classé, Linn vs SOTA, ad infinitum? We're always looking for The Winner.

Perhaps all these comparisons are actually getting in the way of pure enjoyment of music. Or perhaps men only enjoy music when they make comparisons. I spend a lot of time listening to my system and tweaking components. Yet the thought constantly occurs to me that my enjoyment of favorite recordings, such as Furtwängler's BPO performance of Beethoven's Coriolanus Overture, has not increased at all since the days when I owned a B&O receiver and turntable and I forgot what speakers.

Without the constant need to compare, there would be no desire to upgrade one's system. With no compulsion to upgrade, there would be virtually no high-end market. If my observations and assumptions are correct, some of the suggestions, like making components more "attractive," won't draw women into the High End. I understand that people collect vintage electric train sets. Apparently in the late '30s, some genius at the Lionel Train Co. noticed that little girls weren't buying electric trains and persuaded the bean counters that it was because trains were ugly. Lionel therefore marketed a train set painted entirely in pink! As I understand it, that set (complete and mint) now sells for tens of thousands of dollars because little girls didn't buy it, and it is of extreme rarity. Spare me from a pink Krell or a floral SOTA! That isn't going to do it. My friend with the NAD gear has never made any comment, pro or con, about the looks of the equipment (her listening room is in Early American). She accepts the NAD for what it is, and she likes the sound.

Will the growth of home-entertainment systems draw women into the field? I think not. I don't know any women who care if they watch a favorite movie on a 13" Panasonic or a 32" Sony XBR, or a Gawdalmighty Theta Data/Runco/Lexicon/Snell THX system. They don't seem to need to make these differentiations. And how many women buy subwoofers? Please, Velodyne and Muse, tell us. Make me wrong.

The High End is designed by men for men. It feeds our particular need to compare and improve. Nanette Westerman was right, in her letter last April (p.12), that there is a certain amount of defensive chauvinism in the men's club of audiophiles. Her most telling statement, if I may edit, is: "...before I spend my money, you'll have to see how music fits into my life, and design practical, affordable systems around my needs." Actually, this is just what high-end systems are not. They are impractical and awfully unaffordable systems which fit certain men's needs. When I have audiophile (men) friends over, we listen to and comment on my system. But I listen to music far more (live and recorded) with women, who could care less if I'm using KT88s or KT99s.

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the High End has no rule excluding women. In this context, LA’s response in the April ’93 “Final Word” was right on the money. Women don’t see themselves as audiophiles, and would appear to have no interest in being seen as audiophiles. But LA’s argument that industry, stupidity, and lack of promotional creativity have kept women out of the High End doesn’t convince me. It’s true that many dealers are insensitive klutzes and that many salesmen are ignorant jerks, but as many are not. Stereo Plus, a fine dealership in San Francisco, has female salespersons who are extremely competent and a pleasure to work with. I don’t notice more women customers there than in other stores.

I have no idea if there is a way to involve women in the High End, which seems to exist to serve men in quest of constant upgrading. Should the industry discourage this? Should women suddenly become as neurotic as we are? Why?

LA’s idea to “invite local female executive groups to be your guests for their meetings” is a wonderful idea. Perhaps the hangup for women is that their awareness of the High End usually comes from a father, husband, or boyfriend, and is therefore perceived as A Male Thing. If all-women groups could be persuaded to listen to high-end equipment together, things might change. A sensitive dealer could do a lot in this direction.

So is there a point to all this? I suppose it’s this: Integrate the high-end bar by all means, but don’t be surprised if women continue to buy drinks in the mid-fi lounge and enjoy their music live. They have a right to.

CHARLES ARNOLDH
SAN JOSE, CA

ASYMPTOTIC ATTRIBUTIONS

Editor:

Two articles in the January ’94 Stereophile prompt me to offer two comments, one personal and one practical:

In his cry of despair about the threatened demise of high-end audio (p.68), Jack English noted a possible parallel between audiophilia and automotiva and also offered a graph relating loudspeaker cost to performance which followed an asymptotic law. For the record, in 1968, I presented a similar curve in my book Hi-Fi in the Home, plotting financial outlay against quality for complete stereo systems, with cars set in parallel for comparison, and subsequently employed the phrase “asymptotic to perfection” when discussing the cost/quality equation in Hi-Fi News. Prices have changed somewhat since then, but it’s gratifying to find the asymptote still in place after a quarter-century of further perfectionist striving.

My practical point arises from Thomas J. Norton’s “Questions of Impedance Interaction” (p.109), which showed that a ghostly echo of a loudspeaker’s impedance modulus can be imposed on its frequency response by virtue of an amplifier’s source impedance acting as the top limb of a potential divider. Mr. Norton illustrated the effect with some specific graphics, but the data can be usefully generalized by means of a simple rule arising from the ohmic arithmetic.

Assuming a worst-case situation of very large impedance undulations, with, for instance, an LF peak reaching 10 times the value of that characterizing the lower-mid region, the rule runs as follows: To confine frequency-response changes within an amplitude band of 1dB, the amplifier’s source impedance (plus the resistance of its connecting cable) must be less than an eighth of the speaker’s impedance at the latter’s lowest point, and less than a sixteenth for a band of 0.5dB.

These criteria also satisfy damping requirements for practical purposes, since the resistance of a speaker’s voice-coil is effectively in series with the amplifier.

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feed, so that once the latter falls below about one quarter of the coil resistance, there can be no worthwhile improvement. Perceived changes in bass "softness" between transistor and tube amplifiers are thus more likely to be due to LF impedance "response ghosts" than to the damping-factor, as such. Huge ratios for this parameter make impressive reading in technical specifications (like ultra-low distortion figures), but are so far along the relevant asymptotic curve as to be useless for audio purposes.

John Crabbe
Todmorden, Lancashire, England

High-definition CD

Editor:
In his discussion of the new and very exciting HDCD™ format last July, Robert Harley stated that "Discs encoded with HDCD will still play back on standard hardware without the decoder and sound better than conventional CDs..." This is not—nor could it possibly be—correct.

I have listened extensively to Reference Recordings' HDCD Sampler. Comparing the (HDCD-encoded) Mike Garson track to any of the tracks on Garson's The Oxnard Sessions, Volume One (recorded in conventional digital), anyone with decent equipment would have to call the "conventional" recording superior. Likewise, listen to any of the brass on the disc, and you'll notice that it has very dirty edges—gritty, hard, and not at all close to the way real brass sounds. It could be argued that no reproduction of brass is close to live, except that other recordings of brass sound much closer, including numerous titles from Telarc and other companies. Try about 3:47 minutes into track 4, "The Testament of Freedom." Keith Johnson and Reference can do (and have done) much better than that. You would do better for your readers (and yourself) to not parrot the promotional literature, but to listen for yourselves...

Keith Weiner
New City, NY

Mr. Weiner's contention that HDCD-encoded discs cannot sound better than conventionally coded CDs is not correct. HDCD is not purely a digital processing scheme, but an entire process that encompasses both the analog and digital domains. The conversion of analog to digital is performed with techniques that reduce artifacts inherent in conventional coding—techniques that I understand benefit playback both with and without an HDCD decoder. Moreover, some of the additional information encoded with HDCD is in-hand, and thus contained within the undecoded signal. Retrieval of this information doesn't rely on the side channel and decoder. Consequently, HDCD-encoded discs should sound better even when played back without the decoder.

The suggestion that I merely "parroted" the "promotional literature" rather than listening for myself to judge HDCD is in error. First, there is no promotional literature for HDCD. Second, John Atkinson and I are among the few dozen people in the world who have heard HDCD in direct comparisons with Keith Johnson's first-generation master tapes—without and with the decoder. Moreover, we heard the very music whose sound Mr. Weiner objects to—Testament—from analog master tape, digitally with HDCD encoding and conventional decoding, and with full HDCD decoder. I also heard a comparison of a live microphone feed, Keith's analog machine, and HDCD-processed digital audio during the Dick Hyman Plays Duke Ellington sessions. As I reported in my "As We See It" in January 1993, the HDCD process—even undecoded—preserves many of the qualities heard on the analog master tape.

—RH

First, I should note that, while Reference
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Recordings' first HDCD-encoded release, Dick Hyman Plays Duke Ellington, suffers from slow modulation of the background noise, this was an artifact of the prototype encoder used. No matter how you examine them, the later recordings, including the Testament album, are superbly natural-sounding recordings, even without HDCD decoding. With the decoding, which I was privileged to hear in late 1992, Testament sounds less like a CD and more like a live microphone feed, in the same way the 20-bit Nagra I discussed in January's "As We See It" did.

I assume that HDCD buries within the 16-bit data stream extra information about the signal, information that is encrypted so as to resemble subjectively innocuous noise when decoded. If you examine the silence between tracks on the decoded HDCD recordings with a spectrum analyzer, the background noise does appear to have a disproportionate amount of energy in the top audio octave. While this is inaudible, due to its low level and the ear's reduced sensitivity above 10kHz, it will help linearize the low-level performance of D/A converters. This might be a factor behind Pacific Microsonics' claim that even decoded HDCD recordings will sound better than normal.

One point about HDCD strikes me, however. If it does encrypt extra information within the 16-bit data stream—and I'm only conjecturing that it does—then HDCD-encoded CDs will be incompatible with systems that use DSP processing ahead of the DAC to implement room or loudspeaker equalization. This is because such processes change each individual data word, meaning that the additional HDCD information will become scrambled. Similarly, passing an HDCD-encoded data stream through the Digital Domain VSP sample-rate converter to reduce its jitter will also scramble the encrypted data, as the Analog Devices AD1890 chip also rewrites each data word.

This conjectured incompatibility is, I assume, part of the reason why the HDCD encoder incorporates its own digital filter, because a digital filter, by definition, also changes each data word. The HDCD decoding has to be done before the filter, but then the signal might have too high an effective sampling rate and too high definition to be processed by a conventional chip. According to Pacific Microsonics' Michael Ritter, however, the HDCD chip will have a digital output port where the recovered high-definition data can be sent to DSP engines.

—JA

LP: RAISE THE ALARM!

Editor:
I want to comment on the alarm regarding the LP raised by Robert Marino [of Athena and Maildisc] in his "Keep Analog Recordings Alive" letter in January (p.9).

I have been a very satisfied customer of Mr. Marino and Maildisc for many years, but I cannot agree with his hypothesis. After reading Marino's letter, I browsed through my latest Mosaic records catalog and noted that several of their LP releases were sold out. Fantasy records also appears to be doing well with their OJC vinyl releases. And I assume that Mr. Marino's own Athena LP releases of the Rachmaninoff Symphonic Dances, Stravinsky's Petrushka, and the Moravec performances of the Debussy and Ravel Piano Works probably sold well.

From a non-reviewer perspective, my own hypothesis is that audiophile LP releases that do not sell are usually not musically satisfying. Spectacular sound by itself will not sustain any label—it must be combined with satisfying performances by great artists. Otherwise, once the curiosity about being-there sound is satisfied, the typical audiophile will revert to that which got her/him involved in this hobby in the first place: the love of music. And on this score, far too many audiophile labels are underachievers. An evening of Dafos will drive even the most committed analog lover to make peace with the defects of digital.

The challenge to establishments that specialize in purist recording techniques:
Where's the beef? There is a market out there for those who can offer the combination of great performances and impeccable LP production techniques. But the music, above all, is the main course! Everything else is dessert.

Ken Kallon
Stamford, CT

**LP’s Demise**

Editor:
While I agree with everything Mr. Robert Marino said ("Letters," January 1994), and I applaud his efforts in maintaining the existence of the LP, he left out one important item in his remarks about Kavi Alexander of Water Lily pulling out of the LP business. I wanted to buy Kavi’s latest release, but when I found out it was $50 plus $6.60 for mailing, I backed off, and I’m sure there are others who did the same. I buy dozens of new and used LPs every month, but I’m not about to spend that much for a one- or two-record set. In a sense, Mr. Alexander is not a victim of, but a contributor to the demise of the LP.

Pierre Koenig
Los Angeles, CA

**B&W Filters**

Editor:
I recently purchased a set of the latest B&W Matrix 801 speakers. The dealer kindly included the standard B&W alignment filter, which was set up for this particular speaker, at no additional charge. The B&W 801 is, without a doubt, among the greatest loudspeakers in production, but, as some of your reviewers have noted (see Lewis Lipnick’s B&W Matrix 800 review in Vol. 14 No. 6, p. 151), B&W’s stock alignment filter, intended to convert the natural fourth-order Bessel alignment to a sixth-order Butterworth alignment, leaves much to be desired.

My experience was the same, especially when driving the alignment filter directly from the variable unbalanced outputs of my Sony X707ES CD player. Tom Norton noted that the variable outputs of this unit exhibit a high and variable impedance (around 4k ohms at the midpoint of the adjustment range). This player’s rather high output impedance (or, for example, the high output impedance of many passive preamps) is seen by the alignment filter as a source resistance. The question I ask myself and have now thoroughly answered is: How does a non-zero but purely resistive source impedance affect the response of the stock B&W alignment filter?

I first answered this question theoretically, and then confirmed the theory with a few MLSSA measurements of the actual filter. My guess was that B&W had used a standard voltage-controlled voltage source (VCVS) active filter design, since this type of filter adds very little distortion by avoiding large amounts of feedback, unlike infinite-gain, multiple-feedback filters which are prone to anomalous nonlinearities under transient conditions.

The theory yielded some interesting results. It turned out that a purely resistive source impedance not only adds no additional poles or zeros to the filter’s response, but also has absolutely no effect on the filter’s center frequency (20Hz in the case of the 801, 24Hz in the case of the 800). The source resistance does have a moderate effect on the overall gain of this filter (this is not unexpected) which could easily be compensated for by a minor volume-control adjustment. The most significant result, however, was that the source resistance strongly affects the filter’s Q (which has a design value of 2), and so can easily destroy the intended sixth-order Butterworth alignment of the loudspeaker.

As the measurements confirmed (fig. 1), the overall gain change with source resistance has been removed from these curves), the Q decreases as the source resistance increases. The highest peak was taken with MLSSA directly, and
Because sensitivity, which is more a function of the design, was increased so much—about 4%—since MLSSA has an output resistance of 75 ohms, this curve shows a very slight decrease in the peak value from its theoretical 6dB. The next-lower peak occurred when the total source resistance was increased to 1k ohms, and the bottom peak occurred when the total source resistance was increased to 5k ohms. Fig. 2 shows the effect of the source resistance on the filter’s group delay (an indirect measure of phase response), which also changes the desired sixth-order Butterworth phase response. My advice to owners of the stock B&W filter is to drive it with as low a source impedance as possible, preferably at or below 100 ohms, to ensure the bottom-end response intended by the B&W designers. As for the third-party filters, I have not tested them.

A better filter having much less sensitivity to its source impedance can be constructed from a PMI BUF-03 (fig.3). Because the BUF-03 has a 500 giga-ohm input impedance (5x10\(^11\) ohms), it is possible to design a VCVS filter using relatively large fixed resistor values which mitigate the effects of a moderately high source resistance. In this design, for a source resistance of 5k ohms, the Q falls to 1.97 from its nominal value of 2.0—about as much variation as one would see from the 1% component tolerances. For a source resistance of 10k ohms, the Q falls to 1.93 or about 4%, which is still acceptable. Purists could take this design one step further and buffer the filter’s input with a second BUF-03, but I doubt that a second buffer is really needed in most cases.

Readers are free to build and use it if they are so inclined, but in such case, all the risk of success or failure rests with the tinkerer, not the designer. I have just completed building a prototype of the improved filter and am pleased to report that it sounds superb in my system with the Matrix 801s. There’s no longer any sonic degradation in the midrange or treble, yet the bass extension is there, very tight and solid, the way I would expect these speakers to play. In fact, you can’t even tell the filter is switched-in unless very deep bass is actually present in the recording.

Corey Greenberg might consider incorporating this filter into his Homemade Buffered Passive Preamp as a switchable option. Note that, because of the large value of R2, care should be taken in shielding—all connections involving R1, R2, and C (except the input wire) should be kept as short as possible, and all solder flux needs to be removed from the circuit board in order to prevent leakage currents from the power-supply rails from increasing the output DC offset.

**COILED LIGHTNING**

Editor: Barry Willis’s lightning-strike horror story in the February issue states that “[the final line of defense is the electrical outlet itself]” and recommends MOV surge protectors, ferrite chokes, isolation transformers, and the like. This is all well and good, but the “final line of defense” is actually the power cord itself.

Here’s a tweak that gladdens the heart—it doesn’t cost a cent, takes three minutes to perform the procedure on your entire system, and, most importantly, it works: Just form a neat coil with the surplus slack in each of your power cords. I’ve actually seen a household with coiled cords after a lightning strike. Each coiled power cord was burned through and severed at the wall-outlet end of the coil. The juice never got to the components.

**Martin R. Needleman**

Annapolis, MD

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US: John Atkinson

Dealers promoting manufacturer and designer seminars should fax me (don't call) the when, where, and who at (505) 983-6327 at least eight weeks before the month of the event—ie, if you're putting on something in June 1994, you should get the information to me by April 1. Mark the fax cover sheet "For the attention of John Atkinson—Dealer Bulletin Board." Promoters of Hi-Fi Shows should also fax me the details as soon as possible.

Florida: Don't forget: Hi-Fi '94, Stereophile's High-End Hi-Fi Show, takes place at the Doral Resort and Country Club, 15 minutes from Miami's airport, from April 29 through May 1, 1994. See the ad in this issue for full details.

Georgia: The Atlanta Audio Society is co-hosting a series of manufacturer seminars at Georgia high-end retailers from April through June. On Saturday April 16 at 7pm, Audio Atlanta (19 Atlanta Street, Marietta, (404) 499-0145) will be presenting Michael Green of RoomTune, who will talk about "The Tuning Revolution" and his Chameleon "tuneable" loudspeaker. The next day, Sunday April 17, the Michael Green Roadshow moves to Stereo Video Designs (1253 Powers Road, Marietta, (404) 916-1001). Also on April 17, at 2pm, Audio Atlanta will present David Marshall of Aerial Loudspeakers, and loudspeaker reviewer Don Keele of Audio magazine. On June 19, Music House will present Audiophile Systems' Jan Donaldson and Alex Montenegro, who will demonstrate the Majik/Knekt whole-house audio system from Linn Products. Call (404) 565-2118 for details.

Illinois: Select Sounds (1220 West Ogden Avenue, Naperville) will be holding its Third Annual CD Clinic on Wednesday April 20 through Saturday April 23. For $299.50, attendees may bring their CD players in for inspection, cleaning of the laser transport lens and belts, lubrication of the sled rails, and performance evaluation. Depending on the player, LSB trimming of its multi-bit DAC will be offered for a nominal charge. For $40, attendees can have their players fitted with the Laser Illusions Optical Spatial Filter. Other manufacturers participating in the Clinic will include David Birch-Jones of Marantz, Jeff Wilner of Rotel, Jack Shafton of SOTA, Sonic Frontiers, and TEAC. Call (708) 717-1100 after April 1 for details and a reservation—admission will be limited to the owners of the first 100 CD players needing tune-ups.

In February, Linn Products opened its first American retail outlet, in Chicago, following the opening of stores in London (at Harrod's) and Tokyo. Featuring Linn-based systems priced from $600 to $40,000 demonstrated in "real" living-room environments, the focus of the store is to reach not only audiophiles, but also customers who might otherwise be intimidated by a typical store's shelves of many different components. (Retailers should note that Linn does not intend to open stores in cities where they already have representation.) Linn Hi-Fi Chicago can be found at 2518 North Clark Street and will be open from 11am to 7pm, Tuesdays and Fridays; 1am to 8pm, Wednesdays and Thursdays; 11am to 6pm, Saturdays; and appointment only. Call (312) 348-5466 for more information.

Ohio: On Thursday April 7, Audible Elegance (9464 Montgomery Road, Cincinnati) is holding a double seminar, "What to Listen For When Choosing a Stereo System," with Jim Yamaguchi of California Audio Labs and Stephen Hill of Straight Wire. There are two presentations, at 5pm and 7pm. Seating is limited, so call (513) 793-3737 for reservations.

South Carolina: On Wednesday May 4, Michael Green of RoomTune will be presenting his "Tuning Revolution" seminar at American Audio (101 Verdade Boulevard, Greenville). Call (803) 288-4293 for details.

Germany: Thomas J. Norton

In the early 1980s, the German Audio press was among the first to embrace the CD format. So when I saw that the October '93 German Audio had devoted several articles to various types of home recorders, I had to pick it up. I was especially intrigued by an article comparing four different home recorders, each based on a different format: the Sony DTC-670 DAT, Philips DCC600 DCC, Sony MZ-1 MiniDisc, and Pioneer CT-S820S cassette deck— all roughly comparable in price.

No one at Stereophile is fluent in German (RL comes closest, as he's listened to Wagner's Ring ten bazillion times). Nevertheless, all of the German hi-fi magazines I've seen are loaded with helpful charts and tables, and in their frequent group reviews they clearly show the order in which they rate the products. The German Audio magazine not only assigns points, but also has several classes, each designated by a number of ears. For example, "Reference Class" is five ears, "Top Class" four, "Upper Class" three, and "Middle Class" two.

Using only the tables and charts to interpret the information, the only recorder of the four rated "Top Class" was the Pioneer cassette deck—a high-end model with Dolby S and HX Pro. The DAT and DCC machines were both rated "Upper Class," and while they were one ear short of the Pioneer, they did rate comparable (or slightly higher—the charts are a bit ambiguous on this point) in the digital mode (I assume that...)

The model numbers here will not all be familiar to US buyers—the big Japanese manufacturers tend to use different model numbers in each market. Models with different numbers may be the same, but there's no way to know for certain.
Why won't conventional hi-fi speakers work for Home Theater?

You need three front speakers - left, right and center - to achieve realistic home theater. A stereo pair would place the dialog in the center (where it belongs) from only one listening position. You can't use conventional hi-fi speakers for the center channel, even shielded models, because their dispersion patterns prohibit raising them too high or laying them on their sides.

KEF's proprietary Uni-Q® driver, which places its tweeter at the center of the woofer, allowed KEF's engineers to create the ideal center channel speakers, the Models 100 and 90. Their uniform dispersion patterns let them be placed beautifully above or below the screen, creating the impression that the sound is coming directly from the screen. Moreover, the Models 100 and 90 are both Reference Series, which not only ensures their quality and consistency; it permits their use as satellites and their seamless integration with other KEF Reference and O-Series loudspeakers.

The Uni-Q driver. One of a series of KEF scientific achievements dedicated to one goal: the most realistic performance in your home.
by “digital mode,” they are referring to a digital input, rather than an analog one which must utilize the recorders’ internal A/D converters). The Sony MZ-1 MD portable, however, was only rated “Middle Class”—a disappointing showing. Granted, it’s a portable, but in another article, a Sony TCD-D7 portable DAT recorder was rated “Top Class.” Although the latter was in a different article, and thus perhaps not totally comparable, the difference in ratings is noteworthy.

We don’t have much solid information as to how DCC and MiniDisc are doing in Europe. Even in the US, the indications are sketchy at best. (I’m sure Philips and Sony know, but they aren’t talking.) Recent reports in Audio Week indicated that, after reaching a peak in software production in December 1992, the DCC duplicating plant in Jacksonville, Florida has since seen their duplication business fall off to practically nothing; and the Sony MiniDisc plant in Terre Haute, Indiana is operating at 12%-40% of its normal capacity. (According to Sony, however, CD did no better at a similar stage in its development.) At best, both formats are struggling to establish themselves, which is one reason why Sony announced an extremely aggressive marketing program for 1994 at the recent WCES, as RH discusses in the next story.

**US: Robert Harley**

At the Winter Consumer Electronics Show in Las Vegas, Sony Corporation announced ambitious new MiniDisc products and aggressive marketing plans for the MD format. With MD outselling Philips’s competing Digital Compact Cassette by a margin of two to one, the format war may already be all but over. The most recent figures, however, indicate that both formats are selling at levels far below projections.

In a special press event, Sony’s Dr. Roger Lagadec presented a broad perspective on MD and its relationship to other audio formats. He put MD in its historical perspective, and drew parallels between MD in 1994 and CD in 1983. Specifically, he suggested that the dramatic price reductions in CD hardware would be paralleled by MD.

Dr. Lagadec also announced an improvement to MD’s Acoustic Transform Adaptive Coding (ATRAC) reduced bitrate coding scheme. ATRAC is a perceptual coding method that generates a digital audio signal with less than 20% of the data requirements of conventional linear coding. Because of these improvements to ATRAC, second-generation MD products reportedly sound better than previous models. These refinements are made possible by more sophisticated DSP engines, enabling the ATRAC decoding algorithm to be implemented with higher quality. Specifically, the new silicon allows longer word-length calculations, resulting in a better-optimized
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bit-allocation scheme. The result is lower THD and a lower noise floor.

Dr. Lagadec suggested that the ATRAC algorithm will undergo continual improvement, using the word “massive” to describe the potential improvement in ATRAC over the next ten years. He also indicated that psychoacoustic research will likely redefine the masking thresholds (on which all perceptual codecs are based), producing further gains in ATRAC sound quality. Ultimately, MD will become very close in sound quality to CD, Dr. Lagadec predicted. Dr. Lagadec made the interesting observation that, although the method in which data are recorded on the MD is fixed in the format, the method by which those data are extracted from the signal is open and subject to improvement.

The new MD products were shown at a separate marketing-oriented press conference. The strongest MD entry was the Sony MZ-E2 portable ($549), a 7.2oz MD player about the size of a cassette box. The MZ-E2 will play for two hours on the integral lithium-ion battery, or for 7½ hours by adding a pair of AA batteries. The MZ-E2 is supported by the $995 MDS-501 home MD recorder, which will presumably be used to record blank MDs for portable or car MD machines. Three MD car units were introduced, including two models that will hold four MDs in a carousel, providing nearly five hours of music.

The laser pickups and other mechanisms of these second-generation MD products were passed around, along with those used in first-generation MD machines. The contrast was striking: The new laser pickup was a fraction of the size used in the first-generation player. These mechanical improvements, along with greater semiconductor integration, make the second-generation MZ-E2 portable 80% smaller and 70% lighter than its predecessor. Indeed, Sony suggested that the second-generation MD hardware is at a stage of refinement equivalent to that of fourth-generation CD hardware.3

The MD marketing plans include a promotion that will offer, with the purchase of some MD hardware products, $300 in coupons for pre-recorded MDs. The idea appears to be designed to get consumers in the habit of buying MDs, and to achieve the critical mass of consumers needed to ensure the format’s survival.

But what does MD offer the high-end audio enthusiast? As a long-time cassette user (only for portable applications), I welcome MD—it's a vast improvement over the sonic and functional limitations of cassettes. The question is whether MD's much-higher price for hardware, blank media, and pre-recorded discs compared to analog cassette will exclude the very market Sony is pursuing: the teenager with little disposable income.

Although I believe data compression (the ATRAC coding used in MD) is a step backward for high-quality music reproduction, Sony appears committed to the CD (with its uncompressed coding) for home use. The company reiterated at the press conferences that MD is the successor to the analog cassette, not a replacement for CD, as many in the High End fear. As long as uncompressed digital audio is available on CD, MiniDisc may emerge as the ideal format for portable audio.

**US: John Atkinson**

Some audio-people news: We were sorry to learn of the death on February 6 of Alexis Arnold, the Vice President of Naim USA. Alexis was one of those people who always seemed to be having more fun than they had any right to, even when she was battling cancer. She was a stalwart member of the Academy for the Advancement of High End Audio.

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*Stuart McCreary - Positive Feed Back Magazine*

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least temporarily emotionally shattered—he had vision and energy for two men. In addition to Nimbus's involvement in Video-CD, Count Labinsky's legacy will be the Nimbus Foundation for the Performing Arts, whose 550-seat concert hall on the Nimbus grounds was opened in May 1993 by Prince Charles. Count Labinsky was 70.

I was saddened to hear of the deaths, in January and February, respectively, of Ralph Hodges, the high-end audio columnist for *Stereo Review,* and of Audio reviewer Len Feldman. Ralph had also occasionally written for *Stereophile* in the early '80s.

Paul Klipsch, founder of the loudspeaker company that bears his name, celebrated his 90th birthday at January's Winter CES. Paul constructed his first radio in 1919, a year before the first public broadcast. After working in Chile, he entered graduate school at Stanford, earning a degree in Electrical Engineering. He served in Munitions for the US Army during World War II in Hope, AR. He earned a patent for his first Klipschorn in 1943, and concentrated on home-speaker design after the war. Klipsch was awarded the Audio Engineering Society's Silver Medal for his contributions to loudspeaker design and the measurement of distortion. He was inducted into the Audio Hall of Fame in 1984.

**US: Robert Harley**

We were saddened to learn of the death of audio pioneer Bart Locanthi. He died of cancer on January 9 at the age of 74.

Bart spent ten years as Vice President of Engineering at James B. Lansing Sound, the predecessor of JBL. As a VP of development at Pioneer in the 1970s, he was responsible for designing the company's TAD line of professional drivers (including the unique horn-loaded tweeter used in the Rush Monument high-end loudspeaker).

Although Bart was known primarily as a loudspeaker designer, his later work focused on digital audio. He edited (with Barry Blesser and Thomas Stockham) the seminal Audio Engineering Society anthology, *Digital Audio,* and served as Chairman of the AES subcommittee on digital audio. He was named a Fellow of the AES, and served as its President in 1986–87.

Most recently, Bart established an ad hoc committee to study the audible quality of low-bit-rate coders, such as PASC used in Philips's DCC. Not satisfied with the established methodology for sonically evaluating low-bit-rate coders, Bart turned his house into an optimum listening environment to conduct his own tests. He was able to secure many types of low-bit-rate coders and report their flaws to the products' designers. In fact, it was Bart who immediately detected a problem with a low-bit-rate coder that had already been officially judged acceptable as the DBS replacement for FM broadcasting in Europe.4

Bart fundamentally believed that low-bit-rate coders should be subjected to rigorous critical scrutiny by independent listeners, and that the products should be held to a very high standard of sound quality. He never accepted the notion of "good enough," pushing developers of low-bit-rate coders to improve their process. During my research into PASC coding for my report in Vol.16 No.7, Bart generously shared with me his insights into low-bit-rate coders and suggested tests to reveal their flaws.

Bart is survived by a wife, two daughters, and a son.

---

4 See my "As We See It" in Vol.15 No.3.

**UK: Ken Kessler**

Immune as I am to the attractions of radio, I thought I'd find myself puzzled by the (mild) furor created by recent changes at BBC's Radio One. But, no, I've accepted that what's happened at the BBC is normal for the times; the ensuing outrage is the now-typical response of a poorly served public.

Why, though, do I not listen to British radio? Because I was spoiled by grow-

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**Stereophile, April 1994**
ing up in the US during the era of the Killer Disc Jockey, when spinning the dial was worthwhile. On a clear night, I could pull in Boston or maybe New York City, but it didn’t matter; even the local jocks were thrilling. Then again, any AM radio was a gas up until the ’70s, so it might’ve been the music rather than the DJs themselves which made radio so much of a pleasure for me in my youth.

But back to the uproar in the UK: It involves the transforming of Radio One into a clone of the commercial stations, into something less than the allegedly universal, if homogenized, pop force it became after a few decades’ worth of trying. This station came into being in the late 1960s only because the British Broadcasting Corporation—stuffy Auntie Beeb—had to respond to the demand for a station which would play the dreaded rock ‘n roll instead of Tin Pan Alley-caliber pop slop. Pop-music airtime, until the government gave the BBC the go-ahead for Radio One, was being filled by pirate stations anchored just outside the UK’s coastal limit. In true Monty Python fashion, most of the pirate DJs became Radio One DJs, poachers turning gamekeepers indeed.

Unfortunately, nearly 30 years later, most of those same DJs were still in place. So, ca 1993, you had 50-year-olds spinning discs for 15-year-olds. The trendy new BBC management felt that it was finally time to do something about this weird anomaly, especially since local (that is, commercial) radio was stealing BBC listeners by the thousands.

**THE BBC APPEARS TO BE A MICROCOSM OF ALL THAT IS BAD IN CORPORATE BRITAIN.**

Let’s step back a bit before describing the bloodbath. You should know that the BBC’s privileged position as a government-financed media corporation has, for the past few years, been seriously threatened. On the television side, the satellite stations and the lean-and-mean commercial stations (the various ITV regions and Channel 4) have been grabbing all of the best imported programs because they have more money to spend. The penny-pinching BBC management has seen to it that fewer in-house productions are being created because it’s cheaper to buy independent productions, which, unfortunately, aren’t always of the quality traditionally associated with the letters B, B, and C. As is shown in a regular feature of the satirical magazine _Private Eye_, the BBC appears to be a microcosm of all that is bad in corporate Britain.

You might wonder, though, why a broadcasting corporation financed by license fees and government handouts needs to worry about the size of its audiences—unlike commercial stations, which sell advertising time based on their listening/viewing numbers. The answer is simple: If the BBC doesn’t fulfill its purpose of providing educational and/or entertaining radio and television programs for all sectors of the British public, it could lose its cherished status, its raison d’être. This venerable institution could, in theory, become just another station on the dial, fighting it out with the current independents, devoid of government protection.

Because we’re in the post-’80s, post-boom recession, you can probably guess that the current BBC management resembles accountants and politicians rather than broadcasters. And this management, which is about as out of touch with reality as its Old-School-Tie predecessors, has sacked much-loved, if aged, DJs in favor of the same type of cutthroat dweebs who have taken over most radio and television programs in the independent/commercial sector.

The genotype of the new talking head is exemplified by a semi-literate, under-
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nourished trendy with an accent which defies class or region: The sound is that of the deeply, incurably inarticulate. It's the MTV mentality in excelsis, but with a horrible, thuggish British spin. Not only does this make for unintelligible broadcasting, it also influences every young and impressionable listener in the land. Glottal stops and dropped aitches are only part of the problem. "Grammar" has become something you call your father's mother. (And I was afraid that my three-year-old's main verbal stigma vis à vis his British classmates would be his inheritance of my New England inflection instead of some useful if plummy local accent. He should be so lucky. Odds are he'll end up sounding like some geek on Channel 4's The Word, a "youth-oriented lifestyle" TV show which single-handedly wishes to destroy Western civilization.)

So what's happened to Radio One? The forced departure of hoary old jocks like Dave Lee Travis (48), Bob Harris (45), and Simon Bates (46) has resulted in a loss of 1.4 million listeners from Radio One's weekly audience. Radio One is still a monopoly with 14.3 million listeners, and it supposedly captures the ears of a third of the country's adults, but it's under serious attack. Among the benefactors? Richard Branson's Virgin station. Unfortunately, the wily Branson was not made Chairman of the BBC. If there's a single soul in this country capable of turning the BBC around, it's Branson.

How will this change affect those of you who live beyond the reach of Radio One? I have, for example, no idea how much longer the BBC will continue with its World Service, which provides short-wave comfort not just to ex-pat Brits like JA, but to listeners in troubled territories; it would be a tragedy if the management tampered with that institution, which has recently been joined by BBC World Service Television.

On a less humanitarian level, I fear that we've now permanently lost any future technical contributions from the BBC. Recall that the BBC has pioneered work in digital technology, creating the NICAM system—one of the best stereo TV broadcasting formats in the world—and, since the 1920s, has set standards for speakers and amplifiers. No other broadcasting company in the world, not even the wealthy NHK, can boast a heritage to match the BBC's.

But now, the department which gave us the LS3/SA is soon to close, and all future technological changes or advancements (or upgrades, if you prefer) at the BBC will probably be brought in from independent outsiders. This isn't a good thing, because outsiders work solely for commercial purposes. The BBC used to work solely to achieve technical excellence.

Some, however, might argue, "plus ça change..." Maybe the BBC will reach the end of the century intact. I'm certain that many feel that way about a smaller, less venerable, less revered institution, the Federation of British Audio. I've reported that this organization is undergoing a metamorphosis. Again, in genuine Monty Python fashion, we see the Federation of British Audio reborn as the British Federation of Audio. This simple reordering of words obscures a wholesale change in the group's attitudes. Let's see if I can make sense of the rhetoric:

"Federation of British Audio"—the old name—should mean a group consisting of audio companies which happen to be British, especially British hi-fi manufacturers. In theory, then, the FBA could have existed in Hong Kong or Seattle or Tierra del Fuego, but the members would have to be British. It's just like clubs or organizations, found around the world, that exist for most nationalities or religious, political, or ethnic groups; eg, the B'nai Brith or the YMCA or Noraid or the Rotarians or Basque separatists.

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So, the choice is yours. For superb performance with any outboard digital-to-analog processor, it's the CDT1 compact disc transport. For all-round musicality in a single chassis (with the option of later use as a transport), it's the CD1 compact disc player.

Some audio critics have said that digitally encoded music has finally come of age. We say it's been reborn. Experience it soon at your nearest authorized Audio Research retail specialist.
The new name—"British Federation of Audio"—puts the emphasis on a British organization consisting of audio companies in general. Got it? In other words, the old FBA stood for the furthering of British hi-fi manufacturers. If you were imported, you were a virus, vermin, an infection. The BFA? Well, it sounds like the FBA members finally realized that we're all in this together and that, at the very least, Great Britain is part of the European economic community; the goal should be to further an awareness of all hi-fi, not just British-made hi-fi.

It also means that the BFA is open to a vastly wider potential market, er, membership, including distributors, media members, and anyone else with a UK postal address. And, for example, at £2000 annum dues ($3000) for any company doing more than £3m/year in distribution, you can imagine what it'll do for the BFA's coffers.

This open-membership policy, however, does not mean that the BFA is a rival to, or an equivalent of, the American Academy for the Advancement of High End Audio (AAHEA), because the BFA welcomes manufacturers of any old rubbish, provided that members pay their dues. And if you understand the British usage of the word "audio," it just ain't the same thing as hi-fi.

Everywhere else in the world, "audio" is interchangeable with "hi-fi." In the UK, anything that makes a noise—from the nastiest boombx to a £9 personal hi-fi system to a one-piece £99 "mini-system"—is termed "audio." And I'm sure that the tackler of the BFA's supporters will use this as proof that the BFA is "anti-elitist." But this is probably the last time I'll write about the BFA, because it'll probably be just as useful to the hi-fi community at large as its predecessor was: playing the host for an extortionate annual dinner.

**US: John Atkinson**

Harman International, which already owns the JBL, Harman/Kardon, Infinity, Fosgate-Audionics, Loxicon, Son-Audax, and AKG brands, and has a 20% stake in Madrigal Audio Laboratories, announced in February that it was to purchase the venerable Swiss pro-audio manufacturer, Studer Revox. The Revox consumer product line remains under the control of its current owners, the Swiss public utility company, Motor Columbus.

ADST, the holding company that manufactures products sold under the ald/s/ and Muscatek brands, has acquired the high-end in-car manufacturer, Orion Industries, of Tempe, AZ.

Marantz, although owned by Dutch company Philips, has been distributed in the US for the past few years by B&O. That relationship ceased at the beginning of the year. Marantz America, Inc. can now be found at 440 Medina Road, Roselle, IL 60172. Tel: (708) 299-4000.

**US: Peter W. Mitchell**

A THX controller processes two-channel Dolby Surround recordings to produce six playback channels (left, center, right, sub-bass, and de-correlated left/right surrounds). Manufacturers who are now making THX controllers will have to make only minor design changes to add an AC-3 decoder for 5.1-channel Dolby Surround Digital. For Lucasfilm's WCE's demonstration of 5.1-channel THX, the Pro Logic decoding in a Madrigal Proceed PAV processor was bypassed in order to use the PAV as a system controller while playing discrete six-track digital tapes.

I was eager to hear this THX demo, because I knew that the six-track tape would include a purist discrete-surround recording of a small classical ensemble (an acapella choir of about 20 voices), taped in the acoustically superb "scoring stage"—movie jargon for a symphony-size recording hall—at Skywalker Ranch. I particularly wanted to hear whether THX signal processing and the radiation pattern of THX speakers would combine to provide an even more realistic you-are-there impression than what I've heard from stereo discs using a Yamaha DSP ambience processor. I was hoping that this would be such an effective demonstration that its realism might persuade surround sound skeptics like JA.

As luck would have it, I arrived just as a demo was beginning, and the only available seat was in the right-rear corner of the listening area. The ambience level was very weak, but I suspected I might just be sitting in a null—a dead spot in a bipolar surround speaker's radiation pattern. When I leaned forward over the couch, the ambience was noticeably stronger. It was nearly at the correct level for the movie excerpts at the end of the demo, so for the repeat of the demo program, I grabbed a seat on the couch. The surround ambience was still too weak to establish "envelopment"—ie, the impression that the listener is enveloped in the same body of air as the performers—in the music recordings.

Envelopment is why I believe surround sound is not an artificial gimmick, but an important aspect of high-end sound. Envelopment is the essence of a surround system's ability to take you out of your living room and place you in the environment where the microphones were. Thus, the issue is realism: Do your ears tell you that you're in the concert hall with the musicians, surrounded by the hall's acoustics? Or are you merely hearing a hi-fi system?

Since I heard ambience but not envelopment, I told the system operator at the end of the demo that the surround level was set too low by an amount that was at least 0.5dB, but not more than 1dB. The operator was amazed that I could judge levels with such resolution. Actually, of course, I was judging not the absolute level, but the relative balance of surround to front speakers. A change of 0.5dB in relative balance is easy to hear.

Similarly, in two-speaker stereo you can easily hear the effects of a 0.5dB change in left/right balance. Such a change affects not only the centering of the image, but also the apparent depth and layering of the soundstage. Balance errors of 1dB to 2dB are commonplace in recordings, and the two speakers in a stereo pair often differ in sensitivity by a similar amount. I'm appalled that the designers of some high-end preamps foolishly omit a balance control. I often find that small adjustments of left/right balance, amounting to 1dB or so, significantly improve the soundstaging.

**Envelopment is an Important Aspect of High-End Sound.**

The main reason I'm reporting this story is to warn you that the designers of many remote-controlled surround processors are making a mistake. Typically, they provide a rotary volume-control knob that's motor-driven for remote operation of the Master volume level, but they settle for circuits that adjust the Center and Surround levels in discrete steps of about 2dB. This is unacceptable. You may be able to use such a surround processor for casual enjoyment of Dolby-encoded film soundtracks and TV shows, where much of the surround content consists of discrete sounds (audience applause, traffic, or jungle noise). But if you'd hoped to reproduce realistic ambience, you'd have to connect the processor's surround output to an integrated amplifier whose volume control permits precise fine-tuning of the surround balance.

To get back to the story of the THX demo, the operator relayed my complaint...
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to Tomlinson Holman, the THX guru. Holman is familiar with the need for precise surround balance, so he responded by asking whether his calibrated system settings had been altered. The operator replied that yes, in response to an earlier complaint that the sound was too reverberant, he had reduced the surround level by one step on the Proceed PAV. The well-designed PAV has 0.5dB steps. So, in fact, the surround level had been running 0.5dB below the setting that Holman had established at the beginning of the day.

This validation of my estimate doesn’t mean that I’m a golden-eared listener. I’m not. It simply demonstrates that when you’re using a single pair of surround speakers as stand-ins for the acoustics of an entire hall, small changes in surround balance have a subjectively large effect. If this seems unreasonable, recall that high-end audio frequently involves “tweaks”—small refinements that add up to greater musical realism. Raising the surround level to Holman’s original setting provided what sounded to me like the correct amount of hall ambience, but I didn’t get a convincing impression of envelopment. Raising the surround level by another half-dB provided a luxuriant cathedral-like spaciousness, but it still wasn’t realistic.

The problem was in the recording. The main left/right channels contained far too much hall reverb. The recording, Theater of Voices, was taped by Harmonia Mundi USA, who used a spaced pair of omnidirectional mikes to capture lots of churchly ambience along with the voices. Lucasfilm used the feed from those mikes for its left and right channels and added its own center and surround mikes, recording all five channels on an Alesis ADAT (a popular 8-track digital recorder that sounds good and is widely used today at small studios). The strong reverb in Harmonia Mundi’s two channels may yield pleasingly spacious sound in straight two-speaker stereo, but the addition of even a modest amount of hall sound through the other three channels yielded a result so reverb-heavy that it unpleasantly colored the voices. In my experience, the most true-to-life surround playback is achieved when the ambience in the front channels is relatively subtle and is unmasked by the surround reproduction. If the miking is arranged so that the surround channels carry the main burden of the hall sound, then the five channels can be mixed down to provide an appropriately spacious result for two-speaker playback. Unfortunately, the THX demo recording wasn’t made that way.

**UK: Ken Kessler**

**Question:** Is the continuing panic about CD rot unique to the UK? More so, is it unique to The Daily Mail and The Mirror? The former newspaper’s second article on this plague suggests that “The chorus of complaints over rotting compact discs has reached a crescendo.” Eh?

It would appear that the mere act of Philips responding to the worries about CD rot is enough to trigger responses of a shock! horror! caliber in classic British newspaper fashion. And what did Philips do to perhaps cause one to think there’s more to this CD rot than meets the ear? Simple: The company set up a free hotline at the PDO plant in Blackburn. When I phoned it, the call connected after two rings, which suggests to me that the line ain’t all that busy. (Compared to, say, Microsoft’s UK help line, which keeps you on hold for more than half an hour... at UK phone-call rates.)

But some salient points have come to light which will, at the very least, relieve those of you who own CDs pressed at PDO Blackburn. It seems that, while the...
rest of the world’s CD plants have been using aluminum coatings, PDO Blackburn has been using silver. Philips used to believe that CD rot (disks turning a bronze color, proving unreadable by the player’s laser) is caused only by contaminants in the packaging. Apparently they now believe the problem to be caused by air-borne sulphur, as well as unexpectedly high amounts of sulphur found in certain types of cardboard and paper. This sulphur can eat through the protective lacquer and react with the silver, creating the bronze-colored compounds, the company believes silver to be less immune than aluminum to sulphur contamination. This, however, has not stopped PDO Blackburn from coating discs with silver. Instead, they’ve looked at the protective sealant—since nitrocellulose isn’t the most secure sealant, PDO is now using an acrylic outer layer.

The long-term effect? Even the Consumer’s Association—publishers of Which?, and an organization which makes Ralph Nader look like Ronald McDonald—has said that consumers cannot expect to take action over faulty goods after six years, unless the consumer was misled in the first place. This brings us back to those rash statements made during the CD launch years, when Philips, Marantz, and others made ludicrous claims about CD’s near-Kryptonian immunity to everything short of nuclear explosions. In theory, any CD manufacturer who unquestionably stated that CDs offer “perfect sound forever” could be taken to task. But it would be pushing the courts . . .

Anyway, I phoned David Wilson of PDO to find out the exact extent of the plague. So far, only 100 CDs have been returned. (And most of those were failing to play because they were scratched, not because they had corroded.) To put this into perspective, PDO Blackburn has now manufactured over 100 million CDs, so the odds of having a CD which rots seem to be, literally, one in a million. But Philips went ahead with the hotline anyway, and Wilson confirmed that my connected—after—two—rings experience is normal. “There was a flood of calls right after the Mail and Mirror articles, but almost all of them were calls for reassurance.”

Wilson said that no other territories, PDO manufacturing plants or otherwise, have reported any CD rot. But Wilson also had some advice for the true paranoids among you: All PDO-manufactured CDs have a slight yellowish tinge anyway, so listen to your seemingly contaminated CDs before panicking.

---

**US: Peter W. Mitchell**

As TTN mentioned in February, Dolby’s digital film-sound system is now officially known as Dolby Stereo Digital (DSD). In case you’re confused about the names of Dolby’s various surround-sound formats, here’s the logic behind their nomenclature. Since there are two basic categories of Dolby surround, each of which has two playback environments, a four-entry table tells the story.

The older system involves analog mixing of four original signals (left, center, right, surround) in a matrix circuit to produce a two-channel composite signal. When this is recorded on film for theatrical playback, it’s called Dolby Stereo. Thus, as a film format, the word “stereo” reflects its distribution as a two-channel system.

Newer Dolby systems use 5.1-channel digital sound (DSD) to produce the same matrix circuit output. When this is recorded on film for theatrical playback, it’s called Dolby Surround. Thus, the word “surround” reflects its distribution as a 5.1-channel system.

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channel optical soundtrack. When a matrixed Dolby Stereo recording is transferred to a consumer format (disc, tape, or broadcast TV), it's called Dolby Surround.5

At the playback end, there are three grades of decoding for Dolby Surround signals: A basic “Dolby Surround” circuit extracts the four channels from the matrix, then applies Dolby noise reduction and delay to the surround signal; “Pro Logic” circuits add steering logic (gain-riding and phase shift) to compensate for the inherently poor separation of the decoding matrix; and “THX” processors combine Pro Logic decoding with small-room equalization and timbre-matching, then split the mono surround signal into two “de-correlated” outputs.

The digital category of Dolby surround recording uses AC-3 coding to transmit six discrete channels (three front, two surround, and a bass track) at a low bit-rate. The theatrical and consumer formats have the same names as their analog counterparts, with “digital” appended—Dolby Stereo Digital on film for theaters, and Dolby Surround Digital in consumer media for the living room. I’ve seen the abbreviation DSD used for both. The theatrical version was formerly known as Dolby SR-D, or Dolby Digital for short.

The potential for confusion seems to be growing. For example, the fact that some Pro Logic decoders operate digitally could mislead consumers into thinking that they’re buying Dolby Surround Digital devices. In fact, they handle only matrixed Dolby Surround signals. Laserdiscs contain an analog FM soundtrack and a CD-format digital PCM soundtrack, but the digital sound is not DSD; both are versions of the matrixed Dolby Surround signal. This is true even for movies that were shown in theaters with Dolby Stereo Digital sound; eg, Batman Returns, Under Siege, and The Fugitive. Next year, if Pioneer’s proposal is adopted as a standard by the Laser Disc Association, these and other laserdiscs will be reissued both as “Laser Digital” discs with Dolby Surround Digital in AC-3 code as well as the customary digital soundtrack with matrixed Dolby Surround.

The development of a Zoran IC that performs AC-3 decoding for DSD was described in this space several months ago. The recent adoption of AC-3 coding as the standard for the sound of HDTV has made it clear that there will be a huge market for AC-3 decoders. To meet the anticipated demand, other IC manufacturers such as Texas Instruments have begun to develop their own chips.

Surround-Sound is an evolving medium, and there is still much to be learned.

Meanwhile, Sanyo has developed an IC that performs all of the specialized analog signal-processing functions for home THX in one chip. The LC83017 chip performs small-room equalization to correct the excess brightness of movie laserdiscs, re-qualification of surround signals to match the timbre of front signals, crossover filtering for a subwoofer, and de-correlation to produce two phase-scrambled surround outputs from the mono surround signal of a Dolby Surround source. Onkyo and other companies will use this chip to produce THX receivers and low-cost THX controllers. Radio Shack is already selling a complete Pro Logic decoder (including three 20W amplifier channels) for only $199, so perhaps next year they’ll have a budget THX controller as well.

For high-end applications, engineers at Lucasfilm’s THX division have developed program codes to perform the processing for home THX digitally in a standard Motorola 56004 DSP chip. Since a second 56004 could contain program codes for Dolby Pro Logic processing, a pair of 56004 chips could be the heart of a complete digital THX controller. On the other hand, since the Zoran 38500 chip performs both Pro Logic and AC-3 decoding in the same IC, perhaps the best way to manufacture a high-end digital surround product would be to combine the Zoran chip with a THX-programmed 56004.

The preceding sentence was a suggestion, not a definite conclusion. Surround-sound is an evolving medium, and there is still much to be learned about what works best. For example, there will be vigorous debates during the next few years about whether the diffusion provided by the bipolar radiation pattern of THX surround speakers will still be desirable when the mono surround signal of Dolby Surround is replaced by the discrete stereo surrounds of DSD. Commentators from Dolby Labs and elsewhere have suggested that discrete five-channel recordings might sound better if all five speakers have the same radiation pattern.

5 If you’re interested in surround-sound and AV home theater, you’ll probably enjoy Corey Greenberg’s essays in Video magazine about aspects of home-theater sound.
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A million-selling album often changes the playing field for recording artists—many agonize over their music, become reclusive, go five or ten years before releasing another record. They can develop monomania, at once trying to build on what they've done and grow artistically while maintaining the core of what sold so many albums in the first place—figuring out what elements were appealing to people and doing lots of second-guessing.

No wonder so many stars seem neurotic. However mysterious—even mystical—the musician's art and personality might seem to his or her audience, all the artist really wants to do is to connect—and to continue to connect. And woe to the performer who doesn't. Ask John Fogerty. Ask Donald Fagen. Ask Robbie Robertson.

But don't ask Keith Jarrett. In many ways, Jarrett is the opposite of this kind of performer. Indeed, his 1975 Kölner Concert—a recording of solo, improvised piano music—sold well in excess of a million copies and continues to sell in the tens of thousands annually. This has made him ECM's flagship artist, and certainly the most financially successful—not that he's particularly interested in all that. Jarrett held sway over jazz during the '70s, and was one of the few artists to develop a mass audience during one of the music's worst downtimes. He did so by bucking popular trends.

"Or ignoring them," Jarrett asserts as we sit in the control room of his studio, overlooking his home and property in western New Jersey. "Ignoring them in my work. I don't ignore them. They're out there—you can't escape them, though when I'm in my little house here I don't have to see them. I know what's going on, I know what the trends are. They have nothing to do with my work. I am not resisting them—I find them ineffectual in and of themselves, so there's nothing to resist. Trends are trends. They come and they go in cycles. If I ever feel pulled by them, I know I should stop being a musician."

"Silence is where music comes from. Music doesn't come from directions other people have, although, if you're playing with them, it comes from listening to the directions these
other people have in their playing. But trends to me are fashions, and fashions are clothes.”

Keith Jarrett seeks first and foremost to be the paradigm only for Keith Jarrett. In the 19 years since Köln, his output has been nothing if not diverse and prolific: He has made albums of music by Bach, Handel, and Shostakovich; he has made seven albums of standards with his “Standards” trio; on Spirits, he overdubbed instruments from all over the world. And, of course, he has made improvisational concert recordings, where he sits at an acoustic grand piano and creates for up to 45 minutes at a time. One of these sets, Sun Bear Concerts, runs to six CDs.

And now, when it seems as if he could do nothing else new, Keith Jarrett releases two wildly disparate albums: Live at the Deer Head Inn finds the trio of Jarrett, bassist Gary Peacock, and drummer Paul Motian playing standards at the tavern in eastern Pennsylvania where Jarrett—a native of Allentown—first started playing jazz. The other, Bridge of Light, presents four of Jarrett’s symphonic works, played by various instrumental soloists and accompanied by the Fairfield Orchestra, conducted by Thomas Crawford. (See p.228 for Michael Ullman’s reviews of both of these recordings.)

“I’m radical and I’m popular,” Jarrett muses. “Where else does that happen? You can’t do that in the classical world, you can’t do that in pop. You can’t do that anywhere but in jazz. It’s almost okay if you do that.”

Jarrett has straddled the two worlds of composed and improvised music almost all his life. On the one hand, his renown rightly springs from his improvisational abilities. Like many, he first came to the attention of jazz fans as a member of that great improviser’s farm team, Art Blakey’s Jazz Messengers. He cut more teeth as the pianist on some of Charles Lloyd’s more notable work, and spent a watershed couple of years playing electronic keyboards in Miles Davis’s band in the late ’60s and early ’70s. He then broke off on his own, eschewing all electronics but a recording mike, and becoming an avatar and champion of acoustic music, particularly acoustic jazz.

But he started (as do most pianists) with the repertoire of European classical composers. Indeed, he was something of a child prodigy, playing both Madison Square Garden and the Philadelphia Academy of Music in his youth. Arrangements had even been made for him to study composition with Nadia Boulanger in Paris. After spending time learning and playing at Boston’s Berklee School of Music, Jarrett opted to play jazz in New York. He found the spontaneity of jazz more satisfying than either composing or playing in the style of the European conservatory.

“Interpreters don’t have another thing they can do to get their ya-yas out. They don’t have their own music. They don’t play from themselves. Because they don’t have that experience, they are essentially frustrated. Every [interpreter] I’ve met has this sort of speedy delivery. Their voice is tighter than a jazz player’s. They’re more nervous about the notes. Instead of saying, ‘That was good,’ they say, ‘That was good.’ They don’t breathe out. Breathing out would be sitting at the instrument and making some music.”

But Jarrett never stopped interpreting the classics, and in the last five years has recorded Bach’s Well-Tempered Clavier (Book I on piano, Book II on harpsichord), Goldberg Variations, and French Suites. Bach’s mathematically precise fugues and counterpoints might seem an odd choice for someone who’s worked with the cooking units of Miles or of hard-swinging guys like Blakey. While artists ranging from Dave Valentin to the Modern Jazz Quartet have interpreted Bach in their own idioms, Jarrett worked them from the page.

“When I was doing The Well-Tempered Clavier—the second book, on harpsichord—many people who wrote about it said it was restrained somehow, or maybe not dramatic enough for them—not as elastic as a lot of performances. If they had been in the control room observing it, they could have said some of those things about the music, but they wouldn’t have been able to say I was restrained. I was into it, to use the old phrase. I think ‘into it’ is the key, you know? If you’re into it, it will happen. If you’re not into it, it doesn’t matter how much you know.”

Ways of knowing separate Jarrett’s two musical worlds. In through-composed European music (what has come to be known generically as “classical”), the evidence, the history, is on the page, and has been for centuries. Yet if jazz hadn’t developed along with recorded sound, it might have become one of the many forgotten folk musics—written out but not written down. The history of improvised music, of jazz, is an aural history.

“It’s the voice of the musician himself,” Jarrett maintains. “His voice was there; you can hear that voice in his playing. When a listener hears a major player, it galvanizes something. It either makes him react against it, or pulls him into the story of jazz. When we talk about the story of jazz, everybody we bring up was absolutely involved in it, not thinking about it. Did Charlie Parker think he was playing bebop? Maybe someone said, ‘Hey, that sounds like. . .what should we call that?’ But the music wasn’t coming from that place. It wasn’t coming from a historic title.”

Think of all the great improvisors of the past, from so many different traditions, who have no present stature because there was no means of capturing—it, recording—their legacy. We know about artists like Zyrab, the Arabic court musician credited with bringing the guitar to Spain, but he has become folklore, his music lost forever. No one knows what David’s music to the Psalms sounded like, though history and folklore.

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"You make music that you aren't really happy with," Jarrett shrugs. "It comes out, someone will say, 'Gee, they weren't really happening that time. I guess this isn't one of their best.'"

Keep this in mind as you go through Jarrett's body of work; it will become evident that he'll be remembered as an improvisor. While the "classical" records occupy a place in his oeuvre, the solo improvisations—the trio recordings, the other jazz-band work, even his experiments with indigenous instruments—predominate.

"Everything I do is essentially from improvisation, but I love music in general," says Jarrett. "I am essentially an improvisor, so I always need to ground myself in that. It can't be emphasized enough that extemporizing is one thing and improvising is another. Your being can belong to spontaneity. Extemporizing is something that all human beings do at one time or another, but improvising is something central that you need."

Even his composed music is spontaneous, though Jarrett emphasizes that his improvisation is improvised, his composed music composed. About the latter, however, he admits, "I don't revise. I don't come up with numerous sketches that I spend years erasing and polishing, erasing and polishing. It's usually a process that's faster than my fingers. In other words, I don't get it written down fast enough for what I'm hearing. I know other composers who have the same story to tell—when they really hear what they want, they have too much to do to get it on the page."

When Jarrett plays other people's composed music, many consider him an audacious interpreter, but that's hardly surprising: considering that, as an improvisor, he's been labeled an iconoclast for 25 years. Some of the ideas that inform his interpretations of the composed repertoire are nearly as subversive.

"I view most interpreters as actors, and I don't believe that's correct," Jarrett holds. "It's important to know, for example, that The Well-Tempered Clavier was assumed to be played by Bach on the harpsichord—his students would come and he'd play parts of it for them. However, nobody knows what temperament Bach used to tune his harpsichord. There are theories all over the place, and there are experts whose only expertise is in having a firm opinion not based on any facts. I did enormous research into it and came out the other end of this giant funnel of research into Bach's tuning of his harpsichord saying, 'Wait a minute. If nobody knows, if I wish to emulate Bach, then I tune my harpsichord [the way I think it should be tuned]. That's it. That's all we have to know.'" When I did research on Shostakovich's [Preludes & Fugues, Op.87], I would have known less if I hadn't known he had written them after attending a Bach festival. That led me to understand that I considered my way of playing this piece to be more correct than the Russian way of playing it. It was somehow in between the two. This helps me strengthen my own feeling about what I'm already doing."

Of course, improvisors use repertoire, too. Even Ornette Coleman, who has eschewed standards since the mid-'50s, claims that 90% of his early and current free jazz is composed. For all the wonderful pieces John Coltrane wrote in his lifetime, his signature tune was "My Favorite Things." Jarrett's solo improvisations may be totally spontaneous, but he has also recorded his share of the standard jazz repertoire.

"When you interpret Monk or Johnny Mercer, unless you're playing from the page and the whole thing is written out, it's more than interpreting. It's expanding."

Jarrett's own symphonic work is now interpreted on Bridge of Light. Some of these pieces are almost a decade old and have been performed as many as seven times, so hearing the works played is not a new experience for the composer. He has definite ideas about how they should be played—not dealing with the score so much as with the spirit.

"When I give my work to someone and they play it with a certain confidence, I let them have away with murder," he admits. "But if they play it like they're stepping on broken glass, I have to keep telling them, 'Wait a minute. It doesn't sound like that.'"

The scored orchestral works, the solo piano recordings, the "Standards" trio, and unique projects like Spirits are neither the potshots of a musical diletante, nor the calculated moves of a major recording star. Rather, they represent facets of an artist with many interests—a holistic approach to an art that needs to be focused and fragmented lest the central idea of any single composition is lost.

"I've always been at odds with people who think that I'm eclectic, I know what they mean: They hear a lot of things in my music that sound like they are from disparate sources. My contention would be that there is no such thing as disparate sources. The music is all coming from the same place. I write all this down under the same heading, which I would loosely call 'consciousness' or 'presence of spirit.' It's like when someone asks me who influences me, I realize that my influence from a musician comes from the spirit behind the music. So, often it's not like I would even want to use ideas that they use. It's the spirit I can sense behind their notes, or even their compositions."
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When we call something "world music," we're saying it's not our world. If it were our world, it would include all music.

Jarrett's attitude toward all aspects of music became evident about a year after the death of his former employer, Miles Davis. After reflecting on what Miles meant to the music of the 20th century, Jarrett opened fire on the op-ed page of the New York Times with "Categories Apolteny, but Where's the Music?" a piece remarkably full of birdshot (and subsequently reprinted in the January '94 Stereophile). He called new-age music "Jell-O," world music a hoax, said that the avant-garde doesn't exist, and accused the record industry of swindling the public.

"If you walk up to troubadours on the Nile River and ask them what they were playing, they wouldn't say 'world music,'" he points out. "My understanding of what 'world music' is doing in the marketplace is that it's defocusing real ethnic music. Also, when we call something 'world music,' we're obviously saying it's not our world. If it were our world, it would include all the music in the store, the rest of the stuff from our culture. When we say this is 'world music,' what we really mean is it's out there and it's not to do with us."

Assertions like this have led some to accuse Jarrett of hating ethnic music. But anyone with a working knowledge of his work over the last 20 years knows that little could be further from the truth. Spirits contains certain elements of musical imperialism that predate Paul Simon. The noises of the world inform his listening and playing.

"I heard a new Ali Akbar Kahn album," he notes of music that's been nourishing him lately. "It's only on record, but it's a beautiful recording. There's another thing I heard, it's not really in the same category. Ry Cooder made an album with an Indian guitar player [V.M. Bhatt, on A Meeting by the River, Water Lily Acoustics WLA-CS-29-CD]. He invented this guitar and plays it on his lap. It looks just like a guitar, but it has sympathetic strings. He plays it as though it was a sitar. For a collaborative idea, this one is truly remarkable. It's just a perfect idea. It doesn't work all the time musically, but I think it's a great idea. You hear this blues thing going on when Ry's playing—because that's what he does—and you see how all of this is coming from a relatively tiny amount of differences. [You see] how, in this case, Indian music and American blues of a certain kind are the same.

"I don't believe our culture really has a firm musical tradition yet. We're lucky to have jazz—it's a gift, because we don't deserve it. It's important to remember that jazz started out as cultural survival—it's not about commercialism. Singing in the fields was not for no reason, and it was not for an audience, so what's left? It was for them, it was for their survival. If we now have a culture that doesn't think of survival because we think we're cool, we're a little further from that. We might think about having a good life, but we don't often think about survival. If we don't think about that as a culture, we might not think about that as individuals. If we don't think of it as individuals, we won't have jazz."
"I've rarely been as excited about a product as I am about the Sonic Frontiers SFD-2. Its sound is clearly of Class A caliber; it is perhaps the best-sounding digital processor I've heard—regardless of price."

"...the SFD-2 is a stunning achievement in digital processor design.... The SFD-2 should turn the competitive digital processor market on its head."

Robert Harley
Sterephile, Vol. 16 No. 12, December 1993 (U.S.A.)

"Your SFD-2 Digital Processor is a phenomenal achievement.... It's the best sounding D/A Converter I have ever heard!"

Y.K. Chan
Publisher of Audiophile Magazine, November 1993 (Hong Kong)

"The SFD-2 is able to provide all the liveliness, harmonics, sweetness and musical involvement that is traditionally lacking in CD's."

Albert Young
Audiophile Magazine, Issue 92, November 1993 (Hong Kong)

"This [SFD-2] is a superb achievement. Considering the exceptional performance capabilities of this unit, it is imperative to match it with components which are also of reference standard."

La Nouvelle Revue du Son, October/November 1993 (France)

CONVERTED

After putting the Sonic Frontiers SFD-2 Digital Processor through its paces, these reviewers’ old converters have most likely started collecting a little dust. And with good reason - the SFD-2 has set the new standard by which all other processors must be judged.

The SFD-2 is the first digital processor capable of improving your system’s sound quality by rejecting the jitter from your transport (from 1 kHz and above). This is accomplished by using the new UltraAnalog AES20-Input Receiver, a revolutionary module with an intrinsic jitter value of less than 40 picoseconds (a fully verifiable claim). In addition, true differential balanced configuration is attained by utilizing 2 of the latest UltraAnalog Dual D/A converters, DAC D20400A.

With 16 isolated power supply regulation stages, the SFD-2 is the ultimate example of power supply technology. Analogue filtering is performed passively to maximize sonic performance and the output section is of discrete design (no OP amps), utilizing a high speed vacuum tube output buffer stage, instead of solid state devices. No compromise was made on any of the passive parts' quality and its modular design provides for quick and easy upgradeability in the event that digital or interface technology improvements occur.

How do we know the critics have converted? Well, we're still waiting for our SFD-2 review samples to be returned (likely when 8 track is back in vogue). To learn more about this truly innovative digital processor - call, write or fax and we'll be pleased to answer any of your questions and to send you a detailed product brochure and complete review copy.
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(818) 762-1501

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(707) 442-4462

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San Francisco
(415) 781-6025

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Wheat Creek
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Sound Components
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Audio Atlanta
Marietta
(404) 499-0145

Lyric Hi Fi
Manhattan
(212) 439-1900
White Plains
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NORTH CAROLINA
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Cary
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OREGON
Audio Adventure
Tualatin
(503) 691-6025
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PENNSYLVANIA
Utro Systems
Pine Plains
(215) 297-2227
Chesnut Hill Audio
Philadelphia
(215) 923-6403
Soundex
Willow Grove
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TENNESSEE
Nicholas’ Stereo
Nashville
(615) 327-4312

TEXAS
Music By Design
Austin
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Omni Sound
Dallas
(214) 964-6664
Audio Essentials
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Alpine Audio
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House of High Fidelity
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(604) 763-1155

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Creative Audio
Winnipeg
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NEW BRUNSWICK
Stereo Image
Quispamsis
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Kevin P. Kerr & Associates
Halifax
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AUSTRIA
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U.K.
MPI Electronic
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International Audio Development
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GREECE
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Magic Sound
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INDONESIA
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Imai & Company, Ltd.
Shinjuku, Tokyo

KOREA
Song Do International
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NETHERLANDS
Audiac bv
Holland

NEW ZEALAND
Pacific Audio
New Market, Auckland

NORWAY
Bochs HiFi
Skiper

PHILIPPINES
Audiophile
Components, Inc.
Ermilo, Manila

PORTUGAL
Delaudia
Lisboa

PUERTO RICO
Alerion Sound
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SINGAPORE
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Equipment(p)te, Ltd.
The Adelphi

SOUTH AFRICA
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VIETNAM
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WorldRadioHistory
In this first of two parts, Stereophile’s intrepid Thomas J. Norton, Jonathan Scull, Robert Harley, Jack report on analog, digital, and loudspeakers from the revitalized with photographs from Steven Stone

Thomas J. Norton offers an overview

Somebody stole Las Vegas and replaced it with a theme park: Pyramids, sphinxes, a statue of a lion that looks like a sphinx, pirate ships, and E-ticket rides of every description have sprung up all over the place since I last visited just a year ago. Las Vegas has always aspired to be one gigantic theme park, but this year they really went and did it.

The biggest rides in town in early January, however, were at the 1994 Winter Consumer Electronics Show. It sprawled over three major venues: ZooLand (at the Convention Center); Specialty AudioLand (coexisting uneasily at the Sahara with PornLand1), and Home TheaterLand (at the Mirage). There were the usual hangers-on scattered all over town in colonies of Hide-and-Go-Seek—Land—rogue exhibits set up in “unofficial” hotels (and therefore unlisted in any CES directory). For flavor, add a touch of Home Theater exhibits at the Sahara and a dash of audio—only stuff at the Mirage and Convention Center, and you end up with a huge rampaging home entertainment beast.

But it turned out to be a happy beast. Attendance was estimated at over 90,000—10% higher than at last year’s Winter Show. WCESe are apparently hearty breeds, in contrast to the geriatric activity at the ’93 Summer Show in Chicago. The mood at WCES ‘94 was decidedly upbeat all around. The weather echoed the Show’s atmosphere—Eastern and Midwestern Showgoers who left home shivering were welcomed to Las Vegas by sunshine and 60° temperatures.

Even last year’s Show—the largest in my memory until now—didn’t prepare me for the challenge of covering this one. The Sahara, in particular, overflowed with high-end goodies—I’m still finding out about things I missed. Fortunately, instead of covering a specific category, my assignment for this Show was to get a general overview and combine it with interesting bits and pieces. This removed some, but not all, of the frustration of seeing and hearing everything.

Home theater
Home Theater now seems firmly established as the fair-haired child of the Winter Show. The knockout demo was taking place in the Snell/Madrigal/Runco room, featuring Runco’s top-of-the—line 900 projector (about $15,000), fed by the inevitable Faroudja line doubler. The stunning video here almost overwhelmed the superb sound being produced by Mark Levinson/Proced electronics (including the new Proceed PAV audio/video processor—preamp, listing for around $4200) driving the new Snell Music and Cinema Reference THX-certified loudspeaker array ($29,900 for the loudspeakers alone). I missed the AmPro/Cello room nearby because of the long lines, JGH was able to get in, however.

The biggest audio news at the Show, however, wasn’t even a product, but a proposed new format: Dolby Surround Digital, Dolby’s home spinoff of their 5.1-channel (five full-range, one subwoofer), data—reduced, discrete digital soundtrack encoding scheme currently used in several hundred commercial movie theaters. (See my Industry Update in Vol.17 No.1, as well as Updates in earlier issues.)

Both Pioneer and Denon conducted technology (as opposed to product) demonstrations of this system at the Show. Pioneer’s was the most intriguing, as it demonstrated a practical method of actually placing Dolby Surround Digital on an existing video software format. They had recorded all 5.1 digital audio channels of the demonstration material in the space normally occupied by one standard laserdisc analog track. Pioneer is making this format available to all interested laserdisc software manufacturers. The combined data rate for all 5.1 discrete channels was 384kB/s—the same rate

1 The so-called adult—video purveyors, separated from the high—end audio exhibitors by a couple hundred yards of casino and parking lot.
chosen for use in the proposed new US HDTV system. The Pioneer demo used Pioneer Elite electronics (not surprising), an Elite rear-screen projection set, and M&K loudspeakers. I was very familiar with the demonstration material; most of the audio-only and audio/video tracks have been used—in their film incarnations—when I visited Dolby Labs last November. Based on the sum of my experiences so far with data-reduced, digital film sound, I was prepared for disappointment, but ended up surprised: The dynamic range, discrete surrounds, and bass (within the limits imposed by a prefabricated listening space on the main floor of the Convention Center) were all most impressive.

The sound still tended toward the lean and bright side, and while this was consistent with my experiences with Dolby Stereo Digital in theaters, it was so to a lesser degree. But I must say that I was familiar with neither the (non-THX) M&K loudspeakers nor the inherent quality of the program material chosen. Reports gathered later from other showgoers mentioned occasional sound dropouts during some sessions—not unusual for a demonstration that was reportedly put together quickly for the Show—but the system functioned flawlessly when I attended.

Only one thing seems certain about Home Theater at this stage: A new, discrete, multi-channel audio/video format of some sort (and, by extension, possibly some form of similar audio-only format) is on the horizon. Dolby appears to have the inside track at present, but entries may also appear from either or both of the other two combatants in the commercial-theater digital sound race—DTS and Sony’s SDDS. As of this writing, the latter two have made no announcements, but I wouldn’t be surprised to see one. Any such system will require new processors and laserdisc players—not to mention new software.

In any event, home hardware and software for such a system—which you can expect to be expensive at first—is at least a year away, probably two. It will probably be at least three years before there’s any significant quantity of new software, and even longer before there’s any extensive remastering of older titles in the new format. By then, HDTV will likely have arrived and thoroughly complicated the picture. My crystal ball fogs over...

In other important Home Theater news, THX unveiled both new specifications and a new integrated circuit which make THX certification a financially practical proposition for both receivers and integrated amplifiers. Two Japanese manufacturers, Onkyo and Technics, concurrently announced upcoming THX receivers: the Onkyo TS-XV919TX at just under $2000, and the Technics SA-TX1000 at under $1200.

The new “integrated” specs, as first announced, differ in two principal ways from THX’s standard certification requirements (which remain in force for non-integrated products). First, lower-power rear-channel amplifiers in these products are permitted than is the case for basic, one-size-fits-all THX power amps. This is said to be possible because channel allocations within an integrated product are fixed; the less powerful rear-channel amp cannot be easily switched to front-channel use. The Onkyo receiver, for example, is specified at 50Wpc in the rear, though the Technics retains in excess of a rated 100Wpc all around. Both receivers have line-level subwoofer outputs, but no onboard subwoofer amplifier.

Second, THX announced that a higher crossover frequency—125Hz—would be permitted for the subwoofer.

2 With perhaps a retail bargain bonanza in older versions for those who don’t have to be the first kid on the block with the new system.

3 If pre-out, power-in connections are provided for all internal amps, it would be theoretically possible for the user to violate this. But why would one want to?
Renaissance...The Rebirth Of Music

Everything about the Renaissance Seventy/Seventy promises the finest sound attainable anywhere, such as separate power/self-bias systems for each 300B triode, massive 21 section transformers, and 35 pound hand machined chassis. Careful craftsmanship produces minimal distortion, yet uses no feedback. Of course, the palpable realism cannot be described in words...you must experience it for yourself.

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Come see these superb amplifiers at the 1994 WCES, Sahara 7201/7202.
But when I followed up on this after the Show, Tony Grimani of THX told me that this change had been rescinded—a post-CES decision was made to stick with the existing crossover specification of 80Hz. THX ultimately felt that two crossover specs would create market confusion. The higher frequency would have permitted THX certification of smaller, cheaper loudspeakers for the front channels, which could negatively impact overall system performance, in my opinion.

THX also revealed the availability of a dedicated DSP chip, manufactured by Sanyo, for use in home-THX controllers. This chip performs all the essential THX functions—decorrelation, "timbre-matching," re-equilization, plus subwoofer crossover—putting further downward pressure on the admission price to home THX. Will the pending availability of lower-cost gear (though it’s still expensive to the market at large) take the bloom off the home-THX rose? With the new Technics receiver, for example, a complete home-THX system, sans sources and video monitor, will be available for not much more than $4000, including an allowance for a modestly priced, add-on amplifier for unpowered subwoofers.

**Other Audio**

The serious audio demonstrations at the Mirage were, as usual, held in upstairs suites, a few special exhibit rooms, or prefab booths in a large ballroom. Sharing the last were several rows of tiny booths jammed with displays of everything from equipment racks to cable to custom-install hardware to the Cyberdisc automated CD storage and loading system. The what?

Picture this: Stacked in an equipment rack are up to four CD players (your choice, as long as they’re front-loaders and meet certain dimensional restrictions). Up to four storage bins—each of which holds 250 CDs stored vertically in a carousel—sit at the bottom. Upon selection of the desired disc, the appropriate storage bin rotates that disc to the left side of the rack and gels it to a "ready" position. A mechanical arm trundles down the left side of the rack, latches onto the disc, carries it up to the selected CD player, rotates the disc 90°, and places it gently in the center of the player’s open loading drawer. I kid you not.

Each of the CD players (or transports) can be connected to different systems located in various parts of the house, and may be remotely loaded and controlled from keypads located in these remote locations. The ultimate audio-couch-potato CD carousel! And an Animatronic floor-show to boot, at no extra charge. Cost? An “entry-level” minimum of about $6000 for one 250-disc storage unit and the associated mechanisms to set up the full system (user supplies the CD player or transport and the rack); each additional 250-disc tray will cost you $2195. For full control, an outboard PC (also user-supplied) is recommended. Contact Cyberkinetics Ltd., Toronto, Canada. Tel: (416) 733-9838.

**The Sahara**

Last year’s periodic power failures in the undernourished electrical system of the Sahara’s bi-level complex were a dim memory. This year CES arranged for an outside generator (merciably placed out of earshot) to feed power into each exhibit room. Lounging extension cords—which were not furnished, to my knowledge, by any supplier of aftermarket audiophile power cords—snaked into windows, the vision of which raised interesting questions. Suffice it to say that no particular negative impact was noted from the power setup. The general quality of sound at the Sahara was neither better nor worse than that of past years—at least the exhibits weren’t periodically plunged into silence.

My impressions of the Sahara’s high-end displays melt into a blur, with the occasional vivid image or sonic memory popping into the foreground: images such as the pair of Chateau Research loudspeakers driven through a pair of Kimber’s $15k Black Pearl speaker cables, the latter so heavy (from their lead-shot loading) that they were taped to a second pair of stands behind the main stands to keep them from pulling over the loudspeakers; memories of the evidence of analog’s stubborn longevity—including several new turntables, and a number of announcements of analog LP releases coming from audiophile labels (notably Mobile Fidelity). But I’d hardly claim a new LP Spring in the making—maybe an Indian Summer. Digital was still clearly the program material of choice, except where the exhibitor was specifically selling turntables. Not that this was necessarily a bad thing...

**Favorite embarrassing moment:** Hearing the soundtrack from Glory over the stunning Sonus Faber Extremas in the Sumiko room (my first chance to hear these loudspeakers properly demonstrated) and assuming I was hearing the LP. After all, Sumiko is still involved in analog in a big way. I was just about to kick myself for not buying this recording on vinyl when I had the opportunity to do so, when I looked over to find that I’d been listening to the CD all along.

No CES is complete without running up a short list of great new recordings to round up—it’s even better when you sometimes find them at the Show or in a local shop. Take the new Pomp and Pipes, a Reference Recording of the Dallas Wind Ensemble, with organ, conducted by Frederick Fennell (Reference RR-58); Genesis was using this CD (an LP version will be available about the time you read this) on their new Genesis II, whose low end provided a sneak preview of the Southern California’s January earthquake.

Or how about JGH’s fave recording of Vaughan Williams’s Sinfonia Antartica on Koss Classics, heard to impressive effect through the newly revised Shahinian Hawk loudspeakers (one step down from the Diapason, which also sports new midrange drivers) Too much narration on the disc, though.

Then there was the Fisk organ dedication recital on Music-Maker Recordings, recorded directly from the master onto CD-R (Ron Meyer Recordings, 1613 Duke Ct., Plano, TX 75093), heard over the JM Labs Alcor loudspeakers. The latter landed quickly on my “must-review” list.

And don’t forget the Alien 3 soundtrack, a system-buster championed by Jason Bloom of Apogee over his new Slant 6 hybrid loudspeakers (the Slant line replaces the Centaure line). Yours truly later bought the disc at Tower and used it in a number of rooms to test bass range and dynamics. Of those speakers tested, the champion was the A2A from Dimensional Research Laboratories, set up in the Sumo room.

And I have to mention a series of recordings made by Mark Levinson (the man, not the company) and heard over the impressive new Snell CIV. Mark made these recordings while searching for classic blues performers living in rural obscurity (and generally poor conditions). This was part of a project called Musicare which, hopefully, will improve the quality of these musicians’ lives. Contact Cello, Levinson’s current company, for more information. And encourage them to release these superb recordings; plans to do so are currently tentative.

Dejá vu is never far away at any CES. As the Show was drawing to a close, I was cornered in the hall by David Chesky of Chesky Records, who told me there was something I just had to hear. He ushered me up to the KSS room, where I spied a pair of three-way loudspeakers, about 6° deep,
lying on their backs on the floor. They were clearly very rough prototypes, from a company called Enlightened Audio (not the same as Enlightened Audio Designs, the CD playerprocessor company). Called the FFLs, these speakers are said to be (at least in the sketchy piece of literature available) of truly omnidirectional design, firing as they do at the ceiling.

The concept reminded me somewhat of the old Harman/Kardon Citation Thirteen (also a three-way system, designed by Richard Shahian ca. 1971), which placed its six drivers on the top of the cabinet, radiating toward the ceiling. The main differences in the radiation pattern between the two: In the Thirteen, the baffle was tilted a bit toward the listener (under 20°, as I recall) to provide a hint of precedence effect. It was also placed a good deal higher off the floor. The FFLs are anticipated to cost around $2000/pair; the Citations, if produced today, would probably cost more than twice that (they cost $600/pair in 1971...sigh). As ever, from mighty oaks, little acorns grow.

Jonathan Scull on Analog

It was the Sahara Hotel on the first morning of the Show—8am. Everyone looked a little sleepy (except TJN, who had popped out of bed at 6:30am like a piece of toast). Guy Lemcoe (the world’s oldest teenager)—resplendent in Hawaiian shirt, jeans, and Wayfarer sunglasses—bleated for coffee. I empathized—my tongue felt furry, and my lips were chapped from the dry air. JA breezed in, dapper as Hercule Poirot in a gray suit, and bestowed upon us our assignments; I drew analog front-ends. Cool, I thought—half a dozen rooms, then party time. Wrong! The big news at the Show was the resurgence of good ol’ analog. My cup brimmeth over.

I pulled myself together, drank about a gallon of weak casino coffee, and hit the rooms. New introductions abounded, especially in the AAA (Affordable Analog Arena). The Great Analog Resurgence is not just taking place on the Lost in Space Kilobuck Planet.

Sumiko’s Stirling Trayle breezed me right past the high- rent SME Model 30/IVi arm fitted with their new, as-yet-unnamed 2.3MV moving-coil cartridge (a replacement for the late Virtuoso DTIs, to retail for about $1500), and proudly showed me the low-cost Pro-Ject 1 and the recently introduced Pro-Ject 6 turntables from Vienna. Pass the strudel, please. The Pro-Ject 1 features a shock-mounted AC- synchronous motor, aluminum pulley, belt-drive, Teflon thrust bearing, non-resonant polymer inner platter, and a machined metal-alloy outer platter, for only $350, with an Oyster hanging off the business end of the arm. The brand-new Pro-Ject 6, looking sexy and a touch more upscale and mini-Oracle-ish, features: a three-point sprung aluminum top-plate with a silicone-filled dash pot to remove high-frequency oscillations; an aluminum, glass, and felt platter; belt-drive; and an integrated arm with upgraded captured-ball-and-race bearing ($695 with an Oyster, $850 with a fully clothed Blue Point). An important consideration for nervous vinyl neophytes is that all Pro-Ject ‘tables arrive factory-adjusted for VTA and azimuth, thus limiting end-user futz-time.

Smilin’ Jack Shafton showed me around the SOTA/ Sheffield room. Besides the upscale Nova sporting the ubiquitous Graham Engineering 1.5t arm, set up here with an AudioQuest 7000NSX, and the previously released Comet with integrated arm ($500-$600, depending on finish), they were debuting the cute-as-a-button Moonbeam at $329. It sports a medium-mass arm and the same drive and subplatter as the Comet, but with a ¾” high-density polyethylene outer platter rather than the slightly more up-spec Comet. They were also showing a prototype of SOTA’s Record Cleaning Machine, very similar in concept to the more costly VPI HW-
Harry and Sheila’s VPIs were all over the place. I listened to a TNT 3/SME V/Koetsu Rosewood Signature in Elliot Kallen’s Tweak Shop room. Art Ferris was in close attendance with his John Curl–designed Gold Phono Board installed in the popular Audible Illusions M3. They also had a Studer/Revox A700 half-track set up in their room to play some blow-you-away master tapes. In the Sonic Frontiers/mbl 101/Entec room was a TNT 3/Graham 1.5t/Clearaudio Signature—the last $2100 a pop—combo playing into SF’s upgraded SFP-1 Signature Phono Stage ($1495). Germany’s Clearaudio cartridges are once again being imported into the US by Joe DePhillips of Discovery Cable, whose wires graced the Sonic Frontiers LP rig and many others at the Show. SF’s ever-gracious guest host and DJ, Richard Foster, gave me a break from the wear and tear of the rilly big shew, threw everyone else out of the room, and spun some vinyl that sounded very fine. I didn’t want to leave, despite the slight lack of integration between the Entecs and the mbls. George and Akim Bischoff and partner Charlie Gavaris of Melos were making music with their all-balanced 333 Gold Phono Stage and an HW-19 Mk.IV/SME V hung with yet another Clearaudio Signature (and getting the best sound I’ve yet heard from their Show room).

Barry Kohan of Bright Star was spinning tunes on a TNT Jr/Benz MC3 with what may have been the most-talked-about arm at the Show, the $3500 SPJ—imported by Mr. Analog, Brooks Berdan of Brooks Berdan Ltd. This odd-looking and idiosyncratic contraption, designed by one Judy Spoteheim—an Israeli woman living in the Netherlands—is a unipivot design that’s actually dual-pivot, according to Brooks; there’s a second internal thrust-plate for azimuth and anti-skate, adjustable during play, as is VTA. The arm tube is fabricated of titanium, while stainless steel and bronze are used throughout the rest of the arm. These materials account for the SPJ’s prodigious weight, which in turn renders it suitable only for VPI tables at this time. Damping, which is built-in to the arm, may be used or not, as required. Sadly, SPJ’s fax number, which appears on the arm, will be deleted in production. Barry was also showing an hysterical entry in the Bright Star family of resonance-control devices: the Padded Cell Isolation Chamber for noisy turntable pumps and AC power supplies, and the like. “Every audiophile needs a Padded Cell!” [huddaBOOM] Nothing like a manufacturer with a sense of humor.

Manley Labs introduced their Simon Yorke–designed Manley-Zarchathustra Model 8 Record Playing System (Z-8 to its friends). The whole $10k package—attractive and looking super—high-tech—will consist of the ‘table, a unipivot tonearm, electronic power supply, dedicated stand, and RIAA Manley all-tube “Balanced Coil”-design phono preamp (which includes a line-out stage for direct connection to your amp(s)). You can break it up and buy just the ‘table and power supply, and/or a few or all the bits and pieces. The ‘table is supplied with an SME armboard, with others available on request. David Manley’s literature on the ‘table was the only spec sheet at the Show to invoke the Zen word: Ohmmmmmmmmmmmmmmm . . .

Another upscale entry in the Balanced Input Analog Sweepstakes was the FM Acoustics FM 220 Phono Linearizer/Preamplifier. FM Uberboss Manuel Huber demo’d it for me in their Mirage suite, with a jiggly Pink Triangle/Graham 1.5t/Benz Ruby combo which knocked my socks off. (More about this petite and beautifully built $13k Swiss Audio Trinket in an upcoming cartridge survey.) This all-class-A tour de force takes balanced in and out, offers virtually unlimited loading via both capacitive and resistive adjustments, and is designed with zero feedback/feedforward, all discrete circuits (no internal wiring, op-amps, DC, or transformers), and variable RIAA de-emphasis for early nonstandard LPs. Say no more!

Coming back down to earth, Garth Leerer at Musical Surroundings introduced a new cartridge from Benz called The Glider—an “open, free-floating” design with aluminum cantilever, the same micro-edge diamond as the Ruby, and an easy-to-drive output of 1mV. The Glider has a suggested retail price of $750—$600 with qualifying trade-up. “The Glider lands in Las Vegas,” “Test-fly the Glider, . . .” I woulda cracked wise about the Styrofoam gliders all over his room if I hadn’t wanted one of his busted-cartridge clocks so bad—a Shaded Dog with, you got it, cartridges marking the hours. The “open, free-floating” concept consists of aluminum side panels that protect the wires of the cartridge, but leave the generator out in the breeze. Garth, who distributes the Graham tonearm and Basis turntable as well as Benz cartridges, was bent over a Basis Ovation/Graham 1.5t/Glider/Benz Phono Stage combo for most of the Show. The last I saw of Bob Graham was when Jean–Paul Caffi, Directeur général de Jadis, was looking intently at one of Bob’s arms and Gallically raising his eyebrows; “I’ma’’’ taking one of these ‘ome whiz me for my Goldmund Ref-air-rence, yes, no, isn’t it so?” Bob was smiling and nodding enthusiastically, “But of course, mon ami!”

“Mr. Music” Stan Klyne of Klyne Audio Arts introduced several new phono preamplifiers, including the budget 6PE (internal power supply and other cost-saving features) at $1750; the 6PX2 (separate power supply and other internal refinements) at $2450; and several stages of upgrades for the 7PX series to version 2.5. Stan was rooming with Eminent Technology’s Bruce Thigpen, so I listened to yet another VPI HW-19 Mk.IV fitted with an ET-2 arm (of

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Despite the complexity of what happens inside, the PAV is simple and intuitive to use. You'll need to lock it up if you want to keep others from using it! Button locations, multi-color LEDs, on screen programming, and a powerful learning remote have all been coordinated to make the PAV both logical and fun.

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course) and a Transfiguration, through the top-of-the-line 7PX2.5 and Bruce's LFT-VIIIIs. These guys always know how to make music.

Marcel Riondeau of Oracle introduced the new Delphi Mk.V ($2795–$3195, depending on finish), the 15th Anniversary Limited Edition with a granite plinth ($4795), along with a Mk.V update kit. Of all the upgrades, the new self-contained Mk.V upgrade module (which contains all the electronics and switching) plus the Turbo Power Supply will be the easiest to retrofit to earlier Oracle 'tables. Marcel also announced two cartridges: the 0.4mV Oracle Phono Cartridge at $800, and the 0.2mV Reference at just under $2k. (The Mad Monks from the Shun Mook Planet were also using an Oracle in their room.)

Before I hit the software trail, I'll mention some other analog front-ends I tripped over. Immedia featured the RPM-2/Parnassus with their RPM unipivot tonearm. A Linn Sondek/Itoh/Blue Oasis/Trampolin/Lingo was making beautiful music in the Esoteric Speaker Products room (another room I didn't want to leave). Forsell Air Force Ones were flywheeling both in Dr. Forsell's own room, and over at Convergent Audio Technology's room, where vH1 Grasshopper Golds and Blue Oasis cartridges were sharing the air bearings. The French Platine Verdier ($7500 and up, depending on finish), now supplied with two armboards standard, was shown by Hart and Beth Huschers of Audio Advancements with a Morch DP-6 Transcriptor Arm ($2395), a Morch cartridge, the Brass Tacks III record weight, and a Marigo platter. My good buddy Chad Kassem of Acoustic Sounds was running an unexpected, very attractive Kuzma turntable with integrated arm/Dynavector XX-1L combo.

Next door at Muse, in addition to a monster Studer A-80, they were playing a Kuzma Stabi Reference with yet another Dynavector hung on the business end of the new Wheaton Triplanar 4 (new armtube, better damping, and a new decoupled counterweight). Whew! I'm running out of breath just writing about all this analog.

Audio Note was spinning a Voyer Reference with their AN-1s-V bimetallic silver-wired arm at $1995, a SOARA IO-2 0.05mV output MC cartridge, and the AN-S6c silver-wired MC transformer—knockout sound from all of 27 single-ended wats. Charles Hansen at Ayre Acoustics (who designed the Avalon Ascents gracing my listening room) was playing Six-Eye Columbias on a Well-Tempered Signature/Cardas Heart 'table' into a CAT Signature and his own amp, while Jeff Joseph of Joseph Audio was showing his latest speakers with some help from NRG, and hitting the vinyl with a Pierre Lurné J-1/SME V/Monster SG 2000 combo—an idiosyncratic choice.

Speaking of idiosyncratic, along with his popular Red Rollers and Wood Block RF blockers, John Bicht was showing his extremely limited—production VersaLab Model 3 turntable—a cute little thing with a sand-filled walnut base and a suspensionless Blue Stone plinth, a further evolution of his air-bearing arm, spindle, and bearing of the Model 2, and a projected price tag of $25k. “Simplicity’s the name of the game, Jonathan.” 10-4, John. He'll make you one if you ask him nicely and cough up a check for the full amount; money-back guarantee if the 'table's not delivered by the contractual date.

Movietone presents Analog Software on the March: Chad Kassem continues his audiophile reissue madness with a new Analogue Productions blues recording of Jimmy Rogers and Johnnie Johnson—a DAT copy of the master made its appearance at the Show. I came home with a few titles from Acoustic Sounds, one being a copy of Smack Up (Analogue Productions APJ 012), by the Art Pepper Quintet—a fabulous recording, as classic as it comes. Way to go, bud—eh!

In other Software News, Classic Records (Ying Tan of Pacific Vinyl in Los Angeles, and Michael Hobson of Hobson Ultimate Sound in New York) announced their plan to use original master tapes to press a series of 15 vinyl reissues of RCA Living Stereos in 1994, and another 12 titles in

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Joseph Audio's RM50 “infinite-slope” three-way loudspeakers made nice sounds with NRG amplification, thought JA.
1995–96. The premiere release of three titles is scheduled for April, others to follow every two months in lots of two or three. An amendment to the CES press release noted that a number of titles are marked with an asterisk denoting selections which will not be released domestically by Classic Records. David Chesky told me that Chesky Records holds the domestic rights for these particular titles, thus prompting Classic’s move to overseas-only release.

Mobile Fidelity is back in vinyl again, with product available as we speak. I came home with a test pressing of Muddy Waters’ Folk Singer (significantly better than my original Chess pressing). Other MFSL vinyl titles include albums from Manhattan Transfer and Pink Floyd, among others. Analog stalwarts Chesky, Wilson Audio Specialties, Sheffield Lab, Reference Recordings, and Clarity Recordings’ effervescent Ed Woods were all offering new vinyl. A true embarrassment of riches.

I had a great time at the Show and enjoyed a lot of laughs with my new colleagues at Stereophile, who have helped put the fun back in audio—what a great bunch of guys and gals. Everyone at the Show seemed suffused with optimism for the coming year. I’d also like to thank Harry Pearson for trashifying me, Steven Stone, Mark Fisher, and Stereophile in general in Issue #92 of The Absolute Sound. A shrill would call this a validating experience. Color me validated.

Robert Harley on Digital

The Consumer Electronics Show is an indicator of a company’s commitment to, or lack of, a new format. The January 1994 Show was notable for Sony’s big promotion of their MiniDisc format, and Philips’s relative silence about Digital Compact Cassette.

Sony held several press events in which they announced new, more appealing MD products and discussed MD’s future. With MD players outselling DCC machines two to one, Sony seems to be moving in for the kill; their new MD product lineup and promotion plans are formidable indeed. Sony also seemed more willing to tackle DCC head-on: Sony’s new slogan for MD is “What if cassettes weren’t cassettes?”

(The opposing DCC camp’s biggest news was price: Techniques introduced a $599 home player/recorder, and Marantz announced serious price cuts on its existing DCC home recorder line (now $699 for the DD-92, $599 for the DD-82). It’s hard to say at this point whether the new prices reflect an attempt to break into the market, or a sign of trouble for the format. Meanwhile, CD recorders (write-once CD-R) aimed at the consumer market—the subject of rumors in the press for months, and a cause of some marketing controversy in Japan—were notable by their absence.—TJN)

But on to the new high-end digital products unveiled at the Show.

The venerable Theta Generation III digital processor has been replaced by the Generation V, which features a discrete analog output stage, a bigger, redesigned power supply, and balanced operation (an option on the Gen.III). In addition, the single-ended output is derived from the balanced signal, providing many of the advantages of balanced operation to users of the single-ended outputs. The Gen.V will sell for $5595, with ST-type output adding $300 to the price. Theta’s Single Mode optical system is also available for an additional $800.

PS Audio announced a $300 price increase on their $1695 Lambda CD transport. A version with both ST-type optical and AES/EBU outputs sells for $2395. The higher price reflects Philips’s price increase on their CDM9 Pro transport mechanism used in the Lambda. PS also introduced the replacement for the very successful UltraLink, called the UltraLink II. The new model features the UltraAnalog AES20 input receiver and the newest version of Ultra Analog’s DAC. The styling has also been improved, and ST-type optical input is now standard. The UltraLink II will sell for $2295.

Sonic Frontiers entered the mid-priced digital arena with their SFD-1 digital processor, a scaled-down version of their extraordinary SFD-2 (which I reviewed in December, Vol.16 No.12, p.140). The $2195 processor uses the UltraAnalog AES20 input receiver and UltraAnalog DAC with a tubed output stage and ST-type optical input standard... sounds like it’s time for a shootout between the UltraLink II and the SFD-1. Sonic Frontiers also introduced the Ultra JitterBug, a $699 jitter-reduction device based on the UltraAnalog AES20 input receiver.

A new budget CD player from California Audio Labs made its debut at the Show. The $595 DX-1 has some impressive features for an inexpensive machine: a FET input, all-discrete analog output stage, and a multi-layer steel chassis. The unit also claims less error-correction activity as a result of the “digital servos” controlling the transport mechanism.

Ed Meitner of Museatex conducted the first public demonstrations of the new BIDAT (Baby Intelligently Digital Audio Translator) digital processor. The $1995 unit uses the same DSP-based dual-filter topology as the $14,000 IDAT I reviewed in Vol.16 No.3 (p.99). The IDAT system has two different digital filters and an algorithm to select which filter processes the signal, based on the signal’s dynamic characteristics. The proprietary filters are implemented in two Motorola DSP chips. The BIDAT is fully balanced in the digital domain, and uses the Philips 7350/TDA1547 Bitstream DAC. The BIDAT also uses Ed’s custom input receiver and a C-Lock jitter-reduction stage before the DACs. All four inputs (coax, TosLink, ST-type optical, and AES/EBU) are standard. A wired remote volume control will be offered as an option. The BIDAT packs a lot of technology into a modestly priced converter.

Ed Meitner also described to me a circuit he’d just designed

5 See Industry Update in this issue.

6 Arnie Nudell and Paul McGowan used an Ultra JitterBug between their low-jitter C.E.C. TL 1 transport and jitter-rejecting Sonic Frontiers SFD-2 processor. They reported hearing improvements in this already-low-jitter processor through the very-high-resolution Genesis II loudspeakers.

7 First seen in Sony players, the servo circuit operates in the digital domain, the error being digitized and the necessary corrective signals produced using D/A converters. The advantages over conventional analog servo systems! Better long-term reliability, perhaps, but the word “digital” can’t hurt when it comes to marketing.

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The next Jads DA-60. Tubes, naturellement.
that purportedly eliminates any trace of clock jitter. I don't have enough room in this report to explain how it works, but the technique appears invincible—though expensive to implement.

Audio Alchemy showed some interesting new products, along with updated versions of previously released components. The $699 Digital Decoding Engine v3.0—a high-end model of their popular DDE v1.0—was introduced. The unit features full microprocessor control, a discrete class-A analog stage, and multiple inputs (including AES/EBU). The original DDE v1.0 has been updated to the v1.1, but keeps the $399 price. The new v1.1 uses a Crystal CS4303 1-bit DAC, reportedly a higher-quality version of the popular CS4328.

In the new-product department, Audio Alchemy unveiled the DTI-Pro, a more advanced version of the original DTI (Digital Transmission Interface) jitter-reduction device. The DTI-Pro claims much lower jitter than the DTI, and also performs Digital Signal Processing (DSP) to provide what AA calls "resolution enhancement." The software-driven DSP chip interpolates the Least Significant Bits (LSBs) below the 16-bit level based on information in the 16 bits read from the CD. Audio Alchemy claims a 2.8-bit (16.7dB) improvement in resolution over 16-bit data in the midband and bass (the HF is left untreated). Because the software is in a socketed EPROM, software upgrades are as easy as replacing a chip. The DTI-Pro's reportedly lower jitter performance is realized with a dual-PLL scheme built around a Crystal CS4312 input receiver.

Although it wasn't shown at the CES, Audio Alchemy announced the DTI-2, an improved version of the original Digital Transmission Interface. The $599 DTI-2 uses the same dual PLL architecture as the DTI-Pro; the DTI-2 is essentially a DTI-Pro without the DSP. All the AA products have attractive new cosmetics.

The best Home Theater sound at the Show was found in the one room without a video monitor or projector: Meridian demonstrated their new Digital Theatre with music rather than the carsplicing Terminator 2 sound effects that most Home Theater demos use. Designer Bob Stuart wanted to make the point that a properly designed Home Theater audio setup can also be a true high-end music-reproduction system. Rather than compromising a system's musical qualities to make it compatible with film soundtracks, Bob approached the problem with the requirement that the system be, first and foremost, a high-quality music system.

To this end, he designed the Meridian Digital Theatre, the world's first all-digital surround-sound system. The Digital Theatre combines the existing Meridian digital loudspeaker models with three new products: the DSP5000C center-channel digital loudspeaker8, a DSP-assisted subwoofer, and the heart of the system—the 565 Digital Surround Processor. The DSP-based 565 is extremely sophisticated, allowing the user unprecedented control over the system. A lot of thought obviously went into the 565's functions and controls. For example, the center channel can be delayed so it better integrates with the left and right loudspeakers. The surround loudspeakers also have separately adjustable delay and level. In the demonstration I heard (using my own CD6), the surrounds were not audible, but their presence was perceptible as a sensation of being enveloped in the soundstage. With the ability to adjust the center-channel delay, the center image was allowed to become stronger without being obtrusive or artificial. With this flexibility, the 565 can be optimized for pure music reproduction or Home Theater. Up to 16 preset setups can be stored in memory for instant recall. Of all the new products I saw at the CES, the Meridian Digital Theatre was, without question, the most impressive technically.

Steve McCormack unveiled his new Digital Drive CDT-1 CD transport. The top-loading design features a custom damping disk and an air-tight lid to seal the disc playback chamber. The $1495 CDT-1 should be in stores by the time you read this.

Duson, a French company I hadn't previously heard of, showed their new CD 100 CD player. The $4000 player uses the CD99 Pro transport and the Crystal CS4328 DAC in a reportedly unique implementation. The CD 100's DAC section is on a removable board for future upgrades.

Wadia Digital surprised me by playing LPs in their room. They haven't gone analog, but were showing how analog sources can be integrated into their all-digital system without an analog preamp. Many of Wadia's digital processors and CD players have digital-domain volume controls and additional digital inputs to accept the output of their new $3250 Wadia 17 A/D converter. The digital processor or CD player thus replaces the traditional preamp's functions of providing gain control and input switching. In addition to the A/D converter, Wadia also showed their new $6750 Wadia 16 CD player, a higher-quality version of their model 6.

Muse Electronics has finalized their Model Two DAC and is now shipping the $1700 digital converter. Based on the PCM63 DAC, the Two is the result of extensive listening tests to each element in a digital processor. Designers Graham Hardy and Kevin Halverson used analog master tapes played back on a custom Studer machine as a reference against which to judge different circuits in the Model Two. This led to some different design techniques, including a jitter-reduction circuit between the digital filter and the DACs. A version with two AES/EBU inputs will sell for $2000.

David Manley has sold his interest in VTL to his son Luke and Eric Abraham of Silicon Valley retailer Sound Goods, who will continue to produce the VTL line. David has, however, started a company called Manley Laboratories which will design and manufacture professional and consumer audio equipment. A few of David's new designs caught my eye at the Show. The first was his all-out assault on the state of the art in digital processors, the Manley Reference 20-bit D/A converter. This $8800 unit uses two UltraAnalog AES/II input receivers in series for maximum jitter rejection. Conversion is performed by fully balanced UltraAnalog DACs, and the output stage is, naturally, all vacuum-tube. With an external tube-regulated power supply, a massive machined-aluminum chassis, and gold pc boards, David Manley's newest creation is one to watch.

On a less ambitious note, Manley Labs showed the $1150 Delta-Sigma converter, based on the Crystal CS4328 DAC. The unit features output volume control for those listeners with only CD source.

One of the best sounds at the Show was produced in the Ensemble room. The Swiss company demonstrated their new Dichrono digital processor and Dichrono CD transport feeding the diminutive Corifeo power amplifier and modestly sized Primadonna loudspeakers. The $6900 Dichrono processor incorporates a discrete class-A line-stage preamp and volume control, allowing direct connection to a power amp. Although Ensemble's Urs Wagner wouldn't disclose the technology inside the Dichrono, he did confirm

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8 The term "digital loudspeaker" means that the loudspeaker accepts a digital input, implements the crossovers with DSP, converts the signals to analog with onboard DACs, and amplifies the signal with analog power amplifiers which power traditional drivers. See my review of the Meridian D6000 in Vol.14 No.9 (p.116) for a full description of digital loudspeakers.
that it's based on multi-bit DACs. The $5700 transport is built around the excellent Esoteric/Tec VRDS mechanism, and is mounted on a vibration-damping platform. The two products were reportedly designed with much attention paid to reducing jitter. As with other Ensemble products, the Dichrono pair was visually stunning.

**Parasound**, importer of the belt-drive C.E.C. TL 1 CD transport, showed their TL 3 transport ($2995), which uses the same electronics as the TL 1, but in a less lavish chassis. Parasound also displayed their $1295 DAC, which features four PCM63 DACs for true balanced operation.

**Bitwise Audio Technologies** is finally shipping their Musik System CDT-One transport and Musik System 2tc processor. The $2450 transport and $5950 processor feature separate clock lines for low jitter transmission. Customers buying the transport and processor together are given a discount of $900 on the pair. The "tc" in the processor's model number stands for "Time Continuous," a new patent-pending DAC topology developed by Bill Firebaugh of Well-Tempered fame. Bitwise also announced a new version of their Musik System Zero, called the Zero Plus. The Plus replaces the Yamaha input receiver with the Crystal part, and features an improved power supply. The Zero's price remains at $1495.

Robert Watts, designer and founder of the UK-based DPA company (formerly Deltec Precision Audio), announced an ambitious new processor called the PDM Ten Twenty-four. The $10,000 limited-production unit uses eight noise-shaping DACs, 128x digital filtering, and gold-plated pcb traces, all in a 1.2"-thick chassis.

The Sumo Theorem digital processor I reviewed in Vol.15 No.10 (p.225) has been upgraded to accept the new Burr-Brown PCM69 hybrid DAC (the original Theorem used the PCM67). The $799 Theorem can now be ordered with AES/EBU input (a $100 option) and true digital-domain balancing for an additional $400.

Over many CES reports, I've described the development of a processor from newcomer **Resolution Audio**. The company has finalized their designs and is now producing two models, the Quantum ($2995) and the Reference 20 ($1495). The Quantum uses the UltraAnalog AES/20 input processor and a D20400A DAC, and the Reference 20 has a Crystal input receiver and D20400 DAC, making it the lowest-priced processor to use the UltraAnalog converter. I'll be reviewing one or both processors in the coming months.

The French company **Micromega** unveiled their long lineup of new digital products. Micromega makes three CD players, ranging from the $695 Stage 1 to the $1295 Stage 3. The Stage 1 and Stage 2 can be upgraded to Stage 3 status through Micromega dealers. Micromega also showed their $1495 T Drive transport, based on the CDM9 Pro mechanism and featuring the "Accutrans" jitter-reduction circuit. The matching T DAC D/A converter ($1495) has balanced outputs, AES/EBU input, and digital tape loops. While this would be a full digital lineup for most companies, Micromega doesn't stop there. They also showed the $495 MicroDAC, the $1195 Microdrive transport, and the $995 VarioDAC, which incorporates a remote-controlled preamp and Bitstream D/A converter. Micromega also continues to offer the Duo and Trio series of transports and processors.

**Luxman** showed some gorgeous-looking new products. The wedge-shaped, top-loading D-500Xs ($7000) and D-500 ($5000) CD players use the CDM3 transport, motor-driven volume control (D-500Xs), and pay lots of attention to vibration isolation.

**Accuphase** showed a beautiful new line of digital products consisting of the DP-65 CD player ($7000), DP-90 CD transport ($7500), and DC-91 digital processor ($13,500). The processor and CD player are based on Accuphase's Multiple Multi-Bit system, in which up to thirty-two 20-bit DACs (the PCM63) convert the digital signal to analog. This technique of parallel DACs reduces noise and improves low-level linearity. The three products also incorporate other innovative technologies. Accuphase is distributed in the US by Art Manzano of Axis Distribution.

EAD's T-7000 laserdisc-based transport has been discontinued and replaced by the T-8000, a machine optimized for both audio and video playback. EAD has switched from Philips to Pioneer mechanisms in all their transports. EAD also introduced the CD-1000 CD player ($1595) and the T-1000 CD transport ($1099). Both machines are based on Pioneer's Stable Platter mechanism, and the T-1000 is fitted with an ST-type optical output as standard. The player uses PCM63 DACs and features a direct-coupled, DC-coupled-less output stage.

Melos introduced the CDD-2 transport, a new CD transport based on the Philips laserdisc mechanism first used in the Theta Data. In the works is a companion all-tube digital processor which will use a 1-bit DAC. The CDD-2 will cost $2700, the yet-unnamed DAC $2000.

AMC, manufacturer of the tube-integrated amplifier Jack English reviewed last June (Vol.16 No.6, p.146), showed a new line of low-priced digital products. The most intriguing was the CD7M, a $599 transport that can be converted into a CD player by plugging a D/A stage into the transport's docking slot. A tube D/A for the CD7M is available for $399, and a solid-state converter based on the Crystal CS4328 costs $299. The company also showed the CDM6, a $599 Bitstream-based CD player.

A company called **Polyfusion Audio** showed a line of electronics that included many digital products. The $2900 Model 920 transport features a CDMA9 Pro mechanism and an outboard power supply. The company makes one stand-alone D/A converter, the $3000 Model 800, and a digital processor/preamp combination, the $4000 Model 900. In addition, the company's Model 940 preamp will accept a D/A card, which adds $1500 to the preamp's $3250 price.

The best sounds at the Show came from very different systems. At one end of the scale, Arnie Nudell's new **Genesis** II loudspeakers ($27,000) was absolutely stunning. Driven by the Paul McGowan-designed Stealth amplifier and with a C.E.C. TL 1 transport and Sonic Frontiers SFD-2 digital processor as the source, the sound in the Genesis room was breathtaking.

At the opposite size/complexity extreme, the **Ensemble** room was also eminently musical. The Ensemble system truly disappeared, providing me with a few minutes of musical bliss.

I also enjoyed the sound in Casey McKee's **Exposure Electronics** room. The Exposure XIV preamp (with its matching IX power supply) fed the Exposure IV power amplifier, which drove **Sonus Faber** Electa Amator. The front end was either a Lingod Linn LP12 or the **Mark Levinson** No.30/No.35 combination.

Other sonic highlights included the amazing $995/pair Dunlavy SC-1 loudspeakers (driven by Exposure electronics), which get my vote for best high-end bargain at the Show. In fact, the entire Dunlavy line was impressive, and seemed to offer very high performance for the money. Paul Hales's new loudspeaker—which I heard on the first day of the Show, before he got them set up optimally—was superb. The Haleses were driven by Scott Frankland's new
Wavestream V8 tubed power amplifiers, fed by an Altis transport and processor.

JACK ENGLISH ON LOUDSPEAKERS
As always, a mind-boggling number of new loud speakers were introduced. Fortunately, the major trends were very encouraging. For starters, there were no stratospherically priced newcomers—new reference-caliber models were generally offered at lower price points than current flagships.
Second, the greatest competition was among the release of a host of promising products at around $2k/pair. The third major trend was the growing number of high-sensitivity, easy-to-drive speakers in use with very-low-powered, lusciously musical, single-ended triode 300B tube amplifiers from such innovators as Kevin Hayes/VAC, Dennis Had/Cary, Peter Qvortrup/Audio Note, Scott Nixon/Anodyne, and J. Gordon Rankin/Wavelength Audio.

LOWER-PRICED REFERENCE CONTENDERS
At $27,000, the Genesis Model II is less than half the price of the Model I, which was introduced in Chicago. The II is a similar but slightly smaller version of the I and consists of four 5'-tall columns. Each mid/tweeter screen uses a 4' push-pull ribbon dipole, twelve front-firing 1" planar tweeters, and three rear-firing tweeters. Each bass tower contains four 12" servo-controlled metal-cone woofers. A remote-controlled, 1000W bass amplifier is included in the price. The II had an effortless sound with a large-scale presentation, and sounded significantly better than the much larger I.
One of the best sounds at the Show came from Dunlavy's new SC-VI. Weighing in at over 400 lbs each and costing approximately $17,000, the SC-VIs are definitely heavyweight contenders. With a 91dB sensitivity and nominal 5 ohm load, the SC-VIs—driven by a single Krell KSA-250 amplifier—easily filled a small ballroom at the Golden Nugget. I was amazed at how much better the sound was compared with John Dunlavy's earlier work with Duntech. He told me that the SC-VI incorporated no major breakthroughs; improvements were the result of an intensive 14 months of R&D coupled with improved technology in parts, CAD, and virtually everything else that goes into the product. The Dunlavy SC-VI demands comparison with any speaker currently available at any price—it was simply stunning.

Martin-Logan, hot on the heels of a host of favorable reviews, launched the complete Monitor System. This $15,000 system consists of a pair of Monitor Electrostatic monitors which incorporate a new planar driver covering the 100Hz–250Hz range, the Exos stereo active crossover (also available separately), and a pair of the new Baros subwoofers. While I was disappointed with the sound, other M-L products have been too good to reach any quick judgments about the technologically intriguing Monitor. The technological innovation of Infinity's trend-setting Epsilon was even more fascinating. Designed by Cary Chris-
To make Home Theater real takes something unique. It takes 40 years of American design and engineering experience building internationally acclaimed audio components.

It takes McIntosh. Start with the new C39 Audio/Video Control Center. The C39 is a full-fledged audiophile component; but, it’s a lot more. Besides its impeccable sound and build quality, its expandable multi-zone remote control and built-in Dolby® Pro-Logic circuitry, the C39 accepts a dealer-installed module for Home THX® processing that lets you upgrade to the ultimate in Home Theater sound.

The C39 Audio/Video Control Center with its optional THX® module, the matching MC7106 900-Watt, six channel THX® amplifier and a set of McIntosh THX® loudspeakers combine to create the world’s first single-brand, THX-licensed, Home Theater System.

If you thought you had heard Home Theater, you owe it to yourself to hear McIntosh. Really.
tie, the Epsilon, as "the first monopole planar," bucks current trends. Weighing in at 150 lbs/side, each 5'-tall Epsilon includes dual EMIs, a single EMIM, a new L-EMIM (low-frequency midbass driver), and a 12" servo-controlled injection-molded graphite (IMG) woofer. Infinity does not provide a woofer amp, the user's own bass amp becoming part of the servo circuit. The upper-frequency drivers have a vented, tapered, fiberglass rear housing which absorbs the rear wave. As usual, Infinity offers multiple bass-, mid-, and tweeter-level controls. Two 9V batteries, used to supply a bias voltage to the tweeter crossover circuitry, are hidden among the upper controls. The suggested price is $10,000, and the sound was very satisfying, especially in the delicate, extended upper frequencies.

One of the Show's most impressive sounds came from the new Quartzessence four-piece satellite/subwoofer system from Purist Audio (with a big assist from Unity Audio). Included in the $9500 price is a pair of purpose-built Sound Anchor stands and computer-assisted installation in the owner's home. The speakers, designed for small to medium-sized listening rooms, have several key design features: extensive use of Corian in the cabinets; satellites bolted to the stands with different interfacing materials, depending upon the owner's room; rear-firing tweeters which can be turned down or turned off; variable subwoofer crossover frequencies; and a high 90dB sensitivity.

Vegas happily saw the return of Paul Hales with his new company, the Hales Design Group, which introduced three new models. Top of the line was the three-way, $8795 Five. Hales's earlier cabinetry established an aesthetic benchmark; the new models were visually disappointing. I hope the designs' appearance will be refined prior to actual production. The Fives sounded very impressive, with an open, airy top end, a musically natural midrange, and a bass foundation more powerful than those of earlier Hales speakers.

Two grand: real-world competitors

Some of the most active and interesting speakers at the Show were those at or around $2k—a price range seemingly sewn up by Martin-Logan's marvelous Aerius (see JA's review in Vol.16 No.10, p.222), and one already populated by such outstanding products as the Magnepan MG 2.6R, Eminent Technology IV, and KEF R103/4. Leading the charge was the new two-way, floorstanding Thiel CS1.5, which lists for $1990. With its small footprint and typically first-rate fit'n'finish, the Thiel looked like a winner even before it reproduced a note. I hung around once the 6½" woofers, 1" aluminum-dome tweeters, and passive bass radiators got going. Those sound of those little boxes was not only musical, but surprisingly big in Thiel's large Sahara Tower suite.

Over at the Mirage, Apogee showed off its new Centaurus Slant 6 hybrid. Listing for $1995, the Slant 6 has a 6½" woofer in a ported cabinet coupled with a 26" dipole ribbon. As promised, the Slant 6 played appreciably louder than earlier Centaurus models, easily filling the large suite with music.

Dunlavy showed their $1995 SC-II, which uses a vertically symmetrical arrangement of two 5½" mid/woofers and a 1" tweeter in a 65"-tall column. The 91dB-sensitive "time/space collimation" IIs sounded great in an immense room.

Not to be outdone in the sensitivity sweepstakes, Swan Speaker Systems introduced the 90dB/Wm Baton, which lists for $1895 and features a 1" tweeter and 7" woofer. Driven by the 12W Cary CAD-300SE, the 38'-high, floor-standing Baton sounded rich and romantic.

Another $2k competitor was the oddly shaped Spectrum minimonitor in a six-sided cabinet. The 1"-thick walls are composed of a bilaminated combination of high- and low-density PVC. The little two-way, which includes a 5" Focal mid/bass driver and a 1" aluminum-dome tweeter from SEAS, sounded very open.

In the $2500 range, Avalon proudly showed off its smallest speaker, the Monitor. With the characteristic slanted and sloped cabinet (albeit in a much smaller, stand-mounted package), the Avalon features a 1" titanium-dome tweeter and a 7" Nomex/Kevlar woofer.

Snell displayed the new floorstanding Type C/V three-way, which has dual 8" woofers, a front-firing midrange-tweeter/midrange array, and a rear-firing tweeter. The C/V sounded wonderful, drawing attention away from the silent $19,000, all-new Type A Music Reference System.

Bright Star's steadily evolving and unusually shaped Altair Pro sounded very competitive, with improvements attributed to changes in the damping compound, crossover topology, internal lining shape, and woofer mounting gasket.

Electrostatic Research impressed showgoers with the new, $2700 Model II hybrid electrostatic while, at just under $2800, relative newcomer Aerial Acoustics drew attention to themselves with their new, two-way, floorstanding Model 7, which has a 9" woofer and 1" tweeter. Very impressive sounds also came from the similarly priced Paragon Regents. These unusual boxes have a large, downward-pointing arrow on the front baffles, and dual 7" cone mid/woofer drivers with a 1" fabric-dome tweeter in a D'Appolito configuration.

Most promising newcomers

Also introduced were a bevy of exciting designs from both new and established companies from all over the world. Lead-
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The Bose 901 look-alike Ethera ($2500), from Canadian manufacturer Vitae, did a wonderful job of pinpointing images in three-dimensional space, while the odd-looking Cadence ES electrostatic hybrid from Eclipse of India produced pleasant sounds. The Cadence ES's panel is mounted horizontally atop a bass-reflex-loaded, conventionally boxed woofer.

Australia was well represented, not only by the marvelous Audio Definition Status three-way ($14,000)—which has a D'Appolito-configuration array with 6dB/octave slopes and a high 92dB sensitivity in a +6'-tall column—but also by the ProAc-like, 37"-tall, floorstanding, two-way Lyrix from Krix (again with a sensitivity of 92dB), and the don't-let-your-children-chew-on-the-inside lead-lined Whatmough Monitors.

Other noteworthy introductions from US companies: the stand-mounted Spica TC-60 at $800; the big-bang-for-the-buck floorstanding Signet SL280ex in black vinyl for $900; the $1499 RM9 ProMonitor from Joseph Audio, which features Richard Modaferrri's "infinite-slope" crossover; the steel-lined, cherry-and-maple-veneered, 92dB-sensitive Taddeo Arpeggio B at $3395; the full-range, four-way Chapman T-8 at $3500; the radical, backward-slanting, floorstanding two-way Ay from Meret Audio; the unusually attractive, little-box-on-a-bigger-box, $3990 Sound Stage Five; Dzurko Acoustics' $4500 stand-mounted Jaguars, their first product to be sold through dealers; Acarian Systems' Alon V at $4800; Esoteric Speaker Products' $4900 Harp; and the new lineup of Audire full-range ribbons, topped off by the entirely new, $14,000 Image 6.

Italy displayed the Aedon Audio NPS (natural perspective series), which features broad listening windows for off-axis performance. Denmark was well represented by the fine-sounding Audiovector series, which features the $5100 model VI, finished in black or white piano lacquer.

In a holiday mood, Music Hall introduced two floor-standing models from JPSW's Ruby series; these English speakers feature bright-red aluminum-cone midbass drivers to contrast with the festive green logos of the new Greek electronics (now part-owned by Music Hall). At $2295 (Ruby 3) and $2895 (Ruby 4), the new JPSW's produced very satisfying sound for the money. From Canada, PSB announced the $299 Alpha Subsonic subwoofer as an ideal mate for their best-buy Alpha satellites.

WorldRadioHistory
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MOST DISAPPOINTING SOUND
The highly regarded Audio Physics Medea speakers from Germany, demo’d in the Forsell room, won hands down. Prices are yet to be decided upon, but with all the pre-Show hype, and mates with the highly regarded Forsell equipment, I expected to hear magic. I was disappointed. Ironically, the bottom-of-the-line Audio Physics Step minmonitors (including stands) sounded lovely mated with modest electronics from Norwegian firm Adytech in the latter’s room.

CES HIGHLIGHTS & TRENDS FROM PETER W. MITCHELL
While my colleagues scoured CES halls to identify new high-end products, I wandered about in search of trends, new technologies, and unusual products. For me, the most important new trends were two major disappointments. One involves a new product category, while the other concerns an important area of audio technology that surprised me by being completely absent from CES. I’ll report on the latter disappointment first.

Two years ago Snell Acoustics made a big splash at CES by demonstrating how digital signal processing (DSP) can flatten the frequency response of a pair of speakers, improve their soundstaging, and dramatically reduce the coloration added by room acoustics, all in one fell swoop. A Sigtech processor was used to demonstrate this impressive advance. A year ago Snell unveiled details of its own implementation of the process (developed jointly with Audio Alchemy) and demonstrated a preliminary product. For last June’s CES, Snell planned to show a pre-production sample of its new top-of-the-line speaker, the Type A/5 with DSP for speaker/room correction. At the last moment the company withdrew from the Summer ’93 CES, so I went to the January ’94 CES expecting to hear the final version of the Type A. It is now called the Type A Music Reference System, but it no longer includes DSP.

Last year several other manufacturers were reported to be developing their own DSP speaker/room correctors. B&W’s system, developed with the aid of Oxford mathematician Michael Gerzon, was called the Listening Room Optimizer. A new company, formed as a spinoff from Theta Digital, intended to produce a relatively low-price DSP unit. And while Audio Alchemy developed the electronics for Snell’s dedicated processor (with a signal-processing window nearly a full second wide to perform very precise corrections), they also planned to make a general-purpose version for use with other loudspeakers. But full correction for listening-room reflections turned out to involve unexpected complications; evidently Sigtech’s 10-year head start in room correction can’t be duplicated overnight by other developers. Audio Alchemy is now designing a less ambitious DSP unit with a processing window limited to about 50 milliseconds (like the Sigtech). It will be aimed mainly at correcting loudspeaker imperfections rather than room acoustics.

In view of the many promising developments in this area last year, I expected to see a flock of products this year, offering a variety of approaches to DSP speaker/room correction. So I was very disappointed when I didn’t see a single demonstration of DSP room correction at this CES. If anybody had a processor, they must have been keeping it behind closed doors. Even Sigtech, which pretty much owns this product category, failed to show up—because of a big New England snowstorm the week before CES, a time-consuming move into a new factory, and delays in finalizing the design of a new consumer model.

My other big disappointment concerns the arrival this year of an inferior new product: the Video CD. Although this development has been discussed for a couple of years, discs will arrive in stores this year containing up to 74 minutes of video with audio. If you worry about the effects of the data reduction schemes that are being used in new audio media (4:1 in DCC, 5:1 in MiniDisc, wait until you see the drastic compression ratios used for the picture signal in the Video CD—about 50 to one!)

An NTSC television picture is about 300 pixels (picture elements) tall by about 400 pixels wide. Each pixel is formed from three primary colors and is displayed 30 times per second, for a total of 10 million pixels per second. The dynamic range of video can be captured fully by 8-bit coding, so broadcast-quality digital video requires about 80 million bits per second (Mb/s). But in a Video CD the digital video signal is squeezed until it fits into the same data rate as an audio CD—just 1.4 million b/s. The accompanying stereo sound uses Musicam coding with a data rate of about 224 kilobits/second.

The video compression employs MPEG-1 coding to achieve its 1.4 Mb/s data rate. The 50:1 compression causes obvious compromises in picture quality, similar to VHS tape. A more elaborate system called MPEG-2, which may be used for HDTV, preserves a much sharper picture at a data rate of about 6 Mb/s. But the American public has accepted fuzzy VHS pictures, so manufacturers have decided to go ahead with the equally fuzzy Video CD. Philips initiated the trend a couple of years ago by using MPEG-1 coding for CD-I discs with FMV (full-motion video). Last year major Japanese companies agreed with Philips on a new White Book standard for the Video CD using a similar compression scheme, and some film studios plan to release movies in this format.

This could affect the video rental market. Besides being easier to mass-produce than VHS tapes, Video CDs are much more convenient to transport and store. They would be a better rental medium for movies since the discs offer quick track access and wear-free play (unlike VHS tapes, which are discarded or sold off cheap after a few dozen rentals), they aren’t easily damaged, and can’t be duplicated by dishonest store owners or greedy customers. Of course, VHS tapes will have to remain available for another decade to serve the huge VCR population.

Are we forever doomed to mediocre VHS-quality pictures on our TV screens? Not necessarily. Laserdiscs continue to grow in both popularity and quality, and laserdisc rentals are spreading. (Hooray!) And this spring RCA is commencing a new DBS (direct-to-home broadcast satellite) service, called DirecTV. It will use a pair of two-ton Hughes Galaxy satellites, one of which was launched last December on a French Ariane rocket. Several dozen channels of programming, uplinked from an operating center near Denver, will be relayed from the satellites to small 18" dish antennas that can mount on the wall or roof of your house and need to be aimed only once.

DirecTV doesn’t have some of my favorite channels, but it offers most cable channels without the headaches of cable service. And its picture quality, using a variant of MPEG-2 coding with video data rates at 6 to 8 Mb/s, is strikingly clear and sharp—much better than VHS, Video CD, or any cable hookups. Its digital sound uses moderate data compression and may not be quite equal to CD, but it is vastly

10 The dish they were using was a 10-foot, in the nearby parking lot. The explanation—that the transmitter wasn’t up to full power yet—made sense, but I wondered why it wasn’t. The data-reduced NTSC picture was notable for its total absence of video noise, but didn’t look to me like the touted 400 lines of resolution.

—JGH

Stereophile, April 1994
The Mongoose is a revolutionary interconnect which uses light to transmit audio and video information. Dynamic range rivaling the best of the "High End" conductive cables is achieved by transmitting in the analog domain. Unlike cables of the past, the length of interconnection now becomes irrelevant. Also, since there is no ground connection between components, less noise is transferred through a system. When paired with the Cobra fiber optic cable, the Mongoose comprises what high definition audio is about, the latest in exotic technologies implemented for our musical enjoyment.

The Cobra is a specially optically balanced fiber for analog transmission. It is designed to keep optical anomalies like Fabry - Perot effects and optical feedback to an absolute minimum. The cable is 3 mm in diameter and very flexible. Mongoose and Cobra are available in both audio and video versions.
superior to the hum-plagued MTS stereo of cable and broadcast TV, and it will decode far more cleanly into Dolby Surround. Dolby Surround Digital coding will be added when it becomes available. In addition, there will be spare data capacity in the system that RCA could use to offer many channels of digital radio service, if customers demand it.

Getting back to audio, in the 20 years that I've known Bob Carver as a friend, I've grown accustomed to his habit of launching new designs with a veneer of techno-hype that misleads as much as it reveals about what his products actually do. So when I went to hear the new Lightstar amplifier from Carver Research, I was prepared to disbelieve most of what I read and heard. As it turned out, while Carver conceived the basic concept of this amp in the late '70s, the parts needed to build it didn't exist until recently, and a British engineer was responsible for much of the actual design work on the amplifier. (I misread his business card, so I don't have his name handy.) But the engineer was delightfully candid about the circuit design, and I soon put aside my doubts. It really does appear to be a novel solution to some of the major challenges of high-power amplifier design.

The Carver Lightstar Reference, no relation to a Jedi Knight's light-sword, is a $3000 power amp whose ratings suggest that it is an ideal voltage source—meaning that its rated power doubles with each halving of load impedance (300W into 8 ohms, 600W into 4 ohms, 1200W into 2 ohms). That's difficult to accomplish with conventional power transistors, which operate safely only within a restricted range of voltage/current combinations. (The graph of this range is called the transistor's safe operating area.) Many amplifiers deal with this limitation by using several transistors wired in parallel to share the output current. This works, but multiple devices usually don't have exactly identical characteristics, and some designers feel that a single set of output devices per channel can sound slightly better.

The Lightstar amplifier solves the safe-area problem by controlling the voltage across the output transistors independently of the current flowing through them. It uses a single pair of output devices, MOSFETs that are rated for extremely high current (160 amperes) but only 30V. If the amplifier had a conventional fixed-voltage power supply, these MOSFETs could safely deliver only a few dozen watts into an 8-ohm speaker, but could push hundreds of watts into a 1-ohm load.

Delivering high power into normal impedances requires high output voltages. To provide these without violating each MOSFET's 30V limit, the positive and negative power-supply voltages are modulated by the audio signal. The supply voltages track up and down together with the audio signal, while the voltage difference across the MOSFETs is kept within a safe 10V range. In effect, all of the voltages in the output stage "float" up and down with the audio signal, while the high-current MOSFETs are free to provide virtually limitless current to drive a loudspeaker's voice-coil. While the incoming audio signal is fed to the MOSFETs to produce the output current, it also drives a pair of PWM (pulse-width modulation) amplifiers that modulate the power-supply voltages up and down. The result is a purist output stage that can provide both high current and a wide voltage range regardless of the speaker's impedance.

One potential difficulty remained: Music is full of transients, and speakers respond to transients by generating "back-EMF" pulses that must be absorbed in the amplifier without affecting its sound or its safety. Feedback diodes in the Lightstar provide a return path for back-EMF energy, which is fed back into the power supply. All in all, the Lightstar impressed me as a remarkably clever, innovative, and cost-effective design that promises to deliver huge power levels to any load and also has the potential for excellent sound.

To conclude my CES highlights, I'd like to mention a few loudspeakers that merit your attention (and perhaps a full review in these pages). Many of the new speakers that I heard at the Show seemed to have been rushed to market not quite finished; their sound was generally attractive, but needed more fine-tuning to remove small colorations. A few designs stood out as exceptions to this rule.

A couple of years ago a new company called Audile—which I took to be the beginning and end of "audiophile"—introduced a very expensive pair of triangular cabinets with coaxial speakers and a digital processor that was said to provide perfect correction of the speaker's amplitude and phase response. But the system sounded bright, and my quick on-site measurement revealed a broad treble peak. The designers, of course, said that my measurement was invalid. Since then the company has obtained new drivers and new financing—they were acquired by a publicly traded company, Cabre Corporation. When I played familiar CDs the sound was impressively accurate and uncolored, with airy and spacious soundstaging. Sure enough, my new measurement (using the same analyzer as before) disclosed very flat response. The $8750 price is not low, but includes the DSP correction processor; a pair of Audile subwoofers raises the price to $13,100. My preliminary impression is that Audile has joined the short list of speaker systems that accurately reproduce a recorded signal.

Despite its name, Massachusetts company Aerial Acoustics produces speakers, not TV antennas. For many years

11 Audile's ACT 1 (Audio Correction Technology) is a DSP box that goes between your transport and DAC, and a pair of their loudspeakers. After each ACT 1 loudspeaker is analyzed and characterized, the measured data are stored on memory cards which are inserted into the front panel of the ACT 1 DSP processor.—RH
12 I was also impressed by the sound of the ACT 1 system. The imaging was extraordinary—pinpoint, focused, and deep. —RH
Do you really hear the unique character of your music? The personality? The soul? To experience the essence of music, some audiophiles build systems based on impressive technical specs. Others rely on their highly developed perception. Exposure Electronics creates amplification systems which satisfy both inclinations. Extraordinary technology, capable of extraordinary performance. All built with an ingenuity which disproves the myth that stunning sound quality is achievable only at extreme prices. The right system enables you to hear the true character of your music. To Exposure character is everything.

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World Radio History
company founder Michael Kelly was in charge of production at a/d/s, where he mastered the art of assembling woofers and tweeters with superb precision and quality control. Now he is free to apply his manufacturing skills to loudspeakers of his own design. Aerial speakers appear to be fairly conventional systems (dynamic drivers in tapered cabinets), but closer inspection reveals that the cabinets are extraordinarily rigid and well braced. The solid bass, uncolored midrange, and transparent highs of the Aerial 10TI ($5000) make it a strong contender in this very competitive price range.

A Metaphor is a word or phrase that is a stand-in for a different word or phrase, making it an appropriate brand name for loudspeakers that serve as stand-ins for real voices and musical instruments. The sloped-back design of the Metaphor 2 ($6000/pair) reminds me of an Avalon speaker, but on first hearing, the Metaphor’s fundamental neutrality impressed me even more favorably than the large Avalon (high praise, considering the latter’s excellence).

I went into the Dana Audio room to hear the new Signature model ($269/pair), but someone had blown a tweeter. So I spent some time reacquainting myself with the remarkable Dana Model 1 mini-speaker ($199/pair) and the cylindrical Sub-1 woofer module ($295/pair). These speakers, sold by direct mail from the factory, have been widely and favorably reviewed, but I’d forgotten what a good value they are. I suspect that their performance may have been slightly refined and improved during the past year or two. The cello range seemed weak (even with the “subwoofers” operating), but the midrange and treble were amazingly accurate and airy, with superb imaging and very good resolution of detail. At only $500/pair for the combination, they are a real bargain.

A couple of years ago I was very impressed by a $15,000 speaker system from Spectrum Dynamics that had very low coloration and superb soundstaging. Its rounded ceramic cabinet was very solid, but its resemblance to granite gave it a rather negative Spouse Acceptance Factor. This year the company showed a new model at half the price that seemed similarly rigid, but its polished wood exterior would look far nicer in a living room. Driven by a tube amplifier, its sound was smooth, warm, and musical, but seemed to lack “air.” The next day, driven by a solid-state amp, the air was there, but there was also a trace of aggressive mid-treble hardness.

B.I.C. speakers were exhibited in the Convention Center (“the Zoo”) rather than in the high-end rooms at the Sahara. Many serious listeners may not have bothered to hear them—particularly since other B.I.C. speakers appear to be competent but unremarkable mass-market products. When I heard familiar CDs through the B.I.C. Realta and noticed the overall smoothness, warmth, and accuracy of the sound, I was amazed. Each Realta weighs 87 lbs and stands 4½’ tall with a d’Appolito arrangement of two 5” midranges straddling a titanium–dome tweeter. The tonal balance was slightly on the mellow side of absolute neutrality, which probably is the best direction to err in if you’re playing CDs. Two 10” woofers produced bass that was clean, tight, and strong down to 25Hz. The list price of the Realta is not $3000, or even $2000, but just $1100/pair; and even that is widely discounted down to a street price of only $900/pair.

To close this discussion, I’ll mention three subwoofers that made a strong impression on me (and my bowels) by generating very deep and powerful bass at the Show. The Parasound GMAS (Great Mother of All Subwoofers) is an open-box dipole system initially designed around an Aurasound 18” woofer whose novel magnet system provided uniform drive over very long voice-coil excursions. But despite a year of trying, Aura was unable to come up with a suspension (spider and surround) that could handle such large excursions.

So Parasound switched to a long-exursion 18” woofer of more conventional design, and the system produced literally floor-shaking (earthquake-like) rumble. The new A/V speakers from NEAR are named after parts of a sailing ship. The system’s subwoofer is a large cube, nearly 2’ in each dimension, that also serves nicely as a stand for a large-screen TV. More to the point, in the tanker chase from Terminator 2 the NEAR subwoofer produced some of the most intense and tautly defined deep bass that I have ever felt.

I heard and felt similarly impressive low-bass power in the Hsu Research room. That didn’t surprise me, since I was already a fan of Hsu’s low-cost cylindrical subwoofer systems, and several large models were in the room. But according to designer Poh Ser Hsu, all of the non-boomy, stomach-massaging bass energy was coming from a single 12” powered subwoofer, the new HRSW12V ($700 including amplifier and 24dB/octave Linkwitz–Riley crossover).

Typically, subwoofers are placed near or behind the main stereo speakers, because integration with the main speakers is an important issue when the subwoofer produces significant output at midbass frequencies above 80Hz. Of course, when a subwoofer is located at the far end of the room from the listener, its output interacts strongly with the room, becoming muddied by resonances and standing waves before it reaches your ears. But Hsu subwoofers typically are designed to cross over at 40Hz and extend the bass down to below 20Hz. In this range the bass is truly non-localizable, so Hsu chose to place his subwoofer directly behind the listening area. Subjectively, the bass seemed to be coming from the front of the room. But with the subwoofer directly behind my chair, the leading edge of each pressure wavefront reached my ears before it engaged the room, producing an impression of bass that was both taut and intense.

Next month, J. Gordon Holt, Steven Stone, and Barry Willis report on Home Theater, amplifiers, and accessories.
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Components listed here are ones which have been formally reviewed in *Stereophile* and have been found to be among the best available in each of four or five quality classes. Whether a component is listed in Class A or Class E, we highly recommend its purchase.

Each listing—in alphabetical order within classes—is followed by a brief description of the product's sonic characteristics and a code indicating the *Stereophile* Volume and Issue in which that product's report appeared. Some products listed have not yet been reported on; these are marked (NR). We recommend that any product's entire review be read before purchase is seriously contemplated (products without reviews should therefore be treated with more caution); many salient characteristics, peculiarities, and caveats appear in reviews, but not here. To obtain back issues of the magazine, see the advertisement in this issue. (We regret that we cannot supply photocopies of individual reviews.)
In general, discontinuation of a model precludes its appearance here. In addition, though professional components—recorders, amplifiers, monitor speaker systems—can be obtained secondhand and can sometimes offer performance which would otherwise guarantee inclusion, we do not generally include such components. Apart from that exception, Stereophile’s “Recommended Components” listing is almost exclusively concerned with products currently available in the US through the usual hi-fi retail outlets.

**How Recommendations Are Determined**

The ratings given components included in this listing are predicated entirely on performance—ie, accuracy of reproduction—and are biased to an extent by our feeling that things added to reproduced sound (flutter, distortion, colorations of various kinds) are of more concern to the musically oriented listener than things subtracted (eg, deep bass or extreme treble) from the sound. On the other hand, components markedly deficient in one or more respects are downrated to the extent that their deficiencies interfere with the full realization of the program material.

We try to include in “Recommended Components” every product which we have found to be truly excellent or which we feel represents good value for money. Bear in mind that many different tastes are represented. The listing is compiled after extensive consultation among Stereophile’s reviewing staff, editors, and publisher, and takes into account continued experiencing of a product after the formal review has been published. In particular, we take account of unreliability and defects that show up after extended auditioning. The fact that a product received a favorable review cannot therefore be regarded as a guarantee that it will continue to appear in this listing.

The prices indicated are those current at the time the listing was compiled (February 1994). We make no guarantee that any of these prices will not have changed by the time this issue of Stereophile appears in print.

Where we have found a product to perform much better than might be expected from its price, we have drawn attention to it with a special symbol next to its listing: **$$$**. We also indicate with a * star products that we’ve been on this list in one incarnation or another since the “Recommended Components” listing in Vol.14 No.4 (April 1991). Longevity in a hi-fi component is rare enough that we felt it worth indicating (although it can also indicate that the attention of design engineers has moved elsewhere). We are not sympathetic toward letters complaining that the Synphonic Bomba—123 Mk.V1a, which we recommended heartily two years ago, no longer makes it into “Recommended Components” at all. While deletions are made, we endeavor to give reasons (there are always reasons). But remember, deletion of a component from this list does not invalidate a buying decision you have made. Individual reviewers mentioned by their initials are: Larry Archibald, John Atkinson, Arnis Balgalvis, Martin Colloms, Anthony H. Cordesman, Robert Deutsch, Jack English, Gary A. Galo, Corey Greenberg, Larry Greenhill, Robert Harley, J. Gordon Holt, Ken Kessler, Guy Lemoe, Lewis Lipnick, Peter W. Mitchell, Thomas J. Norton, Russell Novak, Dick Olsher, Wes Phillips, Markus Sauer, Donald A. Scott, Bill Sommerwerck, Steven Stone, Sam Tellig, Stephen W. Watkinson, and Peter van Willenswaard.

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**How to Use the Listings**

Read carefully our descriptions here, the original reviews, and (heaven forbid) reviews in other magazines to put together a short list of components to choose from. Carefully evaluate your room, your source material and front end(s), your speakers, and your tastes. With luck, you may come up with a selection to audition at your favorite dealer(s). “Recommended Components” will not tell you just what to buy any more than Consumer Reports would presume to tell you whom to marry!

**Class A**

Best attainable sound for a component of its kind, without any practical considerations; “the least musical compromise.” A Class A system is one for which you don’t have to make a leap of faith to believe that you’re hearing the real thing.

**Class B**

The next best thing to the very best sound reproduction; Class B components generally cost less than Class A ones, but most Class B components are still quite expensive.

**Class C**

Somewhat lower-fi sound, but far more musically natural than average home-component high fidelity; products in this class are of high quality but still affordable.

**Class D**

Satisfying musical sound, but they are either of significantly lower fidelity than the best available, or exhibit major compromises in performance—limited dynamic range, for example. Bear in mind that appearance in Class D still means that we recommend this product—it’s possible to put together a musically satisfying system exclusively from Class D components.

**Class E**

Applying to loudspeakers and phono cartridges only, this “Entry Level” classification includes products that may have obvious defects, but are both inexpensive and much better than most products in their mid-fi price category.

**Class K**

“Keep your eye on this product.” Class K is for components which we have not tested (or have not finished testing), but which we have reason to believe may be excellent performers. We are not actually recommending these components, only suggesting you take a listen. Though the report has yet to be published in certain cases, the reviewer and editor sometimes feel confident enough that the reviewer’s opinion is sufficiently well-formed to include what otherwise would be a Class K entry in one of the other classes, marked (NR).

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**Turntables**

Editor’s Note: Any audiophile worth his or her salt should (unless exclusively committed to CD) consider at least one of our Class D recommendations—or preferably one of the Class C turntables and their variants—as the essential basis of a musically satisfying system. An in-depth audition as part of a preferred turntable/arm/cartridge combination before purchase is mandatory. The point should also be made that these are lean times for turntable manufacturers—Larry Archibald’s advice is “Buy while you can.” If an inexpensive turntable has not made its way into Class D or is not listed in Class K, do not assume that it is recommended by default. Underachievers are more common in the world of turntables than in any other area of hi-fi.

**A Basis Debut Gold Standard:** $8200 •

“A natural for a Class A recommendation,” said AB of this thoroughly worked-out, beautiful, suspended-subchassis design. Interchangeable armboard has been designed in an ingenious manner that doesn’t compromise structural rigidity. A vacuum hold-down upgrade is available for $3500; the Basis supplied with hold-down is $10,600. (Vol.13 No.12) Fostell Air Force One Mk.MK: $25,500. Sophisticated two-chaos, air-bearing Swedish ‘table with thread drive and parallel-tracking, air-bearing tonearm. JS enthused over its 3D image solidity, tight, deep bass, super-plush midrange, and “enormous palpability factor.” Very similar Fostell Air Reference ($12,500) lacks the separate air-bearing Flywheel drive system, using an internal motor and a silicone-rubber belt. (Vol.17 No.1) Linn Sondek LP12 with Lingo power supply: $26,450—$27,745 (depending on finish) •

**Basis Debut Gold Standard:** $8200 •

Compared with the Valhalla model, the Lingo-equipped version minimizes the LP12’s propensity for a slightly fat midbass, subjectively extending the low frequencies by another octave. The Lingo upgrade alone costs $1295. The Trampolin suspension reduces the effect of the support. New Cirkus bearing/ubchass, now fitted as standard, costs $495
Simplicity is a complicated thing . . .

In our efforts to achieve a single goal — the reproduction of music with no additive or subtractive artifacts — we have abided by certain simple truths:

Less is more. Form follows function. In the process, we have learned how not to do straightforward things in roundabout ways . . .

And that is as simple as it sounds.

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inc. labor as upgrade kit, and further extends and tightens the turntable's bass, leading to a Class A rating, according to MC, JA, and LB (as long as the dustcover is used, adds MC). Though CG feels that the LP12/Cirkus loses a certain something compared with the original version, he still concluded that "the LP12 ranks as one of the finest high-end audio products on the market today," despite its slightly measured rumbly and excellent speed stability reinforce the feeling of maximum musical involvement offered by this classic belt-drive turntable. Good isolation from shock and vibration—essential in view of the fact that JANs like to use their LP12 (with the lid down) as a springboard for jumping onto the equipment cabinets! While the felt mat doesn't offer the greatest degree of vibration suppression within the vinyl disc, what absorption it does offer is uniform with variations of other decks. JA remains true to the basic design he has used now for over 15 years. (Vol. 14 No. 1)

**B**

**Basit Ovation Mk. II: $5300**

This well-engineered turntable combines a high-mass platter with a superb suspension and precision drive system. According to DO, the Ovation offers awesome bass definition, incisive spatial resolution, and a well-recorded hall ambience, DO's reference. Works nicely with the Graham 1.5t tonearm, but requires a shim (available from Basis) for proper VTA range. Just fails to reach Class A, due to its lack of a vacuum hold-down system. (Vol. 15 No. 5)

**SOTA Cosmos: $4400**

"Does it boogie?" asks MC, adding that "Every feel of the big turntables do." TJN thought very highly of the Cosmos, however, feeling that it offers a more complete bass and higher, due to its Sextet ball bearing and greater inter-transient silence. The subjective result was that small details were better resolved with the more expensive turntable. The low end, too, better, the Star in detail and clarity. TJN did feel, however, as others have, that it was not easy to experiment using the Cosmos without SOTA's supplied "Groove Damper" mat. In systems which lean toward warmth, the mat led to "a slightly more closed-in sound that tempered the feeling of the unrestricted top end that is one of the Cosmos's principal strengths." In leaner-sounding systems, however, the overall balance with the mat might be preferred. A high-gloss black finish adds $600 to the price, and a dust cover adds $250. (Vol. 13 No. 7, Vol. 15 No. 3; see also Ovation (Jewel review in Vol.15 No.4.)

**VPI TNT: $3500**

Sophisticated belt-drive turntable with two idler pulleys in addition to the motor pulley to give a more even belt tension. "Soul" was an ingredient that TJN felt impelled to mention as being part of the big VPI's sound, as was "midrange liquidity, with a self-effacing high-frequency sweetness." The sounds of the cartridges and arms he used became a little richer on the VPI when compared with their sounds on the SOTA Cosmos and Star. Compared with the sound of the standard VPI HW-19, the TNT features a greater degree of palpability. Borderline Class A; LA's reference LP source. West Coast price is $3600. A dust cover and dedicated stand add $150 to the price. (Vol. 13 No.7)

**C**

**Linn Sondek LP12 Valhalla: $1745-$1845 (depending on finish)**

The newest range of turntable designs have been measured for 17 years now, the Linn is felt to be some by more than colored the other Class C tables, particularly in the upper bass. Latest version has a laminated armboard and Cirkus bearing/ subchassis (inc. labor as upgrade kit) which results in a considerably more neutral sound. Certainly it's harder to set up and is more likely to go out of adjustment, though with the latest springs, Trampolin suspension, glued subchassis, and Cirkus mod, it's now much better in this respect. (Low-bass structure, coupled with cleaned-up sound quality: "The quiet between the notes is suddenly more slice. Add AB in his review, details seem to be enhanced, though the sound is more lightweight than that of, say, the VPI. The Black Damped Platter is now standard, and is also available for $330-$440, depending on vintage of turntable. GlI recommends it as a good long way toward alleviating the WTT's lightweight balance. "It should bring pleasure to a lot of record collectors—borderline Class B," was his conclusion, though he finds the WTA's cartridge clips rather fragile. RH recommends the various Marteg Audio Labs modifications—Well-Damped Arm Clamp ($299), Micro Suspension System & Motor Termi- nator Kit ($239, now height-adjustable), and, for those with the old plate, the Platter Interface System ($895, which can also be used on other turntables), see RH's review in Vol.16 No.4. (Vol.11 No.3, Vol.16 No.4)

**D**

**Linn Axis: $1195 (inc. arm) versus**

"tunkey operation," two-speed belt-drive deck with electronic speed control and ingenious suspension. Latest version fitted with the new Akito tonearm, which is much improved compared with the previous arm. "Small is the new big," in this version, which offers both a greater sense of ease and better low-frequency extension. Tight midbass, but a slightly "fat" upper bass coupled with a forward HF balance don't detract from this inexpensive player's ability to allow its own" CM preferred the sound with the Linn cables replaced by AudioQuest Emerald. Version without arm costs $895. (Vol. 10 No. 1, original version; Vol.14 No.7)

**Rega Planar 3: $775 (inc. arm)**

"Supersimple" of almost all turntables with a superb arm (included). Lack of environmental isolation may be problematic (see "Letters" in Vol.16 No.10). Limited cartridge compatibility, but a safe Class D recommendation nevertheless. Can be obtained in a dedicated version for playing 78s. (Vol.7 No.1, Vol.8 No.6)

**Roksan Radius: $1495 (inc. arm)**

Well-made and stylish belt-drive turntable with quartz-referenced motor supply and integral Tabriz tonearm. Minimal suspension consists of three rubber spheres that separate the two halves of the plinth. While not as coloration-free as the WTPR, the Radius has a better-defined bass register, with a good sense of rhythmic vitality. Tonearm lacks midband trans- parentness through CG foot. A dedicated version with Sumikou's Arm Wrap helped enormously in this regard. Works best with Roksan's own Corus Black cartridge. Borderline Class C, says KK. (Vol.16 No.8)

**SOTA Jewel: from $1095**

Basically a bare-bones SOTA Sapphire without the suspension or vacuum hold-down, the Jewel features the same "Constrained-Mode" damped platter and inverted bearing as the more expensive model. Using $299 AudioQuest Kicker (and Graham tone- arms, TJN was impressed with the Jewel, finding its sound "clean, clear, and dynamic, with a well-controlled bass. Balance is a little forward, more contrasty, compared with the Cosmos, and sound tends to unravel at checksums by comparison, but overall "very high Class D," according to TJN. The Jewel can be upgraded all the way to Star Sapphire level; fundamental upgrades price include wooden armboard ($30, $50 pre-cut), composite armboard ($100 blank, $150 pre-cut), acrylic drive ($100), and Reference Clamp ($150). (Vol.15 No.4)

**SOTA Comet: $500 (inc. arm) $350**

Bare-bones, belt-drive turntable relies on high-mass plinth for environmental isolation, but captures what GL defines as the "essence" of the music, with an uncolored midrange, excellent detail (except at high playback levels), good depth, but only fair stereo imaging, using the Blue Point Special cartridge. Price includes LMT-II tonearm. Reflex Clamp ($150) an essential accessory. (Vol.16 No.8)
close your eyes and see

the Delta 290 amplifier with the Delta 280 digital FM tuner

Close your eyes and see how a 75 watts per channel amplifier with "real clout" can, at the same time, be "subtle and intriguing" (Audiophile magazine). Discover a "big-boned" six-input unit that, whatever the sound-source, still "presents the detail in a wholly natural fashion" (What Hi-Fi?). Prove to yourself, as Hi-Fi Choice did, that "amplifiers of this calibre are certainly uncommon." And realise why the world's most important consumer electronics show, the Chicago CES, gave it a Design and Engineering Award for being "one of the most innovative consumer electronics products of 1993."

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World Radio History
VPI HW-19 Jr: $600 $$$

Well-constructed belt-drive turntable featuring an exchangeable tonearm. No surprise, but upgrade path to fully fledged HWD-19 being incorporated into design. GAG therefore recommends a wall-mounted isolation shelf (such as the Target) to get the best performance from the Jr. Available for $895. Includes Acme-Q 3.5 FT-6 tonearm. West Coast price is $25 higher. (Vol.12 No.10)

Well-Tempered Record Player: $1495

Somewhat fuzzy to set up, but when done right, the WTRP 'tabletop design produces coloration-free sound with a clarity and articulation that belies its price. Possesses a more laid-back, more musically natural balance than the Linn Axis, but does achieve this by suppressing recorded detail. Low-bass performance is intrinsically a little soft, but can be fine-tuned by playing with the damping arrangement. Borderline Class C, performance with the latest platter, according to CG. (Vol.14 No.7, Vol.16 Nos.2 & 10)

Deletions

Vena Dynamics 20.23 and Aura turntables no longer available.

K

Immedia RPM-1, SME Model 20.

TONEARMS

A

Eminent Technology Two: $2000 with standard air pump

The ET 2 features a host of ingenious extras, including VTA adjustable during play. More important, it has "an extraordinarily live and open soundstage," according to AHC, and gets the best results from a wide range of cartridges. Very fuzzy to set up and use, and needs a very stable subchassis turntable—VPI, for example—for its best of its kind. MC also reports excellent performance with the ET 2 mounted on the Roksan Xerxes. Surpassed overall by the SME models as neutral a midrange and significantly better bass definition and extension, and by the Airtangent. Latest version incorporates a viscous damping trough ($75) and a revised, high-pressure manifold ($100 with return of original pump and manifold) to take advantage of the higher pressure offered by the Airtect Wisa pump ($375) and surge tank ($200). (The Airtect pump and tank cost $500 if bought together.) GL reports excellent results from this combination on the VPI HW-19, and also recommends the Telelock AL-911 VTA dial indicator ($34.95), for which ET provides a mounting bracket ($25). Price without standard pump is $1500. (Vol.8 No.7, Vol.13 No.3, Vol.14 No.10)

Grammavolt ML 1.5

$265

The "2Z" version costs $2750 and includes tungsten weights ($250 as upgrade) and AZ-1 Azimuth Alignment Box ($150 as upgrade). Both versions incorporate new SW-2 arm wand ($500 as upgrade) and a refined counterweight decoupling mechanism; otherwise, the arm is the same as reviewed. Beautifully engineered unipivot design using an SME-type armboard cutout that offers interchangeable arroungs and easy adjustment of VTA, attitude, and geometry. Superb bass definition, though not as much punch as the system solution that belies but astonishingly good retrieval of midband information due to a very low resonant signature, exceeding even the performance of the SME in this area. Standard finish is gold and chrome matte. (Vol.14 Nos.3 & 8; see also TJN’s SOTA jewel review in Vol.15 No.4)

Linn Ekos: $2495 $$$

Cleaner-sounding than the Ikko, upon which it is loosely based, the Ekos rivals the SME in overall neutrality while offering a somewhat brighter, more energetic presentation of the music. The treble is nevertheless superbly transparent. The Ekos also provides a much better match with the Linn LP12 than the Ikko, which loses control of the bass when mounted on the Scottish turntable. MC also found the Ekos’s bass to be more tuneful and "open" than that of the original Ikko. Azimuth adjustment is not possible. (Vol.12 Nos.3 & 4, Vol.13 No.3, Vol.16 Nos.2 & 3)

Naim ARO: $1695 $$$

"An inner balance and harmony consistent with the musical message," says MC of this unipivot design. MS found the ARO to offer superb timbral accuracy, soundstaging, dynamics, and rhythmic integrity. He also found it less bright than the Linn Ekos and better balanced in the bass than the SME V. Additional arm ton $959. (Vol.16 No.6)

SME Series V: $2550 $$$

This beautifully constructed pivoted tonearm has an extraordinarily neutral midrange, with one of the lowest resonant signatures in this region (though DO feels the Graham offers slightly more midrange detail). Easy to set up, VTA and overhang are adjustable during play, but there’s no azimuth adjustment, something that DO feels to be a significant drawback. "The best bass performance on the market," said SW—LA concur, having auditioned the V on a VPI TNT— but JGH, JA, DO, and LL feel that the whole bass range is somewhat exaggerated. Not recommended with the LP12. Some compatibility problems with cartridges having lower height. A less versatile version, the IVI (which uses Series V bearings and Magneflow V mount), appears to offer the IV’s sonic virtues and more at a lower cost ($1995). (Vol.9 No.6, Vol.14 No.8, Vol.16 No.6)

B

Oracle SME 345: $1595

Made by SME for Oracle, this sports the detachable headshell of the 309, the bearings of the IV, and the arm lead of the V. A less relaxed, less warm sound than the SME V, thought TJJ, the more expensivearm also offers a combination of depth and overall high-fidelity balance. Nevertheless, he found the combination of the Oracle Delphi IV and SME 345 arm to be very satisfying. (Vol.14 No.8)

SME ST: $1195 $$$

ST continues to use this detachable-headshell arm on the now discontinued AR turntable as "Beautifully engineered, easy to use, a great non-tweaker’s arm," says he. Lacks any damping mechanism. (NR, but see Vol.11 No.10, p.53, and Vol.12 No.12, p.63)

Well-Tempered Precision: $1195 $$$

One of the most neutral arms, according to JGH, this odd-looking arm is hard to fault on any count. Superb highs, stereo soundstaging, and midrange, plus excellent compatibility with MC cartridges that put a lot of energy back into the arm. Some deficiency in softness in the low bass, and, according to some listeners, an undynamic sound, but virtually no other problems. Good value for money. The Black Classic version, which is currently being supplied with new Well-Tempered Turtable, is available as an upgrade for $300. Removing the armrest, which adds a thickening in the lower midrange when the arm is mounted on the Well-Tempered Turtable (see Vol.11 No.8), further improves the sound, as does replacing the standard counterweight with a more muso one nearer the pivot. RH recommends the LP Lab carbon-fiber armtube modification for the WTA (Vol.15 No.1), which costs $395 including UPS return shipping. (Vol.8 Nos.4 & 7, Vol.9 Nos.3 & 5, Vol.16 No.4)

C

AudioQuest PT-8: $595

TJJ got excellent results from the PT-8 fitted with Signet OC-9 and AudioQuest 404-1. Phono cartridges on a SOTA Jewel turntable. Soundwise, the balance is a bit more forward in the midrange than the Graham arm, but with excellent dynamics. The armtube is dead, there’s no play at the pivot point, and friction seems very low, he found, summing it up as a "gem." Otherwise identical AudioQuest PT-7 ($495) and ’6 ($395) differ from the ’8 only in having less highly specified AudioQuest arm-preamplifiers, (Vol.15 No.4)

Rega RB300: $425 $$$

The Rega offers very good detail, depth, midrange neutrality, ambience, and precision of imaging, almost creeping into Class B. Works well with the Rega Roksan ’table, but also recommended by ST as an ideal substitute for the arms that come with the AR and Sonogonc tables. The Audio Advisor also offers it as a package with the VPI HW-19 Mk.III and Jr. and SCFTA Sapphire turntables. Lacks any form of height adjustment, however. VTA can only be adjusted by adding spacers under the base. (Vol.7 No.7, Vol.10 No.1)

K

Wheaton Triplanar IV.

PHONO CARTRIDGES

A

AudioQuest AQ 7000NSX: $1695

RH’s auditioning, confirmed by RD, DAS, JE, LA, and AB, suggests a highly musical performance for this activated low-output MC manufactured for AudioQuest by Scan-Tech, featuring detailed de-

erring of depth, astonishing retrieval of recorded detail, and “razor-sharp” transient leading edges are coupled with a slightly emphasized top octave (that becomes smoother after signals run-in) and a somewhat less overall bass range. DAS adds: “its high detail, credibility, staging, and natural warmth make you want to smash your CD player against the wall!” Auditioning by RH of the latest NSX version suggests Class A performance. RD adding that the NSX has a more neutral treble than the earlier version. (Vol.14 No.6, Vol.15 No.1)

Benz-Micro Reference: $2500

Gutsy reproduction of the lower mids and bass octaves. Non- resonant LF signature with marked bass punch and control; a rare feature in this regard. Exemplary retrieval of low-level detail. DO noted a slight brazen or synthetic quality through the upper octaves that traded grill for smoothness in its portrayal of harmonic textures. Price with a qualify trade-in phono cartridge is $1750; re-tipping cost is $50. (Vol.16 No.2)

Ikeda Kiwame: $2645

Difficult to set up and happy at a VTF of 2.3g, where trackability is still relatively adequate. RH now manages to light a fire under the soundstage. Remarkable transparency, spatial resolution, and palpability coupled with a dismally liquid textural quality, says DO. (Vol.16 No.2)

Knowles Pro IV: $395 $$$

Although DO ultimately couldn’t recommend it in his review—he found it “overly lush”—JE emphatically disagrees, feeling the big Koetsu to be one of the world’s great cartridges with “a state-of-the-art midrange” and a big, wide soundstage, though its bass is less generous than some of the other Class A contenders. “Paints a marvelous picture of the music,” summed up JE in his Follow-Up. (Vol.14 No.12, Vol.15 No.11)

Koetsu Rosewood Signature: $2150 $$$

MC’s reference pickup “matches the Linn Troika for bass definition and overall definition,” and offers a superb balance between the ability to decode space and perspective and to present a detailed retrieval of groove information. Allows its owner “to be swept away by the music.” (Vol.13 No.3)

Linn Arkiv: $2195

This Scan-Tech-sourced, tonally neutral, three-point-mounting MC cartridge has a less incisive, more soft-sounding presentation than the Troika, it replaced, but excels in its feeling of musical communication. Some sample inconsistency, however. (Vol.16 No.11)

Symphonic-Line RG-8 Gold: $5000

What’s so endearing about the handmade RG-8, according to DO, is its rare mastery over music’s
Accuracy in Performance - Elegance in Appearance

Bryston’s BP-20 Preamplifier

Bryston’s new BP-20 line level preamplifier offers a significant step forward in capturing the subtleties, nuances and emotions of recorded music.

Redesigned inside and out to reflect the improvements in the entire Bryston line, the BP-20 is a perfect match to the new NRB series of amplifiers. All aspects of the signal flow are much improved, with lower noise and distortion figures, and higher overload levels.

You will find the noise floor has been significantly improved, reducing background hash to far below audibility. Input-to-input crosstalk is essentially nonexistent to eliminate signal bleed-through from one source to another. Channel-to-channel interaction has been improved, reducing any possibility of component crosstalk.

Signal switching and audio connections utilize heavy gold plating to provide long-term trouble-free connections. Two pair of XLR balanced inputs and one pair of balanced XLR output connectors are standard as well as five pair of unbalanced inputs, 2 pairs of paralleled unbalanced outputs and one processor loop. This provides total flexibility for integrating other balanced or unbalanced audio equipment into your system.

The power transformer is mounted externally to eliminate power-supply noise and interference. The BP-20 is housed in a steel cabinet for shielding to reduce electromagnetic interference effects. Buffered inputs provide for lower distortion and improved linearity from source components. A ground plane has been incorporated in this new design to further reduce crosstalk and noise throughout the internal circuitry.

Our feeling is that Bryston’s BP-20 is one of those fortunate circumstances when the long hours and extended listening pay off. The sense of transcending the recording medium and experiencing the original performance is captured with exceptional realism.

Nothing but a listening test will convey the feeling of musical perfection available in the Bryston BP-20. We invite you to audition one today.
finnes and brawny: The effortless detailing, the smoothness of expression, and the purity of texture are contrasted with the bass impact and dynamic power of a steam locomotive. Works best into high-impedance loads. DO’s current reference. (Vol.16 No.2)

B

Audio-Technica ART1: $1300

Eminently musical sound with a lyrical upper midrange that DO found to sing on female voice. Excellent grip on treble transients, but less control at the bass end of the spectrum. Not as totally convincing or as well-integrated top to bottom as the Lyra Clavis. (Vol.16 No.2)

Ikeda 9R: $1895

The cantilever in Ikeda offers superb transparency. Moving away from a fast, tight, "U-R-there" quality, felt All: "vividly focused, delineated, and dynamic." Less-refined treble than the Clavis and AQ 7000, however, with some sibilation emphasis. (Vol.15 No.1)

Lyra Clavis: $1895

Like the AQ 7000, the Clavis is made in Japan by Scan-Tech. AB felt the Clavis traded "some of [the former's] lower-midrange richness for an improved ability to handle the upper frequencies." He also noted an "abundance of coloration," and rejoiced in the way the Clavis was able to retrieve inner detail during loud, complex musical passages. A winner at the price; Exchange for a new cartridge costs $1095. (Vol.15 No.1, Vol.16 No.2)

AudioQuest 4001-L: $695 ♠

A slightly forward treble and a minor lack of image depth didn’t prevent TJN from enthusiastically recommending the MC, the sound being naturally detailed without any HF exaggeration. Current production has PCA-6: "Functionally Perfect Copper" coil windings—said to improve the sound of the low-output version slightly, but that of the "H" high-output version to a significant extent. (Vol.12 No.3)

Grado Signature TLT 11: $500 ♠

The only MM model in this revered performance region, the TLZ features slightly more open highs than the AudioQuest 4041-L, an open, lively midrange, a taut midbass, and expansive low frequencies, according to TJN. Latest version is said to be a little flatter in response than the review sample. "A sweetheart," said GL. (Vol.12 No.7)

Kitty Blue Goldspot: $700 ♠

This well-made MC offers good tractability, good if not outstanding image delineation, and, said DO, "outstanding bass control and definition." (Vol.15 No.3)

Audio Advisor/Monster Cable

Sigma Genesis 2000: $600 ♠

Early samples seemed to be very arm-sensitive, but when mounted in an optimal tonerarm—the ET 2, for example—the Sigma Genesis offers an airy and open sound with superb dynamics but a rather soft bass. A rather forward if detailed presentation of soundstage information, as though the 2000 "seemed to turn up the contrast ratio a notch," thought MC, implying that it would not be the best choice for systems that are not of a larger than life. Now, available only from the Audio Advisor, but a bargain at the new price. (Vol.13 No.3)

Audio-Technica AT-OCA9: $400 ♠

"The best ever from Audio-Technica," said TJN. Neutral through the midrange, the OCA 9 is less sweet and three-dimensional than the best in its class, but not by much. Highly recommended (and an excellent tracker). The OCA 9 has very high output for a low-output MC, minimizing phono-stage noise. (Vol.12 No.12)

Sumiko Blue Point Special: $295 $$$

CG enthused about this model, P-Mount-less version of the standard Blue Point, pointing to its lack of bass bloom, tonal honesty, and clearer, more extended highs. It also offers excellent detail and focus. A touch of StyLast applied to the underside of the cantilever optimizes the bass. High output. (Vol.16 Nos.4 & 12)

AudioQuest MC-5: $395

Borderline Class C for this high-output cartridge, thought CG, who said, "Clean, crisp, and dynamic . . . with a little sparkle on top." But he thought it has less-focused soundstaging than the Blue Point Special. (Vol.16 No.5)

Benz-Micro MC-20E II: $125

A master in the bass, with excellent soundstaging, but less smooth than the standard Blue Point, with somewhat less extended highs and a less focused sound. "A steady shortstop selection for a "home-run hitter," said TJN. (Vol.12 No.7)

Roksan Corus Black: $325

The best-moving-magnet design CG has heard, the Black is more forward-balanced than a less refined design, though not overall than the Blue Point Special, but has tighter bass and better-focused soundstaging than the standard Blue Point. Fussy about VTA. Less expensive Corus Blue ($200) shares the same body but a Gyger II-profile stylus rather than the Gyger III, and sounds more nasal. (Vol.16 No.5)

Shure V15 Type V-MR: $175 $$$

Very neutral midrange and bass, slightly soft high. High compliance makes it unsuitable for use in high-mass arms. You sacrifice a bit of detail compared with good MCs. A "budget reference," according to ST, who, given his dethroner, would place it in Class C, though he notes that its sound "doesn’t open up like a good CD." Recommended for its unsurpassed tracking and excellent reliability, and listenability. Excellent value. (Vol.7 Nos.5 & 8, Vol.10 No.5, Vol.12 No.11)

Sumiko Blue Point: $125

Rather a woolly bass, due to the P-Mount adaptor configuration, but a sweet balance, lacking any nasality, thought CG of this high-output MC. (Vol.16 No.4)

E

Grado ZET II: $130 ♠

The best buy in a really cheap cartridge, this MM has excellent tractability and sounds rather like a good MM. Simphonic readers should consider spending more than $30 on a cartridge, but when asked by friends what we thought they were playing for an old Dual or Garrard, this "system saver" is the one to mention. Will hum if used with older AR decks (an "AR" version is available); lack of suspension damping can lead to woofer pumping, even flutter, with highs— or even medium-mass arms. (Vol.7 No.8; actual review was of the earlier GTE 1+1.)

K

Roksan Shiraz, Blue Oasis, Clearaudio Signature, Benz-Micro Ruby, Sumiko Transfiguration, Lyra Parnassus, AudioQuest MC-200, Dynavector XX-11.

CD PLAYERS

Editor's Note: The class ratings are a little different in this and the following two sections. Whereas the phrase "state of the art" can be interpreted literally for other categories, here it means the best CD sound available as of the time of writing. With every advance in digital replay, we realize that the goal still seems to be just as far away. As with computers, a CD replay system becomes effectively obsolete as you drive it home from the store. We urge caution to someone about to purchase an expensive "state-of-the-art" CD player. Perhaps the wisest strategy these days would be to buy separate transport and DAC sections, even if you already own the limiting factor in CD sound—see RH’s interview with Doug Sax in Vol.12 No.10, and compare the sound of the industry-standard Sony PCM-1630 with Chocks’s 128x-upsampling ADC on the appropriate tracks on the first Stereophile Test CD.

A

Linn Karik CD transport & Linn Kernalog D/A processor: $5790

Two-box system in which DAC clocks the transport via a separate link. Excellent presentation of instrumental timbres other than a somewhat light-weight bass, thought RH, with an intimate rather than Technicolor-sounding, and a fatigue-free, music-like quality. "A most balanced system," said RH, but the LM, however, feels that the Linn has a reduced sense of pace and involvement. Current version of the Karik transport ($3395 if bought separately) incorporates the system rather than being used as a standalone CD player. (Vol.15 No.1)

Micromega Trio: $8000-$10000

Very expensive three-box B-B streamer. "Superb in its ability to convey the fine dynamic structure of music," judged RH, who found that the Trio’s wholly liquid presentation made him forget about reviewing and just enjoy the music. "Less ‘punchy’ presentation than the best multi-bit processors, however. Though RH ultimately prefers the Linn, MC notes that the Trio offers "superior digital replay." Now distributed by Golden String; includes both balanced and single-ended outputs. (Vol.15 No.5)

Naim NA CDS: $6925

The sound of this very expensive two-box player (under $10,000) is truly superb. All in all, it combines a rich, rounded, glowing midrange with an open, detailed top end and a full, warm, well-defined and punchy bass, decided TJN. "The music never fails to communicate," was JA’s conclusion. JG found the bass to be a little lean, however. Compared with the Sony “X779. High level from variable outputs optimizes its use straight into a power amplifier. Needs at least 100 hours to begin sounding tolerable, says SS. Discontinued as of this month, dealers will still hold stocks for a while. (Vol.13 No.1, Vol.16 Nos.3 & 5)

MSB Technology Silver: $2795

TJN declared the MSB a favorite of his, observing that this Philips-based player is "tube-like" in that it combines a slightly warm, but not loose, bottom end with an immediate, "alive" midrange and lower treble and a soft extreme top. No digital output, although one can be added at the expense of the player’s analog section. Includes MSB’s 32-bit “Electromagnetic and Acoustic Isolation Plate,” which is attached to the bottom of the player. (Vol.16 No.3)

Proceed PCD 3: $2995

A significant price increase carries with it either a major improvement in sound quality, according to JG, or a minor but still important improvement according to TJN, who described the earlier, Mk.2

STEREOPHILE, APRIL 1994
THE CABLE THAT'S "WIRED" AT CARNEGIE HALL'S RECORDING STUDIO

The world-famous venue, Carnegie Hall, has recently upgraded its studio monitoring and recording facilities with Rectangular Solid-Core cables.

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TARA LABS
Space & Time Audio Products

DIGITAL INTERCONNECTS – RCA. In the world of RCA coaxial digital connects, I have found one to consistently reveal more of the music than any other. It’s the Tara Labs RSC ($295). This cable sounds considerably better than any other RCA that I have run into . . . . It’s, as you may have guessed, made of rectangular solid core conductors. The result is a digital cable that does not restrict dynamics and it’s a clearer window to inner detailing and timbre. It clearly out-performs all glass in the known universe. This is the first digital connect to surpass the performance of the Cogan-Hall EM overall. I think that I can speak for Bob Sireno on this one, and tell you that he, a Cogan-Hall EM devotee, is fully enamored with the results obtained when using the RSC in his system. (The RSC has been bouncing between our homes like a ping-pong ball; now he wants it back.) I have to wonder how incredible this cable might sound if it were available terminated BNC.* Anyway, I consider it just about perfect as it is, and a must audition.

*Note from Tara Labs: Now also available with BNC adaptors and AES/EBU configuration.

Audition RSC Digital in your own system. Most Tara Labs dealers have a home trial program available. For the location of your nearest authorized RSC dealer, call 503 488 6465 or fax 503 488 6463.
version of the PCD as being “drier, less liquidly sweet, less pristine-sounding.” The new Produc's sound is tight, detailed, and open, but a little “detached” (TJN) or “less involving” (GHJ). TJN also felt it to be a little cooler than the MSB, overall. JGH also found it a little “closed-in” compared with the Sonics Gear’s A & D. ST also praised the CD player's sound quality and accuracy. ST recommends the CD player highly for its isolation and noise reduction capabilities. (Vol. 17 No. 12)

**K**

Quad 67, Wadia 6.

**Deletions**

CDX CD-60 discontinued; Proceed CD Library.

**Digital Processors**

**Editor’s Note:** The sound of any particular CD transport/digital processor combination will be dependent on the data link used.

A

**Demon DA-51: $7000**

(See TJN's review in the next issue.)

**Krell Reference 64: $14,000**

“Powerful, vibrant, dynamic,” says MC of the top Krell processor, when used with Krell’s DT-10 or MD-10 transports via the Time Sync connection. Less laid-back than the Levinson No.30, “with more immediacy, palpability, and bite,” said RH, but not as forward-sounding as the Sonic Frontiers SFD-2. He added that the big Krell “excelled at presenting a cohesive, focused, and clearly delineated soundstage.”

(Vol. 17 No. 11)

**Mark Levinson No. 30: $14,950**

Very aggressive but very well made and very versatile processor whose ease and quality of sound, when driven via an ST optical cable from a Theta Data, blew RH’s socks off. Its dynamic contrasts, palatable soundstaging, and freedom from “digital” artifacts set a tone unlike any other. (Vol. 18 No. 10)

**Sonic Frontiers SFD-2: $4695**

RH’s favorite processor, offering what he felt to be true Class A performance at a very competitive price. While noting that the midrange didn’t sound as liquid as that of more modern or binary bass reproduction . . . full, rich, warm, deep, and powerful . . . and a stunning sense of space,” he enthused, adding that the treble was softer and cleaner. Even with the SFD-2 in balanced mode, RH found the low treble to be somewhat forward. In unbalanced mode, the sound is too bright. ST agrees: Based on his experience of using it single-ended, he found it grainy and lacking in tonal beauty. JS also reinforces RH’s finding that the SFD-2 must be listened to in the balanced position. Although the output impedance is not particularly high in the midrange, it rises to 3k at 20Hz, meaning that, unless the preamp used has a high input impedance, the sound will be too lean. The SFD-2 also produces higher levels of distortion into loads below 7500 ohms. (Vol. 16 No. 12; Vol. 17 No. 1; see also the Timbre review in this issue.)

**Digital Domain VSP Model $1: $1995**

Intended as a sample-rate converter, this slim unit also re-clocks digital data and virtually eliminates jitter. It offers a high-spoken and a higher priced version. Both CG and MC point out that the “955 sounds more musically natural than the Bistream ‘965, due to a better-developed sense of dynamics and a more involving, if less detailed, sound. MC, however, feels that the ‘965 still deserves some recommendation.”


**B**

Altis Audio DSP-St: $3950

Quite dynamic, overall, for a Bistream unit, decided
"At the risk of perturbing owners of my earlier work, here are my best cable designs ever."
— David Salz

Please don't imagine I'm ungrateful to those audiophiles and reviewers whose ears and hearts were won over by my designs in the past. It's just that time has marched on, and I've founded a new company. Once again, I have designed a new generation of audio cable.

The difference this time is in the details. Countless subtle and varied musical details are revealed by the unprecedented resolution, spatial coherence, and harmonic integrity my cables provide. Several proprietary design details I developed made these improvements possible.

I redesigned the concentric cable structure I began developing twelve years ago, redefined the limits of connector quality, and refined our metallurgy to compete with the world's best. Our unique phono plugs feature an O-ring tensioning device and gold/copper or solid silver contacts for unmatched conductivity. Our solid silver polymer-spring banana plugs rival the sound purity of our solid silver spades.

The materials I have utilized, grain-optimized copper or solid silver conductors and teflon or microporous teflon dielectrics, are the finest available at each price level.

I ask only that you audition and compare before your next purchase. That's how certain I am you'll share my enthusiasm.
C
Adcom GDA-600: $750 $$$
Offering a smooth treble and excellent bass,
delivered at a reasonable price, the Adcom GDA-600
would be rated borderline Class B, were it not for
a trace of hardness in the mids, says RH. LL "couldn't
believe how good it sounds...a remarkable value."
(Vol. 17 No.3)

Audio Alchemy Digital Transmission Interface: $199 $$$
Not a D/A processor, but a data re-clocking
device that goes between the transport and D/A and
reduces word-clock jitter and maintains all the
innovative character of the D/A processor,
says MC, which always improves the sound.
Whether the D/A converter will improve the sound of
a system depends on the spectre of the jitter and
whether the transport's lower is lower or higher than
that of the D/A. Pre-purchase auditioning with specific
transport and converter is therefore mandatory. Ideal
for use with digital sources, laserdisc players,
for example, that have only TosLink optical outputs.
(Vol. 16 No.3; see also Vol. 16 No.1, p.143, 8, 9, p.47;
and With Fever's review of line on jitter in Vol. 16 No.10)

Counterpoint DA-10: $1695 plus DAC card
Well-made mainframe processor that accepts
interchangeable DAC cards. The AD1862 DAC card
contains $255, offers excellent sense of pace, a
granite-like soundstage, and very sweet treble.
It costs $355. There's also a Burr-Brown card at
$595, but this wasn't auditioned.
ST-optical input adds $200. (Vol. 17 No.2)

Kinergitics KCD-55p: $1895
Identical to the twice-the-price $55 Ultra—apart
from substituting Analog Devices AD1862 DACs
for the Ultra's Ultra Anadig DACs—the $55 has
a more etched treble quality which keeps it from
Class B. Dynamics are excellent, however, the soundstage-
and in general the image is larger and more
clearly defined than the Ultra's. The bass
is powerful, extended, and tuneful. ST-type optical
input available for an additional $250. (Vol. 15 No.9)

McCormack Digital Drive DAC-1: $995 $$$
Well-made 1-bit DAC using high-quality parts
and the circuit is well thought out. The soundstage
sounds open with good clarity, and more immediacy and
less top-octave energy than the Meridian, but shares the
British processor's laid-back dynamics. (Vol. 16 No.11)

Meridian 263 D/S: $695 $$$
Unified in double-P.LL data-input receiver circuit
reduces word-clock jitter to very low levels. The
sound of this delta-sigma, Crystal-based processor
may not suit all listeners, points out RH. The
263's bass is less powerful and tightly defined than
that of the Meridian, but the overall presentation is
more transparent and softer in the treble than the
original Sumo Theorem. Very musical overall balance,
however, and its absence of treble lift has the 263
into Class C. (Vol. 16 No.10)

Meridian 400c: $975 $$$
Needed to be used with a good transport, notes
MC of this French Bitstream processor—something
that was confirmed by ST, who got excellent results
with a Melior CD-D. "Sweetness, smoothness, and
delicacy...free from edgy, irritating sound," was
ST's description of the Dac's character. (Vol.15 No.6)

D
Audio Alchemy DAC-in-the-Box: $199 $$$
Sets a new standard for sonic performance per dollar.
"Avoids the worst faults of inexpensive digital," said
RH. Excellent articulation in the bass, with excellent
soundstage imaging at a slightly grainy treble, Borderline
Class C, says CG, held back by its weak low end and
slightly wavy highs. Perfect for upgrading the sound
from laserdisc in a high-end Home Theater or for
getting high-end sound from a mass-market CD player
(though it has a digital output). (Vol.17 No.3)

Cobalt 307: $599
"Punchy, clean, clear," says ST. "A big, gutsy, powerful
quality," says RH, though a little "thick" overall.

Sterephile, April 1994
No way can we keep this baby quiet

Duntech Audio is proud to announce the safe arrival of a beautiful new baby... the PCL25 Loudspeaker. Born and bred with all the characteristics of the Sovereign and Princess, esteemed parentage that has made the DUNTECH family of loudspeakers internationally acclaimed for accuracy in music reproduction. Combining 'pulse coherent' performance and point source radiation, this baby has the ability to produce some very impressive sounds. For more information, write, phone or fax us.

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A

Atma-Sphere MP-1: $6800–$11,240, depending on options

SS’s reference for a two-chassis, all-tube preamplifier with an exquisite midrange, well-defined low frequencies, and neutral highs. “Scary” soundstaging, commented one reviewer, is relatively noisy, however, restricting its use with low-output MCs. Recommended only for use with balanced-input power amplifiers. Replacing the 6N7T output tubes with the new 6N92s gives slightly lower noise. (Vol.14 No.10, Vol.16 No.1 & 4)

Audio Research LS2B: $2995

“The most transparent yet—love it!” said MC of the unbalanced version of this line-level-only preamp, which KRC reviewers find to have almost no editorializing effect on the signals it passes. DO demurs, however, feeling that the FETtube 2 was betted by the Jadis in that the all-tube preamp threw a more palpable, better-defined soundstage. Current version has balanced inputs and outputs; an upgrade is available for owners of the original LS2 for $695. (Vol.14 No.10, Vol.16 Nos.1 & 4)

Audio Research LS3/LS3B: $1495/$1995 $$$

A line-level—all-FET preamplifier, the ‘3 offers Class A for its price. An affordable price—impossible but true!—enthuses MC, who prefers it to the hybrid LS2B. “You could not ask for more at twice the price!” Superbly spacious soundstaging and punch dynamics are coupled with excellent transparency and resolution. The “B” balanced upgrade for a plain LS3 costs $695. (Vol.16 No.8) Calzola Pallette Preamplifier: $6500

As well as superb transparency across the band and holographic imaging, the Calzola Pallette Preamplifier offered “a musical quality I didn’t know existed,” according to LH, though JE is less convinced. Extremely high input impedance but only 6dB of gain. Incorporates superb graphic equalizer which differs from the norm in having a large amount of interaction between the bands. In combination with the fact that the midrange and high frequencies boost or cut decreases toward the center of the audioband, this actually results in very fast optimization of program material by ear. Note that the response with the controls centered but not bypassed is not quite flat, which will invalidate listening comparisons. Added to this is the loss of the sound of the EQ circuitry on its own. Optional phone stage costs an additional $2000. (Vol.15 No.6)

Convergent Audio Technology SL-1 Signature: $4950

JE’s reference, the tube CAT is both harmonically accurate and able to endow the music with “glorious midrange splendor.” It also excels in the reproduction of dynamics and of a palpably real soundstage. Phono stage is quiet enough to work with the Audionet preamp. It has low output impedance, which decreases toward the center of the audioband, this actually results in very fast optimization of program material by ear. Note that the response with the CAT’s controls centered but not bypassed is not quite flat, which will invalidate listening comparisons. Added to this is the loss of the sound of the EQ circuitry on its own. Optional phone stage costs an additional $2000. (Vol.15 No.6)

Jadis JPL: $5395

DO’s reference, the Jadis JPL offers terrific accuracy and uncommonly defined soundstaging, and sets a new standard in the delineation of dynamic contrasts. Fleshes out the full spectrum of shadings from soft to very loud with the greatest of ease, says DO. MC would like greater transparency, however. (Vol.15 No.1)

Jeff Rowland Design Group Consumer: $8750

This superbly made, fully remote-controlled, solid-state preamplifier offers superbly precise imaging, palpable soundstaging, clean and tight low frequencies, and a slightly forward midrange and treble. TJN found the line section to be more soft and sweet than the Krell KRC. Phono section sounds open and spacious, but a little lean overall. Price includes phono stage, available separately for $2800; price for line section alone is $5950. About to be discontinued. (Vol.15 No.1)

Krell KRC: $6900

LL loves the ergonomics of this remote-controlled preamplifier, MC the “confident, clean deep bass,” TJN the combination of instrumental weight and body, clarity and openness. He also enthused about the open-sounding, grainless highs, marginally preferring balanced operation. TJN’s reference for lack of preamplifier operation. Phono stage adds $500, but is of high Class B quality compared with the line stage’s Class A, thought TJN. (Vol.17 Nos.1 & 3) Despite the Krell’s lower THD, the latter overall performance was still better. (TJN ed.)

Exposure XVII preamplifier: $1495 $$$

(See RH’s review in this issue.)

Krell KSL-2: $2950

Line-level—only control preamplifier (an optional phono stage adds $500) with balanced as well as unbalanced inputs and outputs. The sound is “amazingly close” to that of the KBL, said MC, with superb dynamics, a “clean, crisp bass devoid of any emphasis or restriction,” but a rather cool midrange balance. A touch of haze in the high treble keeps this from being an excellent preamp from a price/Class A rating. Currents “2” version has cosmetics to match Krell’s new product lines; owners of original KSLs can have their units updated to the new look for $180 plus shipping. (Vol.14 No.7)

Levinson No.10: $2995

A superbly quiet phone stage and a line-stage with exceptional detail, clarity, and focus are offset by a slight dryness of harmonic textures and a touch of upper-midrange grain, said RD. MM or MC stage adds $500 to 15. The open-hi-res—precision volume control uses an optical shaft encoder. “Good Class B sound;” adds LL, noting that the No.28 sounds “filtered” compared with the twice-the-price No.26S. (Vol.15 No.7)

Mark Levinson No.30: $1995

MAF MC Reference: $12,850

The preamplifier to replace the CAT Signature in JE’s reference system, this immaculately engineered tube preamplifier combines an “uncanny” sense of spacecoupling, solidstage definition and detail, and an excellent sense of pace. A more powerful bass than the CAT, but a more distant soundstage perspective overall. High phono-stage gain and low noise optimize its use with low-output MICS. Inverts polarity fairly easily to outputs, “joyously musical and tirelessly entertaining,” summed up JE in his review. (Vol.17 No.1)

Classé Six Mk.II: $3295

Borderline Class A, with a very dynamic sound, a tight, well-defined bass, lots of pace, but a somewhat forward midrange and a darker, less-open presentation than the original Mark Levinson No.26, felt LH. Offers balanced and unbalanced outputs and one set of balanced inputs. Line-stage-only version costs $2995. (Vol.17 No.2)

Coda Technologies FET-01: $2750

“Superb detail, very smooth, lacks dynamics when compared with the best preamps, avoids any hint of hardness or manner of manner at the price,” said ST of this beautifully built FET preamp. “Cool, calm, and collected,” was how RD described the Coda’s sonic personality, noting that its bass was more extended and more controlled than that of the FET-01. Also found the Coda to be “brighter” than the ST, and lacked any trace of hardness. Line-level—only version costs $2450. (Vol.15 No.3)

Counterpoint SA-5000: $3595

Superb transparency, coupled with a slightly forward presentation and a taut, robust bass. A slight reduction in soundstage “air” and depth keeps this versatile, well-made, all-tube preamplifier from scaling Class A heights, however. “Worth the extra bucks over the SA-3000,” said GL. Separate (tube) power supply. Noise that the Krell’s inverted position of the polarity switch slightly increases the gain, which will invalidate any “Absolute Phase” listening tests. High output impedance from better—sounding “Direct” outputs mandates care in system setup. (Vol.15 No.1)

Counterpoint SA-3000: $1995

GL said that the sound from LP of this well-made tube preamp bore a resemblance to the Vendetta Research, with a superbly transparent midrange, excellent soundstage depth, and well-extended lows. (ST demurs) The balanced Levinson No. 10 is also said to add very little to the sound of the CD. However, a rather clinical overall balance—“pigment” rather than mellifluous, said GL—leads to care having to be taken with integrating the Counterpoint in a musically satisfying system. A line-level-only version, the SA–2000, is also available for $1995 ($55). (Vol.13 No.13)

B

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Bk&B Sonata Pro 10MC: $998 $$$

Inexpensive preamp with one of the best MC stages ST has heard—“neutral, detailed, never spotty or splashy.” Line-stage not quite as good, but can be switched out of circuit. (You needed to switch off the power amps when you did this with early Sonatas, but current production is okay in this respect.) Price includes balanced outputs. (Vol.14 No.5)

Conrad-Johnson PV-10: $10,195

All-tube, full-function preamplifier that CG found very appealing, particularly for LP playback. Balance is on the warm side, but there’s a palpable sense of musicians being in the room that adds to the listener’s enjoyment of the music. Version without the phono stage costs $895. (Vol.16 No.6)

Stereo.

World RadioHistory
Italian designed and manufactured audio stands are based on ultra-rigid aluminum frames, castoline brazed like a fine motorcycle frame.

Steel crimped reinforcement and adjustable bottom spikes assure rigidity. Fillable tubing enhances solidity.

Each shelf is constructed from MDF and features 3 Duraluminum cones for total isolation.

And, you receive up to $125 worth of cones with every stand.

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Passive Control Units

Editor's Note: While many audiophiles feel that a passive control unit has the potential for offering the highest possible sound quality from line-level sources such as CD, it must be noted that the entire responsibility for driving the interconnects, the passive unit, and the power amplifier input is handed over to the source component, which may not be up to the task. Careful auditioning will be essential in putting together a musically satisfying system around a passive unit.

A
Electronic Visionary Systems Attenuators:
$230-$450
RH enthused over the transparency offered by these passive control units, sold by mail-order only. The dual-mono Ultimate Attenuators, which plug either into the power amplifier's input sockets or a CD player/Hi-Fi output sockets, cost $230/pair with 12-position unbalanced attenuator, $305/pair with 24-position unbalanced attenuator, and $450/pair with 24-position attenuator. Those primarily interested in CD replay should investigate these well-made units. (Vol. 13 No.7)

Moving-Coil Step-Up Devices/Phono Preamps

A
Expressive Technologies SU-1 transformer:
$3500
A 35-lb step-up transformer that offers "utter transparency" and "exquisite resolution," according to RH. It is especially good at finding its LP sound with the SU-1 feeding the Mad Squad Phonodrive's MM input to be deliciously transparent and musical. Unless used with Expressive Technology's own interconnects, however, it may be impossible to avoid excessive hum pickup. Needs also to see a 47k ohm load impedance with low capacitance. Otherwise, the sound quality will be overly dependent on the preamp's MM input characteristics. (Vol. 15 No.7)

Mark Levinson No.25: $3990 &
Available in High- or Low-Gain versions, this MC-line-level phono preamp features identical circuitry to the phono section of the No.26 (see "Preamplifiers"). Above price includes PLS-226 power supply. Price without, for those who want to power it from their car No.26 power supply, $2495. Needs careful positioning to avoid hum being induced into its circuitry from the power supplies of other components. (N10)

Vendetta Research SCP-2C phono preamp: $2995 &
From John Curl, a dual-mono MC-line-level Fet-based RIAA equalizer and preamp with separate power supplies that redefines the term "quiet." JGH felt that this well-made unit imposed less of an artifact on the signal than any other preamp he's heard. An ideal partner for a passive preamp-based system, though its lowish output means that the power amplifier or speakers used must be quite sensitive if musically acceptable levels are to be achieved. Great circuitry, presentation, and build. RH enthusiastically supports the Class A rating, while TJD feels it just beats the Contummate phono stage in terms of clean presentation of detail and overall balance. SS, however, feels that the Vendetta's soundstage is "slightly bigger and slightly more spread out than reality." Very limited availability. (Vol. 11 No.6, Vol. 15 Nos.1 & 11, Vol. 16 No.9, Vol. 17 No.3)

B
American Hybrid Technologies phono preamplifier: $2500
Very quiet solid-state MC-line-level RIAA preamplifier with separate power supply. Can be set up for optimal gain/match with the user's MC phono cartridge. JS was impressed with the unit's transparency, neutrality, and pace, though he decided to keep his CAT Signature overall. (Vol. 16 No.12)

Audio Research PHI-1: $1495
"Remarkable in its sense of focus, delineation of individual instruments within the soundstage, and transparency," said RH of this phono preamplifier/RIAA equalizer. He did point out a somewhat lean, too invasive balance that keeps this unit from Class A performance. RH requires careful system matching. (Vol. 15 No.11)

Sonic Frontiers SEP-1: $1695 $$$
Tubed unit with what RH called "a delicious midrange bloom," a complete lack of grain, etch, and hardness, and stunning soundstaging, particularly in its MM mode. (MC mode adds a class-A Fet gain stage above the tube circuitry.) First review sample had a shelved-down treble due to an out-of-spec RIAA stage capacitor. The second sample had a flat RIAA response, which ameliorated RH's earlier criticisms of an "overly soft sound" and a lack of "air, immediacy, and detail." "A terrific bargain," was his final verdict. Borderline Class A. (Vol. 16 Nos.9 & 10)

K
Audio Research PH2, FM Acoustics PM-222, Rotel RHQ-10.

Power Amplifiers

Editor's Note: Due to the disparity between typical tube and solid-state "sounds," we have split Class A into two sub-classes. Nevertheless, even within each sub-class, Class A amplifiers differ sufficiently in character that each will shine in an appropriate system. Careful auditioning with the user's own loudspeakers is therefore essential. Note that, except where stated, all output powers are specified into an 8 ohm resistive load.

A (Tube)
Air Tight ATM-2: $4995 &
An $800pc classic stereo tube design from Japan that eschews the use of printed circuit boards in favor of point-to-point wiring. "The most refined [push-pull] tube amplifier money can buy...a magical midrange," according to DO. Though its highs are free from grain or hash, the Air Tight does have a rather slut-in high treble when compared, for example, with the Audio Research Classic 60, a point which bothered ST. "Sounds like a more refined Quicksilver," said RH. Its low bass, too, is less well defined than the other Class A amplifiers, and it really needs to be used with speakers having 8 ohm impedances. As of 10/93, DO lays problems at the frequency extremes squarely at the feet of the original Chinese KT88 tube complement. "No longer a refined Quicksilver," he reports after his experience with the Gold Aero KT99A: "The extreme treble opens up, harmonic overtones are even more liquid, and the deep bass tightens up considerably." Note that the KT99A requires at least a 24-hour break-in. (Vol. 13 No.5, Vol. 16 No.10)

Air Tight ATM-3 monoblock: $10,500/pair
This Japanese amplifier's midrange is pure and liquid
A NEW LEVEL OF PERFORMANCE

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Extended
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WorldRadioHistory
Only a couple of decades after the 1960s, speakers like the Krell or Mark Levinson competition, they have a musically appropriate fullness. With the latest ARC KT88 tubes, the sound acquires even more depth and palpability. Class A mono-block (10W, $7990/pair) features similar circuitry to the KT150s, but much more power, and an unparalleled midrange liquidity: "There is something magical...in the mids that is unmatched by any other amplifier I’ve auditioned." CG, however, prefers the version with VT-8’s own K790 output tubes (see Vol.14 No.9, p.128-129) for its "more kick-butt balance and tighter bass." Maximum power output is around 140W. Available in tetralode (EL34) or triode (KT90/6550) versions. (Vol.13 No.1, Vol.14 No.10)

DO obtained the sweetest mix by substituting good EL34s (Goldmund A-2000’s tubes) for the KT90s, but his KSA-250s have Tungsol 6550s but with N.O.S. AEG 8025 input tubes to displace the Goldmund National 12AU7s. This is not a romantic-sounding amp, cautions DO, who finds that the lack of flash through the lower mids argues for a mating with a warmer-sounding front end. Although DO tried various line conditioners, JS found the JADis to give of best that plugged straight into dedicated wall outlets. Read his Follow-Up for the full tweaking route. (Vol.16 No.11, Vol.17 No.3; see also JS’s review of the Timbrc TT-1 in this issue.)

Jadis Defy-7 Mk. II: $6490

Superb dynamics, says ST, perhaps at the expense of Jadis’s traditional subtlety. MC adds that this physically massive, 100W stereo tube amplifier has the ability to drive awkward loads to high levels, with authoritative bass reproduction. "Musically, it has a heart of gold," he enthuses, adding that its sound is superbly coherent, gracious, and detailed. (Vol.14 No.9, Vol.16 No.4)

Vacuum Tube Logic MB 225t mono-block: $4990/pair

"This is a long-term reference amplifier," in its EL34-fitted form, he feels it has a detailed and unfatiguing presentation, and overall a very well-balanced, unparalled midrange liquidity: "There is something magical...in the mids that is unmatched by any other amplifier I’ve auditioned." CG, however, prefers the version with VT-8’s own K790 output tubes (see Vol.14 No.9, p.128-129) for its "more kick-butt balance and tighter bass." Maximum power output is around 140W. Available in tetralode (EL34) or triode (KT90/6550) versions. (Vol.13 No.1, Vol.14 No.10)

Valve Amplification Company PA90C1 mono-block: $6990/pair

"Its holographic imaging ability in triode mode is astonishing," DO reports on the sound of this superbly made two-box tube mono-block. "Its levels of transparency, spatial resolution, and dynamic shading combine for a much more convincing illusion of live music." ST, too, was impressed by the sound of these amplifiers: "...[Much midrange, such detail...a realism that was positively breathtaking]." He guesses that he felt it fairly to point out a lack of overall dynamics. ST agrees with DO that triode mode is the way to go, noting also that the almost unobtainable KT77 output tube gets the best from the amp. Output power is 45W triode, 90W ultralinear. An earlier version was reviewed; auditioning of current samples confirms the rating. (Vol.14 No.9 & 11)

A (Solid-State)

Conrad-Johnson Evolution 2000: $5795

Hybrid 200W design using tubes for voltage gain and a MOSFET output stage. (Inverted signal potential, so Warm Effect buffs take care.) Tremendous dynamics are coupled with excellent performance at the lower edge of the audio band. JE found the soundstage presentation to be a little distant, as well as slightly lacking in air and spaciousness in absolute terms. Sounding less vivid than, for example, the ARC Classic 150, the 2000 also lacks a little low-level resolution. Nevertheless, a very musically satisfying performer, decided JE. (Vol.15 No.4)

Krell KSA-300S: $9500

The finest-sounding Krell yet, this 330W power-house runs significantly cooler than previous Krell amplifiers, due to its "Sustained Plateau Biasing." Sounding less lean than the KSA-250 and more real, the 300S offered graceful, three-dimensional reproduction, with a well-focused soundstage and a silky treble, noted TJN. (Vol.17 No.1)

Mark Levinson No.26.6 mono-block: $15,950/pair

LL would like a little more power, but agrees with AT's view that the 100W No.20.6 offers a big improvement over its predecessor. The sound preserves the No.20.5's effortless dynamics and stunning bass impact and extension, and couples them with a significantly more transparent midrange and airier high frequencies. Whereas the No.20.5 lost a bit on top to the newer No.23.5, the No.20.6 sets a new standard, in AT's opinion. Type II upgrade from No.20.5 costs $2350/pair plus $560/pair for new faceplates; upgrade from older amplifiers below $M 8500 costs $3290/pair. (Vol.12 No.9, No.20.5; Vol.15 No.4)

Mark Levinson No.23.5: $7495

A significant redesign of the original No.23 has resulted in an amplifier that sounds altogether more musical, according to AT (though LL feels it's too bad its the same size). Compared to the $3000 No.23.5 offers a more vivid, dynamic, better-defined view into the image, though it still doesn't approach the standard set by the Audio Research Classic 60 in this respect. Its soundstage is also a little shallower than that thrown by the Krell KSA-250, but it handily outperforms even that beast when it comes to low-frequency extension and weight. It's at its best with darker-sounding loudspeakers such as the Krell Quad 500, with which it makes a musically synergistic match. (Vol.14 No.9)

Mark Levinson No.27.5: $5495

Now sold with RCA connectors, the 100W No.27.5 offers improved dynamic contrasts, great transparency, punchy low-end, and an iron grip on its predecessor, concluded LG. Like its No.23.5 stablemate, soundstage depth is a little curtailed compared with the best in this respect. (Vol.16 No.7)

Symphonic-Line Model RG-7: $5600

This is the only amplifier that ST has "been here with," proclaims DO of this well-made 150W German design. "Musically refined, wonderfully transparent and detailed without even a hint of edginess or aggression." He adds, however, that its presentation is a "dry sort" compared with the best tube models. (Vol.15 No.2)

YBA 2 HC: $3750

Well-engineered, slim-line 110W dual-mono amplifier from France features short signal paths, high parts quality, and "a superbly transparent view into the soundstage," found JA. Low sound a little soft in absolute terms, but well-defined, combined with an excellent sense of pace. Overall, a musically natural presentation—"ulta fluid." (Vol.17 No.1)

B

Alema Audion Silver Night monobloc: $3900/pair

"A refined, refined sound, a super, sweet midrange...and rather good bass, too, for a 20W tube job," feels ST of this push-pull, 300B amplifier. "Not at all fabby," has a little more je ne sais quoi, "truth of timbre," he says, than the Cary CAD 300B. (Vol.17 No.2)

Aragon 4004 Mk. II: $1850 $$$

This well-made 200W solid-state amplifier provided TJN with what he thought was the best low-end control of the Apollo Stages he has yet heard. In the Simple Lead listening room. Sounding less forward than the Threshold $4500, the 4004 is overall not quite up to Class B’s highest performers in high-frequency purity. Nevertheless, TJN notes that he prefers it to the similarly priced McCormack, which by comparison has a somewhat softened treble focus. CG also enthuses over the 404: "This is a KILLER amp and one of the best values in high-end audio, period...my favorite affordable muscle amp." (Vol.15 No.9; see also TJN's Haver review in Vol.16 No.4)

Bernoing EA-2101: $3900

Unusual 140W tube amp featuring switch-mode power supply and versatile switching of choices of output transformer secondaries. Capable of conveying an intensely musical experience, provided care is taken over system matching. An undercurrent of...
bright harmonic textures can easily be exacerbated by typical solid-state edginess. Excellent midband transparency, noted DO. Prefers highish-impedance speakers, due to increase in HF distortion and intermodulation into more demanding loads leading to sonic "wiriness." (Vol. 15, No. 10)

Boulder 500AE: $4350  
DAS feels this well-made, 150Wpc solid-state stereo amp, based on the late Deane Jensen's discrete op-amp topology, is "the most natural-sounding amp I've used," though he points out that it needs to be used with a preamp lacking dryness to get the best from it. LL and JGH would argue for a Class A rating for the 500AE, JGH feeling the Boulder to be the most accurate amplifier he's heard. While "... there was nothing rectictent about the top," the highs being "smooth but not sweet," he found the Boulder's presentation of midrange detail "was nothing short of remarkable.... Highly recommended!" Says LL: "Some will claim that it sounds too vivid, too forward, but I think it sounds so much more real than I thought possible." Though he agrees with JGH that the 500AE has superbly powerful, well-defined, and extended bass, RH does find its overall sound too vivid and forward. So JA decided that borderline Class A is about right. LL, DAS, and JGH found the 500AE's sound to be significantly improved, in that it becomes smoother and less dry when a pair is used as bridged monoblocks. XLR sockets are wired opposite to IEC AES recommendation with pin 3 hot, leading to inverted polarity. Optional handles are $325. The otherwise identical Boulder 500 adds meters and other ancillaries for $5500. (Vol. 19, No. 5, Vol. 14 No. 10, Vol. 15 No. 4)

Bryston 7B NRB monoblock: $4390/pair  
Borderline Class A for this very powerful (500W in series mode, 156W in high-current parallel mode) solid-state amplifier from Canada, feh TJN. A rather full, warm low end is allied to a very neutral midrange and sweet, clear highs. THX-approved version costs $2345 each. (Vol. 16 No. 10)

Bryston 4B NRB: $2095 $$

The revision of the highly regarded 250Wpc 4B improves on an area that was very good to start with: bass, where it equals the Krell KSA-250. The 4B NR brings displays generous amounts of bass "slam" and "snap," notes LG, but falls short of the Krell's rich midrange and ultra-smooth highs. THX-approved version costs $2245. (Vol. 15 No. 5, Vol. 16 No. 1)  
Cary Audio Design CAD 300B: $3295  
Classic 300B sound from this push-pull amplifier: a smooth, sweet midrange, with triode purity. ST found the bass to be surprisingly tight, tuned, and well-defined. Lowish power—30Wpc—means the matching loudspeakers must be relatively sensitive. (Vol. 16 No. 11)

Crown Macro Reference: $3500  
This very powerful (760Wpc) solid-state stereo amplifier has Stereophile's reviewers and readers divided. Sounding rather dry overall, with a thin treble, the Crown's lean balance will lead to care having to be taken in system matching. A "clear, clean, quick" character, according to ST, who stands by his recommendation. DO found it to work quite well with Sound-Lab A-1s. LL, however, found it to be the least musical-sounding amplifier he had ever heard, in that it lacked harmonic accuracy and dynamic shading. JGH summed it up best: "The real question is, can the Crown Macro Reference survive the zealotry of its followers?" (See "Letters," Vol. 17 No. 2, pp. 15-25) Fans can be noisy. (Vol. 15 No. 12, Vol. 16 No. 11)

Forté 4A: $1790 $$
An amp that sounds really great, decided CG, adding that it goes much louder, with greater authority, than any 50W solid-state amplifier has a right to. He also praised the sweet but vividly detailed high frequencies and terrific pitch definition in the bass. Added RH: "A remarkable absence of grain and glare." (Vol. 15 No. 11, Vol. 16 No. 7)

Hafler TransNova 9500: $1900 $$
Hafler TransNova 9300 THX: $1250 $$
The 9500 is an unconventional, well-made 250Wpc MOSFET design that excels in its definition of soundstage depth. Overall balance is a little on the lean and analytical side, felt TJN, but it goes loud with ease. The less powerful, 150Wpc, THX-certified 9300 THX sounds very similar, according to ST, but has some residual grain putting it on the cutoff between Classes B and C. These are the best-sounding amplifiers to bear the Hafler badge, says JA. A silver-finished 9300 costs $1150, a silver 9500, $2000. (Vol. 16 No. 4, 9500; Vol. 16 No. 5, 9300)

McCormack DNA-1: $1995 $$
Beautifully made with premium parts, this relatively inexpensive amplifier had RH waxing lyrical about its sound: "... warm, sweet, punchy, and eminently musical." With a more laid-back balance than the Boulder 500AE, the DNAs soundstage presentation featured a superb sense of palpability, noted both RH and JA. A pair wired for bridged-mono operation costs $4595. "A strong Class B product that is knocking on the door of Class A."—RH. (Vol. 05 No. 4)

McIntosh MC275 Commemorative Edition: $3995  
A well-made reissue of a classic 75Wpc tube amplifier with a forward balance and very dynamic sound—"punches out the music"—and excellent overall clarity. Bass is a "bit wild and out of control," said ST. (Vol. 16 No. 11)

Meridian 605 monoblock: $3500/pair  
Excellent sense of pace, notes MC of this 150Wpc solid-state design. ST says there's a liquid-sounding, tube-ish midrange, though it's perhaps not as fully developed a sense of space as he would like. (Vol. 15 No. 12)

Naim NAP 140 power amplifier: $1345 $$  
The idiosyncratic nature of Naim components means that this diminutive 50Wpc amplifier should only be used with a Naim preamplifier and Naim speaker cables. (The 140 is only marginally stable into some highly capacitive "audiophile" cables, and works

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**Audiolab 8000A**  
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**Audiolab 8000T**  
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**Audiolab 8000C/P** (not shown)  
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combining
with
price,
Acurus
XV:
(IA)
Aero.
B-50

No.2)
100

No.11)
No.4)

B (Integrated Amplifiers)
Acurus DIA 100 “Direct-Input Amplifier”:
$995 $$
Combining a passive preamp section with a solid-state 125Wpc power stage, CG says the DIA 100 is “the best $1000 you can possibly spend on a power amplifier|line-stage combination.” Its basic character is “gutsy and upfront, with a bright, forward character and a butt-kicking low end,” according to CG. When the Acurus can handle difficult loads like the Thiel CS1.6, it found it to sound a little lean overall, with a slightly grainy mid-treble—“Chalky,” said CG—which will make careful system matching. But at this price, superb value for money. Recommended U-Beth. (Vol. 16 No.4, Vol. 17 No.2)

Ensemble B-50 Tiger Deluxe: $2780 $$
Current price includes Ensemble Tubos, Powerflux AC cord, Telefunken tubes, and WIMA caps. This diminutive but integrated amplifier enabled GL to get some of the most musical sound he had experienced with his old Acoustac 2xs, particularly when used with Ensemble’s own cables. "A soundstage seemingly unlimited by the dimensions of my room," he notes, adding that the Tiger’s “capitivating ability... to maintain rhythmic and spatial separation between diverse elements of any musical presentation." JA also found the Tiger to give a fundamentally musical presentation. JE disagreed, feeling that the B-50 is more of a "cat" than a tiger. Though the Tiger lacks a phono input, the Phonomaster MM/MC preamplifier with adjustable loading option (NR) is available for $740. Though this can be powered from the B-50, a Mackie PSU (Vol. 14 No.9, p.33) suggests that a separate power supply ($260) is essential to get the best from it. (Vol. 14 No.5)

Exposure XV: $1295 $$$

Modest-powered (40Wpc) English integrated amplifier with unusual regulated power supplies for its output stages. Got a thumbs-up from IH for its excellent sense of dynamics and soundstaging, its smooth, natural midrange quality, relatively grain-free treble, and good sense of bass weight—All provided the amplifier was not asked to work too near the edge of its power envelope. (Vol.16 No.2)

C
Adcom GFA-555 II: $900 $$$

While the original '555 was one of the best-selling power amplifiers of all time, some felt its rather hard treble to be its weakest point. The Mk. II version sounds significantly smoother, though still with a rather forward some signature, while maintaining its predecessor’s authoritative and low-frequency performance and excellent sense of dynamics. It also throws a deeper soundstage. A lot of power for the money—200Wpc Fan cooling is available as a $100 option for those with intensive or low-power loudspeakers. Bonnie best A performance, overall. (Vol.9 No8, Vol.14 No.9)

Parasound HCA-2200 II: $1750 $$$

This reworking of an initially disappointing 250Wpc design from J.Curl succeeds in spades, offering “Class B sound at a Class C price,” according to SS. While its treble is a little on the tizzy side and not as grainless as that of the Boulder, and the midrange is not as liquid as the VTL 300’s, the big Parasound offers more real sound, with authority and a prodigious, effortless bass. (Vol. 17 No.3)

Sonic Frontiers SFS-80: $2895

Well-thought-out 80Wpc tube design with much use of J. tube, CG felt it sounded typi-
cally tuby, slightly softened on top, but with a warm, rich midrange character. He also felt its soundstage depth was slightly foreshortened. While KK preferred the McIntosh MC275, ST thought the SFS-80 had got it right, and was an amp built on a sound foundation. He found it worked much better with Czech Tesla EL34s than with Swedish KT99s from Gold Aero. “A good, solid performer.” (Vol. 15 No.4, Vol. 17 No.2)

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ally state-of-the-art in every other way. Candidates for inclusion in this class must reach down to at least 40Hz, below the lowest notes of the four-string double bass and bass guitar.

In addition, such has been the recent progress in loudspeaker design at a more affordable level that we have an extra class E, for "Entry-Level." Someone asked me recently why Stereophile bothers to review inexpensive loudspeakers at all. In effect, aren't we insulting our readership by recommending that they buy any of these inexpensive models? Remem-

ber: It's possible to put together a musically satisfying, truly high-end system around any of our Class D and E recommendations. That's why they're listed—and why you should consider buying them.

A

B&W Matrix 800: $15,000-$18,000/pair
(Vol.14 Nos.6 & 10)
Meridian D6000: $15,000/pair
Active system offers digital data inputs only and uses Bitstream D/A conversion. (Vol.14 Nos.9 & 10)
ProAc Response Four: $18,000/pair
(Vol.17 Nos.3 & 5)
Sound-Lab A-1: $10,990/pair
"Wings" to reinforce the lows are $1450/each of four in oak, $1750/each of four in walnut; "SALLIE" backwave attenuators are $1000/pair. (Vol.15 No.11)
Thiel CSS: $12,300/pair
(Vol.13 No.6, Vol.14 No.10)
Wilson Audio WATT 3/Puppy 2/WHOW II
Universal or POW-WHOW II:
$22,850/system-$26,620/system
(Vol.14 Nos.6 & 10, without WHOW)

A—Restricted Extreme LF

Dunlavy Audio Labs SC-IV: $4995/pair $5355/pair in dwalnut rose or dwalnut teak. (See JRD's review in this issue.)
MACH 1 Acoustics DM-10 Signature: $10,995
Superb driver integration combined with an exception-

ally inert cabinet make for remarkable clarity

and resolution. This, together with a knack for re-

vealing music's rhythmic nuances, empowers the

MACH 1 to fly at the speed of sound like few dynamic speakers can. Reproduction of the upper registers is distinguished by the use of the Accuton ceramic tweeter; an unusually sweet-sounding tweeter which earned high praise from DO. Optional spiked, non-resonant platforms add $250/pair. (Vol.17 No.1; see also Martin Colloms's comments in this issue's "Letters" column.)

Sonus Faber Extrema: $12,500/pair
(stands necessary)
"I admire the commitment, dedication, and craft-

manship which have gone into this effortlessly musi-
cal transducer," says MC of this well-constructed
two-way speaker from Italy. MC emphasizes that
the Extrema, with its remarkable sense of timing,
supertempered, spacious treble, and naturally
generous midrange, would be rated in Stereophile's
Class A were it not for a low-frequency response
that doesn't quite reach 20Hz. "Always musical,"
says KK. LG agrees with both writers, saying that
"the Extrema has it all: speed, transparency, imaging
accuracy, and midrange richness." Unusually, the
crossover does not use capacitors, and tuning of the
rear-panel ABR is adjustable to optimize the low fre-
quencies for the owner's room. Matching stands cost
$1500/pair, but should be regarded as essential to
get the best from this gem by designer Franco Ser-
blin. (Vol.15 No.6)

Sound-Lab A-3: $7990/pair
JGH's reference speaker for more than seven years, 
offering excellent dynamic range and a neutral, tran-
sparent midband that reproduces instrumental timbers as convincingly as Gordon has encountered. JGH and PWM feel it qualifies for Class A in sound quality, though this large electrostatic's ultimate lack of

extension without a subwoofer precludes that lofty
ranking. "Wings" to extend the bass response can be
retrofitted for $1250-$1550, depending on finish.
(Vol 9 No.6, Vol 11 Nos.6 & 11, Vol.15 No.1)

Wilson Audio WATT 3/Puppy 2:
$12,900/pair-$16,000/pair
A pair of WATT 3s costs between $7450 and $7950,
depending on finish (the upgrade from WATT 2 to 3
status costs $2700), but because their balance is too
too and lightweight for long-term satisfaction, they're recommended only for certain specialist appli-
cations as location monitoring. But add a pair of
Puppy 2 woofers and you have an almost-full-range
system that throws a magically holographic sound-
stage, the speakers giving no clue to their physical
location. The WATT/Puppy system is also refresh-

ingly free from resonant colorations—the much-

modified Focal tweeter used by Wilson is an order

of magnitude better behaved than the similar-

appearing Focal tweeters used in lesser speakers—and

exceed when it comes to accurately reproducing
music's dynamic contrasts. It's easy to get an excel-

s of energy in the crossover region between WATT

and Puppy, however (something that particularly

bothers ST), while the treble region tilts up some-
what, which is very revealing of amplification prob-
lems. This also adds a degree of brashness to the sound that's reminiscent of the real thing, but is a

little exaggerated in absolute terms unless MIT CVT

Terminator cable is used. Despite an impedance
which dips to 1.75 ohms at 2kHz, the WATT/Pup-
pies seem to work best with great tube amplifica-

tion, the ARC Classic 120s or the Jadis Defy-7 pro-

ving capable of producing superbly palpable imaging
and a natural tonality. "Less is more," states MC.

"More rhythm, more dynamics, more music! Who
wants deep, slow bass?" As with the Sonus Faber
Extrema, only a few hertz more of bass extension
would result in true Class A sound, something that
those whose ears we trust indicate can be achieved
by adding the expensive Wilson WHOW subwoofer.
(Vol.14 Nos.6 & 10)

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Stereophile, April 1994
B

**Editor's Note:** I make no apologies for the wide variety of loudspeakers listed in the next two groups. Publicly available prices resulted from a lack of consensus, implying that all the following speakers will, in the right room with the right anciellaires, give true high-end sound. Following pressure from JGH that small speakers should automatically be denoted and isolated from the rest, because of their lack of LF extension, I have split Classes C and D into two sections: "Full-range" and "Restricted LF.

To be included in the latter class, a small speaker has to be at least as good in every other area as the full-range competitors. (Nelson-Reed's particular bootiness, added TJN. Needs to be tri-wired for best performance.) A rosewood finish adds $500/pair. (Vol.16 Nos. 2 & 12)

**Apogee Stage:** $2595/pair $$$  
**stands optional**

**Apogee Mini Grand:** $5590/pair

Price with "Grand"-style fascias is $2995/pair. The Stage has one of the most neutral, seamless midbands around. Recordings are reproduced with an uncanny lifelike quality. Imaging, too, is superb—"In terms of soundstage transparency, it rivals any loudspeaker money can buy," says DO—as is the speaker's presentation of recorded dynamics. There's a lack of deep-bass extension, but the midbass is almost perfectly neutral, as is the stage, reports one reviewer. Adding $1000 to the usual price, however, gets a flat, improved crossover layout, and has done away with the APOC protection circuitry. (Vol.10 No.9)

KEN ROBERTS $2990/pair

The latest version of KEF's flagship speaker features a new tweeter and a revised KUBE line-level equalizer. JA felt strongly that its bass performance (within dynamic limitations set by the use of EQ to extend the response below the design's natural LF limit) was among the best he's experienced in terms of definition and authority, as was its presentation of image depth. While the treble sounds dark, leading to somewhat polite tonal balance (which might also be a function of a wilder-than-usual crossover), the 107's midband is neutral and free from resonant colorations. (Vol.9 Nos. 4 & 7; Vol.10 No.2, original version; Vol.14 Nos.5 & 10)

**Martin-Logan Quest Z:** $3995/pair

Martin-Logan's most successful and intensely musical hybrid to date, according to DO, blending a world-class electrostatic midrange with good dynamic bass. Soundstage transparency and reproduction of image size are superb. As with all hybrids, the optimum tonal balance requires a fairly close integration of the electrostatic and midbass sections, which call for very close attention to crossover design to avoid any balance deviations from neutrality. The upper bass is on the lean side, while the lower treble is overly polite. Even though the midband benefits from the imaging magic of tubes, the best deep-bass definition is to be had with solid-state amplification. The Z version (said to be sonically identical to the older Quest) offers a more benign impedance. (Vol.16 No.10)

**Martin-Logan Aerials:** $1995/pair $$$

Once broken-in, this hybrid speaker offers superb integration between electrostatic panel and dynamic woofer and very good LF extension for what is basically a small speaker. In terms of speed, truth of timbre, absence of coloration, and reasonably good imaging and soundstage focus, ST finds the Aerial is hard to beat, though he would like more highs, in absolute terms. MC points to a rather ragged on-axis response, but JA states that, within the restriction of its necessarily limited dynamic range (which will rule out its use in large rooms), the Aerial is the best speaker yet to come from M-L. Oak side panels add $300/pair to the price; bi-wiring adds $200/pair. (Vol.16 Nos.6 & 10)

**Mirage M-1si:** $5500/pair

Large loudspeakers from Canada with a smooth yet precisely detailed sound. A large, spacious soundstage, both in width and depth, a clean, low-coloration midrange, and silky, detailed highs, according to TJN. Bass is deep and extended, though it leans toward a midsized look, and the M-1si's crossover design is one that is having low-frequency control. Capable of fine sound in Home Theater applications. (Vol.16 Nos.6 & 10)

**Mirage M-3i:** $8200/pair $$$

"Another unequivocal success," said GL of this unusual, floorstanding bipolar design. "...which in the right system, can re-create a musical experience with all the richness, finesse, power, and majesty [of a full-range speaker]." Flat response is noted to be found on the woofer axis (32° from the ground), though the full-bodied bass might be too much in some systems or rooms. (Vol.15 No.11)

**NHT 3.3:** $4000/pair

Unusual four-way dynamic speaker, deep but narrow, goes against the front wall to optimally load the woofer but still get mini-monitor-like imaging precision. TJN was impressed with the NHT's "elegant, front-facing design" and "good, clean bass," and felt the NHT's "broad frequency response...is near its advertised range included in the purchase price." The best sound, however, is to be had from one of the after-market models, such as those from Anodyne and Denon dealerListen-Up (the Maughan Box). Best used with stands: "We've had good results with the Sound Anchors and with the wooden, sand-filled Arcics. (Also see Vol.12 No.10, p.45, and Vol.13 No.2, p.217, for discussions of a crossover modification that improves the sound of the original 811 Matrix.) Current version has a revised tweeter, No.16 Vol.12, an improved crossover layout, and has done away with the APOC protection circuitry. (Vol.10 No.9)

**Nelson-Reed 8-04/CM:** $3650/pair

Very sensitive, with a wide, compression-free dynamic range. Rather forward midrange balance, but a clean, transparent treble that opens "a gorgeously clear [and alive] window on the recording," said JGH in his review. The review samples' out-of-spec woofers resulted in the overall sound being too lean. JGH's later audition of a pair with the proper woofers convinced him. The design's mid-bass behavior was "tactile," confiding DO. Felt that the Nelson-Reed's midband had a velvety, non-recton texture, especially on female voice, and that its highs were free from sizzle and tizz, though he did find that soundstage depth did not develop as fully as he'd expected. JA adds that the overall balance is a little forward in the treble, which might be a factor here, though it does lead to a sympathetic balance with tube amplification rather than solid-state. Nelson-Reor's own NA-1 mono blocks gave liquid-sounding raids and a bold, sweep- ing soundstage, reports DO, who summed up Nelson-Reed's sound feeling thusly: "In terms of tonal balance, LF extension, and dynamic scale, this speaker allows one to fully explore orchestral music without trepidation, congestion, or any form of attenuated harshness." (Vol.9 No.5, original version; Vol.14 Nos.9 & 10)

**ProAc Response Three:** $6500/pair

Beautifully finished two-way, dual-woofer design from English designer Stuart Tyler that Jack English can't recommend highly enough, feeling that it out- distances the "very Class A" Wilson Benesch No.3. On the combination of the Martin-Logan CLS II with the Kinetronics SW-8000 subwoofer. When the speaker's integral plinth is correctly loaded with sand, the bass is "extended, wide-open," and the frequency characteristics are clean and extended, while the soundstage is excellent, the speakers disappearing. The midrange is...full, lush, musical, involving—in short, like- life," wrote JE. And CG, for one, would not disagree. Response 3 Signature costs $10,000/pair—see JE's review of this issue.

**PSB Stratus Gold:** $2100/pair $$$

A large three-way design, the Stratus Gold offers a fundamentally neutral midrange balance coupled with very low levels of coloration, a lively front-end, and a very deep, unflappable, and warm bass. The treble is less prominent when the speaker is used with the grilles on, the sound taking on an appealing accessibility. Excellent value. (Vol.14 Nos.2 & 10; see also PSW's "Industry Update" in Vol.14 No.4.)

**Triadnightmare:** $4795/pair $$$

Considerable conflict among Stereophile's writers over the sound of this big, Kevin Voeks-designed, floor-standing three-way. All agree about its low levels of coloration, neutral midrange and treble balance, and a relaxed, powerful soundstage. Some of the reviewers felt CG very strongly, however, that the B's slow, ponderous bass quality precludes recommendation, while PW & LG feel that, under the right circumstances, the B can sing. GE feels that the electret B is the sonique equivalent of a 'falec recording':...ini-
ially very impressive but ultimately disappointing." LG reinforces JA's feeling that the B's balance will work better in larger rooms, while P/RM adds that, unless the room is somewhat "leaky" at low frequencies, the speaker will tend to sound too thick. Even more than usual, therefore, home trial is essential. (Vol. 14 No. 12, Vol. 15 No. 2)

Snell B minor: $3599/pair

(Sec LG's review in this issue.)

Spendor S100: $2990/pair $ (stands necessary)

Somewhat self-effacing quality compared with "audiophile" loudspeakers and only fair imaging, though ST, but the outstandingly tight, extended bass, rich balance, overall smoothness and lack of coloration through the midrange, and treble sweetness make this beautifully constructed British three-way a strong C.B recommendation. "No significant flaws," say both Mr. T and MC, the latter regarding the S100 to have "hidden depths." JA emphatically agrees, feeling the Spendor to be one of the best buy in high-end audio. The $195/pair speaker stands from Chicago Speaker Stands are normally supplied, though Spendor intends to introduce its own stands. (Vol. 13 No. 6, Vol. 14 Nos. 10 & 12)

Thiel CS3.6: $3990/pair

Remarkably transparent, extraordinarily uncolored floorstanding three-way speaker, with first-order crossovers and truly time-coherent performance. Very revealing of source imperfections and bass of the edge of the generous side, both of which will mean extra care needs to be taken in system matching. Easier to get good results from, however, than the Genesis III, notes RH. "A terrific bargain" at its price, he concludes: "The more I listen to them, the more I like them." Needs a music amplifier to cope with its very low impedance; CG found the Aragon 4004 Mk II to drive it with aplomb, though he noted its limited loudness capability compared with the NFT 3.3. (Vol. 16 No. 5, Vol. 17 No. 3)

Thiel CS2: $2750/pair $888

Smooth, civilized, "buttoned-down" sound with good soundstaging, excellent presentation of detail and dynamics, and superbly controlled and nicely extended bass. "One of the best speaker values on the market today," states ST. JA agrees, choosing to use the Thiel as his long-term reference, though it's fair to note the '22's reduced transparency compared with the larger '36. He also points out to habitual party-thowers that there's a limited dynamic range in the bass, and notes that a residual brightness will mandate careful system matching. The speaker was launched as the '22 but has been renamed, due to Bose's copyrighting of decimal numbers such as "2.2." (Vol. 15 No. 4, Vol. 16 Nos. 1 & 10)

Unity Audio Signature Pyramid: $5495/pair}

Unity Audio Signature 1: $2995-$3295/pair, depending on finish

Well-finished three-way design, with a downward-firing woofer, that RD enjoyed immensely. He noted its superb soundstaging and exceptional transparency. Treble is a little crisp and the midbass somewhat exaggerated, but the overall performance is better than the sum of its parts. "Superbly musical," was how RD summed up his review findings. The Pyramid is fundamentally similar to the Signature 1, but replaces the wooden enclosure with one constructed from artificial marble. The result is improved dynamics, less of a boxy signature, and a more solid, three-dimensional presentation, though the upper midrange becomes more revealing, less forgiving, noted RD. Bi-wiring option adds $250 to the Signature 1, is standard with the Pyramid. (Vol. 16 No. 5, Signature; Vol. 16 No. 12, Pyramid)

Vandersteen 3: $2395/pair $888

As always with a Richard Vandersteen design, this is a well-balanced speaker with no serious faults. Excellent low-bass extension, excellent presentation of musical dynamics, and a good loudness capability are married to a superbly transparent, tonally neutral midrange (when the listener is sitting on the midrange driver axis). Doesn't throw as well-focused a soundstage as the similarly priced Thiel CS2.2, but it's a more forgiving design overall. Needs significant break-in period, though much of this is now done at the factory. Dedicated Sound Anchor rear braces cost $200/pair, but are essential to aim the speaker's optimum axis at the listener. (Vol. 16 Nos. 3 & 4)

B—Restricted LF

B&W 805 Matrix: $1600/pair

(stands necessary) $$$

Borderline Class B, according to LG, but full Class B, according to MC. This well-finished two-way features an exceptionally rigid "Matrix" enclosure. The highs sound effortlessly open, the lows reasonably extended for a monitor woofer, and the imaging is well-focused. The speaker goes loud without strain. "A winner at its price," judges JA. Optional 800 Series Variable High-Pass Alignment Filter equalizer costs $250. (Vol. 16 No. 4)

Celedion SL706SE: $3399/pair $ (stands included)

Once considered very high for a small speaker, the price includes excellent stands. Improves over the SL600S in the areas where that speaker excels, and sets new standards for a box loudspeaker in transparency, neutrality, and upper-bass clarity. In contrast with the SL600S, overall balance is rather on the bright side, which demands careful system matching. Auditioning of the current "Special Edition" version reveals better integration between tweeter and woofer and an even cleaner upper bass, though the tradeoff appears to be a less involving sound overall. "A bit polite," says ST. Though the SL700 is deficient in low bass in absolute terms, rate of rolloff in-room is slow enough that it almost qualifies for 1. A tip from TJN for breaking-in speakers: Place them face to face but wired out of phase. You can then drive them hard with pink noise from a Test CD, but there's less sonic pollution to annoy the other members of your family. To a large extent, the speakers' outputs cancel.

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W H I T E  A U D I O  L A B S

Stereophile, April 1994
inclusion in the "full-range" Class B category. But only almost. (Vol.11 No.9, Vol.14 No.10, Vol.15 No.4) Ceiling SL600Si with DLPL600: $2799/pair (stands necessary) Ceiling's DLPL600 digital-domain loudspeaker processor ($699) fits between the CD transport and DAC; with it, the SL600Si's soundstage snaps into focus to an extent that JA hadn't heard from any other speaker other than the Wilson Watt, Avalon Eclipse, or Quad ESL-63. The speaker's dark-sounding treble also becomes more naturally-lustrous. The lower-midrange congestion remains unimproved, however. Otherwise, the '600 system would beat out Ceiling's SL700. MC adds that the '700 has a better sense of pace and timing. (Vol.15 No.8) Ensemble PA-1: $3180/pair * Ensemble Reference: $4900/pair ($5300/pair with bi-wiring option) * (stands necessary) Two almost identical-looking expensive mini-monitors from Switzerland combine an excellent soft-dome tweeter with an unusual laminated-cone woofer and a rear-facing passive radiator. Both are sensitive to being driven by subsonics, but, provided a good high-pass filter is used, the Ensembles generate a neutrally balanced, if bass-shy, sound with better imaging (..., spatial resolution was outstanding," according to IJO) and less upper-bass congestion than the standard Ceiling SL600Si. The Reference betters the PA-1 in every way—at a cost. A "remarkable midrange," notes MC of the Reference, but adds that its sound is something of an acquired taste. Both speakers require considerable break-in periods to reach their optimal performance levels. Matching Landmark stands cost $12800/pair. (Vol.13 No.6, Vol.14 No.10, Vol.15 No.12) Monitor Audio Studio 20SE: $4499/pair—$5999/pair, depending on wood veneer or piano-lacquer finish A floorstanding descendant of the first Monitor speaker (the Studio 10) to offer a metal-coned woofer. With a similar drive-unit complement, the two-way Studio 20 offers a big, transparent, well-focused soundstage presentation with an excellent sense of detail and sufficient bass fullness, said RH. ST disagrees strongly, feeling that the Studio 20 is too expensive, considering it doesn't go low or play very loud. "Not for everyone!" he warns. JA feels the 20 to be a superb speaker when used within its limitations, though he noticed an occasional wiry edge to female voices and boy sopranos. RH also noted this in his review, but thinks this will be alleviated by a good tube amplifier. Current "SE" model has an integral plinth 4" taller than the version reviewed. (Vol.14 No.12, Vol.15 No.4) Monitor Audio Studio 6: $1999/pair (stands necessary) Similar drive-units to the Studio 20's mounted in a small, stand-mounted reflex enclosure. A little lacking in the pace'n rhythm department, thinks MC, but a natural if forward balance, superb transparency, excellent soundstaging, and a musically involving sound, felt JA. A slight mid-treble glare will mandate careful system matching, however. Beautiful black and rosewood piano-lacquer finishes add $5500/pair. (Vol.17 No.2) ProAc Response Two: $3000/pair (stands necessary) "Solid Class B," decided CG. "But only when the Response Twos are used with the matching Target stands ($700/pair) coupled to them with Blu-Tack, or the RoomDine 'Torture Clamps.' A slight tendency to woodiness in the lower mids is exacerbated by the wrong stand, JA found. While the massively constructed Response Two doesn't have quite the image focus of the Wilson Watt, the SL600/DLPL600, or the Acoustic Energy AE1, it has a more accessible even tonal balance, with a smooth yet detailed treble, enough bass to be very musically satisfying, and much better dynamics than either the Celestion or the Acoustic Energy. "A stunning product that delivers a quality of sound most audiophile speakers only hint at," summed up CG. (Vol.15 No.7, see also Vol.15 No.9, p.162.) Quad ESL-63 USA Monitor: $5500/pair * (stands necessary) Very musical sound, with very low midrange coloration, natural, precise imaging, excellent soundstaging, and very good resolution of detail when listened to on the optimal axis. The highs roll off considerably off-axis, which can lead to a dull, lifeless sound in overdamped rooms. The low treble is a little resonant (perhaps due to the dustcover), which bores some listeners (LA, MC) more than others (ST, LG, DOJA). Low frequencies are tight but not very deep, while maximum volume capability is somewhat limited. (At Santa Fe's 7000th birthday, this is a strict 97dB on peaks.) Later models sound less dry than early-production models. Can really come alive with the right amplifier, and benefits from modifications, most especially suitable stands (we've found Arcatis to work well). Works well with such dipole subwoofers as the Finnish Gradient SW-63 (see "Subwoofers") and the Celestion System 6000, while LG has achieved an excellent match with both the omnidirectional, servo-controlled Velodyne MIDI-18 and the Muse 18. The current version, the USA Monitor, has a stiffer steel frame, a revised protective grille, and a reduced plate gap for higher sensitivity. (Vol.6 Nos.4 & 5, Vol.7 Nos.2 & 7, Vol.8 No.3, Vol.10 No.1, Vol.12 Nos.2 & 6; see also LG's review of the Gradient SW-63 subwoofer system in Vol.14 No.10, and "Editor's Choice," Vol.15 No.12, p.17.) Susano Faber Electa Monitor: $4500/pair (stands necessary) "The Monitor has the Extrema's wonderful imaging and huge soundstage, without that loudspeaker's dynamic range, bass, or transparency," says LG, though JA and TJN agree with JE that it's still a superbly natural-sounding, if very expensive, thing. And yet, this is a weird ad 'cause we really didn't know what to say when we wrote it.

We could have excerpted a bunch of John Atkinson comments from his January review, or some from Tom Norton in his February Follow-Up. Danny Kumin wrote about us in the February CD Review too.

But I hate ads that just pick out cool things that people have said in reviews. After all, no advertiser ever picks the bad things from the review. (If you really must read something, see the Recommended Components List)

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C—Restricted LF
Acoustic Energy AE1: $1495/pair
(stands necessary)

Tiny reflex box with metal-dome tweeter and metalcone woofer. Redefines the art of miniature speaker design, according to JA, due to its relatively high dynamic range, electrostatic—quality treble, and see-through, if somewhat forward-balanced, midrange. Bass is perhaps the weak point, with rather a slow-sounding character that keeps the AE1 from Class B. Now supplied ready for bi-wiring with goldplated binding posts. Price is for satin black finish.
(other finishes are available on request; matching stands cost $729/pair. (Vol.11 No.9; Vol.15 No.7; see also Vol.15 No.9, p.162.)

**Celestion SL600Si:** $299/pair **(stand necessary)**

Though lacking the bottom octave—and a half of bass and transparency, and somewhat dimly presented mid- and extreme-treble range that target the most in demand, optimization difficulty, the SL600Si combines lower-midrange transparency and holographic imaging (areas where it badkly beats most of the moving-coil competition) with a musical, if dark-sounding, balance unique for a box speaker. Worth using with high-end electronics. Latest Si version has revised crossover layout to allow bi-wiring and is more transparent in the treble, though a touch of midrange conglomeration. Sound quality significantly improved by $699 DLP600 DSP engine. Original stands, such as Celestion's own $299/pair 18" SLiS, are mandatory. (Vol.10 No.2, original version; Vol.12 No.5, Vol.15 No.8)

**Epos ES14:** $1295/pair **(stand necessary)**

A speaker that has long been an ST favorite, the ES14 seems to be typical of small British speaker designs in that it features a metal-dome tweeter in a well-braced cabinet with a minimum crossover and the option for bi-wiring. The result is a superbly coherent sound that, according to Tjin, kept drawing him into the music. Ported bass is both a little lighteighted and somewhat soft, but the upper bass and midrange are low in congestion, with excellent transparency. Matching stands cost $250. (Vol.11 No.6, Vol.13 No.1)

**Genius Technologies IM-5200:** $895/pair **(stand necessary)**

Tiny two-way in a unique tubular enclosure from Arnie Nudell, one of the founders of Infinity. Circular "ribbon" tweeter gives a delicate, detailed, open, and airy treble, found Tjin. Levels of coloration are low, while soundstaging is wide, deep, and well-focused. Low bass, however, is missing in action, and the dynamic range of the 5" woofer is also necessarily limited. Overall, the rather analytic tonal balance works best with tube amps that sound sweet, decided Tjin in his review, while the combination with the least Sono 10 subwoofer (see "Swoofsers") approaches Class B quality. Matching stands cost $395/pair. (Vol.14 No.10)

**Harbeth HL-PS: $995/pair (stand necessary)**

The second version of this French minimonitor had a truly horrendous lower treble—peaky and fatiguing—which could be laid at the feet of its Keeva-domed Focal tweeter. Current production features a new titanium inverted-dome tweeter which is significantly smoother that makes system sound, leading to an enthusiastic recommendation from DO. "The upper mids are sweet and texturally smooth," quoted he. Though it lacks bass extension, it gets the tenor region right, the sound of the cello being timbrally correct. Price is for black vinyl finish; Auburn, black satin, and walnut veneer finishes cost $795/pair. (Vol.14 Nos.9 & 10)

**PSB Stratus Mini:** $950/pair **(stand necessary)**

Well designed, well engineered two-way with a neutral balance, low level of coloration, and superb soundstaging. Bass is intrinsically lean, but careful

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**Phonewright Random House**

**Astrid Baladi, Ph. D.**

**Fundamental Intervention:**

A model of excellence, this book is a must-read for anyone interested in the field of phonewright. It covers the latest research and techniques in phonewright, providing a comprehensive guide to the field. The book is divided into several parts, each focusing on a different aspect of phonewright. The first part covers the history of phonewright, from its origins in ancient Greece to its modern day form. The second part provides an overview of the various types of phonewright, including voice, sight, and听. The third part is devoted to the practical aspects of phonewright, including techniques and strategies for improving phonewright. Finally, the book concludes with a discussion of the future of phonewright and its potential applications in various fields. Overall, this book is an invaluable resource for anyone interested in phonewright, and is highly recommended for libraries, universities, and professionals in the field. **Stereophile, April 1994**

**WorldRadioHistory**

**Advent 25th Anniversary Limited Edition:** $319/pair **(stand necessary)**

Provisional rating for this descendant of the Large Advent Loudspeaker of the "70s, based on ST's enthusiastic recommendation for an inexpensive speaker that achieves full-range reproduction with a full measure of admittedly rather boomy bass. (Vol.16 No.5)

**Dana's Audio Model 1:** $199/pair **(stand necessary)**

One of the two least expensive loudspeakers listed in "Recommended Components," Dana's Model 1 is only available via mail order. The original sample had a rather warm bass and a rather depressed treble, which led to a forgiving balance overall by a degree of resonant coloration in the low treble. Latest version is more forward-balanced. Works best away from room boundaries, when it "...squeezes the most music out of the least money," according to DO. Not just limited bass, but no low frequencies at all, leading to a thin balance that fails completely on orchestral music. Nevertheless, "the best-sounding speaker under $1000" according to GC, who was impressed by this tiny speaker's resolution of detail, accurate midrange balance, and incredibly spacious soundstaging. The treble is a touch exaggerated, however—the SuperZero uses the same tweeter as No.13A—which is emphasized by the speaker's lack of bass. (Vol.17 No.1)

**Phase Tech PC-80:** $650/pair **(stand necessary)**

Although it has a rather exaggerated bass region, the well-made PC-80 also offers excellent imaging specificity, a superb flat tonal balance, and a very treble, spoiled only by a slightly nasal upper mid-band. (Vol.14 Nos.1 & 10; see also RH's review of the PC-90 subwoofer in Vol.14 No.9)

**Sander LSJ3A:** $995/pair **(stand necessary)**

A major revision of its crossover in 1988 was meant to do so much to "improve" this venerable BBC design (first seen and heard in 1975) as to bring production back on target. Still somewhat compromised in overall dynamics, HF smoothness, and clarity when compared with Class B and 'tubes' such as the CE-101. (Vol.16 No.4, Vol.17 No.4, Vol.14 No.10, Vol.16 No.11.)

**Signature SL280 B/U:** $700/pair **(stand necessary)**

Designed by ST as an AE engineer, this two-way was found by Tjin to rival the Epos ES14 in being musically satisfying at a modest price. Good bass extension is coupled with excellent midrange transparency, though the treble has a tendency to sound a little brittle. A version reviewed was actually the discontinued SL280, which was identical apart from being more expensive and substituting wood veneer for the B/U's vinyl finish. (Vol.13 No.10, Vol.14 No.10)

**E**


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highs and good dynamics. Imaging a little imprecise, however, and an upper midrange that sounds rather peaky. Perhaps sounding too polite in absolute terms, and too expensive for Class E, the Q60 is still an excellent value, according to MC, with an overall performance closer to Class D than most of the other entry-level loudspeakers. (Vol.15 No.5)

Mirage M490: $600/pair (stands necessary)
Extended bass lacks definition but is offset by lush, transparent midrange, good overall clarity, and highs that are non-fatiguing, if a little excessive in absolute terms. Inexpensive loudspeakers for the music lover rather than the audiophile, said GL. Matching stands cost $110/pair. (Vol.15 No.5)

Pinnacle PNR; $299/pair (stands necessary)
Borderline Class D sound, though the presence region sounds a little emphasized and hard, and bass is too lean with the wrong amplification. Midrange has a slight "boomy" coloration but is otherwise clean, and the imaging is good for a speaker this inexpensive. (Vol.15 No.5)

PSB 500: $499/pair (stands necessary)
Balance is warm and full rather than tight and lean, but impressive bass weight doesn't turn to boomy. Refrains highs for an inexpensive speaker. The PSB two-way 500 achieves "that rare balance of ease and detail," according to TJs, with moderate coloration and congestion only setting in at high levels. "An attractive mix with no glaring weaknesses." (Matching PS stands cost $799/pair). (Vol.16 No.7)

PSB Alpha: $1999/pair $$$ (stands necessary)
"An outstanding audio bargain," proclaimed JE of this little two-way. Designed to be used close to the rear wall, the Alpha plays surprisingly loud without strain, though note-in is best avoided at times. Optimum with electronics that sound soft. Imaging somewhat vague compared with the similarly-priced Danas. Upper bass a little exaggerated and a bit "boomy" — sounding compared with the NHT SuperZeros. (Vol.15 No.7, Vol.17 No.1)

Signet SL260B/U: $450/pair (stands necessary)
An exaggerated treble mandates careful system matching, but the sound field is impressive. This inexpensive two-way is otherwise reasonably well-balanced, with quite good bass extension and definition, and a spacious soundstage. (Vol.16 No.1)

Snell Type K/I: $479/pair & (stands necessary)
A tight, tuneful, articulate bass, said RH of this modestly priced two-way design, though with less weight than the Phase Tech PC-80. The mids are neutral, the highs open and airy, but there's a trace of hardness in the bass range that can't altogether be ameliorated with the tweeter-level control. Nevertheless, RH enthusiastically recommends the K/I11 for its musically natural presentation. A TjN favorite. (Vol.14 Nos.1, 7, & 10)

K
B&W Silver Signature, B&W DM620.1, ProAc Response 1 Signature, ProAc Studio 100, Martin-Logan CSL HZ, Swan Cygnus, Naim SBL Active, Orac D-Way, Aperion Studio Grand, Esoteric Speaker Products Concert Grand, Soundwave VR-2, Magnepan SMG, Spendor SP2/3, Sonus Faber Guarneri, Tannoy Definition 700.

Deletions
Apogee Diva not auditioned in a long time; Apogee Centaur Major and Centaur Minor replaced by new models; Celestion 3 and Spectrum Audio 208C significantly revised; Hales System Two Signature; Rogers LS2A no longer available in the US; Snell Type C IV replaced by CIV, not yet reviewed; Icon Lumen no longer available; Spica Angelus, TC-50, & SC-30 discontinued; Thiel CS1.2 replaced by CS1.5; Genesis Technologies Genesis III replaced by Signature version, not yet auditioned.

Subwoofers & Crossovers
Editor's Note: DO's mini-survey in Vol.12 No.1 indicated that true subwoofers, capable of reproducing the bottom two bass octaves at realistically high sound levels, are almost always rare and expensive beasts. In addition, the problems of integrating one or two subwoofers with high-quality satellites are major if the integrity of the upper/bass-lower-midrange region is not to be compromised. (Peter Mitchelli offers good advice on where to place one or more subwoofers in the listening room in Vol.16 No.3, pp.65-67.) We recommend that those trying to subwoofer on and decide instead look at the possibility of acquiring more-expensive full-range loudspeakers.

A
KINERGETICS SW-800: $3995/system
Twin-woofer, 10-driver stereo subwoofer offering true 20Hz extension and intended to be used with the Martin-Logan CLS IIAs, when it gets a Class A recommendation from JE. Price includes a versatile crossover, but a stereo amplifier, preferably a good solid-state model, is required. (Vol.15 No.3, Vol.16 No.8)

MUSE Model 18 active subwoofer: $3000 (inc. crossover and amplifier)
Slot-loaded active mono subwoofer extending down to 30 Hz with which RH, LG, and CG have obtained great sound (successfully integrating it with Hales Signatures, Quad USA Monitors, and Spica Angelus, respectively). "A complete lack of plodding sluggishness," said RH of the Model 18's ability to preen with kick in character intact. RH also noted that it offers a "dynamic agility" rare in a subwoofer. Part of the reason for the Model 18's quality is that it's not intended to extend very high in frequency, thus minimizing its potential for introducing midrange anomalies. In addition, it can be customized for the specific satellites with which it's to be used, to give a seamless match. Each "personality card" to adapt the Model 18's crossover for a specific loudspeaker costs $35, and seems to have very little editorial effect on the sound of the satellites (other than the high-pass function, of course). Price is for oak finish; walnut or cherry finish adds $250. Balanced inputs add $500. (Vol.14 Nos.7, 8, & 10, Vol.16 Nos.3 & 5)

Wilson Audio Piano 2: $5450 $6450
Dedicated passive stereo woofer system for the Wilson WATT minimonitors. Series 2 version of the Piano features a new high-density composite panel horn and dedicated Mini-Monitors. "The Piano Tall." See "Loudspeakers." (Vol.14 No.6)

B
Apogee Mini-Grand subwoofer: $2955/pair
A stereo system recommended only within the context of use with Apogee Stages, with which it gives good bass extension and midrange integration. Limited in ultimate loudness capability and by the fact that the drive signal is not high-pass filtered, leading to significant drive—unit excursion below the port tuning frequency. DAX electronic crossover included in price. (Vol.17 No.3)

Bryston 10B electronic crossover: $1195
Balanced inputs and outputs add $200. (See SS's review in the next issue.)

Entec 12-20 active subwoofer: $2347 (inc. crossover and amplifier)
Though it has a lower dynamic range than the Muse, keeping it from Class A, the Entec nonetheless goes very deep and is very clean and well-controlled. Its interface is extremely versatile, and includes a useful notch filter to tame the most annoying low-frequency room modes. (Vol.16 No.5)

Gradent S $663: $3000/system (inc. crossover)
Stereo dipole moving-coil subwoofer system from Finland intended to be used with the Quad USA Monitors. Adds useful increase in dynamic range and midbass power handling— Within the 40-
Hsu Research SW10: $800/pair
(inc. passive low-pass filter, spiked feet, and a free CD)
An inexpensive, cylindrical stereo subwoofer system that achieves true 20Hz extension. Main drawback is that, as supplied, the satellite speakers are not high-pass filtered, therefore, do not increase the satellites’ dynamic range (which is the other reason for investing in a subwoofer); hence, the Class D rating. Supplied passive low-pass filter is set for 40Hz with 12dB/octave slope; different low-pass filters—available at different frequencies—are available. A variable-frequency 80Hz to 180Hz octave low-pass filter raises the system price by $50; an electronic crossover costs $350. (Vol.16 No.3)

**Delete**

Infinity Modulus active subwoofer and Kinergetics SW-100 Platinum not auditioned in too long a time.

**C**

**Home Theater Surround-Sound Components**

Editor’s Note: Although BS has argued cogently against the use of a Dialog-channel center-speaker approach in his Dolby decoder reviews, JGH points out that when several listeners are involved, as will often be the case with movies, a center speaker will be essential if those well off the central axis are to receive dialog correctly localized at the screen position. Although this section contains dedicated Home Theater products, THX-certified amplifiers and subwoofers can be found in their respective listings. Regarding the THX loudspeaker issue, we feel that audiophiles shouldn't abandon the idea of using their Home Theater systems conventional loudspeakers whose sound they like on music recordings.

**A**

Reference Recordings: A Video Standard: $59.99 LaserVision disc (1 side, CAV) produced by Joe Kane containing video and audio test and demonstration tracks to optimally set up a Home Theater system. “No one who is seriously into video can afford not to own this disc,” says JGH, relishing the opportunity to double up negatives. (Vol.12 No.11)

**B**

Fosgate/Audionics 3A THX surround-sound processor: $2799
Both JGH and LL prefer the Fosgate to the Lexicon CP-3, though JGH hates the remote control. (See JGH’s review in this issue.)

Fosgate/Audionics 7X Home THX loudspeaker system: $13,799/system
Consists of the Fosgate/Audionics 4125 4-channel power amplifier ($1079), MC-220 THX LCR loudspeaker ($1595 each, stands necessary), SD-180 THX surround loudspeaker ($1850/pair, stands necessary), and the FS-400 THX subwoofer ($995). (See JGH’s review in this issue.)

Lexicon CP-3: $2995
Similar in concept to the older CP-1 Plus, the '3 is bigger, better, and incorporates a THX mode to optimize its performance in Home Theater systems. LL finds the Lexicon an “ ergonomic nightmare;” but JGH enthusiastically recommends it—he found that he mainly used the surround modes for the extraction of recorded conversations (deciding rather than than the ambiance synthesis. Bypass testing revealed a slightly veiled sound, according to JGH. This loss in overall resolution, as well as a cold, edgy character, is laid at the feet of the internal ADC/DACs by CG, and recommends the processor not be used in that “coldly”-designed system. (Due to be updated this month to CP-3 Plus status. (Vol.15 No.12)

**C**

Lexicon CP-1 Plus: $1595
Dolby Pro Logic decoding is performed in the digital domain, making what's basically an ambience synthesizer also an excellent buy for home-video surround-sound use. A rather brash, "transitory" coloration is noticeable. Unique in being able to accommodate the effects of tape-axisim errors. As a surround-sound synthesizer, offers versatile choice of reverberation parameters, although less flexible overall than the now-discontinued Yamaha DSP-3000. Current version has upgraded software. (Vol.12 Nos.1 & 8)

**Lexicon CP-2:** $995
Less-well-featured version of the CP-1 that keeps the all-digital processing of the Dolby surround system and the auto-balancing circuitry. (Vol.12 No.12)

**Snell 500 Home THX loudspeaker system:** $5595/system (stands necessary)
This system is intended for use in Home Theater installations and is made up of three MC LCB-500 front speakers at $899 each; two MC SUB-500 surround speakers at $899 each; and a SUB-550 at $549 (the review was of the no-longer-available SUB-750). Matching STA-500 stands cost $99 each. “I was taken in. The sound was as good as anything I’ve ever heard in a movie theater,” proclaimed JGH of the Snell 500 THX speaker system when he used it to play back video soundtracks. On music program, however, he found that, while the Snell had “a tremendously extended low end” and excellent image definition and stage/depth depth, the overall sound was too polite/veiled/uninvolving. CG and LL agree, the latter pointing out a residual brightness that’s less noticeable on soundtracks than on music. (Vol.15 No.12, Vol.17 No.4)

**Rane THX-44 Home THX Audio Equalizer:** $1299
Offers one subwoofer channel, and three full-range channels, each of the latter with a mix of 9:1 octave control, 2-kHz and 2-octave parametric filters above that frequency. Lacks transparency, decided JGH, though he found it an excellent tool for getting the most neutral tonal quality from a full-fledged video Home Theater system. (Vol.15 No.12)

**D**

AudioSource SS-Threel: $3500 $$$
“A heck of a bargain!” said DAS of this versatile processor incorporating a Dolby Pro Logic chip, subwoofer crossover, and a 30W stereo amplifier to drive the front-center or rear channels. “A slight darkening...but above-average sound quality,” said BS. CG enthusiastically agrees. (Vol.15 No.1)

**K**

McIntosh Home THX system and Dolby Pro Logic processor; Adcom GTO-600, Proceed PAV, Rotel RSP-960AX, and Fosgate Model 5 surround-sound processors.

**HEADPHONES & HEADPHONE ACCESSORIES**

**A**

**Grado HP 1:** $395 $$$
Beautifully made, but rather uncomfortable dynamic headphones with a strong, transparent, well-balanced sound. The midrange-to-treble transition is seamless compared with the Stax Lambda Pros, though JA feels that the extreme high end lacks air, and the bass is a little generous. Highly recommended, though it must be pointed out that, to get the best from the Grados, you need a dedicated headphone amplifier such as the Melos tuned unit, the HeadRoom, or Grado's own battery-powered device. (JA got excellent results driving the Grados with a pair of VTL's Tiny Triodes.) The otherwise identical HP 2 lacks the absolute polarity switches and costs $495. (Vol.14 No.5)
Koss ESP/950: $990 $$$

Class A because of its "reviving midrange," said TJN of the '950 electrostatic at its original price of $2000—though he did point out a little euphonic softening at the frequency extremes, and a warmer balance than the Stax Lambda Signature. At the reduced price, it's a sonic bargain (LG has even seen the '950 advertised for as little as $499) (Vol.15 No.12).

Sennheiser Orpheus HE 90/HE 90: $12,900

Stunningly beautiful, limited-edition system consisting of Bitstream DAC, tube amplifier, and electrostatic headet. A quick, clear, transparent midrange and a pristine, airy treble, but a rather lean, laid-back midrange, found TJN. He also found the internal DAC to be less good than the rest of the package. Diffuseco-field equalized. Additional HE-90 headsets cost $6900 each. (Vol.17 No.2).

Stax SR-Lambda Signature: $2000 $$$

A diaphragm Y-shaper (aim) from the Lambda Pro, and a driver amplifier (SRM-T1) with a tube output stage distinguish what BS termed "the best headphones around" in his review. As good as the Pros are, the Signatures better them in terms of air and space around instruments, having a more forward midrange and less—if you can believe it—of a "mechanical" quality. The modest cables Stax supplies with the SRM amplifiers are dark at the top, with slightly muddy bass, according to BS. (Vol.11 No.8, Vol.15 No.12)

Stax Lambda Pro 3: $1200

Used with Stax's SRM-1 Mk.1 II dedicated Class-A solid-state amplifier (Stax's passive interACES add some hardness, veiling, and brightness), the Pro 3 features a totally transparent sound, according to BS, "eddies of detail." Unlike most 'phones, the listener gets a true feeling of the surrounding ambient on a recording. Balance is laid-back and bass is a bit fat, not quite blending with the rest of the range, but distortion levels are astonishingly low, and the Pros have a remarkable dynamic-range capability. As delivered, the Lambda suffers from a midrange suckout, which becomes less bothersome after some hours' use. The low treble still remains a little isolated, however. Very comfortable. (Vol.7 No.5, Vol.10 No.9, see also headphone reviews in Vol.12 No.4, Vol.14 No.5).

B

AKG K-1000: $999 $$$

Superb resolution of detail and a sense of effortless-ness to the sound of these expensive dynamic headphones, which have hinged earpieces to allow the soundwaves to strike the ear pinnae at a natural angle. BS was bothered by an excessive nasal coloration, but JA found the degree to which this coloration was present to be very dependent on the angle the headphones were made with the side of the head and the exact relationship between drive-unit and ear canal. Bass response generous, if a little underamped. (Vol.14 No.3 & 5)

HeadRoom headphone amplifiers: $199-$399 $$$

Small, beautifully made, battery-powered solid-state amplifier based on a proprietary surface-mount module, and available in three versions: Standard, Premium, and Supreme. (The module by itself costs $59-$489.) All three versions feature switchable intra-channel crossfeeding and time delay to render headphone listening to stereo program less artificial-sounding. The effect of this is surprisingly subtle in AB comparison, but proves much less fatiguing in long-term listening sessions. The Standard, which features ordinary parts quality, is not recommended except to the impeccable; the Premium uses high-quality parts, while the Supreme uses heavier-duty output transistors and adds a treble-boost switch. Driven dynamic headphones (though not, it's reported, the low-impedance AKG K1000a) to high levels with authority and excellent clarity, without this being associated with any brightness. JA bought a Supreme to drive his Sennheiser HD580s, with which it makes a very musical-sounding combination. (Vol.17 No.1, p.41, and TJN's headphone review in Vol.17 No.2, p.114).

Stax Lambda Pro Classic; $850

Supplied with the SRM-X amplifier, the Lambda Pro Classic has a slightly thicker diaphragm than the Class A Lambda Signature. Excellent bass exension, image focus, and clarity, but a rather cool, distant balance overall. Headset alone costs $475. (Vol.16 No.2).

Stax Gallia Professional: $700 $$$

The Gamma offers a superbly clean presentation with airy, delicate high frequencies and excellent low-frequency weight when driven by the SRD-7/pro (SRD-7). Connecting the Gamma Pro to a Stax direct-drive amplifier further refines the sound, but it still lacks the pristine detail and musical focus of the Lambda headphones. (Vol.14 No.3)

Stax Gamma: $80 $$$

A slightly thicker diaphragm than the Gamma Pro leads to a darker, less transparent sound overall. (Vol.14 No.3).

Stax SR-34 Professional: $200 $$$

A new 4m diaphragm gives these inexpensive electrostatic headphones a slightly transparent midrange without any trace of grain or dryness, offset by a sometimes slightly hard edge to their sound that BS felt was due to the SRD-4 step-up transformer. (Vol.14 No.3)

C

Beyerdynamic DT990 Pro: $339 $$$

Excellent dynamic headphones, with a neutral mid-bass balance and extended low frequencies. Borderline Class B performance. (Vol.10 No.9, original version; DT990 Pro, Vol.14 No.3)

JVC HA-D990 Digital Reference: $150 $$$

These circumaural and closed-back cans produce a sound that's beautifully clean and transparent, without the midrange and midbass colorations that afflack so many other closed-back headphones. Though brass instruments tend toward brightness, they don't sound hard. Full but tight bass, along with crisp detailing without being "edgy." (Vol.14 No.8)

Sennheiser HD540 II: $199 $$$

Sennheiser HD560 II: $279 $$$

Slightly less neutral than the Beyerdynamic DT990, made more back-laid with a "wispier" even bright, high end. The HD560 II has a more musical balance, lacking the '540's top-octave brightness, notes PWM. Now supplied with Keval-wrap OCC leads rather than the steel (I) originals, which make the '560's treble balance more neutral. (Vol.10 No.9, $400).

D

Nakamichi SP-7: $100

A somewhat bland balance keeps these headphones from Class C, but, as BS noted, the SP-7 is one of those rare inexpensive headphones that's basically neutral and essentially honest. (Vol.14 No.8)

K

Etymotic Research SR-4 in-the-ear headphones: $200

Deletions

Stax ED-1 diffuse-field headphone equalizer, as too lacking in ultimate transparency.

FM Tuners

Editor's Note: LJG recommends that those interested in purchasing a good FM tuner read JGH's and...
A

Magnum Dynalab Etude: $1350 ★★★

Based on the well-established FT-101A, the Etude features a machined faceplate, WBT output jacks, audiophile-quality passive components, and two extra hours of component selection, matching, and testing during its manufacture. The result is a tuner that sounds only slightly noisier than the extraordinarily expensive Day-Sequerra Broadcast Monitor with the same antenna and station, and features a distortion-free midrange with strong dynamic contrasts. “The sound was wonderfully free of hash, distortion, grit, and glare,” said LG, though he feels that it’s now borderline Class A, due to the Day-Sequerra FM Reference setting a new standard, particularly regarding bass reproduction and sensitivity. His overall conclusion? That the Etude nevertheless "represents one of the better balances of price and performance you can find in FM tuners today." (Vol.13 No.9)

Naim NAT 01: $395

Excels in natural sound quality, but full automation of tuning parameters to optimize sound quality will annoy DX hounds—DAS was so frustrated that he was driven to uncharacteristic hyperbole: "It will not get stereo stations unless the tower lights are in sight!" However, "The Naim's ability to involve the listener in the music is remarkable," stated LG. (Vol.15 No.9)

Rotel RHT-10: $1500 ★★★

A superbly transparent sound that allowed DAS to identify the brands of competitors and tuner used by his favorite stations. 'Extraordinary fidelity to the broadcast waveform'. 'High output level—3-4V on peaks—is a problem in systems with very sensitive preamp line stages or loudspeakers.' (Vol.16 No.10)

B

Grundig Fine Arts T-9000: $1199

Excellent stereo sensitivity and sound quality are let down by brightness, due to the German Grundig emphasis on tuning changed from the European 75µs time constant to the 50µs required in the US. Limited selectivity means that a good directional antenna will be needed in regions with overcrowded FM bands. (Vol.16 No.2)

Magnum Dynalab FT-101A: $875 ★★★

An analog tuner, the FT-101A is superb from an RF standpoint, particularly in quieting and sensitivity. Selectivity is bettered only by the Onkyo T-9090, Denon TU-800, and Citation 23, but the '101A consistently sounds superior on most stations. Examination of three different samples in February 1988 confirmed good quality control. Latest version has instant-on feature, defeatable stereo blend, and new board. (Vol.8 No.4, Vol.10 No.3, Vol.13 No.10)

Magnum Dynalab FT-11: $455 ★★★

Borderline Class B tuner, according to DAS in his review, that lacks transparency when compared, for example, with the more expensive FT-101. This is perhaps due to its having a simple, narrow IF bandwidth. Has good selectivity and a very effective high-bend circuit for receiving weak stations in acceptable stereo. (Vol.12 No.10)

Pioneer Elite Reference F-93: $900

An optimal tuner for those a long way from the transmitters. Loaded with sensitivity, selectivity, and elaborate, "space-age" tuning displays. Sonics display a natural timbral quality, but are cut below the best British tuners. Costs more than the similarly-performing Onkyo T-9090, but sounds better than most of the digitally synthesized competition LG has heard. DAS recommends trying the less expensive Pioneer F-449 ($285), which he has found to have a similarly good sound. (Vol.15 No.9)

Soundstream T-1: $595

Residual RF noise at some frequencies limits this American-made tuner's ultimate sensitivity, but overall RF performance makes the T-1 a good choice for those in weak signal areas. A good, long-term buy, thought DAS. (Vol.14 No.11)

D

Adcom GTP-400: $400 ★★★

Good budget-priced preamplifier, with integral FM/AM tuner offering good sensitivity, but only reasonable selectivity. (Vol.12 No.9)

AudioSource TNR One: $229 ★★★

A basic, no-frills tuner that DAS felt offered a basically good sound for its price, in areas where FM signal strength is moderate to high. (Vol.14 No.3)

Harman/Kardon TU-9600: $429

Midrange clarity and clean, grain-free highs are let down by a rather confused lower midrange, thought DAS. (Vol.16 No.4)

K

AudioLab 8000T, Fanfare FT-1, Yamaha TX-950. Deletions

Day-Sequerra FM Reference temporarily, pending resolution of International Jensen's plans for the product's continued manufacture; Quad FM4 in favor of new FM-66.

FM Antennae

Editor's Note: No indoor antenna can compete with a good roof or mast-mounted outdoor antenna, but as apartment dwellers often don't have a choice, we list the following indoor models.

AudioPrism 7500: $450

63°-call, remote-controllable, vertical phased-array passive FM antenna for indoor use offering a more directional pickup than the less-expensive 7500. (Also offers an omnidirectional pattern.) Will prove optimal for those who desire to receive relatively weak stations competing with stronger stations on similar frequencies broadcast from other directions. (Vol.14 No.6)

AudioPrism 6500: $300 (wood cabinet) ★★★

If you don't have the room for an external antenna, then the diminutive 6500 could be a good substitute, offering good reception except for DX-ing purposes. A lot more effective than the small, active, omnidirectional antennae offered by some companies, thought BS. Vinyl-covered version costs $60. (Vol.13 No.9)

BP FM-9700: $30 ★★★

Excellent directional active indoor antenna offers

Its mother is a TC-50.

Its father is Tabasco Sauce.

Fast you take the improbably wide soundstage and pinpoint imaging of our classic TC-50. Then, through the miracle of science, you add some punch, some pizzazz. You make the midrange and highs more transparent, extend the bass and spice up the dynamics.

The result is the Spica TC-60. Like mom, they'll surely end up monitoring more than a few recording sessions. And like dear old dad, they'll certainly add life to those nearly dead dinner parties.

So make some quality time and listen to our next generation. And hear a kid that would make any parent proud.

spica

Division of Parasound · 415-397-7100 · Fax 397-0144.
6dB improvement over conventional T-shaped dipole. (Vol. 11 No. 10)

**Magnum Dynalab 205 FM Booster:** $279 +

Excellent RF alkaline to optimize selectivity and reception in areas of poor signal strength. (Vol. 10 No. 6)

**K**

Antenna Performance Specialties FMQ-1.

**Deletions**

Day–Sequerra FM Urban antenna (see above).

**HOME RECORDING EQUIPMENT**

**Editor’s Note:** With the exception of the Fostex and the Crown SASS-P, none of the microphones listed below has been formally reviewed. However, RH has had extensive experience with many professional models, and has compiled most of the thumbnaill sketches of their sonic signatures. Other professional models to look out for on the secondhand market are: cardioids $1499, Sony (CS06 or CS08), Milab, and Calrec (AMS), figure-8 ribbons from B&O and Coles, omnis from Schoeps and B&B, and PZM mikes from Crown (though it’s easy to get a rather colored midband with the PZMs). The Shure SM81 cardioid is also reported to have a quite flat response. Anyone about to undertake serious recording should ignore all “amateur” microphones; as a rule of thumb, you should spend as much, or more, on a good pair of mikes as you do on your recorder.

**A**

Briel & Kjaer 4006: $1660

Omnidirectional, 48V phantom-powered, 1/2” capacitor microphone with high dynamic range, extended bass and a basically flat response marred only by a small peak in the top audio octave and a rather depressed lower treble. A calibrated sample is used by Stereophile to measure loudspeaker responses. (NR, but see Follow-Up in Vol. 14 No. 10, and audition track 5, index 7 on the first Stereophile Test CD.)

**EAR 824M stereo mike preamplifier:** $3150 +

Extremely neutral, very quiet, all-tube, balanced stereo preamp from Tim de Paravicini, with switchable level controls and 48V phantom mike power. Used by Water Lily Acoustics and also to make Stereophile’s first two commercial recordings. We also use it to make all our loudspeaker measurements in conjunction with a Briel & Kjaer 4006 omnidirectional microphone. (NR)

**Manley Reference A/D converter:** $7000

After using this solid-state, Ultra Analog-based two-channel converter to master Stereophile’s Internazionale and second Test CDs, JA felt it to be one of the best-sounding around. One of the winners in the October 1991 AES Sound-Off. Offers DC trim controls, balanced and unbalanced analog inputs, and AES/EBU and SPDIF data outputs. Analog peak meters with “0” set to 12dBFS are an anachronism, however; you’re better off using the LED or LCD peak meters on the DAT recorder (or whatever you use to store the data) to avoid running out of bits on peaks. (NR)

**Meridian CD-R:** $6995

Superb, Philips-based digital recorder let down by only fair-sounding ADC and DAC sections. (RH’s advice is to use external processors; the Meridian’s performance then jumps to full Class A) SMA optical input and output adds $500 to price. A drawback for those with pudgy fingers is that the “Track Increment” button is right next to the “Digital/Analog Source Select” button. A surprise for those who feel that “bits is bits” is that a CDR copy of a CD or DAT sounds better than the original. This appears to be due to lower levels of jitter in the recovered data stream. (Vol. 15 No. 11; see also Vol. 15 No. 3, pp.39–41)

**Nakamichi 1000 R-DAT transport:** $5900 +

With the Nakamichi 1000p processor ($6000), this superb DAT transport is easily the most expensive R-DAT machine around. Records digitally at 44.1kHz and 32kHz and from analog at 48kHz. Superb, quiet tape transport, unique fast-spooling mode, and exceptional ergonomics make it a joy to use. Treated as a D/A processor, the sound of the original version was not up to such Class A contenders as the Theta DS Pre, being less transparent. The current 1000p is much improved, particularly when it comes to soundstaging, though it was ultimately outclassed by the original PS Audio UltraLink. The Nakamichi was used to master the first Stereophile Test CD, though its A/D section does not now match the transport in overall quality, being exceeded by the Manley and Pygmies ADCs. (Vol. 12 No. 1; see also RH’s Follow-Up on the 1000p in Vol. 15 No. 6.)

**B**

**AKG C414B/ULS:** $1199 +

A popular, large-diaphragm condenser mike, the 414’s extended bass and flat frequency response make it ideal for a variety of applications. Switchable polar patterns, variable pad, and selectable LF rolloff add to its versatility. Transformer-less TL version costs $1499. (NR, but see Track 5, index 11 on the first Stereophile Test CD.)

**AKG The Tube:** $2999 +

One of the few currently produced tube microphones. Smooth, open, and uncolored, The Tube captures detail without obvious bias. (NR)

**AMS SoundField MK.V:** $8500 +

Having used both Mk. III and Mk. IV versions, JA feels that the highly praised variable pickup pattern of this stereo Ambisonic mike is let down by an overall “grayness” and lack of midrange detail, coupled with a slightly hard lower treble. Nevertheless, it’s excellent at capturing a true stereo image with width and depth. Price includes recording kit, windscreen, 20m of dedicated multi-conductor cable, 100m of S/PDIF leads on a reel adds $450 to price. (NR, but audition track 10 on the first Stereophile Test CD, and track 13 on Test CD 2.)

**EAR “The Mic”:** $4000 +

Using a single 6J1B tube and a first-rate output transformer, this very expensive rectangular-capsule (sourced from Milab), switchable-pattern (omni, cardioid, figure-8) mike is somewhat noisier than average and shut-in in the highs, but has extended low frequencies and a midrange that’s extremely true to the original source. “Near edge of glare or glare,” says RH. Borderline Class A. (NR, but audition track 10 on the first Stereophile Test CD, and track 13 on Test CD 2.)

**Neumann U-87A microphone:** $7000

A perennial favorite among recording engineers. Wide, flat response gives it a similar balance to the AKG 414, but with more “reach” in stereo mixing applications. Used extensively for vocals. (NR, but audition track 5, index 12 on the first Stereophile Test CD.)

**Panasonic Pro 3700 R-DAT recorder:** $1599

According to PW/M, the 3700 clearly outperforms most mass-market DATs with its MASH oversampling encoders and pretty good analog circuitry. A best-buy storage device when used with an external ADC such as the Pygmy or Manley. Offers better sound with redesigned filters, easier head cleaning, a jog/shuttle control knob, more flexible controls, and a lower price tag than its predecessor, the 3500. Includes useful error rate, headline, and SCMS status indicators (SCMS can be switched out when recording from the AES/EBU data input). Analog outputs are all balanced XLR. Only inconvenience is that a rear-panel DIP switch is used to select between AES/EBU and SPDIF data inputs. (NR)

**Tandberg TD-20A-SE Open-Reel Tape Recorder:** $1995 +

The best buy in an open-reel deck, this Norwegian model offers professional-caliber performance at a
relatively modest price. Better sound than many professional decks, but ergonomics are not as good as the Revox or HK0-99. Now distributed in the US by Tandberg International of Brewster, NY. (Vol.7 No.7)

Teufelken ELAM251 ★
Classic tube mike with a sweet, warm sound. No longer made, but available in the used market at many times its original price. Smoother HF than the 414 or U-87. (NR, but audition track 5, index 16 on the first Stereophile Test CD)

C
AKG C4608/ULS/CK61: $649 ★
A small-diaphragm condenser mike with removale cardioid capsule (unidirectional, hypercardioiud, vocal, and shotgun capsules are also available). Sound is very detailed, but the tonal balance leans toward the thin and bright, and it has some off-axis peakiness, making it a less than optimal choice for realistic two-mike stereo. Good on drums, however. The C460/C61 is said to be much improved over its predecessor, the C451/C1. (NR)

Crown SASS-P Mk.II microphone system: $899
This is a stereo pair of onix PZM microphones in a head-sized foam block that produces ORTF—like, superbly natural stereo imaging. Extended bass response, unlike most directional microphones. Weighs only 1 lb, making it very easy to hang from cables or mount on a tall stand. "One SASS-P unit, one stand, and a Panasonic Pro 255 DAT make a complete but amusingly portable recording system with very satisfying results," reported PWJ. BS found the original version to sound very dry and rather grainy, but the Mk. II is said to be much improved in these areas. (Vol.15 No.7)

Foster M22RPS M-S stereo microphone: $1095 ★
Integrated ribbon M-S stereo microphone. While not quite as open at the top as the best capacitor mikes, and possessing a lightweight bass, the M22RPS captures the original soundfield extremely accurately. Stripped-down version, the M20RPS costs $700. (Vol.11 No.3)

Panasonic Pro 255 portable R-DAT recorder: $2700 ★
Good sound, with MASH A/D and I3A encoders. Less flexible than the 3700, and lacks digital inputs. Amazingly tiny for what it does—far away the best-sounding recorder small enough to carry in a coat pocket—but not rugged enough to be trouble-free when subjected to abuse. Built-in mike preamp, while not the ultimate, is good enough for serious use. (NR)

Sony TC-D5M: $750 ★
This decade-old portable will handle metal-particle tape but offers only Dolby-B noise reduction. It's probably still the best location cassette recorder available short of an R-DAT, says JA. (NR, but see "Letters" in Vol.16 No.10.)

D
Sony WM-D6C Pro Walkman cassette deck: $400 ★
A pocketable stereo recording system of surprising quality and versatility. Alvin Gold feels that to spend more on a cassette deck would be a waste of money. Less expensive WM-D3S ($270) is half the size, but keeps most of the quality. Higher wow and flutter, however. (Vol.7 No.6, Vol.10 No.6)

Any cheap Dolby-C cassette deck
Buy the cheapest with the longest manufacturer's warranty; don't expect to get high-end sound quality from it; use it to make tapes for your car or Walkman until it breaks; throw it away; buy another one, advised ST in Vol.10 No.9. Still good advice today.

Deletions
Pioneer Elite CT-193 cassette recorder no longer available.

K
Pygmy AD1 A/D converter, Dorrrough AES/EBU peak/average level meter, AMS 250 SoundField microphone, Manley microphone preamplifier, be added to latest version, though rear pillar restricts their utility. Price includes three Super Spikes. (Vol.14 No.7)

Arcic Superstructure I & II: from $177.50 ★
Basic price includes one shelf. Versatile, well-made, reasonably priced metal equipment-rack system that doesn't require assembly. Our experience with two samples of the II indicates that the shelves can be a little underenerized, however. New, bigger spikes eliminate any tendency toward instability. (Vol.14 No.11, Vol.16 No.10)

ASC Tube Traps: $229 to $699, depending on size and style ★
Relatively inexpensive but remarkably effective room-acoustics treatment. Tube Traps soak up low- to-high bass standing-wave resonances like sponges. The $379 Studio Trap provides easily tuneable upper-bass absorption that JE found to be a boon with the Martin-Logan CLS BAs. RH recommends the Tower Traps ($459/pair to $569/pair, depending on size), which proved very useful at eliminating side-wall reflections. (Vol.9 No.3, original Traps; Vol.15 No.2, Studio Traps; Vol.16 No.12, Tower Traps)

Audio Advisor Efﬁx AC Polarity Tester: $29.50 Components tend to give the best sound with the lowest potential between their chassis and signal ground. JGH found using the Efﬁx to be an easy, non-contact method of optimizing this aspect of performance in conjunction with AC "cheater" plugs. (Vol.15 No.6)

Audio Control Industrial SA-3050A Analyzer: $995 ★
Portable (battery-powered) and inexpensive 8-octave analyzer with pink-noise source. ANSI Class II filters, accurate calibrated microphone, and six non-volatile memories. Parallel port can be used with any Commodore-compatible printer to print out real-time response. (Vol.11 No.6, Vol.12 No.3)

Audio Power Industries Power Wedge Model 116 AC Line Conditioner: $569 Featuring RF filtering, three isolation transformers

...audible results with the finest in connecting components!

SOUND CONNECTIONS INTERNATIONAL, INC.
203 Flagship Dr. — Lutz, FL USA 33549
PH: 813-948-2707
Fax: 813-948-2907
with dual secondaries feeding six AC outlets, and MOVs to absorb voltage spikes on the AC line, the Power Wedge also offers four filtered outlets to plug your power amplifier(s) into. Highly recommended— "Makes the silences pure silent," says JA (though LL cautions that, in some systems, it may detract from overall dynamics). Actual model reviewed was the very similar Model 1. Other models are available with fewer outputs. Audio Power’s $279 Power Enhancer and Powerlink AC cords ($1596) enhance the performance of the Power Wedge even further, found JA, the former increasing the solidity of his system’s bass performance. (Vol.14 No.11)

AudioPrism CD Stoplight: $14.95 ø
Green water-based acrylic paint for coating the edges of CDs. The green color—it absorbs the laser’s infrared wavelength—is presumably significant, but at present we have no idea why this tweak should so improve the sound of CDs. That it does so, however, seems to be beyond doubt to anyone with ears to hear (though no one single product has raised greater eyebrows from the mainstream press). “This stuff works!” report JE, PW, and JA, who feels that it increases soundstage definition, improves the solidity of bass reproduction, and usefully lowers the level of treble grain so typical of CD sound. PW and MC report that a water-based poster pen, the Uniposca from Mitsubishi, has a very similar effect. MC also notes that the CD should first be deacidized and its edges degreased before the green paint is applied. (Vol.14 No.11; see also DO’s and TJN’s WCES reports in Vol.13 No.3 and ST’s and RH’s articles on CD tweaks in Vol.13 No.3.)

AudioPrism DM-1000 cartridge demagnetizer: $95 ø
Effective, but be sure to remove the stylus assembly when using any of these devices to demagnetize a moving-magnet cartridge. (NR, but the similar and more expensive Sumiko FluxBuster was reviewed in Vol.9 No.4, Vol.10 No.5, Vol.12 No.4.)

AudioQuest Laserguide: $20
"If you’re into glossing up your CDs, this is the best stuff!" we come across," says CG. (With all CD treatments, take care not to scratch the playing surface.) (NR)

AudioQuest Sorbothane Feet ø
One of the best means of isolating components from vibration. A set of four big feet costs $50, four CD Feet, $30. (NR)

AudioQuest Sorbothane Tube Dampers: $15/set of four
Used two to a tube, these Sorbothane rings reduce microphony. Take care not to allow them to melt, however, warns SS. (Vol.16 Nos.2 & 5)

AudioStream Premier R-series rack system: from $169
System consists of R-30 Expandable Rack, $169; R-5 ES Expansion Shelf, $49; R-CC Cable Channel Kit, $35; and R-10 Amp Stand, $69. Excellent value, noted SS, but not rigid enough for use with a turntable. (Vol.16 No.10)

Bob Young Audio BALANC1 AC line filter: $585
Formerly sold under the Wave-Perfect name, the BALANC1 is recommended as an essential add-on for the Audiostatic ES-100. Versions of the line filter are available for other electrostatic speakers. (Vol.17 No.3)

Bright Star Audio Rack of Gibraltar equipment stand: $1495–$1595

Bright Star Audio Big Rock Isolation Platform: $149–$175

Bright Star Audio Little Rock Isolation Pod: $99–$114
A very effective isolation system for control of unwanted vibrational energy. Individual components float on a sand bed for energy dissipation and are weighted down with the Little Rock to minimize spurious vibrations. Sonically, the payoff is enhanced resolution of the music’s nuances, says DO. (Vol.16 No.7)

CD Greenbacks: $1.98 each & $1.50 S&H for first 5, $2 for up to 10
Green plastic disc that sits atop a CD’s label side; JE called it "the real seal of the digital age." Improves the music’s microdynamics, with a lowering of the apparent noise floor; also reduces discs that have too many errors to play without dropouts. (Vol.16 No.2)

CDAV SAVER ø
Eliminates scratches from CDs and laser discs, rendering the unplayable playable. (Vol.10 No.8, Vol.11 No.8, Vol.14 No.11; see also Vol.13 No.9, p.11)

Combak Harmonix RF-56 Tuning Bases: $220/eight
It’s hard to see how these little rectangles can affect the sound improvements that their users are attached to. MC, however, found them to significantly clean up the sound of speakers when attached to the drive unit mounting bolt positions. He also recommends trying them on the circuit boards of electronic components. SS found the bases functional when he applied them to the pcb of his beloved Denon SC-MK3.2 preamp. "If you have a component that you wish to extract every iota of performance from, you should seriously think about Combak bases, no matter how silly they seem," he says. (Vol.16 No.7)

Combak Harmonix RF-65/RF-66 Tuning Insulators: (feet): $390/four, $470/four
Combak Harmonix TU-201 large-size Insulators (feet): $650/four
Complex feet that MC found to improve the sound of some CD players and preamps, but not others. Some components may need mass-loading to bring the feet into their effective frequency range. (Vol.16 No.7)

Combak Harmonix RF-413 Tuning Cable Rings: $120/four
Rings fit over RCA plugs and speaker cable terminations, offer small improvements in clarity and dynamic contrast, found MC. (Vol.16 No.7)

Combak Harmonix RFA-78 Room Tuning Devices: $595/16
Quarter-sized metal discs which the user fixes to the ceiling and floor of the listening room. The (surprising) effect was to improve the sound’s dynamic shadings, cleaning up reverberant decay to the benefit of intelligibility. MC found that this was apparent on live speaking voice as well as on reproduced sound. (Vol.16 No.8)

Compact Dynamics CD Upgrade: $7.95/five, $49.95/fifty
Self-adhesive polyester disc, with centering system, that is stuck to the CD’s label side to produce subjective improvements similar to those from CD Stoplight and CD Greenbacks. Note that the disc is not removable. (Vol.16 No.2)

Gramolin Contact Conditioner: $29.95 ø
The right stuff for cleaning up dirty and/or oxidized plugs and contacts. Available from Old Colony Sound Lab. (Vol.10 No.6)

DB Systems DBP-10 Protractor: $30 ø
Fiddly but accurate guide for setting cartridge tangency, JAVs and JGH’s preferred alignment protractor. (NR)

Discwasher CDU/CD Laser Lens Cleaner: $21.95
PW found this CDU fitted with six tiny brushes in a spiral to be effective at improving the sound of his 18-month-old Marantz CD-80. (Vol.14 No.11)

Ensemble Tubes: $58/pair
Small one-size-fits-all sleeve made from a weave of Kevlar and copper wire that’s said to both lower a tube’s operating temperature and minimize microphonics. DO confirmed the latter, but not the former. (Vol.16 Nos.2 & 5)

Finyl CD treatment: $11.95 (treats 100 CDs)
This surface treatment made CDs sound more open, direct, and dynamic," determined PW. A larger bottle ($23.95) treats 200 CDs. (With all CD...
German Acoustics Steel Cones: $11 each

The effective brass-colored steel cones have removable hard tops. (NR, but see Vol. 15 No. 4, p. 162.)

Kimber Power Kord: $100/ft, $75 termination

ST uses Kimber Kords throughout his system and noted the improvements with a Jads dizzy.-Try before you buy, he warns. (NR)

Laser Illusions Spatial Filter: $79.95

Basically an optical aperturing disc that fits over the laser lens in a CD player, resulting in lower measured jitter in the recorded data stream. Both RH and CS found that the improvement in sound quality was offset by the player becoming much more fussy about which discs it could read. Fitted as standard in the PS Audio Lambda and Theta Data Basic transports. (Vol. 15 No. 5. Last Sty /Stylus Treatment:

$25/4 oz bottle

* Sty /Styl won't make a difference every time you put it on, but it will help provide smoother high-end sound, and is claimed to extend stylus and cartridge life. (NR)

** Merrill Stable Table Atlas turntable stand: $1097

Exceptionally stable support, but too massive for spacious floors unless some means—e.g., jacks—is found to support the floorboards. An appropriate amount of lead shot will cost around $100. (Vol. 12 No. 10)

Michael Green Designs AudioPoints for electronics: $49.95/set of 3

Michael Green Designs AudioPoints for loudspeakers: $79.95/set of 4

Sharp-pointed cones made of solid molded brass that RD found to be the best in tightening the bass and improving the midrange focus of Dunlavy SC-1V loudspeakers. (NR)

Microscan TM-8 & TM-6 vibration dampers: $120/pair, $110/pair

Commercial absorber that fits to the sides or rear of a loudspeaker cabinet using a removable magnetic sheet. (This is supplied in two forms: one for wood surfaces, the other for plastic.) JE found that they did clean up the sound of speakers, though this was not an improvement over the RD, also found it to work well on the Unity Audio Pyramid Signature speakers, though ST found that the original D-8s fell off the back of his Advents. Measurements show that, when used optimally, the Microscan units significantly removed the resonant behavior of the speaker cabinet. (Vol. 16 No. 8 & 10)

Microscan TD-24 Transfer Deck: $180

RD found the Transfer Deck to work well under the PS Lambda CD transport and the Cat SL-1 Signature turntable, in both cases producing a general cleaning-up of the sound, especially in the bass. (NR)

Mondial Magic video ground isolator: $69.95

Provides effective antenna isolation for those whose video systems have hum problems. (Vol. 15 No. 2)

Mondial Cable Footers: $30-$100/four, three different sizes

Effective Navcom isolation feet. (NR, but see Vol. 15 No. 9, p. 162.)

Music & Sound POWER masTER AC cord: $120/pair, $170/10' cord

Replacement AC power cord that AB found to make a worthwhile difference to the sound of power amplifiers. LH had some concerns about the mechanical integrity, but a recent examination by TJN revealed that these cords are about as well made as it's possible for a non-encapsulated design to be. (NR, but see "Industry Update," Vol. 15 No. 9, p. 6.)

Nestorovich Labs Cartridge Network: $300

Passive network intended to optimally load an MC cartridge. Audiofanzine's "Audiophile" version is available for an extra $250. (Vol. 13 No. 9)

Noiseflipper 2000 AC Line Conditioner: $1155

Available by mail order, this unit effectively filters RF from the AC line and features a 2kV isolation transformer. (Vol. 14 No. 11)

Noiseflipper Power Strip: $157

Shun Mook Mpingo Disc: $50

Shun Mook Mpingo Spacial Control Kit: $450

The Mpingo Disc is an ebony disc just over 1.5" in diameter and 0.5" thick. Three bonded to a wooden L-bracket make up the Spatial Control Kit, which can be used to "tune" a system's imaging. Read JS's review carefully to get the full scoop on how to use the discs, but JS is convinced that they effect a major improvement in the sound. " Yep, they work," agreed ST: "they make my $78 AR speakers sound like $2500 Linn!" Though he's not sure why they have any effect, ST does point out that they can make the sound waver if not used correctly. "Try one or three. Notice the difference." (Vol. 17 No. 2)

Shun Mook Super Passive Diamond Resonator: $400

Ebonyl foot with a diamond-tipped steel shaft that JS found to work well under CD transports, amplifiers, and preamplifiers. (Vol. 17 No. 2)

Shun Mook Mpingo record weight: $895

The best record weight JS has used on his forsell turntable, "bar none." (Vol. 17 No. 2)

Signet SK-302 Contact Cleaner Kit: $25

Contains abrasive plastic tools for effective inner cleaning of phono plugs and sockets in combination with Cramolin or Kontakt. (Care must be taken not to twist the cleaner and break the RCA socket's internal center connection.) The RCA phono plug and socket cleaners alone cost $10. (Vol. 16 No. 6)

SolidSteel 410 component stand:

$550 in black

Beautiful component rack from Italy, with individual spiked shelves. Can be mass-loaded. JE found that his system's imaging improved, compared with the massive wooden rack he'd had been using previously. Silver finish adds $50. (Vol. 17 No. 2)

Sumiko Analog Survival Kit: $50

On a "goodable" table, makes kickoff digital processors cry for EPROMs! was CG's verdict of this set of turntable and arm tweaks consisting of a paper-thin mat and a high-tension plastic strip to damp tonearm resonances. (NR, but see CG's Follow-Up on the WTRP in Vol. 16 No. 10.)

Sumiko Konkato: $50

Far away the best contact cleaner CG has used. "The gains in transparency and purity are startling," gushed he. (NR, but see "Industry Update," Vol. 15 No. 6, "Manufacturers' Comments," Vol. 15 No. 9)

Sumiko Navcom Silent Switch: $175

Robert Deutsch finds these damping feet to provide isolation superior to that of Mission's Isobolat. (NR)

Sumiko Tweek Contact Enhancer: $19

This contact enhancer for use on plugs and terminals actually improves the cleanliness and resolution of the sound of an already excellent system. Keeps freshly made contacts fresh by extending air. (Vol. 10 No. 6)

Targus TT series equipment racks:

$150-$325

Finished in basic black, these useful but inexpensive racks feature rigid, welded rectangular-steel tube construction, price dependent on height and number of shelves (from two to five). Spiked feet supplied, with top shelf resting on unpainted, available spikes to optimize it for tunable use. Target's wall-mounting turntable shelves ($95-$200) are possibly the best way of situating your turntable out of harm's way.

TDK NF-C09 Digital Noise Absorber: $149.50/pair

ST found these ferrite rings to improve the sound from CD when clamped over the interconnects between player and preamp. He also found the sound improvement noticeable when the ring was clamped over the coaxial data lead between transport and processor, though we would have thought that this would increase jitter. (Vol. 14 No. 1)

Theoria Optique: $50

Reflective inductive-matching goop which LH recommends for use with ST-type glass-fiber data links. "Must be used on the Theta's internal connections to get the full benefit," he cautions. (See L.L.'s Theta review in Vol. 15 No. 10.)

T冰e Power Block/Titan Series II:


$1350/$1100 Super, if expensive, AC conditioning system. Series II models differ from the original in having a TPT-treated AC cord (!) and specially designed capacitors. RD finds the Series II to give a significantly extended top end. Updates cost $300 (Power Block) and $50 (Titan), including return shipping in original packing. A “DIY” Series II parts upgrade kit costs $200. The new expanded-scale voltmeter for the Power Block costs $85. (Vol.13 No.4)

Tiptoes: $11.50 each The Mod Squad’s greatest invention. The least expensive way of improving the bass and midrange definition of virtually any loudspeaker when used to couple the speaker or stand to the floor. Version with thread or screw costs $16.50 each. (Vol.9 No.1)

WBT RCA plugs: $50/pair The best, although original steel locking collet, now replaced by brass, gave rise to neurosis. (NR, but see “Industry Update,” Vol.12 No.9.)

Good Speaker Stands
There are too many possibilities but, briefly, a good stand has the following characteristics: good rigidity; spikes on which to rest the speaker, or some secure clamping mechanism; the availability of spikes at the base for use on wooden floors; if the stand is steel, provision to keep speaker cables away from the stand to avoid magnetic interaction; and the correct height, when combined with your particular speakers (correct height can be anything from what you like best to the manufacturer's design height for best drive-unit integration). Though Stereophile has neglected to review speaker stands, it's not because we think they're unimportant—for speakers that need stands, every dollar spent on good stands is worth $5 when it comes to sound quality. Brands we have found to offer excellent performance are Chicago Speaker Stand, ArcTec Rapid Riser, Gosen SLS, Merrill Sound Anchor, Target, Sanus Systems Steel and Reference, and Linn. (Sound Anchor also makes an excellent turntable stand, reports TJN.) Interface material between the speaker and the stand top plate is critical. Inexpensive Blu-Tack seems to reduce the amplitude of cabinet resonances the most (see Vol.15 No.9, p.162).

K Goldline DSP-30 real-time analyzer, MIT Z-1 Z-Stabilizer, Z-2 Z-Strip, Z-3 isolation transformer, Versalab Red Balls & Wood Blocks, Champ Audio Labs Lightspeed CLS6400 Isolite conditioner, Panamax MAX 1000 surge protector/line conditioner, QR/DNM Ringmat turntable mat, Caig ProGold contact enhancer.

Deletions Roomtime ClampRack discontinued.

Record-Care Products

A

Gruv-Glide II: $21.95 Record de-staticizing agent that ST found to give better sound. Apparently doesn't leave a film or grunge-up the stylus. (Vol.9 No.8)

LAST record-preservation treatment: $30/2-oz bottle Significantly improves the sound of even new records, and is claimed to make them last longer. A 2-oz bottle contains 60 treatments. (Vol.5 No.3)

Nitty Gritty Mini Pro 2 record cleaner: $75

This semi-automatic wet cleaner cleans both disc sides at once. Slightly less rugged than the VPI, but both do an excellent job, and the Nitty Gritty Pro II is faster. Significantly better design than earlier Nitty Gritties. You may be surprised that the main sonic effect of cleaning LPs is not primarily a reduction in surface noise, but a cleaning-up of midrange sound. (Vol.8 No.1)

Nitty Gritty 2.5FI record cleaner: $39

Instead of a vacuuming "tonearm," as on the professional Kenh Monks machine, the NG cleaner uses a vacuum slot. Cleaning is efficient and as good as Nitty Gritty's Pro, at a significantly lower price, though it takes twice as long, cleaning each side of an LP in turn. (Vol.7 No.5, Vol.8 No.1)

VPI HW-17 record cleaner: $800

Clearly an industrial-quality machine of reassuring quality, the VPI does one side at a time, semi-automatically, and is slower than the Nitty Gritty. A highly functional and convenient luxury. Latest version has a heavier-duty vacuum system. (Vol.8 No.1)

B

VPI HW-165 record cleaner: $450

Manually operated version of HW-17 (above), noisier motor; less money. Adjusts automatically to thickness of record. Gets hot quickly. (Vol.5 Nos.7 & 9, review was of earlier but substantially identical HW-16.)

Nitty Gritty Mini Model 1.0 record cleaner: $239 $$$

Audio Advisor Record Doctor II: $190 $$$

Both of these machines (the latter is manufactured for Audio Advisor by Nitty Gritty) are manual units that offer the least expensive way to effectively clean LPs. The Record Doctor II differs from the original in that it has a roller bearing to make turning the LP easier when the vacuum—cleaning motor is on. The earlier model can be fitted with a roller-bearing accessory, available for $16 including S&H from KAB Electroacoustics, P.O. Box 2922, Plainfield, NJ 07062-2922, which fits beneath the existing platter. The Nitty Gritty 1.0 is also available as the oak-finished 2.0 for $289. (NR)

D

Decca, Hunt-EDA, Goldring, or Statibrush record brush & Properly used (held with the bristles at a low angle

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Stereophile, April 1994
against the approaching grooves and slowly slid off the record), these are the most effective dry-record-cleaners available. (JGH disagrees, feeling that they leave the dust on the record.) No substitute for an occasional wet wash. (Vol. 10 No.8)

**Discwasher record brush**

If you have to clean a machine, the DW system will do an adequate job on relatively clean records, but won’t get out the deep grunge. If you begin to accumulate lots of gunk on your stylus after cleaning your record with an older DW brush, the bristles at the end will lend itself back for refurbishing, or buy a new one. A high-torque turntable is recommended. (NR)

**Deletions**

Nitty Gritty Hybrid 2 Record/CD-cleaning machine discontinued.

**Loudspeaker Cables & Interconnects**

Editor’s Note: Rather than classify cables into the usual four “Recommended Components” classes, we’ve just listed those cables that members of the magazine’s review team either have chosen to use on a long-term basis or have found to offer good value for money. They are therefore implicitly recommended. Where a cable has been found to have specific matching requirements or an identifiable sonic signature, these are noted in the text.

Jack English supplies a cogent essay on the whole subject of cables in Vol.14 No.10, but bear in mind that, to a far greater degree than with any other component, the sound of cables depends on the system in which they are used. Before parting with possibly large sums of money for a cable, it’s essential to audition it in your own system. “Drinking by the label” is always a bad thing to do in hi-fi, but it’s both unforgivable and unwise when it comes to speaker-cable purchases. In addition, what’s the “best” in absolute terms may not necessarily be the best for your system.

AB points out that mixing n’ matching interconnects and speaker cables is a well-worn route to sonic disappointment. His advice: Always use interconnects and speaker cables from the same manufacturer. PWM strongly makes the point that less is more when it comes to speaker cable, recommending that a mono power amplifier be placed as close as possible to the speaker it drives. This does put the buck, however, to the preamplifier, which must then be capable of driving long lengths of interconnect. Peter uses Canare Star Quad microphone cable for interconnect, a cable available from pro-sound outlets that CG feels to be the best of its type.

**Interconnects**

Acoutec 6N-A2010: $400/1m terminated with 6N copper RCA plugs gold-plated pins

“Very, very good,” according to LL. “Amazing clarity,” reports DO.

AudioTruth (AudioQuest) Lapis Hyperlitz: $245/1m pair terminated w/RCA plugs, $550/1m pair terminated w/AQ custom XLRs & direct gold-plated FPC sockets & pins

Tonally, the latest version of Lapis (which uses RCA plugs made from Functionally Perfect Copper, or FPC, with the gold plating applied directly to the copper and not to a cable sheath) is better than ever. The Lapis cables—MIT, Monster—and those that are rather up-front in the treble, such as Madrigal HPC and Straight Wire Maestro. JA feels, however, that its outstanding virtue is a lack of grain that allows correct instrumental textures to flow freely and a deep, well-defined soundstage to develop. Auditioning of current-production Lapis (as of 291), which uses Tellon insulation and long-grain, solid-silver conductors, suggests that this is the best AudioQuest interconnect, apart from their even-more-expensive Diamond x2. Auditioning of identical lengths of Lapis fitted with Neutrik XLRs and AudioQuest’s own custom XLRs suggests that the latter represents a useful step forward in sound quality (!).

AudioTruth (AudioQuest) Diamond x2: $625/1m pair, $705/1m pair w/AQ custom XLRs w/direct gold-plated FPC sockets & pins **Superb resolution of detail coupled with a musically natural midrange and excellent low-frequency weight. Now Diamond x3 ($900/1m pair) is said to offer improved performance as balanced interconnect.

Cardas Hexlink Golden Fine C: $650/1m unbalanced pair

Golden-section-stranded, PTTFE-insulated interconnect needs an immense break-in period, but then has a glorious bass and an excellent sense of pace and dynamics. JE found that upper mids can be a bit forward. (Vol. 15 No.12)

Cello Strings:

$320/1m pair terminated w/RCA plugs

$380/1m pair terminated w/XLRs

$476/1m pair terminated w/Fischers

“Remarkably well made,” said LL, “and ‘faster’-sounding than the Acrotec interconnect.”

Expressive Technologies IC-1:

$600/1m pair terminated w/RCA plugs

IC-1 gets excellent results when interconnect with the same company’s SU-1 step-up transformer. “Despite the fact that these cables are bigger around than a garden hose, ridiculously bulky, unwieldy, and stiff, the musical rewards they offer are well worth the trouble,” he says. A D0 favorite. Less cumbersome IC-2 is close in sound quality. (Vol. 15 No.7)

Finestra Argento Signature Mk. II interconnect:

$1795/1m pair

Unbelievably expensive cable uses “six-nines” silver conductors, each insulated with Teflon. JE found that it offered exceptional clarity with line-level signals, though he couldn’t eliminate hum when using it as a phono lead. (Vol. 16 No.5)

Jereid BG-6: $550

DAS fits this inexpensive generic cable (available from radio-supply shops) with Radio Shack plastic-shell RCA plugs modified to fit the wire diameter, and feels that the result is remarkably uncolored.

Kimber KCAG: $350/1m pair

RCA or XLR termination XLRs **Unshielded but astonishingly transparent, and offering improved image focus and even better clarity when compared with Kimber’s PBJ. A JE and TJ favorite. (NR, but see Vol. 16 No.7)

Kimber KC-PBJ interconnect: $625/1m pair

RCA or XLR termination $$$

Unshielded cable that CG found to come very close to RCAG in his system, citing its HF detail, air, clarity, and tonal accuracy. For those with RPI problems, Kimber’s KCI ($765/1m pair terminated) is the same cable with a grounded shield, but doesn’t sound quite as good. (Vol. 16 No.7)

Magnan Type Vi:

$595/4’ pair, $695/4’ pair balanced **

“A masterful ability to simultaneously achieve state-of-the-art levels of both musicality and accuracy,” said JE. Combines a rich, full-bodied sound with excellent retrieval of detail. (Vol.15 No.12)

Magnan Type III: $195/m, $295/m pair balanced

Bearing a strong family resemblance to the more expensive Type Vi, the Type III is less impressive at the frequency extremes, according to JE. (Vol. 15 No.12)

MIT MI-330 CVT Plus Terminator: $1800/1m pair terminated w/MIT CVT RCA plugs

Extremely expensive interconnect uses patented network-works but gives an extremely palpable, musically natural sound, said JA. (Did he say it was extremely expensive?) RCA plug center-pins a very tight fit with some jacks.

Monster Cable MS2K Sigma:

$750/1m pair terminated w/RCA plugs

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— Gildard D. Burt, Sterenol Sound, Issue No.43, Fall 1993

"If you have a listening room of reasonable size, nothing can improve your stereo system as dramatically for $750 as the HS Research HRSW10!"
— Pete Azcel, The Audio Critic, Issue No. 19, Spring 1993

"I guarantee you this much: once you have good, clean bass, you'll be hooked for life. Highly recommended!"

"Truly awesome noise-shaming bass...+5 to 13Hz, +40dB at 60Hz!"
— Don Keano, Audio 11/92

"Most effective subwoofer we have tested...Best Buy!"
— Julian Hirsch, Stereo Review 9/92

"Bass extension was truly remarkable!"
— Robert Deutsh, Stereophile Vol. 15, No. 4, April 1992

"Delivered clean low level bass at high levels...work just splendidly!"
— David Moran, Speaker Builder 1/91

"Some of the most impressive subwoofer systems I've heard!"
— Peter Mitchell, Stereophile Vol. 16, No.3, March 1993

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STEREOPHILE, APRIL 1994

Acrotec 6N-S103B: $199m
This "six-nines" pure-copper cable is recommended by DO as good value for money. The strong bass and low-level detail resolution are exemplary. LL finds it's clearly the best speaker cable he's heard.
AudioQuest F14: $85/ft. ★ ★ ★
Inexpensive flat-twin solid-core cable that RH enthusiastically recommends as excellent value for money.

AudioQuest Type 4: $2.25/ft ★ ★ ★
"The best cheap speaker cable on the market, and much better-sounding than F14," sez CG. "Try this stuff before laying down long green for expensive cables."

AudioTruth (AudioQuest) Clear Hyperlitz: $1295/10' pair terminated, $1055/8' pair terminated (most common length) ★ ★ ★
Very expensive, but solid bass reproduction with a clear (hal), open midbass and treble. Can sound rather lightwight in some systems, but almost defines the term "neutralitly," says JA. Uses "6N"-pure copper bundles in a complex lay that brings every conductor to the surface to the same extent.

AudioTruth (AudioQuest) Midnight Hyperlitz: $275/8' ★ ★ ★
Almost as good as Clear at a much lower price.

AudioTruth (AudioQuest) Sterling: $1995/10' pair terminated, $1615/8' pair terminated
AudioTruth (AudioQuest) MiniSterling: $2655/8' pair terminated
Two silver-conducted speaker cables that are maximally smooth and transparent, according to RH and JA. JA also finds the powerful bass performance of Sterling to be its strongest suit.

Audio Research Litzline 2: $520/1m pair, $640/3m pair
JE found this under-promoted speaker cable to perform well in a diverse variety of systems, working especially well with ARC's own amplifiers.

Cardas Hexlink Golden Five C: $840/1m pair, $1360/10' pair ★
Very similar in character to the Cardas interconnect. A JE reference cable. (Vol.15 No.12)

Kimber 4 AG: $100/2m ★ ★ ★ ★
An expensive hyper-pure silver cable that can offer a glimpse of audio heaven. Significan system sensitivity, points out DO, so be sure to check for compatibility before you buy.

Kimber 4TC: $4.60/1m ★ ★ ★ ★

Kimber FTC: $8.60/1m ★ ★ ★ ★
A double run of FTC greatly improves the sound, feels DO. Excellent bass.

Kimber 4PR: $11.60/1m ★ ★ ★ ★
Least-expensive of this line. Kimber was found to have good bass, but a "izzy" treble and poor soundstage, according to DO. With inexpensive amplifiers, however, its good RF rejection, compared with zipcord or spaced-pair types, will often result in a better sound.

MIT MH-750 CVT Plus Shotgun Terminateur: $4500/8' pair terminated w/MIT CVT spade connectors
Extremely expensive cable that forms a synergistic combination with Wilson WATTs and Puppies.

Monster Cable MS2 Sigma: $1000/12' pair terminated, $750/8' pair terminated ★ ★ ★
Excellent detail, attack, and delineation of space, found AB. Not as transparent as XLO Type 5, but takes the honors for presence, pace, and harmonic integrity.

Naim NACAS: $12.95/m ★ ★ ★ ★
Inexpensive cable that ST found to work well with the Spendor S100 loudspeaker. Worth investigating as a good-value cable, thinks JA.

NBS Signature: $900/3' pair JE's reference. (Vol.16 No.11)

OCOCO cable: $8/ft plus $75/pair termination ★ ★ ★
Distributed by Sumiko, this lissokynetic cable was found by LG to have a speed and clarity he hadn't heard from other cables. He found the bass to be a little lightweight, but voted it a "three-star" design.

Purist Audio Coollus: $1800/1.5m pair, $2000 each additional 0.5m
The famed "waxer" cable with a fluid-filled insulating jacket. AB found "resoundingly open staging with
A remarkably distinct lower-midrange-uppper-bass presentation which lends music a great sense of pace." Radio Shack 18-gauge solid-core hook-up wire: 11¢/ft = $$$

Ridiculously cheap way of connecting speakers, yet ST reports that this cable is okay sonically. You have to choose for yourself whether to space or twist a pair of wires (even when to double up the runs for less series impedance).

Siltech FT-12: $595/first meter w/s拍ades, $250/2nd additional meter MC: Good shield cable, but high inductance mandates careful amplifier choice.

Straight Wire Maestro: $560@@/pair w/gold splice lugs or pins; $30/additional foot • The cable that LA found to work best between the Krell RSA-260 and Thiel CS5s.

SYMO LS55X: $30/ft w/gold-plated speaker connectors

Distributed by Apexo Acoustics, this relatively inexpensive cable works well with, you guessed it, Apexo's. TJN's reference for use with the Stages. TARA Labs Space & Time Rectangular Solid Core "Master": $45/ft plus $90 termination RD found that these cables have wonderful lucidity and a top-to-bottom coherence that's truly heavenly: "The Almighty owns these cables." AB found it to have an endearing smoothness, "but without obvious loss of detail due to softness." DO's favorite speaker cable: "Quite spectacular in its resolution of spatial information," he says.

TARA Labs Space & Time Phase II cable: $6.95/ft • $$$

Featuring twisted solid-core construction and "Australian copper," this inexpensive cable is DO's workhouse speaker cable. (Vol.11 No.3)

van den Hul Revelation cable: $873/2m pair, $1495/4m pair

The best speaker cable MC has used at any price. (Vol.16 No.5)

XLO Type S: $55/ft, plus $100 termination

"The best overall XLO line"—very consistent, and very detailed."—AB. Perhaps a touch of midrange prominence makes it less suitable for speakers that are already balanced too far forward. Not as expansive as TARA RSC or Monster's Monitor, works well with tube amps. (Vol.15 No.12)

A Straight Virtuooso, Wireworld Eclipse, Transparent speaker cable.

Digital Data Interconnects

Editor's Note: Extensive auditioning by RH suggests that a variety of digital data cables listed below are better than conventional, TosLink-fitted, plastic fiberoptic cables, which in general don't give as tight a bass as or focused a soundstage. "You don't get that essential sharpness of image outlines, the sound becomes more homogenized," quoth he, which is why we no longer recommend any of the TosLink interconnects. JA feels that coaxial interconnects generally fall short of the sonic standard set by the "AT&T" ST optical data connection. He also points out that the specific character of any particular cable will depend heavily on the transport and processor it connects.

Acrotec D5010 digital data link: $68/1m

Mapleshade Electronics Omega Mikro digital data link: $295/1m

The Acrotec and Mapleshade cables join the Ensemble Digitux 75 as the absolute best data links DO had auditioned as of early '94 in his Theta-based CD playback system. System-dependent factors, however, are critical determinants of any digital link. Altis Aliminate Glass Fiber: $150/1m, $55 additional 1m

"Four stars," says JE of this ST-type datalink, finding it endowed his Mark Levinson-based system with a wide, deep soundstage and a smoothly liquid midrange. (Vol.16 No.11)

Very stylish and awkward to handle, notes RD, but it does sound remarkably transparent. RH also recommends it highly. (NR)

van den Hul D-102 Mk III interconnect: $141.11/1m pair terminated

Although nbt specifically intended for use as a data-link, JE found this interconnect to be useful in systems that are too bright overall, too forward. (Vol.15 No.2)

XLO Type 4 Reference Series digital data interconnect: $150/1m, $50 additional 0.5m

JE found this unbelievable cable to excel in soundstage presentation, while being warmer and fuller than the Kimber AGDL. "The best digital cable I have yet heard in re-creating a believable soundstage with layers upon layers of width and depth, ample ambience, and pinpoint localization," he announced. (Vol.15 No.2)


Computer Software

CALSOD loudspeaker system optimization program, version 3.00: $339 w/printed manual, $269 w/son data disk (5¼" or 3½"")

User enters measured drive-unit response, impedance and sensitivity, and target response; program designs appropriate crossover and equalizers. Version handles double-ported bandpass enclosures, and can calculate the effects of LF room gain, enclosure leakage and absorption losses in scaled-box, vented-box, passive-radiator, and bandpass systems. Thiele-Small parameters can be calculated from two impedance measurements, and data can be imported from the IMP PC-based measurement system. Available from Old Colony Software, PO. Box 243, Peterborough, NH 03458-0243. Tel: (603) 924-6932 or Fax: (603) 924-9467. (Vol.13 No.11)

LEAP 4.5 loudspeaker design program: $395—$1195

Highly recommended by DO and much used by professional designers, LEAP imports raw drive-unit data (it accepts Audio Precision and MLSA files as well as data produced by Audio Technology's own LMS system) and optimizes a speaker system's cross-over network to meet the user's target specifications, either on- or off-axis. (It also averages responses to give a speaker's power-handling and fully loaded capabilities.) LEAP 4.5, which includes a SPICE-type passive network analyzer and an Active Filter Library, costs $1195, a basic version, to which modular upgrades can be made (each one is $175), costs $395. Available from LINEARX Systems, Inc., 7556 SW Bridgeport Rd, Portland, OR 97224. Tel: (503) 620-3044. Fax: (503) 598-9258. (Vol.13 No.11)

The Listening Room: $47.50

Inexpensive but excellent computer program for PCs and Macs that allows an audiophile to move simulated loudspeakers and a simulated listening seat around a simulation of his or her room (in three dimensions) to find the position giving optimal performance below 400Hz or so. The suggestions made by TJN in his review have been incorporated in the latest version, which can also store different setups as separate files. Upgrades are available for $15, inc. postage. The Macintosh version ($47.50 introductory price) requires 1MB RAM and allows local optimization of listener and/or speaker positions. It also models the listener's LF limit and slope. Available from Sitting Duck Software, PO. Box 130, Veneta, OR 97487. Tel: (503) 935-3982. (Vol.13 No.12)

SPEAK loudspeaker design program: $395

DO's program effectively calculates loudspeaker low-frequency response and specifies re-creation, impedance, excursion, even pipe resonances—for scaled-box, reflex, and even transmission-line alignments. Available from DLC Design, 24166 Haggerty Road, Farmington Hills, MI 48335. Tel: (313) 477-9370. (Vol.16 No.3)
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DUNLAVY AUDIO LABORATORIES
SC-IV LOUDSPEAKER
Robert Deutsch

Three-way dynamic loudspeaker. Drive-units: 1" soft-dome tweeter, two 5½" cone
midrange units, two 10" long-throw woofers. Crossover frequencies: not specified.
Amplitude/frequency response: 37Hz-20kHz ±2dB, approximately -6dB at 27Hz.
Phase/frequency response: ±20° from 200Hz-1kHz. Sensitivity: 96dB/W/m. Impedance:
nominal 5 ohms, minimum 3.0 ohms, maximum 7.5 ohms including bass resonance.
THD: <0.3% for an SPL of 90dB (re: 1m) at all frequencies above 100Hz. Pair matching:
better than ±0.5dB up to 1kHz. Power handling: peak 250W for 10ms, average (pink
noise) 25W. Recommended amplifier power: minimum 100W into 8 ohms. Recom-
manded listening distance: 8'-25'. Serial numbers of samples reviewed: 058A/B, of
speaker measured, 0173. Dimensions: 72" H by 12" W by 18" D. Weight: 180 lbs.
Price: $4995/pair in black or oak finish, $5495/pair in dalwood rose or dalwood teak.
Approximate number of dealers: 22. Manufacturer: Dunlavy Audio Labs, P.O. Box
49399, Colorado Springs, CO 80949-9199. Tel: (719) 592-1891. Fax: (719) 592-0859.

"D
AL firmly believes that a full
set of credible measurements,
made by qualified engineer-
ing staff using state-of-the-art equipment and
facilities, can reliably predict the potential of
a loudspeaker to accurately reproduce the com-
plex sounds of music."

—Dunlavy Audio Labs

For many audiophiles, there's a fightin'
words. We've all heard speakers with flat
frequency response that don't sound
nearly as good as the measurements
would imply. We've also heard speakers
that, while far from exemplary in the
measurement realm, nevertheless con-
trive to sound like music. We pride our-
selves in having genuine 24-karat ears
that are superior to any instrument! And
while most speaker-designers make
extensive use of computer-based mea-
surement systems such as MLSSA, it's
often said that speaker design remains as
much an art as it is a science.

Ah, but there's measurement, and then
there's measurement. Designer John Dun-
lavy specifies a "full" set of "credible"
measurements. He measures everything
about a speaker's behavior, paying par-
ticular attention to the impulse response,
measured anechoically at the typical
listening distance of 10'. He points out

1 The cartoon, by Elwood H. Smith, that illustrated J-
Gordon Holt's series of articles on audio terminology
(Vol.16 Nos.7-9) has one listener, with bananas sticking
out of his ears, saying, "Measures well," while the other,
whose pencil and pad identify him as an audio reviewer,
exclaims, "Aggressive, analytical, arrgh!!"

2 The MLSSA waterfall plot is, in fact, calculated from
the impulse-response measurement.

3 Dunlavy retains partial ownership of Dunotech, the
company he founded, but he's no longer involved with
them at the design level.

Dunlavy Audio Labs SC-IV loudspeaker

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WorldRadioHistory

STEREOPHILE, APRIL 1994
may still disappoint in subjective terms. The proof, as always, is in the listening.

DESCRIPTION & DESIGN

It definitely takes two people to unpack and set up a pair of SC-IVs. The 6'-tall, 180-lb speakers, which are obviously well out of the minimonitor class, are likely to visually dominate all but very large rooms. However, the SC-IV's proportions are unusually pleasing, and the speaker is mounted on a stand/plinth in a manner that gives the impression that it's "floating" in the air, so the overall effect is not as massive as might be expected.

The review pair was finished in flawless "architectural-grade" oak veneer. Removing the grille revealed a symmetrical arrangement of drivers that those familiar with Dunlavy's earlier Duntech designs will recognize: a centrally located fabric-dome tweeter, flanked by 5½" cone midrange units, with 10" woofers at the top and bottom. The tweeter and midrange are sourced from Vifa, with modifications (including damping of the tweeter's back wave) made at the factory, according to DAL's specifications. The tweeter is relatively inexpensive, but Dunlavy claims that, when modified, its performance exceeds that of the most exotic and expensive units on the market.

The Morel woofers feature long-throw voice-coils. The tweeter and midrange drivers are in a sealed compartment that does not extend the full depth of the cabinet, leaving the rest of the cabinet (including the space behind the tweeter/midrange compartment) to serve as a common enclosure for the woofers. The 1½"-thick MDF cabinet is heavily braced and filled with foam (Dunlavy believes that overdamping the woofer produces the most realistic bass response). As with Duntech speakers, there is extensive felt treatment around the tweeter and midrange drivers.

Generically, the rather complex crossover falls into the minimum-phase (6dB/octave) category, but Dunlavy says it cannot be accurately described in terms of conventional slopes and crossover points. There's also a network to notch out the tweeter's resonant frequency and conjugate load matching to produce an easy impedance load. The SC-IV is set up for single or bi-wiring. The binding posts are extra-thick, which makes them incompatible with most spade lugs, and they're difficult to tighten properly. DAL's Quality Assurance process involves the testing of every component, subassembly, and assembled speaker.

SYSTEM

Analog: Lingo'd Linn LP12 (Cirkus'd just a few days before the end of the review period), Ittok, AudioQuest AQ7000NSX. Digital: PS Audio Lambda transport, PS UltraLink processor, AudioQuest OptiLink Pro 2 ST datalink. Preamplifier: a Convergent Audio Technology SL-1 Signature, with the latest Marigo Audio Labs AC power cable (highly recommended to CAT-lovers). Power amps on hand included a pair of Bryston 7BS, Quicksilver Silver Monos, a Luxman MQ 68C, and a Krell KSA-1005 (review forthcoming). Most of the listening was via the Bryston 7BS and the Krell KSA-1005. Interconnects were TARA Labs RSC Master, and Purist Audio Design Colossus Mk.II. Speaker cables were bi-wire sets of Purist Audio Colossus Mk.II, TARA Labs RSC, and DAL's own Z-8, an excellent cable whose claim to fame is a characteristic impedance of 8 ohms and the ability to reproduce 1MHz squarewaves. My listening room is provided with two dedicated AC lines; digital components were plugged into a Tice Series II Power Block. (The CAT has its own Power Block-like isolation transformer; further AC conditioning is not recommended. The tube amps sounded cleaner when plugged into the Power Block, but the Brystons and the Krell were more dynamic au naturel.)

SETUP

The listening room itself is on the small side (16' by 14' by 7½'), but has been extensively acoustically treated with the new "Slim" ASC Tube Traps in the corners behind the speakers, CornerTunes and EchoTunes in the usual positions (top corners and the middle of the wall near the ceiling, respectively), and Roontunes along the side walls to control the early reflections. The floor is covered with a thick carpet and underpadding; there's also a 4' by 6' rug hanging on the wall behind the listening area.

The SC-IVs come with a user's manual that contains a sort of mini-treatise on speaker design, with many useful suggestions on how to optimize speaker setup in the listening room. One principle I very much agree with, and which I've followed for a long time, is that speakers should be separated so that the listening angle is at least 60°. Dunlavy points out that the common audiophile practice of setting up speakers along the room's short dimension with the listening area in the middle of the room results in a narrow soundstage and extensive peaks and nulls in bass response. He suggests that the most even frequency response and the widest soundstage are produced by setting up speakers along the room's long dimension, with some acoustical treatment on the back wall. This is essentially the speaker setup I routinely use in my listening room.

I ended up placing the SC-IVs in close to the same location I'd set up the last three speakers I've reviewed—Acarian Alón IV (Vol.16 No.2, p.136), Unity Audio Signature One (Vol.16 No.5, p.119), and Unity Audio Pyramid Signature (Vol.16 No.12, p.205)—and where I normally have my own Quad ESL/Cizek MG-27 combo. The angle subtended by the speakers was about 75°, with the speakers placed unequal distances from the back and the side walls. My listening chair puts my ears at a height of about 38", which is very close to being on the tweeter axis. The vertical listening angle was not particularly critical, the rolloff in the highs being gradual, with a surprisingly good stereo image apparent, even when I was standing up. DAL recommends listening distances from 8'-25'—I made the minimum listening distance with only about 6' to spare! I experimented considerably with toe-in angle, from the straight-ahead position through pointing right at the listening chair, and even cross-firing to a point in front of the listening chair.

The optional toe-in angle turned out to be a little more than halfway between the straight-ahead and the pointing-at-the-listening-seat positions. With the speakers pointed at the listener, the focus of imaging was actually slightly more precise, but the soundstage was not as wide.

A COUPLES' TWEAKS

Unlike most high-end speakers, the SC-IV does not come with spikes. When I questioned John Dunlavy about this, he expressed skepticism about the likelihood that spikes would have an audible effect, given the speaker's mass. Well, spikes may not be equally beneficial on every surface, but on the thick carpet of my listening room, four spikes under each speaker produced a noticeable tightening of the entire bass and midbass region, with some improvement in focus in the midrange. I obtained good results with the original Tiptoes, German Acoustic spikes (less so with their cones), and, best of all, Michael Green's new AudioPoints.

Then there's the matter of the grille: The SC-IV manual states that the grille frame and cloth are "almost perfectly transparent," and that "the performance of the loudspeaker has been optimized with the grilles installed." Of course, I hadn't to find out for myself.

The grilles are easy to remove and replace, so I spent a fair amount of time
listening to music with the grilles on and off. My conclusion is that the effect of the grilles is admittedly minor, but, at least in my system, not negligible. With the grilles removed, the sound was just a bit more immediate, as if a veil—or, say, a grillecloth—had been removed.

Still, I'm ambivalent about unequivocally recommending removal of the SC-IV’s grille. Some of my reservation is aesthetic: The speaker as supplied is an attractive piece of furniture; with the grille removed, it becomes an objet d'art. Also keep in mind that I was listening off-axis; the sonic effect of the grille may be different in a setup where on-axis listening is optimal. So, like all tweeks, this is one that audiophiles should try in their own systems to find out if it represents a significant improvement.

**Sound**

This is a fabulous speaker! On my first day with the review pair, with the drivers not broken-in and the setup not even close to being ideal, I was hearing things on familiar records that I'd never heard before. They continued to improve with playing, reaching higher and higher levels of performance as I tweaked the setup and worked at optimizing the selection of associated components.

The most startling of the SC-IV’s many strengths was the impression it gave of providing an unimpeded pathway to the musical source and to the sonic characteristics of other components in the reproduction chain. Call it transparency, revealingness, resolution, or clarity: The SC-IV had it in spades. With a good recording, the sound of instruments in an orchestra and individual voices in a chorus were presented with a timbral and spatial definition that was simply stunning.

Listening to Golden String’s newly remastered release of All Star Percussion Ensemble (GS CD 005), I was struck by how individual each instrument sounded, and how clearly each instrument was defined in space. On disc 1, track 8 of Candide (Deutsche Grammophon 429 734-2), I could hear that one of the tenors in the chorus appears to have aspirations for becoming a soloist: He doesn’t quite “blend.” I heard all sorts of subtleties of orchestration, such as the fact that during “Míra,” from Carnival (Polydor 837 195-2), the accompaniment at one point features a cello and a concertina playing the same notes.

In a previous review, I mentioned that the first CD I ever bought was 42nd Street (RCA RCD1-3891), and that I've played it countless times. I thought I knew this disc pretty well, but listening through the SC-IVs, I heard for the first time what is clearly a bad edit on “Getting Out of Town”: at 0:13, the voice repeats the end of the word and is in a different space.

The differing sonic personalities of various amps and cables were easily identifiable, as were the effects of varying the tonearm VTA or demagnetizing the cartridge. One consistent effect—on both CD and LP—was that I could hear more clearly the ambience of the recording site, as well as low-level noises generated by the recording equipment itself. On Chesky’s second Test CD (JD68), track 47 has, according to the liner notes, some RFI which may be apparent “on the very highest resolution playback systems.” I'd listened to this many times before, and I had to really concentrate to

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**Singer’s Corner**

The term “loudspeaker” is something of a misnomer. Literally, it refers to the amplification of speech and only at high levels. However, a high-fidelity “loudspeaker” is used mostly for the reproduction of music, and at levels that vary from soft to loud. Rather than functioning like a “speaker,” the device is more like a “singer.” In fact, I think the analogy between singing and music reproduction by loudspeakers has some interesting implications.

A trained singer has to have a range that encompasses all music written for that voice category (e.g., soprano). Similarly, a loudspeaker has to have a range wide enough to reproduce all types of music. Other things being equal, singers with wider ranges are “better,” in the sense that they’re able to handle wider ranges of music—a bass singer who can’t sing anything below a G is handicapped when it comes to much of the repertoire.

Similarly, a loudspeaker that has a weak frequency response at the bottom end is not suitable for reproducing organ music. A singer may practice vocal exercises that are aimed specifically at extending the top or bottom of the range, but it’s well-known among singers that if you work a lot at the top, the bottom of your voice tends to get weaker, and vice versa. It’s rare to find a bass-baritone with an impressive top who has an equally impressive bottom, just as it’s rare to find a speaker with equally strong performance at bottom and top.

Assuming that the singer has a wide range, we can then ask questions about the character of the sound in different parts of the range. Good singers and good loudspeakers must first have a pleasing quality in the midrange, a quality that both singers and loudspeaker designers try to extend up and down the range. The singing voice has different “registers” (ie, chest vs head); ideally, the transition between registers should be so smooth as to be undetectable.

A loudspeaker, too, has different “registers”: woofer, midrange, and tweeter. These also have to be blended so that the listener is not aware that different sounds are being produced by different drivers. For the singer, one of the most difficult areas is the passaggio, the transition between registers. For the loudspeaker designer, one of the most difficult areas is notch, the transition between drivers.

Then there’s the matter of loudness. A singer must be able to sing loud enough to be heard properly by every member of the audience in the hall; the loudspeaker must produce sound that listeners judge as sufficiently loud. Some singers can sing very loud without sounding strained; others have a much more restricted maximum volume. Ditto for loudspeakers. Typically, a singer with a big sound will have difficulty singing softly, may have a narrower range, or can’t negotiate the fast vocal turns required in some music.

Loudspeakers capable of producing very high volumes usually lack finesse at low levels, may be restricted in range (eg, deep bass is missing), and their ability to follow the music’s quick dynamic turns is usually not optimal.

There are singers who have great beauty of tone and vocal agility, but not much power—much like the best minimonitors of the loudspeaker world. It takes a rare singer—eg, a Joan Sutherland—to offer tonal beauty, range, agility, and power. It’s just as rare to find a wide-ranging loudspeaker that well communicates rhythm/pace, and can play loud.

—Robert Deutsch

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1 Of course, the term is derived from the early use of these devices to do exactly that.

2 I'm talking about classical singing, although many of these principles also apply to pop, folk, jazz, and rock singing.
hear it. With the SC-IVs, the RF noise was immediately apparent, spatially distinct from the music itself.

Normally, this sort of resolution has its downside, high-resolution components being described as “ruthlessly" revealing—it, telling us things we may not have wanted to know about problems with a recording and with associated components. To some extent, this is true of the SC-IV. It’s not particularly forgiving of faults in the recording process or of problems elsewhere in the system. (The original Quads are certainly “kinder” to poorly recorded material.) However, unlike many of the products that fall into the “ruthlessly revealing" category, the SC-IV doesn’t seem to exaggerate existing problems—it merely reports them, together with the music.

It is, in a word, accurate.

Some audiophiles have been accused of being “soundstage freaks," of placing an inordinate value on the width and depth of the soundstage and the precision of imaging, perhaps neglecting such other important sonic attributes as timbral accuracy and dynamics. If you’re one of these soundstage freaks, you must listen to the SC-IVs! The “Mapping the Soundstage" test on the Stereophile Test CD 2 was reproduced with more apparent realism than I’ve heard before, Larry Archibald’s footsteps sounding absolutely spooky as he walks to the back of the church.

In my room, I’ve generally found it difficult to get a clearly defined image outside of and level with the speakers (for some reason, images that are outside and deep are much better). The SC-IVs did not transcend this room limitation. However, they were no worse than any other speakers I’ve had in the room. (If only I had a listening room like the one in Tom Norton’s new house.)

On the LEDR test (Chesky JD37), the SC-IVs went as high on the “up" test as the Unity Audio Pyramid Signatures did, the previous champ in this room, and, as with the Pyramid Signatures, the sound meandered a bit on its way up. (Again, I suspect room reflections.) For most records, the image was somewhat higher than ear-level, giving me the impression that I was looking up slightly to the stage. This is exactly the type of soundstage height I prefer—I don’t care for speakers that make me feel like I’m sitting in one of the cheap seats in the balcony, looking down at the stage.

Of course, not all audiophiles are soundstage freaks. Many—including he-hates-it—when-people-refer-to-him—as-the-venerable J. Gordon Holt—place greater value on a realistic balance across the frequency range, and on the ability of a loudspeaker to accurately reproduce the timbral qualities of musical instruments and voices. Tonal balance is heavily influenced by the room and associated equipment (as, indeed, are other sonic qualities). But as far as I could tell, the SC-IV came amazingly close to the ideal of total neutrality. No part of the frequency range seemed to be emphasized; with the best recordings, instrumental and vocal timbres sounded much as they do in real life. The highs were extended without being overly etched, providing the right amount of upper-frequency “air.” (My listening room has a fair amount of sound absorption; in a very live room, the SC-IV is likely to sound overbright.)

In my initial listening, I noted a bit of excessive midbass weight, but this tendency all but vanished when the speakers were spiked. The difficult midbass-to-low-bass transition was handled exceedingly well: The string bass on the “Bass Resonance" track of the second Chesky test CD had plenty of body without being heavy or sluggish. This track revealed an extremely low level of the “box" coloration that is the bane of box loudspeakers—even ones with cabinets made of exotic materials like Fountainhead? (Planar speakers like electrostatics or full-range ribbons, boxless by definition, don’t have box resonances. But they have other problems—like panel resonances.) The relative freedom from box coloration meant that music played through the SC-IVs for the most part just seemed to be there, little to do with the two large objects in the middle of the room.

A cursory look at the SC-IV’s deep-bass spec (-6dB at 27Hz) might lead one to think that the the speaker bass would not be too impressive in this area—but then, cursory looks are often misleading. The specs are based on anechoic measurement, which doesn’t take into account the effect of “room lift’; and we have to keep in mind the SC-IV’s sealed-box alignment, which produces a more gradual rolloff than a ported system. In fact, the low bass was superb in both extension and quality—I’d have to rate it superior even to the previously reviewed Alon IV and the Unity Audio Pyramid Signature, neither of which are slouches in this department.

Organ—pedal notes and bass-drum fundamentals came through with full force, providing the proper underpinning to large-scale music. Testing with a sinewave generator, I got a clean 23Hz tone, with a rolloff at 20Hz. I would expect bass extension to be even greater in a larger room. Only monster-class speakers and heavy-duty subwoofers do better than this. However, in spite of the SC-IV’s fairly high sensitivity (91dB/W/m) and benign impedance curve, I found that the tube amps I had available (Quicksilver Silver Monos and Luxman MQ-68c) were not very good matches—the bass became rather sluggish. The Bryston 7Bs and the Krell KSA-100S worked much better. I’d hoped to make use of the Melos Triode 200ST, a scheduled-for-review tube amp that has a reputation for sounding non-tubey, but didn’t receive it in time.

Resolution, soundstaging, timbral accuracy, tonal balance, bass extension. What else is there to consider? Dynamics and”pace,” that’s what. Can the speaker, as Martin Colloms might say, boogie?

Now, I avoid boogieing whenever possible—not just because I’m a MAG (Middle-Aged Goat); I wasn’t a boogie-man in my teens or 20s, either. I do, however, appreciate a speaker’s ability to communicate the music’s rhythm, and I also believe that, for the ultimate in realism, some records have to be played loud. One CD that I discovered just recently is Mickey Hart’s Planet Drum (Rykodisc RCD 10206), a 1992 Grammy winner in the “World Music” category. This recording, which features a variety of drums and other percussion instruments, is an awful lot of fun, and simply begs to be played loud. I had it up to peaks that read about 105dB (C-weighting, fast response) on the Radio Shack spl meter. (The meter’s inertia is such that the short-duration peaks were probably significantly higher.) The bias indicator lights on the Krell KSA-100S resembled a Christmas tree, but the sound was loud and clean, with a tremendous sense of rhythm, and with the lower-pitched drums having a punch-in-the-chest kind of power. I value my hearing too much to listen at this sort of level for too long, but it’s good to know the capability is there.

Dynamic performance was at least as impressive at what, for me, is even more important: the "micro" level—the subtle variations in loudness and timing that give music its pulse. This is most readily appreciated at moderate and low playback levels, especially late at night with the lights out. Very few loudspeakers sound equally good at high and low levels (as is true of most singers—see my “Singer’s Corner" sidebar); the SC-IV belongs in that rare category. Late-night
listening sessions with the SC-1Vs became voyages of discovery, each record revealing more musical information than I'd thought was there.

**Measurements from JA**

Fig.1 shows the SC-IV's impedance magnitude and phase, measured with the MLSSA system but plotted with the Audio Precision software for consistency with other reviews published in *Sterophile*. The former stays between 4 and 6 ohms from 37Hz to 2150Hz, with minimum values of 3.55 ohms at 95kHz and 3.15 ohms at 10Hz. Though the speaker will be quite demanding of current, with its benign electrical phase angle and high sensitivity—around 91dB/W/m—it will play loud with moderately powered amplifiers. In addition, because of the small variation of impedance with frequency, the SC-IV's tonal balance will not change much when driven by a tube amplifier with a relatively high source impedance.

I have grown increasingly concerned lately that, with very large loudspeakers, my standard measuring distance in Sterophile loudspeaker reviews is too close—there might be some clockwise tilt to the measurement, due to proximity effect. (In the measurement of a loudspeaker's frequency response, it's assumed that the microphone is in the speaker's far field—it, the distance from the mike to the speaker is much greater than the largest dimension of the speaker's baffle.) I've been regularly checking this in my reviews for some time, by taking two sets of measurements: one at 45° (which gives me relatively good midrange resolution with the DRA Labs MLSSA system), and another at 90° (the farthest I can practically get in the Sterophile listening room, but which doesn't give me much resolution below 1kHz). With the exception of large panel speakers, such as the Apogee Stage and AudiaStar ES-100, the 45° distance has proved acceptable. For this review, however, I decided to experiment by performing the measurements in Dunlavy Audio Labs' large anechoic chamber in their new Colorado Springs facility.

Though this enabled me to use a much larger microphone distance—3m, or 10′—a significant reflection of the speaker's direct output was still present from the loudspeaker stand. This limited the midrange resolution to 300Hz or so. I therefore performed nearfield measurements on the midrange and bass drivers, and integrated these with the far-field response to produce the composite plot shown in fig.2.

From 200Hz to 12kHz, the SC-IV is astonishingly flat. There's a very slight downward tilt to the top octave, and a couple of minor ripples in the treble, the latter due to the grille, but it would be churlish to make much of these effects. As I don't have the speakers in Santa Fe and am unable to perform some confirming in-room measurements, I'm less sure about what's going on below 200Hz. The midrange units roll out nearly below 100Hz, with the classic 12dB/octave sealed-box slope. However, there is significant overlap with the woofer's, which have a bandpass response centered on 68Hz. The midranges, in fact, add a small degree of reinforcement to the bass region (seen as the 1dB or so difference between the overall summed response and the woofer response alone).

Weighting the two nearfield responses in the ratio of the drive-units' diameters, as recommended by DR Labs' Doug Rife, appears to indicate that the woofers are a little too sensitive in absolute terms. As a result, the overall response peaks by just under 6dB in the midbass before rolling out to reach a -6dB point at 30Hz. RD did mention some occasional midbass thickness, however, and in my own listening to the SC-IV I did note that the bass was "generous," which indicates that this graph is probably in the ballpark. Perhaps John Dunlavy would like to comment on the SC-IV's bass tuning in his "Manufacturer's Comment."

It wasn't possible to do a family of off-axis plots, the DAL anechoic chamber not having a suitable loudspeaker turntable. However, listening to noise and music revealed that the speaker's balance doesn't change significantly over a 30° or so horizontal window. Vertically, as long as you sit on or near the tweeter axis, everything should be hunky-dory.

Turning to the time domain, fig.3 shows the SC-IV's impulse response on the tweeter axis. (The speaker-stand reflection reveals itself as the small dimple in the plot just before the 12ms mark.)

6 A couple of years back I wrote a simple quickbatch program that takes a loudspeaker's frequency-response data spreadsheet file (frequency and amplitude fields) and modifies it according to the speaker's impedance data file (frequency and magnitude) and the amplifier's source impedance. (The two files must, of course, have the same frequency spacing and bounds.) If anyone would like a copy of this program, or the corresponding stand-alone EXE file, send me a formatted MS-DOS 3.5" or 5.25" diskette and an SASE (Strophe, P.O. Box 5529, Santa Fe, NM 87502. Mark the outer envelope: "Speaker Z Interaction program: FAdn John Anskinson."

7 To examine the effects of different MLSSA boards and microphones—DAL uses a very expensive B&K 4133, while I use an omnidirectional B&K 4066, to which I apply an on-axis correction curve—I measured my 1978 pair of Rogers LS3/5A loudspeakers in the DAL anechoic chamber, which I had previously measured in Santa Fe. There were no appreciable difference other than those due to the microphones. —JA

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4 | Dunlavy SC-IV, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.).

5 | Dunlavy SC-IV, anechoic response on HF axis at 3m with grille on, with nearfield midrange response below 400Hz, nearfield woofer response below 700Hz, and complex sum of nearfield midrange and woofer outputs in the ratio of the drive-unit diameters.

6 | Dunlavy SC-IV, impulse response on HF axis at 3m (5ms time window, 35kHz bandwidth).

Though it's hard to tell anything from a raw impulse response, the simple up/down shape with minimal overshoot implies excellent time coherence. (The only speaker on which I've measured a similar impulse response is the Quad ESL-63.) Integrating the impulse response gives the speaker's step response: the output it would have if presented with a voltage step from zero to some arbitrary DC value. The ideal shape resembles a right triangle—it, the trace moves vertically away from the graph's time axis, then moves back to it at a shallow angle. (Actually, the ideal decay—back-to-zero amplitude is exponential, meaning that it will have a slight concave curve, but this difference is inconsequential.) Look at the SC-IV's step response in fig.4. Pretty ideal—the outputs of all the drive-units arrive at the microphone at pretty much the same time. Thus, definition, is time coherence. As a result, the SC-IV is one of the only two loudspeakers I've encountered that can pro-
duce a good squarewave shape. (The other was, again, the Quad ESL-63.) And this was over a wide bandwidth, from 200Hz to 5kHz. Although the subjective effects of a loudspeaker featuring time-coherent behavior are not fully understood, my subjective impressions have been that such designs always feature superb imaging and soundstaging. The SC-IV is no exception.

Another way of looking at a speaker’s time coherence is to examine the deviation left over from the phase response when that due to the speaker’s departure from a flat amplitude response is removed. In a minimum-phase system—one that has just the right amount of phase deviation for its frequency response—the phase and amplitude responses are related mathematically by the Hilbert Transform. Subtracting the Hilbert-Transformed amplitude response from the measured phase response will leave what is called the “excess phase”; i.e., the speaker’s departure from a true minimum-phase system. Such departures are generally due to system time delays, as when the output of one drive-unit leads another in time due to physical displacement or the use of a high-order crossover. The Dunlavy’s excess phase on the HF axis at 3m can be seen in fig.5, adjusted arbitrarily to give 0° excess at 10kHz, which moves the trace away slightly from the 0° line for visual clarity. The ripples are probably due to residual reflections in the windowed impulse.

This excess phase trace is the best I’ve measured, meeting an astonishing ±0.7° tolerance from 300Hz to 10kHz. This speaker is more like an electrical component in its phase performance.

The MLSSA system software can calculate a speaker’s cumulative spectral decay, or waterfall, plot from its impulse response. This shows how its frequency response changes as the exciting impulse dies away. A perfect speaker would show a straight line (representing its frequency response) that immediately dropped into the floor of the measurement. Fig.6 shows the SC-IV’s behavior. (I used a 0.15ms window risetime to calculate this plot, which visually emphasizes the behavior of delayed resonances, making them easier to perceive. John Dunlavy examines the implications of this in his “Manufacturer’s Comment” letter.) One such mode can be seen at the cursor position, at just under 3kHz. But even with this exaggeration, note how clean the SC-IV’s overall die-away is: There’s a good 18dB drop in output level, evenly balanced across the upper midrange and treble, before a slight amount of treble hash and the aforementioned mode at 3kHz make their presences known.

This is one heck of a loudspeaker!

—John Atkinson

**CONCLUDING THOUGHTS FROM RD**

I started this review with a Dunlavy Audio Labs quote claiming that measurements can reliably predict a speaker’s ability to reproduce music. The SC-IV is a result of this design approach: It measures exceedingly well, and sounds superb. Has John Dunlavy proven his hypothesis?

Maybe yes, maybe no. The “academic” answer is that the evidence presented is consistent with the hypothesis, but does not by itself prove it. In order for measurements to be useful, we must know what to measure, how to measure it, and, once the measurements are collected, how to interpret them.

This last phase is the most difficult, and it’s here that I suspect that John Dunlavy’s many years of experience in designing and building speakers is a factor, over and above the measurements themselves. Furthermore, although the DAL factory in Colorado Springs has a first-rate speaker-measurement facility, its listening room is also well set up, and Dunlavy has admitted to me that the development of his latest speakers has involved much more time spent in listening tests than in measuring per se.

For the audiophile, of course, questions about the role of measurements in speaker design are, well, academic. We’re more interested in the outcome than the process, and we use our ears to evaluate that. In fact, it was the sound of the SC-IV that first brought it to my attention. When I heard it at the 1993 Summer CES, I had the feeling that I was listening to something quite special. Having had a pair in my listening room for the past three months, I know the speaker is very special. In my opinion, it’s not only an outstanding speaker for anything anywhere near its price level, it’s also a genuine contender for Class A status [if it had true high-level extension to 20Hz, like DAL’s larger SC-VI—Ed.].

It’s been said that if a reviewed component is really good, the reviewer should shed tears of sorrow while he or she boxes it up to return it to the manufacturer. We might call this the Audiophile Lachrymal Response Test (ALRT), and the speakers that I’ve had in my listening room for review in the past two years (Acarian Alón IV, Unity Audio Signature One, and Pyramid Signature) have all passed it—at least metaphorically. I must now admit that the DAL SC-IV did not pass the ALRT. Oh, I suppose it would have, but, anticipating extensive responsivenes to the ALRT, I decided not to put myself through this aversive experience. I’m buying the review pair.

—Robert Deutsch

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8 By John Atkinson, during a dinner at the Old Mexico Grill in Santa Fe on December 11, 1993, if you must know.

**Stereophile, April 1994**
Thomas Marshall's famous phrase, "What this country needs is a good five-cent cigar" should be modified for the 1990s to be "What this world needs is a good $1500 preamplifier."

It's hard to find a good full-function preamp (i.e., one that includes a phono stage) at a reasonable price these days. There are plenty of great preamps on the market, but they tend to be expensive or line-stage only—or expensive line stages. Moreover, many manufacturers are omitting phono stages altogether, on the assumption that people don't listen to LPs anymore. This situation leaves the LP aficionado with fewer choices for affordable preamps. Further, many inexpensive products don't deliver the musical goods; it's the rare product that combines great sound with an affordable price.

This is unfortunate, because the preamplifier—the heart of any audio system—exerts a large influence on the system's overall sound quality. Every source component must pass through the preamp, which imposes its sonic signature on the music. No matter how good your source components or your loudspeakers, if a preamp sounds poor, it will degrade the system's overall musical performance. Conversely, if a preamp sounds great, it'll get out of the music's way, letting through to the amplifier and loudspeakers exactly what's coming from the source components. The less the preamp does to the signal, the better.

But are there great-sounding, full-function preamplifiers for under $1500? This question led me to the $1495 Exposure XVII preamp, which incorporates a phono stage with easily switchable moving-magnet and moving-coil phono boards. I was intrigued by the XVII after reviewing Exposure's superb $1295 XV integrated amplifier (Vol.16 No.2, p.154). The XV virtually defined the concept of musicality in an affordable product; would Exposure's more ambitious XVII preamp live up to the XV's reputation?

**DESCRIPTION**

The XVII looks identical to Exposure's integrated amplifiers. The austere front panel has two rotary switches—one source selector and one record-out selector—and volume-control and power rocker switches. The chassis rear holds five pairs of line-level inputs and one phono input, all on gold-plated RCA jacks. The phono and CD line inputs are both higher-quality jacks. The XVII's main output appears on a pair of RCA and XLR jacks in parallel. The XLR jacks are single-ended, with only pins 1 and 2 wired. They're included because Exposure believes XLR connectors sound better than RCA's. Exposure's power amps have unbalanced inputs on XLR jacks for connection to the XVII! Two tape-out pairs are also provided.

The XVII's massive power transformer would look more at home in a power amplifier than in a preamp. A 250VA custom-made toroidal transformer (5" in diameter by 2½" deep) supplies a bridge rectifier and two electrolytic filter caps. As with all Exposure products, the capacitors are custom-made. These feed four regulation stages: two for the phono section and two for the line section. A pair of large TO-3 devices supplies ±24V to the line stage. This regulated ±24V also supplies the input to the cascaded phono-stage regulators—a pair of Linear Technology 337/317 TO-220 devices—which then supply ±18V to the phono section. These rather high voltage rails assure a high input-overload margin. (The XVII is the first Exposure preamp to include a power supply in the same chassis as the audio circuitry.)

The size of the power supply is surprising considering the minimalist circuitry it drives. The line stage occupies just two ½" by 2¼" pieces of the large circuit board. A tape output buffer—which uses just a single pair of transistors per channel—adds slightly to the parts population. Each line-stage channel comprises eight bipolar transistors, about 20 resistors, a couple polysilicon caps, and a few electrolytic caps; the last, unusually, are used as coupling caps. The complementary class-A output driver can source a significant amount of current and drive impedances as low as 1k ohm. Although this use is not recommended, the XVII can reportedly drive headphones. Line-stage input impedance is specified at a lowish 10k ohms.

The phono stage occupies a small patch of circuit board on the unit's right side. This is augmented by a removable phono board soldered between the input jacks and the phono stage. Two phono boards are available: one high-gain type for low-output moving-coil cartridges, and one low-gain type for moving-magnet pickups. No gain specs are provided for the phono boards, but the gain can be inferred from the specified input sensitivity: The MM board's sensitivity of 150mV referenced to 1V output translates to just over 50dB of gain; the MC board's calculated gain is 64dB. Note that these gain figures include the XVII's line-stage gain. Phono input impedance is 47k ohms with the MM board, 470
ohms with the MC.

Only one phono board is included in the price. However, if you get a different cartridge and need the other phono board, Exposure will exchange them at no cost. The only expense would be the dealer's labor for replacing the board—about a ten-minute job.

As with the line stage, the phono section uses very few parts. All the transistors in the XVII are bipolar types. The MC board uses many transistors in parallel for lower noise. A combination of active and passive circuits provides RIAA equalization.

Other technical features include a muting relay that disconnects the main outputs if the line voltage drops or is shut off. The 10k ohms Alpse volume pot is active (in the feedback loop) rather than acting as an input attenuator. The tape buffer stage, line stage, and phono sections are decoupled from each other. A line-stage-only version of the XVII—the XIX—is available for $1295. (Other than the absence of a phono stage, the XVII and XIX are identical.)

Overall, the XVII is an unusual design, with bipolar transistors instead of FETs in the phono front end, electrolytic coupling caps, and a massive power transformer for very little circuitry.

But enough of transformers and coupling caps—what really matters is how the product reproduces music.

**System**

The Exposure XVII was installed in my reference system, replacing the Audio Research LS5 and driving either a Krell KSA-300S power amp or VTL 225W tubed monoblocks. Loudspeakers were Thiel CS3.6s connected by 8' runs of AudioQuest Sterling. The long interconnects between the preamp and power amps were a 20' pair of AudioQuest Lapis. Other interconnects included Monster Sigma, AudioQuest Diamond, and AudioQuest Lapis.

Source components included the Counterpoint DA-10 and Mark Levinson No. 30 or No.35 digital processors, driven by a PS Audio Lambda and Mark Levinson No.31 transports via coaxial and ST-type optical connection. I also used the Meridian 563 and Sonic Frontiers SPD-2 converters driven by the Meridian 500 or Theta Data Basic transports.

The phono front end was a heavily modified Well-Tempered Turntable fitted with an AudioQuest AQ7000NSX cartridge. The 7000's 0.3mV output was ideal for the XVII's MC phono board. The turntable sits on a spiked, sand-and-lead-shot-filled Merrill Stable Table. The built-from-scratch listening room has optimum dimensional ratios for room-mode distribution, and is treated with ASC Tower Traps (reviewed last December, Vol.16 No.12, p.202).

**Glitches**

Before describing the Exposure XVII's sound, I must report a few problems I had with the first review sample. First, the unit produced a low-level buzz through the loudspeakers, regardless of the volume-control position or input selected. The buzz wasn't audible during music, but I could hear it when no music was playing. Lifting the preamp ground at the wall made it worse, as did grounding the preamp and floating the power amplifiers. (Note that both grounds should not be lifted simultaneously.) Disconnecting all inputs to the unit (to break a possible ground loop) had no effect.

Second, the XVII put out a very loud hum through the loudspeakers after the preamp had been transported to Santa Fe for measurement. I traced the problem to a cold-solder joint on one of the large filter caps. I resoldered the joint from the top of the board and was back in action. However, after I moved the XVII a second time, the other solder joint on the same capacitor failed in the identical manner. Note that the large filter caps don't appear to be secured mechanically to the printed circuit board or chassis; they're held in place by the soldered leads and a small dab of glue. A nylon tie might be a better idea here.

After these problems appeared to have been fixed, I continued with the review. My impressions were less than positive; the XVII sounded grainy, hard, lacking in depth, and the unit overlaid music with an opacity that diminished the musical experience. The XVII's bench performance also featured levels of power-supply noise that were much higher than usual. After a preprint of the full text of the review had been sent to Exposure for comment (Stereophile's standard procedure), Exposure's Casey McKee suggested that the review sample had been damaged. The loose filter caps—which, according to Exposure, don't come loose unless the unit takes a severe jolt—indicated that the XVII had been dropped in shipping. Finally, the review sample's poor measured performance (high noise and the presence of power-supply-related noise) also indicated that the unit wasn't working correctly.

*Stereophile's* policy in such matters is that poor sound quality is not a reason to believe a product isn't performing as intended. Moreover, we don't notify the manufacturer when we find sonic flaws with a product; the review proceeds, and the manufacturer is apprised of the reviewer's opinion only after the review is completed, in time for a "Manufacturer's Comment" to appear in the same issue.

It's also our policy to give the manufacturer the benefit of the doubt when a product is claimed to be defective or damaged [provided there does appear to be supporting evidence. If the manufacturer claims his product is defective, but measurements indicate that everything appears to be working fine, the review stands—Ed.]. Consequently, the XVII review was held until Exposure could send a second review sample. A closer examination of the first sample revealed a bent chassis near the power transformer, indicating that the unit probably had been dropped. The first sample also later developed an intermittently working left channel, further indicating damage.

**CD Listening**

I started over with a replacement unit. One listen to the second sample revealed that the first sample was indeed defective. There was no trace of hum in the second sample; in fact, the XVII was extremely quiet. More important, the second sample's sonic signature was nothing like I heard from the first unit. My initial unfavorable reaction to the XVII's sound was replaced by surprise at the XVII's musicality.

Starting with the line stage, the XVII had a musical coherence that was exceptional by any standard. I immediately began enjoying the music through the XVII. The presentation tended to be laid-back, relaxed, and engaging. The music was set back slightly behind the loudspeakers, producing a more gentle and less forward rendering than most preamps I've auditioned.

Although the XVII's perspective couldn't be called analytical or incisive, the preamp nonetheless revealed a full measure of musical information. In fact, the XVII was highly resolving of musical nuances. The preamp allowed the music's fine structure to emerge, a quality that beautifully conveyed the musicians' interaction and expression. The XVII's presentation of this information was suave, sophisticated, and refined—I didn't have to listen past any sonic hype to hear the product's musical abilities. The XVII conveyed the music without calling attention to itself. In this regard, the XVII was at the opposite end of the spectrum from preamps that beat you over the
head with "detail" (read: etch and hype) yet miss the musical subtleties that make the difference between a competent and an outstanding product.

Despite the XVII's overall musical quality, I was a little bothered by a trace of hardness in the mids and treble. The music lacked the lush liquidity and pure timbres that I have found to characterize the Audio Research LS5 (a product that costs four times as much as the XVII and has no integral phono stage). The XVII had a touch of solid-state hardness through the treble that was manifested as a slightly exaggerated metallic flavor on cymbals and strings. Similarly, the mids could get hard, particularly during loud passages? Note that these observations were made in the context of the fully balanced, all-tubed ARC LS5. I included them not to criticize the XVII—no $1500 preamp is perfect—but to put its performance in perspective.

The XVII's bass was tuneful, yet a little on the thin side compared to the LSS's warmth. The bottom end tended to be tight, focused, and full of detail rather than big, fat, and fuzzy. Bass extension and slam were moderately good; the XVII was competent but not outstanding in its ability to portray the dynamic impact of bass drum. The XVII's overall dynamic expression was excellent, but not at the level of the LSS.

Although the XVII didn't have the bloom or degree of soundstage size that characterized the LS5, the soundstage was still exceptional for a $1500 preamp. The XVII didn't cloud the soundstage with opacity, thickness, or the smeared quality that many preamps in this price range impose. Instead, there was a wonderful openness and sense of transparency that allowed the music to breathe. This openness, coupled with the relaxed perspective and subtle presentation of detail, greatly added to my enjoyment of music through the XVII.

**LP LISTENING**

LP playback through the XVII was excellent—far better than I would have expected from a phono stage included in a $1495 preamplifier. The MC board was very quiet and had plenty of gain for even the AQ7000's lowish 0.3mV output. The presentation struck a good balance between being too forward and sounding too distant and uninvolved. As with the line stage, LP playback had immediacy without being in-your-face or aggressive.

Similarly, the treble was detailed without being analytical. The top end was smooth and natural, with very little of the brittle character one often hears from moderately priced solid-state electronics. The extreme treble sounded a little closed-in, making the presentation less open, airy, and extended than I would've liked. The music sounded a little more dark than I'm used to hearing from the Vendetta, but not excessively so. The XVII was also somewhat less resolving of recorded detail than I've heard from other phono preamps. These qualities tended to mitigate the line stage's slightly hard sound. Moreover, the phono stage's softish treble can be a plus if you've got a peaky moving-coil cartridge—and there are lots of them out there, particularly at the price level most likely to be used with the XVII. In fact, most moderately priced moving-coils should form a synergistic match with the XVII's somewhat closed-in upper treble.

The XVII's bass was tuneful, articulate, and had good pitch definition. The extreme bottom end was a little rolled off and lacking in weight, but the midbass was round and full. The power and depth of the bottom-end punch you hear from kickdrum was ultimately reduced, but still satisfying. Conversely, plucked acoustic bass was reproduced well, with a palatability and feeling of a large, resonating instrument sitting between the loudspeakers. Check out Ray Brown's great playing on Bill Evans's *Quintessence* LP (Fantasy F9529). The XVII's phono section did record justice, allowing me to hear all the subtleties of Evans's masterful performance. However, with rock and some jazz, the XVII lacked the ultimate sense of slam and power heard from the Vendetta.

Overall, the phono stage was excellent, but not quite at the level of the Sonic Frontiers SFP-1—a tremendous bargain that offers unprecedented performance for the money (see my review in Vol.16 No.9, p.89). The SFP-1 had greater liquidity, a more open and spacious soundstage, and greater resolution of recorded detail. However, it costs $1095 and must be matched to a line stage, making it considerably more expensive than the XVII.

Despite the minor criticisms, I always found the XVII musical and enjoyable. There are times when I like a product but am unable to describe in sonic terms exactly why—they're just more enjoyable to listen to. The XVII had this ability—ie, to let you forget about the product and hear the music—in spades. Although the $6000 Audio Research LS5 (and BL2) was clearly the better preamp, the XVII provided plenty of musical satisfaction.

**MEASUREMENTS**

The Exposure XVII's line-input impedance measured 7.6k ohms at 1kHz, a little less than the specified 10k ohms. This low value suggests that the XVII should be used with source components having as low an output impedance as possible. A value of a few tens of ohms is ideal, with a few hundred ohms a maximum practical value. The moving-magnet input impedance measured 47k ohms across the audio band. Moving-coil input impedance measured roughly 500 ohms at any audio frequency. (Exposure's spec sheet has a misprint in listing the MC input impedance at "470k ohms"; it should read "470 ohms.")

Voltage gain from line input to main out measured 22.7dB—a little on the high side for high-output digital sources, but not overly so. Gain from the moving-coil input to main output was a high 74.3dB. This is sufficient for even low-output moving-coil cartridges. Phono input overload (MM) was a very high 400mV at 1kHz, a far higher level than what any phono cartridge will produce, and equivalent to an extraordinary overload margin of 38.1dB. Line-input overload was greater than 12V RMS. These figures suggest that it's virtually impossible to overload the line or phono inputs.

Output impedance measured a very low 5 ohms from the main output—the XVII will drive any power-amp load with no trouble. Volume-control tracking was good, with a 0.4dB channel difference at 50mV output, 0.02dB at 250mV output, and less than 0.2dB error at 1V output and above. The volume control's unity gain position was at one o'clock. Maximum output voltage was a very high 16V RMS. Neither the line nor the phono stages invert polarity.

Line-stage frequency response and phono RIAA error are shown together in fig.1. The line stage rolls off by 0.6dB at 20kHz, with a ~3dB point at just above 50kHz. RIAA accuracy was good, staying within half a dB of the reference 1kHz level between 30Hz and 20kHz. Note the bass rolloff built-in to prevent record warp from overdriving the power amplifier and woofers. This is typical of European phono-stage design. RIAA accuracy is independent of the phono board (MM or MC) installed in the XVII.

Line-stage crosstalk (fig.2) was moderate, measuring 53dB and 60dB at 1kHz in the left and right channels, respectively. The curve follows the classic 6dB/octave decrease in channel separation.

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3 A recent article in *Pro Sound News* about vintage recording equipment had this to say about a particular compressor: "Yet another older piece is the Spectra Sonic 610, a '70s vintage compressor based on solid-state technology whose metallic sonic edge has gained it a following." -Yikes!
with frequency, which is indicative of capacitive coupling between channels. The 30 dB of channel separation at 20 kHz (right channel) is only fair. The XVII’s measured S/N ratio was an excellent 84 dB unweighted through the line stage, referenced to 1 V output and measured over a 22 Hz–22 kHz bandwidth. The phone S/N ratio was 65 dB, a figure that increased to 77 dB when A-weighted.4 An FFT of the XVII’s output with no signal applied and the volume control at unity gain produced the plot in fig.3. Some power-supply noise is apparent at 60 Hz and its harmonics, but is well down in level (all components other than the first, which lies at –96 dB, are at or below –100 dB referenced to 1 V output). Fig.4 is the XVII’s THD + N vs frequency for both the line stage (bottom traces) and MC phono stage (top traces). The noise and distortion levels are quite low in level.

To examine the XVII’s individual harmonic distortion components, I drove the XVII with first a 50 Hz then a 1 kHz sinewave at 1 V RMS, set the volume control for unity gain, and performed an FFT analysis on the output. Fig.5 shows that at low frequencies the XVII’s harmonic distortion is indeed low and consists primarily of the second harmonic at –86.1 dB. The 3rd, 5th, 11th and 17th harmonics can be seen just above the –100 dB level, however. At the higher frequency, the less sonically benign higher odd-order harmonics (5th, 9th, 10th, 11th, 13th) are higher in level. Although solid-state amplifiers do tend to produce odd-order harmonic distortion products, the XVII’s distortion spectra showed more higher harmonics than is typical. Note that these harmonics are much more sonically objectionable than lower-order products. Listen to the examples of distortion products (tracks 21–24) on Stereophile’s Test CD 2 to get an idea of what different distortion spectra sound like. Despite their very low level in absolute terms, the presence of these upper-order harmonic distortion components may tie in with the XVII’s slightly metallic character in the mids and treble.

**Conclusion**

The Exposure XVII preamplifier is a highly musical-sounding preamplifier worthy of its $1500 asking price. It has a fundamental musical rightness that transcends analytical description. The XVII’s subtle and understated character conveys the music’s expression without calling attention to itself. I also found the XVII rhythmically powerful, tight, and coherent, as though the music was correctly lined-up in time. Further, the phono stage sounds superb, is quiet, and has enough gain for nearly any moving-coil cartridge.

On the down side, the XVII has a trace of solid-state hardness in the mids and treble, particularly through the line stage. After listening to nothing but the pure-tubed Audio Research LS5 preamp for the past few months, my sensitivity to this form of coloration may have been heightened. This criticism is minor when considering the XVII’s price; many less expensive preamps—some costing more than the XVII—impose much more of a sonic signature on the music. The phono stage tended to be a bit laid-back rather than detailed and incisive, making it a good match for bright, moving-coil cartridges.

I highly recommend the XVII, particularly to those who play LPs. It offers higher musical performance than the typical $1500 preamplifier, and has an excellent phono stage to boot. If you’re looking for an affordable, full-function, musical preamplifier, your search may end with the Exposure XVII.

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4 A weighting curve applied to S/N measurements rolls off bass and treble to approximate the way we perceive the loudness of noise. The ear is less sensitive at high and low frequencies, making noise components at the frequency extremes less audible. The resultant “A-weighted” S/N ratio is a better indication of the noise’s audibility than an unweighted measurement. Weighting curves are also used in sound-pressure-level measurements (wrongly, in) A’s view, unless the source is noise rather than music.

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**Stereophile, April 1994**
**Go NAD!**

Corey Greenberg’s Real-World prayers are answered by NAD’s 502 CD player and 304 integrated amplifier

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### NAD Model 502 4x oversampled MASH single-bit CD player

- **Resolution**: 18 bits
- **Linearity**: $\pm 0.5$dB from 4kHz to 90kHz
- **S/N ratio**: 106dB, de-emphasis on
- **Maximum output level**: 2V RMS
- **Output impedance**: 120 ohms
- **Digital coax output**: yes
- **Dimensions**: $16.5\" (420mm) W by $3.5\" (90mm) H by $10.25\" (260mm) D
- **Weight**: 9 lbs (4.1kg)
- **Price**: $299

### NAD Model 304 solid-state integrated amplifier

- **Power amplifier section**: Power output 35W continuous average power into 8 ohms (15-4kHz), both channels driven, 20Hz-20kHz, with no more than 0.01% distortion. HF dynamic headroom at 8 ohms: 5.5dB, HF dynamic maximum short-term power/channel: 120W into 8 ohms (20kHz). 160W into 4 ohms (9kHz), 200W into 2 ohms (1kHz). Slow rate: $> 20$ms. Damping factor: $> 100$. Input impedance: 18k ohms shunted with 500pF. Frequency response: 3Hz-70kHz, 3dB. S/N ratio: 117dB. Ref 35W. All types of distortion: $< 0.03\%$.
- **Preamp section**: Input impedance: 47k ohms shunted with 700pF. MM, 20k ohms shunted with 500pF. Line: RIAA accuracy: $\pm 0.5$dB. S/N ratio: 77dB ref 5mV, MM; 106dB ref 35W. Input sensitivity: 16mV, line. Maximum input level: $> 10$k. Line. All distortions: $< 0.01\%$ at 5V output. Preamp output impedance: 220 ohms. Tape record-out output impedance: source impedance + 2k ohms. Headphone jack output impedance: 220 ohms. Maximum output levels: preamp-out: $> 12$k; tape-out: $> 10$k; headphones-out: $> 10$k into 600 ohms, $> 500$mV into 8 ohms. Treble control: $\pm 7$dB at 10kHz. Bass control: $\pm 10$dB at 50kHz. Fixed subsonic filter: $\pm 5$dB at 10Hz. Approximate Dimensions: $16.5\" (420mm) W by $4\" (100mm) H by $12.3\" (313mm) D
- **Weight**: 14.1 lbs (6.4kg)
- **Price**: $379


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**QUESTION**

What do you tell a non-audiophile friend when he or she asks you to recommend really good hi-fi gear that's pretty cheap?

A) There's no such thing. Why, look at my system and see for yourself.

B) AIEEE!! RUN!! RUN I tells ya!!! Before it's TOO LAAAAATE!!!!!!

C) NAD.

D) None of the above—it's a trick question. You have no friends. Just the editors of Stereophile, and that AK-47 across your lap.

Of course, the correct answer for more than 15 years now has been C. Good ol’ NAD has been everyone's fave low-cost hi-fi company for as long as I can remember—stuff you buy for yourself when you wanna rock on the cheap, and stuff you recommend to your non-audiophile friends when they wanna get serious about their sound without becoming an audio dork like you!

And by 1986, over 600,000 of you budget-minded buggers out there had bought what's become one of the all-time classics in Real World hi-fi componentry—the NAD 3020 integrated amplifier. 600,000 NAD owners can't be wrong, and they weren't—the little 3020 remains one of the coolest and most-bang-for-the-buck audio products ever produced.

Why did an unassuming, underpowered, unattractive, unmassive, uncouth little integrated amplifier capture the fancies of so many hardcore audiophiles and civilians alike? Because hidden beneath the 3020's dull gray exterior lurked some serious circuitry—like a fully discrete, high-quality phono stage that gave many of the references at the time a real run for their money. In fact, lots of auditioners kept using the 3020 as a preamp/phono stage long after they'd upgraded to a separate amp! And the 3020 was one of the first budget components to sport a high-current amplifier section that excelled at actually driving speakers rather than achieving impressively most test-bench specs—a concept largely ignored by receiver manufacturers then and now.

Sadly, though, NAD has seemed to slip somewhat these past few years. Never known for their robust build quality, the last few generations of NAD products have been what Penn students call “constructionally challenged”—all that rubber baby-bumper—button crap, with controls that felt either like Chiclets or pencil erasers. And the sound of the last several NAD lines hasn't really kept pace with the competition from the likes of Rotel. When I reviewed NAD's $299 Model 5425 CD player a couple of years ago (Vol.15 No.2, p.156), I found that it “didn’t sound half-bad.” That about sums up my feelings about NAD's products over the past several years—they haven't sounded half-bad, but nothing in the line ever suggested the greatness that was the original 3020. The good news is, it looks like NAD's back! Go NAD!

I'd originally slated these two new NADs for separate reviews. But after I heard them hooked up together, I knew I had to link them in print as well. And after I'd marched a bunch of other gear through the system, trying different combinations, it became clear that this was a match made in heaven. Okay, so my living room ain't exactly what you'd want to see when you finally kick it, but I bet St. Peter doesn’t have a copy of the Sonics’ “Strychnine,” either. And I'm positive he wouldn't let you play it as many times in a row as you want, like I would.

**Under the Boardwork**

While the 502's cosmetics are similar to NAD's outgoing 5425 CD player I reviewed in 1992, the new 502 isn't merely a souped-up same-old, but a treasure hidden in a familiar-looking box. Much
attention has been paid to the power supply, with separate regulation stages for the digital and analog circuits. While most manufacturers of even higher-priced players and processors run their DACs off the same ±5V DC as the digital-logic supplies with only a simple RC filter at the chip pin for "isolation," the NAD's digital reference supply features a pair of ultra-low-noise series-shunt regulators to reduce supply noise to below -130dB. NAD stresses that power-supply optimization is vital in getting the best performance from single-bit and MASH-type DACs, and has outfitted the 502 accordingly, despite a price tag more suited to us Mud People than audiophile bleu-bloods.

The 502 does its digital motorvatin' with an MN64714 MASH DAC, a chip that features balanced differential outputs that cancel ground-based noise when summed by a 5532-based differential amplifier stage. NAD maintains that a problem with single-bit converters is the high levels of RF on their outputs, which can overstress the following analog stage. So NAD RF-filters the DAC's differential outputs with high-grade resistors and polystyrene film capacitors before the analog stage, to keep everything nice and stress-free. I bet my sweet mother wishes I'd come fitted with stress filters that would've shunted harmless to the ground every "You don't know jack-0%, man!!" I ever blurted out in all my adolescent unglory, leaving her free to relax with her bomb-making in the basement.

The most important feature of the 502's guts, however, is the DC-coupled audio circuit. That's right—there isn't a single series capacitor, electrolytic or otherwise, to be found in the entire signal path. Any DC offset is nullled by a DC servo around the output stage. This is pretty far-out; most CD players, and all cheap ones, couple their audio outputs with crummy, cheap-ass electrolytic caps that degrade the sound in, oh, let me count the ways: chalky and congested mids, grainy highs, weak bass, and an overall mudder quality! Even the "Recommended Components" budget kings, the $450 Rotel RCD-955AX and the $800 JVC XL-Z1050, have electrolytic coupling caps. That's why it's surprising and, yes, even a bit titillating, to find a capacitor-free player for just a clam under $300.

Externally, the 502 holds few surprises. Dat ol' NAD dark-gray magic is still the styling rule of the day, but thankfully, the chintzy rubber buttons of the older 5425 player have been replaced with sturdier hard-plastic ones—you gotcher Play button, ycr Pause, ycr Open/Closé, and all the rest you've come to expect from a CD player nowadays. In addition to the full-featured remote, there's also a pair of RCA jacks on the rear panel labeled "NAD LINK," which allow the 502 to be controlled from the remote of one of NAD's receivers, but not their integrated amps—the remote-control—less 304 doesn't share the groovy NAD LINK love vibes. The 502 also has something you didn't find on the old 5425: a digital coax output jack on the rear, to allow for an external digital processor down the road, when your pockets are a little more ching-a-lingy.

**NAD 304 INTEGRATED AMPLIFIER**

The NAD 304 is styled identically to the 502 CD player, and is in fact the same height and width, with just a bit more depth. If I were a British reviewer and/or Wimbledon sportscaster, I'd say they look "simply smashing, Nigel!" when stacked. If you do stack these lil' guys, though, make sure the 502 gets the top bunk—when I tried sitting the 304 on top, its weight kinda warped the 502's top and kept the disc drawer from opening. Build qualities for the 304 and 502 are very impressive for the price range, with good-sized power supplies and high-quality parts used in sonically important circuits. Neither one of these NADs is ever gonna be mistaken for a Krell, of course—you could be on your deathbed and still hoist these NADs in each hand. But NAD has never been about massive metallic monoliths whose chief purpose is to remind their owners of how just many people they could crush if they wanted to. NAD is about high-grade sound that's cheap-cuz-the-boxain't-much.

The 304's amplifier section is rated at 35Wpc into 8 ohms, but those are continuous watts—the 304's much more musically relevant short-term power rating is a whopping 120W into 8 ohms, 160W into 4 ohms, and 200W into 2 ohms. And this has nothing to do with NAD's infamous "Soft-Clipping" circuit mojo, either—this performance comes before that switch is flipped. This is because the 304 employs what NAD calls an Extended Dynamic Power circuit that shifts from the modest-sized primary power supply to a high-voltage supply, when the music calls for short bursts of Rock-Approved Wattage. So on real music material, the 304 offers the subjective performance of a much-higher-powered amp than its 35W rating might imply, but without the higher-powered amp's price tag.

The 304's preamp section features a MM-level phono stage and six line-level inputs for CD, Video (for use with the audio outputs from a VHS or LD player), Aux (for use with anything but garbage like a MiniDisc or DCC deck), Tuner (packed in water or oil), and two Tape loops. Yes, there's a pair of tone controls for dicing with the bass and treble, and yes, there's a Tone Defeat button that bypasses them for the best sound. And yes, I was screwing around one day and left both controls cranked all the way up, and yes, I forgot about it and wondered why the system sounded totally bitchin' on Sabbath's "War Pigs" while everything else sucked. The 304 also has preamp-out and amp-in jacks, allowing for independent operation of both sections as well as a bi-amping setup like the one I described in my review of the NHT SuperZero speakers and SW2P powered subwoofer in Vol.17 No.1 (p.139).

Surprisingly for such a budget product, the 304's preamp section employs an all-discrete transistor topology for both the line and phono stages—the NAD's lone IC chip is buried in the heart of the amplifier's protection circuit, out of the audio signal path. Surprising too is the MM-level phono stage's use of precision low-noise metal-film resistors and 5%–toleranced polypropylene film caps, parts more typical of higher-priced fare than a sub–400-clam integrated.

The NAD has two sets of five-way speaker-binding posts, labeled A and B. But where many amps allow for either pair to be driven alone, the 304's "Extra Speakers" front-panel button merely adds the B pair in parallel with the A speakers, which makes their combined load doubly difficult to drive. So don't do it!

Even so, NAD mentions a novel hookup idea for the B pair: Wire the second pair of speakers in series across the Left and Right "red/+" B speaker posts, to derive the out-of-phase L–R signal from the stereo program—and which just happens to be the mono surround channel in a Dolby Surround-encoded movie soundtrack! If you put the B speakers in the back corners of the room,
you can consider this hookup a quasi-Dolby Surround setup, and a good way to get an entry-level taste of what home-theater surround-sound is all about.  

SYSTEM
The 502 CD player and 304 integrated amp saw several months’ duty in my Real World budget reference system: Rotel RCD-955AX and JVC XL-Z1050 CD players; Acurus DIA-100 integrated amplifier; speakers were alternately the NHT SuperZero/SW2P sub/sat system and the new ProAc Studio 100s; Kimber PJB interconnect and 4TC speaker cable; and everything was plugged into a Power Wedge “Power Pack,” a $220 budget version of the popular AC line conditioner that uses the same RFI/EMI filters, but lacks the Wedge’s isolation transformers. A full review shall come to pass, I swear to you this day.

I also listened to both NADs in my He-Man reference rig: Linn LP12/Ekos/Lingo/Trampolin/Cirkus turntable with a Sumiko Blue Point Special high-output MC phonograph cartridge; Theta Data II/Gen.II digital rig; Panasonic RS-805US 8-track deck; my buffered passive pre-amp; Exposure XVII and Audible Illusions Modules 3 preamps; Aragon 4004 Mk.II amplifier; NHT 3.3 speakers; and Kimber KCAG interconnect and 4AG speaker cables. Everything was plugged into the big-daddy Power Wedge AC line conditioners.

SOUND
NAD 502 CD Player: As I said before, I found NAD’s 5425 CD player, the model the 502 replaces, to be a cute little entry-level player that “didn’t sound half-bad.” Although I preferred the 5425 overall to the mid-fi–grade players from Denon and Sony I reviewed in the same issue, the $299 5425 didn’t really knock on the doors of such overachieving budget kings as the $450 Rotel RCD-955AX and $800 JVC XL-Z1050 players. While the Rotel and JVC were capable of sourcing entry-level high-end digital sound, the 5425 just “didn’t sound half-bad.” It was suitable for audiophile-leaning civilians and second systems, but a true high-end budget king the 5425 definitely was not.

The 502, however, ROCKS! This $299 NAD, not one dollar more than the old machine, sounds better than either the Rotel or the JVC, and not by slim margins either—the 502 clearly outguns both of these time-tested budget kings virtually across the board.

For starters, the new NAD sounds nothing like the old 5425. Instead of a mildly muddled and fairly low-rez sound, the 502 had the kind of open, and unrestrained quality more commonly associated with high-end digital playback. No, the NAD didn’t have mc packing up the Thetas, but I’ll tell you what—there was a two-week period there where the Data II was back at Theta, and I just unplugged the Gen.III from the system and let the NAD take over as the sole digital source in my He-Man rig.

Know what? The sky didn’t fall. The cops didn’t bust in. Minister Farrakhan didn’t marry Fran Drescher. In other words, the system sounded fine. In fact, it sounded more than fine. Even as I could readily hear where the Theta duo stomped all over the NAD—think “space,” “bass slam,” “detail”—the lil’ 502 really held its own and provided highly musical CD playback in the weeks it reigned in the He-Man Parade.

The biggest reason for the 502’s high showing was its surprisingly rocking low end. Whereas the old 5425 was really pretty wimpy through the bass range, the 502 had a lively, powerful bottom end that was totally out of character for a player this inexpensive. Compared to the Rotel and JVC players, the 502 had much tighter and better-defined bass and really locked in with groove-heavy music—like Masters of Reality’s Sunset on the Sufferbus and White Zombie’s La Sexorcisto: Devil Music Vol. I—on a base, red-meat-eating level.

Again, comparisons with the Theta duo at precisely matched levels showed the more expensive gear to be clearly superior, but in the much more relevant context of the Rotel and JVC players, the 502 had them both bass-beaten by a mile. Whether this is due to the 502’s DC-coupled audio circuit is the electrolytic-coupled Rotel and JVC players, or to the simple fact that the NAD is a new design while the other two are more than a few years old, I don’t know. But it took hooking up an external digital processor—and a good one at that—to better the 502’s own low-end drive and definition. I tried two—Theta’s $599 Cobalt and Audio Alchemy’s $199 DAC—in-the-box—and while the Cobalt had a clearly more potent low end than the 502, the DIIB’s bass wasn’t as good as the NAD’s.

Tonality, the NAD was clean and clear, but slightly soft on top. Not nearly as rolled off in the highs as the somewhat airless JVC, the 502’s treble range was tilted down a bit, although not to the extent that the sound became dull or overly dark. Compared to the Rotel, the NAD was much cleaner and more open through the mids and highs, giving Muddy Waters’ mofo MoFi Folk Singer CD a far more natural, clean sound. The 502 did have a trace of mid- to low-truble grit when compared directly to the big Theta combo, but c’mon—if it didn’t, then it would be clearly better than anything else on the market except the Theta, and Luis and Fran would be choosing china patterns at this very moment.

Finally, in terms of space trippin’, again the NAD had the other two former champs beat. The 502’s ability to float a solid, multi-layered soundstage was so far superior to the Rotel and JVC players that I took all three into the He-Man room to make sure I was hearing them in a fair light. The He-Man-rig trials backed up what I heard in the Real World system: While the Rotel and JVC players presented a fairly detailed soundstage but with much less depth than I’m used to with the Gen.III, the NAD’s soundstage was not only more vividly detailed than the other players, but also had much more in the way of depth and that tangible 3-D quality that you just don’t ever expect from budget gear. The highly dramatic but fake ambience and soundstage on the Muddy Waters Folk Singer CD was the perfect acid test for comparing the three budget players: While the oldsters made the MoFi superdisc sound as flat and uninvolved as the regular MCA CD, only the NAD was able to present the superior sound quality of this amazing disc as something that was very obviously a whole lot better than any CD that came before it.

NAD 304 integrated amplifier: In addition to teaching the world to sing in perfect harmony and seeing hotdogs growing on vines outside my window, my Perfect World Scenario includes an NAD 304 integrated sitting on the desk of every single manufacturer in high-end audio. Why? Because I want these rat bastards to have to look ashamedly at what can be done for only $379 every time they sit down to plot their next overpriced, underperforming turkey. 379 clams!! For a butt-kickin’ 35W stereo amplifier and a full-featured preamp, with a low-noise discrete phono stage!! Christ, I sound like NAD’s worst promo–jizz nightmare, but, I mean, look at this thing!! This is so anti–High End it should be riding through Santa Fe on a fiery Mexican stallion, shooting pistols up in
the air and aiee-yi-yi-ing at scared Stereophile staffers as they dive headfirst into water troughs.

This is what Real World hi-fi is all about! Viva la 304!

I dig the hell outta this new NAD. This is truly a killer little integrated, and one that offers up a much fatter slice of true high-end sound than anything even remotely near its price. The 304 isn’t some apology—ridden budget box that makes me feel like Goldblocks when I go walking through the El-Chicago Forest —“This one’s too hard. . .and this one’s too soft.” With the NAD 304, I’ve finally found a cool pre/power system that’s juuust right.

Tonally, the NAD is more neutral than it has any right to be at this price. If NAD can do it for $379 and throw in a full-featured preamp to boot, why can’t other manufacturers of budget gear build just a separate amp for the same price that sounds as good as the 304? In a three-way comparison with the similarly priced separate amps I reviewed in Vol.16 No.10 (p.183), Rotel’s RB-960BX and Adcom’s GFA-535 II, the NAD walked all over them, even as it was rated for little more than half their power and sported a full-featured preamp for the same price. Mated with a McCormack passive Line Drive or Rotel’s $400 RP-960BX and Adcom and Rotel amps changed the sounds of the system too much, and in opposite directions—too aggressive with the Adcom, too soft—focus with the Rotel. But when I replaced the 304, everything snapped back into focus. The sound became much more tangible and inviting, in the way that a good high-end system draws you into the music rather than throwing it up as a reasonable facsimile thereof, the manner of most budget gear. The NAD’s clarity and coherence were outstanding for such an inexpensive product, and gave it much more in the way of true high-end sound quality than the other amps on hand.

I listened to the 304’s MM phono stage by moving the NAD over into the He-Man system and using the 304 as a separate preamp with the rest of the system. The phono stage is musical and diggable, a bit rolled-off in the highs, but that’s a good thing with most of the budget phono cartridges likely to be mated to the 304. The $295 Sumiko Blue Point Special undoubtedly showed off the NAD’s phono stage better than what most people will plug into the 304’s phono inputs. But if you do feed the 304 such a thoroughbred, you certainly won’t be disappointed. There did seem to be a lack of deep bass via the phono stage, probably due to a rightfully over-zealous subsonic filter meant to keep the li’l 304 from upchuckling in the face of warped LPs and underdamped turntable/arm/cartridge setups. I got much better phono sound from the phono stages in the Audible Illusions and Exposure preamps, but the 304’s MM circuit is still one of the best-sounding stages I’ve heard from a component in this class, bettering even the very good phono stage in the $595 Creek 4140S. The 304 may have an Achilles heel that I wasn’t able to find during my listening, but the phono stage wasn’t it.

As with the comparison of the 502 CD player vs the previous budget champs, the NAD’s superiority was demonstrated when I listened to the new MoFi Muddy Waters Folk Singer CD. To make things fair, I used the 304’s preamp section with the Adcom and Rotel amps. The Adcom and Rotel made the excellent recording sound much too hard or soft, respectively, for the system to have any legitimate pretense to high-end sound. The 304, however, reproduced the trio of Muddy, Buddy, and Willie as they sound in my He-Man rig: the highs were all there, but without the kind of grittiness I hear from nearly all inexpensive electronics; the midrange was smooth and had excellent detail; and the imaging and soundstaging were in a whole other class from the other two amps. The only area where I felt the 304 did not trounce the other two was in the extreme low-end—while the 304 was authoritative and solid at reasonable levels, it didn’t really outperform either the Rotel or the Adcom in the bass the way it did everywhere else. The NAD’s dual power supplies gave the NAD a considerably bigger sound than any 35W-rated amp I’ve heard, but it still fell short of the ultimate extension and solidity I hear from the true He-Man stuff, as well as the excellent $995 Acurus SD-100 100W integrated I reviewed in Vol.16 No.11 (p.114).

But check this out: With the NHT sub/sat speaker system, the NAD’s bottom-end limitations were made moot because, hooked up in the bi-amp method I described in my review of the NHTs, the SW2P’s amp handled everything below 80Hz; the NADs only wasn’t dealing with any real low end at all. And this is the system that really did it for me, because freed up from having to handle the bass range, the NAD could play much louder with even more clarity through the mids and highs than it could when operating full-range.

Don’t get me wrong—the 304 driving the 6½” two-way ProAcs made for a mighty musical sound. But when I bi-amped the NHTs along with the NHT 80W MA-1 subwoofer amplifier, I had a full-range budget-king system that swung along at Rock-Approved levels with true high-end sound quality. That’s what I’ve been aiming for through all this Real World exploration. Now I’ve finally got it.

Finally, two words of advice about the NAD’s switchable “Soft-Clipping” circuit: Ignore it. Yes, it lets the li’l 304 play compressed rock ‘n’ roll records at a slightly higher overall level without the sound getting garly. But the price paid is a slight but depressing coarsening across the range—and especially in the midrange—at all levels from loud to soft. It sounded like a “Mid-Fi” switch to me—when I’d flip it, the NAD’s sound became noticeably less open and clear. And anyway, I didn’t think it effected a significant improvement in the NAD’s ability to boogie, as the 304 seemed to play just a hair louder without strain at the very top end of its reach with the “Soft-Clipping” switched in. For the best sound, leave it switched off.

AMPLIFIER MEASUREMENTS FROM TJN

Unless otherwise stated, all line-level measurements were made at the loudspeaker outputs and at a maximum volume-control setting. The phono-stage measurements were made at the NAD’s tape-output jacks. The soft-clipping circuits were off except where noted.

The NAD 304 ran hot following its ½-power preconditioning at 8 ohms, but still functioned normally. Its input impedance at its CD input measured 17.8k ohms; at its phone input, input impedance was 47.3k ohms left, 48k ohms right. The output impedance at the tape outputs measured just over 1.9k ohms with a 25 ohm source impedance, 2.5k ohms with a 600 ohm source impedance—indicating unbuffered tape outputs. For those who may want to use the NAD’s separate preamp—out, power-amp—in connections, the preamp output impedance at these jacks measured 226 ohms, the power-amp input just over 18k ohms. Both of these values are similar to those found in good, separate preamps and power amps.

The 304’s output impedance was very low: 0.085 ohms at 1kHz, slightly higher at the frequency extremes (about 0.086 ohms at 20Hz, 0.12 ohms at 20kHz). This suggests a very consistent performance into real-world loudspeakers, at least with respect to overall system frequency response. DC offset measured 7.8mV in the left channel, 8.3mV in the
right. Signal/noise (unweighted, 22Hz–22kHz ref. 1W into 8 ohms) measured 85.4dB in the left channel at the 12:00 setting of the volume control, dropping to 80.4dB at full volume. Interestingly, the right channel S/N, which at 12:00 was about 2dB worse than the right, improved at the full-volume setting (to 84.4dB). The 304 was noninverting from either the phono or line inputs, and at either the main or tape outputs. The 304's phono gain measured 36.2dB; the line gain to the main outputs was 39.9dB. Volume-control tracking was very good, with the highest channel imbalance 0.4dB at the 9:00 setting.

Fig. 1 shows the frequency response of the 304, the RIAA phono response at the top, the line input to main output response (at 1W into 8 ohms) at the bottom. The line response at 2W into 4 ohms (not shown) is virtually identical. The phono response shows a small but minor rolloff at the frequency extremes; the main–response rolloff is more abrupt, but still holds up well at 20Hz and 20kHz. The main output's response in the right channel measures slightly leaner and brighter than that in the right, which may be just audible in critical listening. The deviation is small in absolute terms, but does extend over several octaves. Nevertheless, I would not expect it to be audibly bothersome (nor, in this class of equipment, would I expect it to be consistent from sample to sample). Fig. 2 is the output with a 1kHz squarewave input; the rounding of the leading edge reflects the HF response rolloff above 20kHz visible in fig. 1. The 1kHz squarewave, not shown, has the slightly tilted top consistent with the 304's LF rolloff.

Fig. 3 shows the 304's crosstalk: line crosstalk at the top, phono at the bottom. Note that the phono crosstalk is superior, but it was not measured at the same point (again, the line crosstalk was measured at the main outputs, the phono at the tape outputs). Either way, this is good performance, and is consistent between channels. The typical increase at higher frequencies is, as usual, likely due to interchannel capacitive coupling.

The THD+noise vs frequency results in fig. 4 are also very good. The phono measurements were taken with an input of 100mV; the NAD's phono stage has a very high overload margin; the minimum THD+noise levels were obtained at an input of 100mV. (Noise predominated at lower input levels, but not to a point where it would be of any concern in typical use.) The overload margins on the NAD's phono stage, for 1% THD+noise with an unadjusted input, were 265mV at 1kHz, 2.25V at 20kHz, and 30.3mV at 20Hz. The differences reflect the characteristics of the RIAA phono-equalization curve; these are excellent values, equivalent to 34.5dB, 33.1dB, and 35.6dB.

Fig. 5 shows the THD+noise waveform of the NAD in response to a 1kHz input into a 2 ohm load. It appears to be primarily second-harmonic with some higher–order components. A similar result was obtained into 8 and 2 ohm loads (curves not shown). Fig. 6 shows the spectrum of the NAD's output reproducing 50Hz at an output of 40W into a 4 ohm load. The distortion components are very low, the highest being the third harmonic at 150Hz (~9dB, or about 0.0015%). The artifacts increase rapidly above a 47W output. (These are steady-state readings; the high–rail power supply can't help here.)

The intermodulation in the output caused by a combined 19+20kHz input at 40W into 4 ohms is shown in fig. 7. The largest artifact here is at 21kHz (~78.1dB, or about 0.012%). The spectrum resulting from a 24W output into an 8 ohm load (not shown) is very similar. As in the case with the 50Hz spectrum, the artifacts increase rapidly above 45W steady-state.

Fig. 8 shows the THD+noise vs level curves for the 304, one channel driven, at 1kHz. The output continues to increase into lower impedances, though not dramatically. Note the break in the curves at the "knee" where the high–rail power supply kicks in. For example, the 8ohm curve breaks initially at just over 30W, the distortion beginning to rise rapidly at this point. At just over 40W,
CD-PLAYER MEASUREMENTS FROM RH

The NAD 502 had excellent bench performance, particularly for a modestly priced machine. Its maximum output voltage was 2.24V (when decoding a full-scale, 1kHz sine wave), and channel balance was better than 0.5dB. Output impedance was a lowish 110 ohms at any audio frequency, and the 502 had no problem driving a 150 ohm load impedance. The 502 doesn’t invert absolute polarity, and DC levels at the output were a very low 0.2mV.

Fig.10 shows the 502’s frequency response (top traces) and response with the de-emphasis circuit engaged (bottom traces). There is a slight rolloff in the top octave, but this is well under half a dB. The de-emphasis circuit tracks extremely well, with virtually no error.

Channel separation (fig.11) was very good, measuring better than 100dB up to 10kHz. Below 2kHz, the channel separation was more than 10dB better than NAD’s published specification. The rise in interchannel crosstalk with frequency is due to capacitive coupling between channels.

Fig.12 is a 5-octave spectral analysis of the 502’s output when decoding a –90dB dithered 1kHz sine wave. The noise levels are quite low, and, remarkably, there is no trace of power-supply noise in the audio signal. Power-supply noise in the audio is indicated by peaks in the plot at 60Hz and its harmonics.) Moreover, the left- and right-channel traces perfectly overlap at the test-signal frequency, revealing that both DAC channels are behaving identically. A similar spectral analysis, but over a wider bandwidth and with an input signal of all zeros, produced the plot of fig.13. The DAC appears to turn off (the noise level is lower), and we can see the effect of the analog output filter above 30kHz.

The 502’s linearity is shown in fig.14. Note the different scale used in CD-player measurements (–60dBFS to –120dBFS) compared with digital-processor measurements (0dBFS to –120dBFS), and the slightly different technique that produces what appears to be a noisier plot. The 502’s linearity was exceptionally good, with nearly no error to below –110dB. The apparent positive linearity error below –90dB is more likely noise intruding on the measurement at such a low level. The plot shown is the 502’s left channel; the right channel was virtually identical.

Fig.15 is the 502’s reproduction of a –90dB undithered 1kHz sine wave. The

Table I: NAD 304 Clipping (% THD+noise at 1kHz)

<table>
<thead>
<tr>
<th>LOAD</th>
<th>Both Channels Driven (W @ dBW)</th>
<th>One Channel Driven (W @ dBW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ohms</td>
<td>(L)</td>
<td>(R)</td>
</tr>
<tr>
<td>8</td>
<td>46 (16.6)</td>
<td>46 (16.6)</td>
</tr>
<tr>
<td>(AC line)</td>
<td>122V</td>
<td>122V</td>
</tr>
<tr>
<td>4</td>
<td>39.5 (13)</td>
<td>39.9 (13)</td>
</tr>
<tr>
<td>(AC line)</td>
<td>122V</td>
<td>122V</td>
</tr>
<tr>
<td>2</td>
<td>44.5 (10.5)</td>
<td>44.5 (10.5)</td>
</tr>
<tr>
<td>(AC line)</td>
<td>122V</td>
<td>122V</td>
</tr>
</tbody>
</table>

However, the distortion drops again—the result of the high rail of the power supply turning on. This carries the power to nearly 90W, where the distortion begins rising again. The high rail can only hold the higher power output for a fraction of a second. Fig.8 is plotted with a fairly rapid sweep, though it’s possible that a still-higher power output could be obtained for an even shorter period—eg, as with rapid musical peaks.

With “Soft-Clip” engaged, the output levels are actually reduced slightly below those in fig.8. The 1% THD+noise levels with “Soft-Clip” measured approximately 70W into 8 ohms, 97W into 4 ohms, and 130W into 2 ohms. The discrete clipping measurements for the 504 (by our convention, 1% THD+noise at 1kHz), to the nearest watt, are shown in Table 1. These do not include the contribution of the high-rail supply, but are long-term, continuous values (the high rail’s contribution does not hold long enough to take discrete measurements). Finally, the effects of the “Soft-Clipping” circuit on a waveform at clipping is shown in fig.9. Surprisingly, the visible effects of the “Soft-Clip” circuit are marginal.

The NAD 304 performed well on the bench. Nothing startling here, but it gives solid performance for the price, with notably low distortion levels and good power output, particularly under the brief-period assistance of the high-rail power supply. —Thomas J. Norton
waveform is overlaid with audio-band noise, and has some asymmetry. The negative-going portion of the waveform doesn't stay negative long enough, instead jumping to the zero crossing level halfway through the waveform's negative-going phase. This is most noticeable on the first two cycles (between 500µs and 1ms, and again between 1.5ms and 2ms). The 502's noise-modulation performance, seen as the tight trace groupings in fig.16, was good. There is some deviation, but generally the noise floor doesn't shift or change in spectral content as a function of input level.

Fig.17 is an FFT plot of the 502's output when decoding a full-scale mix of 19kHz and 20kHz sinewaves. We're looking for spikes in the noise floor indicative of intermodulation products generated by the device under test. The 502's spectrum is remarkably clean; there is no trace of the 1kHz difference component (20kHz minus 19kHz), and no other spikes in the audioband. Compare this trace with those of the Timbre DAC and Meridian 563, reviewed elsewhere in this issue. This is among the best performances I've seen, regardless of price.

The 502's unusual construction prevented me from measuring its jitter. The digital components are surface-mounted on the underside of the single large printed circuit board, and the RCA jacks are board-mounted and screwed to the chassis.

Finally, I tested the 502's ability to track disc defects with the Pierre Verany Test Disc. The 502 played through the disc's intentional dropouts on track 31, but started skipping on track 32, indicating good but not exceptional tracking performance.

Overall, I was impressed by the NAD 502's technical performance, though it must be noted that the display failed on our first review sample. Discs could be played, but I had no idea what track was playing.

—Robert Harley

CONCLUSION FROM CG
I think these new NADS are killer times ten! Not only do they sound leagues better than their low- to mid-priced competition, but they're even cheaper besides. You cannot do better for the money—or even twice the money, as far as I'm concerned—than these new NADS.

The NAD 502 represents a new standard in budget-king CD player sound. Better-sounding than either the $450 Rotel RCD-955AX or the $800 JVC XL-Z1050 that ruled this range for the past few years, the 502 deserves a solid Class C rating in "Recommended Components," and is going to make life very difficult for current players in the $500-$1000 range. If you plan to spend this much on a CD player, by all means listen to the 502 first.

The 304 integrated amp's open, clear sound was right in line with what I heard from the 502 CD player, and the combination provided me with a level of sound quality that was positively stunning for the money. As with the 502 player, the NAD 304 achieves a Class C rating at a heretofore unimaginable price for the sound quality delivered. Both the 304 and 502 represent a real return to form for NAD; I'm glad to see the company back on track and offering true Real World hi-fi for less than what some audiophiles spend on magic wooden drink coasters with mysterious Asian monikers to put under their gear.

Add the $880 NHT SuperZero/5W2P sub/sat speaker system to the $680 NAD duo, throw in another $200 for a couple meter-pairs of Kimber PBJ, the DIY crossover filters for the NTHs, and a pair of Kimber 4TC speaker cables, and you're looking at a complete Real World reference rig for only $1760. Actually, what you're looking at is my Real World reference rig.

—Corey Greenberg
Fosgate/Audionics 7AT Home-THX Audio System

J. Gordon Holt

As you probably know by now, I like surround-sound! And, like Robert Harley, I enjoy watching movies at home almost as much as I enjoy listening to music. But Bob and I part company when it comes to listening to music on a home-theater speaker system. He doesn't like it; I'm coming to the conclusion that I do.

I'm not going to get embroiled in a "this-sounds-better/no-it-doesn't" argument, because in reproduced sound, degrees of goodness or lousiness are merely judgment calls. I will grant that most music recordings—LPs, CDs, and prerecorded tapes—do not sound as realistic (or "musical") when reproduced by a good home-theater system as they do on a high-end stereo system. But some of them do, and there's reason to believe that the ones that don't may, in fact, not be as good as those that do. (It's significant that those legendary RCA and Mercury LPs sound more realistic from really good Home Theater systems than do the vast majority of later recordings.)

In case you didn't see the discussions of THX in earlier issues, here's the story in brief: THX was George Lucas's response to the sorry state of theater sound in the early 1980s, when good sound was gaining recognition as an important part of the movie experience. THX, though, is not a sound system; it's a set of objective measurements and installation practices that define minimum performance standards, regardless of the equipment they use, for all theater systems—and, more recently, for Home Theater products as well.

The idea behind it is that if audio playback systems meet the same technical standards as the best mixing stages, moviegoers will hear film sound the way the director intended it to be heard. This would seem on the surface to be worth objective, and one that should appeal particularly to audiophiles who have long maintained that the goal of audio for music is to reproduce the sound of the recording as accurately as possible. But in fact, home THX is not universally

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1 For my reasons, see "Space... the Final Frontier," Vol. 17 No. 3, March 1994, p. 60.

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The Fosgate THX speaker system: 3x MC-720, 2x SD-180, 2x FS-400

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Stereophile, April 1994
admired. Many high-end audiophiles don't really care how accurate a system is, as long as it makes their favorite recordings sound "musical," and they generally agree that THX systems don't do that.

Even Dolby Labs has taken an official stand against home THX, arguing that it denies consumers their right to choose the kind of sound they prefer. This is an overstatement: The mere existence of THX standards doesn't prevent anyone from buying non-THX equipment. Besides, my experience with home-THX systems to date has led me to believe that they are, in most respects, more accurate sound reproducers than the vast majority of audiophile systems.

THE FOSGATE/AUDIONICS APPROACH

High-end street wisdom has it that one-brand systems are bad deals because no one company knows how best to design a spectrum of products. Fosgate/Audionics2 didn't even try; they farmed out the products they didn't feel qualified to design themselves. Thus, the Fosgate/Audionics MC-220 THX LCR loudspeaker

THX speakers were designed by John Dunlavy, once of Duntech, now of Dunlavy Audio Labs [See RD's review of the Dunlavy SC-IV loudspeaker elsewhere in this issue.—Ed.], and the amplifiers by Stephen Manzi, a freelance who has worked anonymously for a number of well-known companies. Only the surround decoder is Fosgate's own, which is fine—designing surround decoders is what they do best.

The front left-, right-, and center-channel MC-220 speakers are conventional scaled-box THX designs with the now-familiar vertical woofer-tweeter-woofer lineup that gives broad horizontal and narrow vertical dispersion (to minimize reflections from floor and ceiling). They are of modest size, but their height makes it clear that they were designed for serious home theaters; i.e., a large front-projection screen on the wall. The center speaker is much too high to put under a floorstanding video display, and would look like hell perched atop it, aside from the fact that it would have to be aimed downward at a precarious angle. So, for the purpose of my review, Harman Video—a division of Fosgate's parent company—loaned me a $12,000 DPM-8 data-grade projector and a 6½' Stewart screen.

The SD-180 surround speakers are unusual in appearance and design. Instead of their dipoles firing parallel along the sidewalls, as do most THX surrounds, the SD-180s are angled into the room by about 25°, which reduces the adverse effects of excessive wall absorption from drapes, bookshelves, and the like, and reduces HF attenuation due to beaming when the speakers are used as point-source speakers.

In most THX surround speakers, the backward-facing woofer/tweeter pairs are hard-wired in parallel and out-of-phase, so the speakers always work as dipoles—with front and back lobes and null points at the sides, to provide an ambient soundfield in the room. Fosgate believes this isn't always the best surround-speaker configuration, so they made their front- and rear-facing pairs electrically independent. This allows them to be wired in-phase, for use as point-source surrounds rather than ambient surrounds. In fact, they're connected as THX-style dipoles only in the THX and movie modes.

The subwoofers are low, square boxes with a 14" woofer facing the floor—something I have misgivings about. Every other floor-facing woofer I've ever encountered succumbed sooner or later to gravity sag, in which the voice-coil comes to assume an at-rest position below its original one. This can cause distortion, because the cone's restoring force becomes asymmetrical, and the voice-coil's movements may take it out of the range where its magnetic field is linear. I recommend putting Fosgate's subwoofers on their sides. A grille cover is available for users who don't care to look at naked woofer cones.

The 4125 amplifiers—the only non-THX components in the system—are four-channel designs rated at 75Wpc stereo and 200Wpc with each channel pair bridged for mono operation. THX calls for a minimum of 150Wpc—to achieve this you'll need three strapped 4125s, for a total outlay of $3237. This isn't out of line, because other high-quality two-channel amps of comparable power (200Wpc) start at around $1000 and average $1500 each.

DECODING

The Three A is a complete audio/video switcher/subwoofer crossover/control center intended to replace the line controller of a two-channel stereo system. Analog from inputs to outputs (except for the surround delay), it has six audio/video inputs which include video switching, all selectable from the infrared remote controller. The S-Video video inputs have both composite and S-VHS inputs and outputs, although there's no

1 Fosgate/Audionics is part of the Harman conglomerate, and should not be confused with in-car amplifier manufacturer Rockford-Fosgate, which also makes Hafler components. Lexicon, another American manufacturer of a high-end, THX-approved surround-sound processor, is also owned by Harman. —JA

2 Fosgate/Audionics
Jazz, between round-sound sound.

There are two front-panel level controls, one a potentiometer for input level (sensitivity), the other a pair of pushbuttons for system volume. A backlit yellow LCD display (with adjustable brightness) shows the volume setting in dB above or below zero, and the current surround mode. Each output channel has its own rear-panel level adjustment for initial system calibration, but there are no individual level sets for the input sources.

Unlike Lexicon and Yamaha, Fosgate does not digitally synthesize the spatiality in any of their surround-sound modes (although the Mono Enhance function does do this). All the surround modes extract the recording’s own antiphase components, which include the acoustics of the original recording hall as well as Dolby-encoded surround effects. This gives the most honest representation of the original hall acoustics in music recordings, and doesn’t add additional spaciousness to recordings that already have plenty of it. The Fosgate’s various music modes use different combinations of front/back balance, side/back balance, surround delay, and surround low-pass filtering to approximate the acoustical characteristics of real performing spaces of different sizes and types.

The Panorama control varies the soundstage width by adjusting the ratio between the sum and difference components of the stereo signal. A third button restores the normal default mix, which neither widens nor narrows the soundstage.

The music modes are Rock, Popular, Jazz, Chamber, and Orchestra. The Rock mode is unusual (maybe even unique) in that it actually provides stereo surround-sound. All the surround modes except two use non-defeatable logic steering. This usually messes up ambient surround-sound because the random nature of hall ambience tends to confuse the steering circuits, causing pumping in the front channels, so I was skeptical about its use in the Three A. With the center channel turned off, Chamber-music mode gives simple L-R ambience extraction à la Harfert/Dynaquad with no steering at all, while Orchestra mode only uses steering to keep front-channel information out of the surrounds, leaving front channels completely unprocessed. Turning on the center channel causes both of these to use front steering, to prevent the almost total lack of separation (3dB) that would otherwise result.

There are four Movie modes: THX, Pro Logic, 70mm, and 70mm Wid. Pro Logic is movie surround without the THX embellishments, 70mm mode is Pro Logic with faster steering and wider-range surrounds, and 70mm Wid is the same as 70mm, but with a wider soundstage. The Mono Enhance mode needs no explanation.

Only Pro Logic and THX use Dolby’s steering-logic board; all the other surround modes use Fosgate’s proprietary steering, which features a lower threshold and faster steering.

Different surround modes are selected when you change sources; by Aux selects Orchestra mode. The source default modes are user-programmable, as they are with the Lexicon CP-3, and you can select any preferred alternative after selecting a source. However, many of the other selected parameters for each mode (front/back balance, panorama width, etc.) are stored in memory when you shut down, and then become the system’s turn-on defaults for those sources until you change them again. For instance, if your system lacks a center channel, you must turn the center channel off to ensure that mono information is directed to the side channels instead of just getting lost. This setting is then stored, and the center speaker remains off in that mode until you elect to turn it on again (which you never should if you don’t use a center speaker).

WHAT’S SO GREAT ABOUT DISCRETE SURROUND?

Some programs can take advantage of them, that’s what. The Dolby Surround information on home-video soundtracks is extracted as a mono signal, which is fed equally to both surround speakers. Both surrounds could actually be in parallel, driven by a single amplifier channel (and are in some decoder/amplifiers). But whether you use one amp or two, the surround signal is still mono, and creates no sensation of the spaciousness you hear in a large theater. Home THX addresses this by requiring that the surround speakers be fed de-correlated signals rather than correlated (mono) ones. This involves splitting the mono signal into L and R paths and introducing small, rapid frequency variations between them—variations too small to be heard as pitch changes, but nonetheless large enough to be heard as a widening of the surround “soundstage.” Obviously, this requires that each surround speaker be independently driven by its own amplifier channel, which implies the potential for reproducing a true stereo sound from recordings containing such information. Yet Fosgate appears to be the only decoder manufacturer to have taken advantage of this.

Dolby Surround and its THX spinoff can give the illusion that surround sounds are imaging along one or the other of the front sidewalls, simply because panned front-side to back-center “motion” always passes through a phase when the surround channels and one of the front speakers are both reproducing the sound. But the resulting images are evanescent—evaporating when you turn to “face” them, and losing specificity as the image moves toward the back of the listening space.

The Three A’s Rock mode uses this channel sharing to sense the intended direction of these rear-side images and steers them to where they belong. Thus, discrete surround effects (as opposed to ambience effects) can be different in the L and R surrounds, with some coming from the left, others from the right, depending on how the original recording was panned. In addition, the Rock mode eliminates the low-pass filtering used by the other music modes to simulate the dulled spectral energy of reverberant energy, providing the full-range surround signals necessary to properly reproduce localized sounds. This is, in theory at least, the closest any current-model surround decoder comes to decoding SQ quadraphonic sound, which was encoded in hundreds of recordings made during the 1970s and is often preserved in their CD rereleases.

The instruction manual for the Three A (which actually covers installation of the entire system) leaves something to be desired. Most of the setup and use infor-
mation you'll ever need is there, and a table of contents helps you find what you might need to reference, but the instructions are more geared to what the various controls do than to how to use them. For example, the section on adjusting rear-channel time delay—to ensure that the listener hears the front channels first, even if she is sitting closer to the surround speakers—does not indicate how to tell when it's set properly. Most irksome, though, is the lack of a topic index in a 39-page manual. I didn't keep a tally of how many minutes I wasted trying to find topics I knew I'd seen but couldn't seem to find again.

INSTALLATION
My review system was initially set up by Fosgate's Charles Wood, who discovered early on that one front channel of the Three A's built-in electronic crossover was DOA. He elected to bypass it, warning me to go easy on the bass-heavy stuff until a replacement arrived. When it did a couple days later, I was left to configure and calibrate the system. This was when I learned how badly organized the "Installation" section of the manual was.

Unlike the Snell/Lexicon/Rane THX system, which had been installed by Tony Grimani of LucasArts, the Fosgate didn't come with a room equalizer. Wood contended that no available equalizer was good enough to avoid serious degradation of the sound, and from what I've heard to date, I have to agree with him. The low-end choppiness that Grimani had encountered in my room, which was a major reason for his opting to use EQ, was largely solved by Wood by means of an unconventional subwoofer placement: both were offset to one side by a distance roughly equal to a third of the room width. (The asymmetrical placement drastically reduces cancellation dips due to standing waves between the room's side walls—another argument in favor of separate satellite/subwoofer systems. Each speaker can be placed where it best reproduces the range it covers, and because the bass has different placement requirements than the upper ranges.)

The Three A decoder gave the impression that it wasn't quite thought through. Despite the fact that the LCD display shows (remotely controlled) volume relative to a 0dB reference level and that there are output-level adjusts for each loudspeaker channel, there's no way of individually calibrating the level of each input source. If source devices don't have their own output-level controls, the "calibration" control must be set by ear each time you change sources—a pain in the neck. Home THX requires that the primary movie source (usually a laserdisc player) be calibrated so that a standard 0dB (from a test disc) produces 74dB with the user volume set at 0dB, which is covered in Fosgate's instructions. But with the system calibrated to that source, my VHS tape machine produced such high output level that 0dB on the LCD/volume control required turning the input level so far down that normal potentiometer mistracking caused one channel to go dead.

LISTENING
My first listen to the Fosgate THX system was disappointing. While there was truly immense dynamic range, awesomely deep, tight, and smooth low end, and blazingly fast transient attacks, the treble was brittle almost to the point of steeliness with both music recordings and movie soundtracks. The soundstage was flat, and inner detail was only fairly well revealed.

Had I written the review at that point, it would have been unenthusiastic. It also would have been wrong.

In my heart, I know that many loudspeaker drivers need extensive break-in before they can perform at their best, yet on the conscious level I seem to keep trying to deny this. So it was mostly out of unwillingness to see all my calibration efforts wasted that I continued to listen to the Fosgate for a couple more weeks. Then I began to think it was sounding less har. Or was I just getting inured to it? No, it was unquestionably starting to sound better than it had originally. Fellow Boulderite Steven Stone listened to the Fosgate shortly after initial setup, and again after it had been broken-in. He agreed that it sounded much better.

It took well over a month—over 70 hours of use—before everything stabilized, by which time the system was sounding absolutely stunning.

During the following weeks, I divided my listening between movies from laserdisc and music recordings from almost every kind of source imaginable. Other equipment used for this review included a Revox A-77 15ips 2-track tape recorder, a Sony PCM-F1/SL-2000 digital recorder, a SOTA Star Sapphire II LP turntable, a Sony CDP-779ES CD player, a Pioneer LDS-2 laserdisc player, and a dozen or so channels from a decent TV cable service. The LV movies ran the gamut from '30s black-and-whites with Academy mono to recent blockbuster releases.

THEATER SOUND
The movie sound from the Fosgate sys-

4 "Starfire" or "jump" factor is the degree to which a sudden, unexpected sound causes one to lift momentarily from one's seat, saying "What the hell was THAT?!?"
5 Foley effects are recorded "live" during post-production, in sync with the on-screen action. Library effects come from the studio's archive of previously recorded tapes, discs, and CDs.
of surrounding me with spatial effects like rain, crickets, forest fauna, and the walls of concert audiences and restaurant patrons. But point-source surrounds did better on discrete rear effects like the sounds of a single voice, a closing door, or a gun being cocked, and did a better job of retaining specificity when an image was panned from the front to the rear of the listening room.

The 70mm mode had a lot going for it, too. Its steering action sounded quicker and more sensitive than either of the Dolby modes. For example, near the beginning of Terminator 2, where a light breeze stirs some scraps of paper trash and a discarded paper cup behind the listener, it took a brief fraction of a second in the Dolby modes before these almost subliminal effects were steered to the rear; in Fosgate’s 70mm, they seemed to start out there.

The 70mm Wide mode is 70mm with the bozots. It should’ve been called “Cinerama”—it expands the whole front soundstage and wraps it all the way around to the sidewalls. It’s kind of fun, if you don’t mind off-center sounds imaging way beyond their on-screen positions. I did mind, so much so that the disparities kept distracting me from the movie.

**The Little Home Theater That Could**

But could it do justice to music? Damn right it could! The Fosgate THX system is going to add some high-octane fuel to the Home Theater—for music, because this is the first such system I’ve heard that almost gets it right.

Granted, it isn’t the kind of sound that most high-enders are used to, or would even like if they heard it, because it doesn’t glorify or prettify the sound of music.6 It also didn’t sound as quick, detailed, focused, or liquid as most high-ticket high-end systems. But despite all these shortcomings, it came closer to reproducing the real sound of music than anything I can recall ever hearing at home. (And I’ve done a helluva lotta listening during the past half century!)

The word “accurate” kept popping into my mind as I listened to music on the Fosgate system, although as often as not it was preceded somehow by the word “but,” as in “The sound isn’t all that great, but it’s probably an accurate reproduction of a mediocre recording.” Even antediluvian 78rpm discs sounded startlingly alive, with their musical content standing out almost in bas-relief from a surprisingly inconspicuous background of hiss and popcorn. (The hiss from some late-’40s 78s sounded like 7.5ips tape.) But every time I listened to a recording that should have sounded great, it did. This included recent Reference Recordings LPs and CDs, some of the Koss and Virgin Classics CDs, and everything Sheffield ever did. (Their Track Record is a killer on the Fosgate THX system.)

Tonally, I found this system hard to fault. Massecd violins, cellos, drum kits, piano, basses, bass drums, brasses, woodwinds, guitars, voices—everything just sounded so completely natural that it was hard to resist getting caught up in the music, forgetting that I was supposed to be working. Indeed, when I wasn’t, I found myself listening to more music on the Fosgate than I’ve done since Home Theater invaded my listening room two years ago. I dragged out LPs and tapes I hadn’t heard for years and actually listened to them all the way through without doing anything else. This is precisely what some critics have insisted that Home Theater systems can’t do. Well, this one did it for me.

It even slaked my longstanding thirst for decent brass reproduction—an area where most high-end systems just don’t deliver. The end bell on brass instruments produces a distinctive, honky “horn sound,” because that’s exactly what it is: a horn. But, possibly because so many horn-loaded speakers have historically sounded that way even when trying to reproduce strings and voice, the ability of a loudspeaker to sound that way when the occasion demands has become anathema to audiophiles. This let’s-kill-the-brasses fad in the High End has had me climbing walls for the past 15 years, because it robs orchestral sound of much of the power that makes it so exciting. (Imagine Night on Bald Mountain scored for woodwind quintet, and you’ll get my gist.)

The acid test of the Fosgate THX system came last Fall when Steven Stone and I started making performance recordings of the Boulder Philharmonic. This allowed us to hear the orchestra live during the early evening, and then, later, to compare our recording with what we’d heard. Okay, so the tapes didn’t sound the same. But there was a lot more than a passing resemblance. (And it didn’t hurt one bit that we were using a mike technique that encodes ambient surround, and were listening on a surround system.) Even apart from audiophile hyperbole, anyone who claims reproduced music can’t sound “remotely” like the real thing is just plain wrong. It can come a lot closer than that—on a system designed to be accurate rather than euphonic.

Interestingly, the Fosgate seemed more susceptible to scale distortion than most costly systems. This is the tendency of a system to sound tonally unbalanced when it is listened to at a level other than the original performance level. It relates to the ear’s own spectral dependence on volume—its falloff of bass and treble content at reduced levels. At less than realistic levels, the Fosgate sounded anemic; at the proper level, it had just the right amount of bass and treble—no high-end tizz, no low-end heaviness. (We were able to confirm this with sp! measurements made from under the microphones at Boulder Phil rehearsals; at home, the sound was most natural at precisely the same levels, measured with the same Radio Shack meter.)

**And in stereo?**

I did very little listening in straight stereo, because the system wasn’t designed for the purpose. Even though Stereo is an option among the available modes, it simply didn’t sound as good (as “real,” if you will) with only the front channels on as it did with the surrounds working. Without them, the bass was lean and uninvolving, and the front-only soundstage had inadequate depth. Good surround reproduction spoils you for anything less. And because of the surrounds, the system didn’t favor some kinds of music over others. Intimate recordings, like jazz and chamber music, had the requisite leanness and punch, while large-scale recordings had all the weight and richness they needed.

**Rock’N’Roll**

Finally, I spent some time investigating the touted advantages of the Three A’s Rock mode. I own about 20 surround-encoded music discs dating from the SQ era, some with ambient surround, others with rear and fast-moving discrete effects. Ambient surround was very well handled by the Fosgate, although with somewhat less spaciousness than I’d heard from the same recordings on the Lexicon/Snell THX system. Bernstein’s Verdi Requiem LP has air-conditioner noise that should completely envelop you; it didn’t do it as convincingly with the Fosgate.

I saved my handful of showoff SQs for last, because I fully expected an aural treat—like dessert for the ears. But the soufflé never rose. SQs like Pink Floyd’s Dark Side of the Moon, Wendy (Walter, back then) Carlos’s Switched-On Bach,

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7 Don’t snicker—they’re a lot better than most community orchestras.
and Firesign Theatre’s I Think We’re All Bozos On This Bus feature spectacular surround effects, including objects that buzz, sputter, or sizzle as they whirl dizzyingly all around you. They were a washout. As soon as anything got farther back into the room than mid-sidewall, its specificity fell completely apart. Anything in the rear room quadrants was vague, nebulous, and seemed to hop from one side to the other according to no known logic, Dolby Pro or otherwise.

Out of curiosity, I tried “Mapping the Soundstage” from Stereophile’s Test CD 2. This was not intentionally surround-encoded, but was recorded with a technique (X-Y mixing with coincident figure-8s) that provides a usable rear-channel difference signal. In the second part of this track, Larry Archibald walks from the center back of the recording space while clapping his hands, passes the mikes on the left, and ends up front and center. I listened first in stereo, as it was intended to be heard. As usual, I heard him approaching from behind the front speakers, as I always have in my own listening room. (Others have reported a strong impression of rearwardness; I’ve never heard it.) After LA reached the mikes, everything tracked the way it was supposed to. Then I tried it with the surrounds in Rock mode. Amazingly, the surrounds improved matters little, if at all. Now the rearward approach imaged like a broad cloud around my head, converging as it moved at the front left sidewall, and continuing tightly imaged to center front. Switching in the center speaker had no effect on imaging location, but brought the front stage somewhat forward.

I dragged out my old CBS SQ test LP. This has pink-noise bursts which cycle slowly around 360° in 45° increments. The result was appalling badly. After creating a tight image at the front center and then the right room corner (between the right and side speakers), it placed vaguely on the right sidewall, then went berserk in the rear quadrants, seeming to hop from front to back several times before zooming abruptly to front center.

The gross left/right asymmetry of the rear “stage” caused me to wonder if something might not be misconceived. After all, the wiring of this system is pretty complicated, with countless possibilities for hookup errors. The side and rear channels tracked Pro Logic’s cycling pink noise okay, proving that all the channels were in their right places. But checking phase was a bit less simple. Because no available surround test disc tests for between-speaker imaging, I used a pink-noise source to feed each adjacent pair of speakers with identical (mono) signals. One of the surround pairs failed this miserably.

In THX mode, the mono-operated surround should have produced a definite null at the sides, between the front and back lobes. My right-hand surround didn’t. Its two sections weren’t wired out of phase—the wire color codes agreed with the speaker-connection diagram. Yet reversing one pair of them produced the desired side null, indicating that one of them was internally reverse-wired. And since I’d gotten good imaging between the right front and side speakers, it had to be the right rear that was reversed. I switched its polarity at the amplifier.

Confident that I’d solved the problem, I repeated the previous Rock surround tests again. The results were a little less haywire, but not much better.

Maybe my sample Three A was defective. Maybe it wasn’t. Whatever the reason, its split surround mode was a bit disappointing. Yes, it did give discrete-sounding images at side left and right, which did wonders for recordings intended to produce images way out there, but rear localization was nonexistent. (I remember, years ago, hearing an early Fosgate surround decoder in Jim Fosgate’s home; rear quadrant effects were so unambiguous and tightly imaged that they sounded like discrete surround.)

THE OTHER SIDE OF THE COIN

The non-defeatable logic steering in most of the Three A’s music modes does have some adverse effects, though they’re surprisingly slight.

Because of its relatively high steering threshold and slow reaction time, Dolby’s Pro Logic circuit tends to become confused by the randomness of reverberant surround information. This results in a certain amount of directional pumping on many recordings of large-scale music like operas and symphonies. If all the speakers in the system are tonally matched, this directional pumping is heard mainly as bursts of lateral instability in the front image. But if the rear speakers are markedly different from the front, the pumping becomes audible as random amplitude-response fluctuations which can almost make you seasick.

Fosgate’s proprietary fast-acting steering eliminates 90% of this. Instead of pumping, the worst problem I ever heard in the Three A’s Orchestra mode was a mild grunginess varying in severity (depending, unpredictably, on the recording) from barely to moderately audible. How you hear it will, of course, depend on the resolution capabilities of your system. The Fosgate THX system rarely revealed the problem, but it was quite evident through a friend’s front-channel pair of extremely analytical studio monitors. (These also clearly uncovered some rather nasty distortion on the Living Presence CD re-release of the Munch Saint-Saëns “Organ” Symphony (RCA 09026-61500-2), to which the high-end press gave kudos galore.) Interestingly, the La Mer and Esales that follow the Saint-Saëns on the disc sounded much cleaner.

You may never notice the Three A’s steering artifacts at all, but if they bother you, just use its Chamber mode when listening to symphonic recordings, and leave the center channel switched off.

REMOTE FOIBLES

There were other problems in addition to the disappointing split surround performance. By far the worst (although it was more of a pain in the butt than a fatal flaw) was the remote control’s flaky behavior.

The remote seemed to have a very narrow beam—I had to aim it within about 4° of dead-on to the decoder’s pickup sensor—in addition to an appallingly limited range. Although the remote usually worked from up to 10’ away when aimed directly at the Three A’s front panel, often it didn’t. It was sometimes necessary to press a button several times in order to elicit a response, after which a single touch would reissue that command—for 10 minutes or so. But then it would need two or three nudges again. (My other remote-controlled devices respond unfailingly with their controllers aimed at the ceiling.) Even from 3’ away, some of the Fosgate’s buttons—Mute, for instance—were maddeningly balky. And whenever I aimed from more than about 45° off-axis, things were much worse. The controller often failed to work from a distance of even 2’. (Of course I checked its batteries!)

Was the problem with the remote unit or the receiver? To answer that question, I programmed some of the balkiest button commands into a Universal remote (one of the units mentioned above that works from a ceiling bounce) and repeated the previous tests. There was some improvement, but not much. This indicated that the Three A’s remote problem was due mainly to poor receiver sens-

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8 Stereophile’s reviewer of this disc, Richard Schneider—see Vol.16 No.6, June ’93, p.241—did indeed comment on this distortion. He attributed it to some inadvertent “meter-pegging” during the original sessions, but added that this CDD was nevertheless the cleanest transfer yet of the original tapes.

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Stereophile, April 1994
vity rather than to a weak controller beam.

In violation of Stereophile’s review policy, I asked Charles Wood if this kind of thing was “normal.” He replied that, because the receiver needed several repetitions of the infrared signal to “lock onto it,” it was necessary to hold the button “for a fraction of a second.”

Wrong. Yes, this sometimes woke up the slumbering Three A, but on other occasions when the receiver “locked-on” immediately, it jumped such commands as Volume and Rear Level to way past their desired adjustment point. Back to the ol’ drawing board.

Other complaints: The Front/Back balance buttons are counterintuitive. The Up arrow increases rear output; intuition tells me that Up should move Front/Back balance toward the front, as it does in every other surround controller I’ve encountered. And the Panorama buttons work backward too. Pressing the Up arrow caused the LCD to show increasingly positive values while the stage width decreased. I could get used to these little foibles; the temperamental remote was a continuing irk.

COMPARISONS
I compared Fosgate’s amplifier with the Boulder 500AE, which I had used to drive the Snell speakers. The Boulder had a slight edge, although not in the sense you might think. It didn’t sound more edgy; the two amps sounded amazingly alike at the high end, and across most of the rest of the spectrum. But they differed in inner detailing and low-end control—the (unstrapped) 500AE was slightly superior on both counts. I must emphasize that the difference was relatively small, although the price difference is not. (The 500AE costs a whopping $4350 compared with the Fosgate’s $1079, and that’s for two 150W channels vs the 4125’s four 75W channels.)

The only other home THX system I’ve lived with was an early sample of the Lexicon CP-3/35n/35n. The CP-3/35n 500 combo: A comparison might be enlightening. Tonally, the two were very similar, with the Fosgate favored because of its more convincing brass reproduction. In terms of detail and snap, the Lexicon/35n was only moderately good, while I would rate the Fosgate as very good, if still not up to the best high-end standards. Bass extension was comparable: both produced a clean, full-level 20Hz, which is where my oscillator stops. Bass smoothness was slightly better with the Snell-based system (thanks in part to its Rane equalizer), but detail and punch were a little better on the Fosgate.

In terms of cost, the Fosgate THX system competes directly with the combination of the Lexicon CP-3 and the Snell THX 500. The latter costs $8039, not including power amplifiers, speaker stands, or the $1299 Rane THX-44 Equalizer; the Fosgate is $13,799 with amplifiers, but without stands. Figuring, rather arbitrarily, that three suitable two-channel amplifiers for the Snell and Lexicon combination might cost about $1400 each—the $1250 Hafler Trans-44 Nova 9300 THX, for example—that puts a complete Lexicon/Snell–based system at close to $12,000, which is in the Fosgate’s ballpark. Assuming that neither the Lexicon nor the Snell components have been significantly upgraded since the review,9 I’d give the performance edge to the Fosgate, mainly because of its superior resolution and detail, plus the fact that it relays more true ambience recovery in the music modes than on digital synthesis of spatial information.

—J. Gordon Holt

AMPLIFIER MEASUREMENTS FROM T.J.N
In its bridged mode, the Fosgate/Audiosciences 4125 did not pass its 1-hour, 1/2-power (75W into 8 ohms at 1kHz) pre-conditioning test. It shut down due to overheating after 35 minutes, but after a brief cool-down period came back online with no problems. The outside of the case above the heatsinks was hot following this test. Fosgate recommends the use of an outboard whisper fan if multiple 4125s are used in heavy-duty applications. I concur. The pre-conditioning is a severe test, however, a continuous power output of 75Wpc for 35 minutes or more is unlikely during normal use.

In the unbridged mode, driving channels 1 and 2 (which share the same heatsinking), the Fosgate passed a 1-hour, 1/2-power test (25Wpc into 8 ohms) at 1kHz. The heatsink area still got quite hot, but nothing eventful occurred.

The Fosgate’s input impedance measured 10.8k ohms bridged, 21k ohms unbridged. Output impedances at 20Hz and 1kHz measured 0.16 ohms bridged, 0.08 ohms unbridged. At 20kHz, these values increased to 0.78 ohms bridged, 0.29 ohms unbridged. The 4125 did not invert in either the bridged or unbridged configurations, and its S/N ratio measured 80dB (unweighted, 22Hz–22kHz ref. 1W into 8 ohms). DC offset at the outputs in the bridged configuration measured 10.8mV (channels 3 and 4 bridged) and 7.3mV (channels 1 and 2 bridged). In unbridged mode, DC offsets measured 4.1mV (channel 1), 5.3mV (channel 2), 4.3mV (channel 3), and 7.6mV (channel 4).

Fig.1 shows the 4125’s frequency response. Note that the response in the bridged mode rolls off more rapidly at the top end—increasingly so at 4 ohms, where it’s down just over 1dB at 20kHz. This is also visible in the 10kHz square-wave response in fig.2, for the bridged mode. The unbridged mode (not shown) has, as might be expected from fig.1, a smaller risetime. The 1kHz squarewave is not shown, as it’s close to textbook-perfect.

The curves in fig.3 show that the crosstalk in the bridged mode, though differing slightly from one pair of channels (1 and 2) to the other (3 and 4), is nonetheless very good. Note, however, that the unbridged crosstalk varies depending on the location of the channels chosen for the measurement. Channels 1 and 2 share the same side of the amplifiers.

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9 Lexicon is upgrading the CP-3 to the CP-3+ this month. Accordingly, Stereophile will re-evaluate the unit in an upcoming issue. Other Home Theater products coming up for review in the near future include the McIntosh THX system and the Proceed PAV Dolby Pro Logic THX processor.

——JA
The distortion curves in figs. 4 and 5 show the normal increases into lower impedances—more evident in the case of the bridged mode into 2 ohms. The distortion is higher in all cases in the bridged mode, though still quite respectable overall. The 1kHz THD+noise waveforms in figs. 6 and 7 (2W into 4 ohms in both cases) indicate a predominant third-harmonic content, with higher-order components (and noise) also evident.

Fig. 8 shows the output spectrum resulting from a 50Hz input in the bridged mode at 200W into 4 ohms. (We take this measurement (and the IM measurement, below) at 1/2-power, defined here as either rated power or—if unrated for the mode under test—the output that gives 1% THD+noise. In either case, we back off on this output level if we see visible signs of clipping.) The second harmonic (100Hz) is evident at this frequency (plus some low-level power-supply noise), but the most significant harmonics are odd-order. The highest lies at 250Hz: -69dB, or just over 0.03%. The result for the unbridged mode (not shown) shows a similar distribution of harmonics. They are, however, around 6–10dB lower in level for the most part in the unbridged mode: 0.01% (~79.3dB) at 250Hz, for example. At lower power levels, the second and fifth harmonics predominate.

Figs. 9 and 10 present the spectra resulting from a combined 19+20kHz input signal. This shows the sum and difference tones created by the amplifier with these frequencies present at the input—i.e., the intermodulation between these two tones. The output of the amplifier in fig. 9 was 200W into 4 ohms (just prior to visible clipping). The IM in the bridged mode is clearly higher—as is the power output. The largest artifacts in the bridged mode are at 17kHz and 21kHz, at ~66dB (about 0.05% distortion). The 1kHz IM component lies at ~66.7dB. The results for an 8 ohm load are not shown (the Fosgate loudspeakers, which are the most likely companion for this amplifier, are closer to 4 ohms for the most part), but the artifacts at the higher impedance are at noticeably lower levels. In the unbridged mode at 80W into 4 ohms (fig. 10), the 1kHz component was ~75dB and the higher-order products all dropped by about 3dB.

The THD+noise vs level sweeps (at 1kHz) are shown in figs. 11 and 12. The only unusual (for a solid-state amp) feature is the rise in the distortion below the “knee” of the curve, though not to significant levels. It should be noted that

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**Fig. 4** Fosgate/Audionics 4125, bridged mode, THD+noise vs frequency (from top to bottom): 4W into 2 ohms, 2W into 4 ohms, and 1W into 8 ohms (right channel dashed).

**Fig. 5** Fosgate/Audionics 4125, normal mode, THD+noise vs frequency (from top to bottom): 4W into 2 ohms, 2W into 4 ohms, and 1W into 8 ohms (right channel dashed).

**Fig. 6** Fosgate/Audionics 4125, bridged mode, 1kHz waveform at 2W into 4 ohms (top); distortion and noise waveform with fundamental notched out (bottom).

**Fig. 7** Fosgate/Audionics 4125, normal mode, 1kHz waveform at 2W into 4 ohms (top); distortion and noise waveform with fundamental notched out (bottom).

**Fig. 8** Fosgate/Audionics 4125, bridged mode, spectrum of 50Hz sinewave, DC–1kHz, at 200W into 4 ohms (linear frequency scale). Note that the third and fifth harmonics, at 100Hz and 250Hz, are the highest in level.

**Fig. 9** Fosgate/Audionics 4125, bridged mode, HF intermodulation spectrum, DC–22kHz, 19+20kHz at 200W into 4 ohms (linear frequency scale).

**Fig. 10** Fosgate/Audionics 4125, normal mode, HF intermodulation spectrum, DC–22kHz, 19+20kHz at 80W into 4 ohms (linear frequency scale).

**Fig. 11** Fosgate/Audionics 4125, bridged mode, distortion vs output power into (from bottom to top at 200W): 8 ohms, 4 ohms, and 2 ohms.

**Fig. 12** Fosgate/Audionics 4125, normal mode, distortion vs output power into (from bottom to top): 8 ohms, 4 ohms, and 2 ohms.
these curves are for a single channel driven (or, in the bridged configuration, two bridged channels). As you can see in the discrete clipping measurements in Tables 1 and 2, the 4125 puts out immense power in its bridged mode, but is power-supply-limited in its ultimate output capabilities (there's a significant drop in power when driving both bridged channels rather than just one).

Finally, I investigated the performance of a single, unbridged channel of the 4125 when two of the other two channels are bridged and driven to a very high level. Specifically, I drove channel 1 (alone) and channels 3 and 4 (bridged) with the same input signal until channel 1 reached clipping (1% THD + noise). At this point, with an 8 ohm load, the bridged channels (3 and 4) were putting out 289W (24.6dBW) at 2.3% THD + noise (just above clipping), and channel 1 was putting out 71.4W (18.5dBW).

With a 4 ohm load under the same conditions, channels 3 and 4 produced 438W (23.4dBW) at 2.8% THD + noise, while channel 1 put out 110.6W (17.4dBW). This condition, therefore, pulls down the clipping level of the unbridged channel by about 10W into 8 ohms and 40W into 4 ohms. Though very much a worst-case scenario, it indicates what might happen when using two of the four channels unbridged to drive, say, the left and right main channels, and the other two channels, bridged, to drive a subwoofer engaged in serious subwoofing. Keep in mind, however, that a drop from 140W to 110W is a loss of just 1dBW; the audible effect of this will probably be nil. And if kept up for more than a few seconds, you'll probably blow out your subwoofer!

For its capabilities and price, the benchmark performance of the Fosgate 4125 is very good—more than adequate to ensure the performance JGH notes in his listening tests.

—Thomas J. Norton

Table 1: Fosgate 4125 Clipping (1% THD + noise at 1kHz), Bridged

<table>
<thead>
<tr>
<th>LOAD</th>
<th>Both Channels* Driven</th>
<th>One Channel** Driven</th>
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<tr>
<td>ohms</td>
<td>W (dBW)</td>
<td>W (dBW)</td>
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<tr>
<td>8</td>
<td>(L) 236 (22.7)</td>
<td>231 (23.6)</td>
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<tr>
<td></td>
<td>(R) 237 (22.4)</td>
<td>242 (24.5)</td>
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<tr>
<td>(AC line)</td>
<td>116V</td>
<td>117V</td>
</tr>
<tr>
<td>4</td>
<td>332 (22.2)</td>
<td>326 (22.1)</td>
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<tr>
<td></td>
<td>451 (25.3)</td>
<td></td>
</tr>
<tr>
<td>(AC line)</td>
<td>117V</td>
<td>116V</td>
</tr>
<tr>
<td>2</td>
<td>592 (21.7)</td>
<td></td>
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<tr>
<td>(AC line)</td>
<td>116V</td>
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</tbody>
</table>

* Channels 1 and 2 bridged, 3 and 4 bridged
** Channels 1 and 2 only, bridged

Table 2: Fosgate 4125 Clipping (1% THD + noise at 1kHz), Unbridged

<table>
<thead>
<tr>
<th>LOAD</th>
<th>Both Channels* Driven</th>
<th>One Channel** Driven</th>
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<td>ohms</td>
<td>W (dBW)</td>
<td>W (dBW)</td>
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<tr>
<td>8</td>
<td>(L) 81 (9.1)</td>
<td>80 (9.5)</td>
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<td></td>
<td>(R) 80 (9.4)</td>
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<tr>
<td>(AC line)</td>
<td>117.5V</td>
<td>118V</td>
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<tr>
<td>4</td>
<td>141 (18.5)</td>
<td>139 (18.4)</td>
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<td>156 (18.9)</td>
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<tr>
<td>(AC line)</td>
<td>117V</td>
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<td>2</td>
<td>263 (18.2)</td>
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<tr>
<td>(AC line)</td>
<td>116V</td>
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</tbody>
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* Channels 1 and 2 bridged, 3 and 4 bridged
** Channels 1 and 2 only, bridged

The Fosgate MC-220's B-weighted sensitivity was to specification at a high 91dB/Wm. Though its impedance magnitude is relatively demanding (fig.13), dropping below 4 ohms throughout the midrange and high treble, the moderate phase angle and high sensitivity will alleviate the task of the driving amplifier. The moderate peak at 61Hz indicates the tuning of the two woofers; though this is rather high in frequency for a relatively large box, it's inconsequential, because the speaker will almost always be crossed over to a subwoofer below 80Hz.

The MC-220's relatively limited bass extension can be seen in fig.14, the -6dB point lying at 43Hz. Other than slight suckouts at 1100Hz and 5.5kHz and a slight peakiness around 10kHz, the speaker's axial response is commendably flat. (The microphone was placed midway between the two tweeters for this and all other measurements.)

Fig.15 shows how this response changes as the listener moves to the MC-220's side. (Only the differences are shown, which is why the reference response appears as a straight line.) Other than a slight unevenness developing off-axis in the 2kHz and 5kHz regions, this is textbook behavior. The high frequencies progressively roll off to the speaker's side, giving a smooth and even change from an omnidirectional behavior in the bass to directional behavior in the mid- and high treble.

Vertically (fig.16), things are a lot more complicated. The use of two tweeters and two woofers severely limits the speaker's vertical dispersion, meaning that the listener should sit exactly on the tweeter axis to get a full measure of high frequencies. Even 5° above or below that axis, the entire treble has dropped by 6dB or so. Note that 30° above or below the reference axis, deep comb-filter notches are apparent, due to interference between the identical outputs of the widely spaced woofers. I would expect these to color the room's reverberant field. Though this will have an unpredictable effect on perceived sound quality, it is possible that it does correlate with the general perception that THX-specification loudspeakers
sound less good with music recordings than they do with soundtracks, where the visuals dominate perception.

Figs.17 and 18 show the MC-220's impulse and step responses. The tweeters are connected with inverse polarity to the woofers and lead them slightly in time. These should be compared to the behavior of a truly time-coherent loudspeaker, the Dunlavy Audio Labs SC-IV, also reviewed in this issue and, like the Fosgate, designed by John Dunlavy. The MC-220's cumulative spectral-decay plot (fig.19) reveals a very clean initial decay, with residual resonant modes apparent at 5kHz and in the 1-2kHz region. This suggests that the speaker will be relatively free from hardness.

Fosgate's SD-180 surround speaker has a radiation pattern switchable from the Three A controller/processor. As I wasn't able to wrest the Three A from JGH for these measurements, I could only examine the behavior of one of the two sets of tweeter/woofer arrays. Fig.10 shows the SD-180's impedance magnitude and phase. Only dropping below 6 ohms at the band extremes, it suggests that the speaker is easy to drive. Though its measured B-weighted sensitivity was below spec at 88.5dB/Wm, this is inconsequential. Note the high woofer-tuning frequency in fig.20: 116Hz.

The SD-180's frequency response (fig.21) confirms this implied lack of bass extension. The deep suckout in the mid-treble was only apparent on the SD-180's tweeter axis; for a wall-mounted surround speaker, what's important is its half-space power response (see my Snell THX Follow-Up). It will be appreciably different when the two arrays are connected in inverse polarity (THX) or identical polarity (discrete surrounds). Unfortunately, without the controller, it wasn't possible to calculate the SD-180's power responses.

Moving on to the FS-400 subwoofer, its impedance magnitude and phase are shown in fig.22. The port tuning, revealed by the saddle between the two bass peaks, lies at a low 24Hz. With a minimum value of 7.2 ohms in the upper bass, the subwoofer should be very easy to drive. The large wrinkle in both traces at 1700Hz implies a major resonance of some kind, but this is so far away from the subwoofer's passband that it will be inconsequential. The minor wrinkles between 120Hz and 300Hz also imply resonant behavior, but as JGH didn't note any lower-midrange coloration, I assume that these, too, have no subjective consequences, due to the THX system's relatively low crossover point of 80Hz.
The responses show FS-400's anof at least this 18dB/octave subwoofer and woofer, Fosgate/Audionics crossover. Typical filter both without THX crossover, but features some low-level resonant spikes above that frequency. The complex sum —amplitude and phase—of the raw woofer and port outputs in the ratio of their diameters is the top trace in fig.24, and can be seen to gently roll out below 60Hz. With the crossover in circuit (the third trace from the top at 100Hz), a little bit of sensitivity is sacrificed; the FS-400's response now peaks between 30Hz and 70Hz and is 23dB down by 200Hz.

Overall, the Fosgate THX speakers and subwoofer appear to be at least very competent, while the MC-220 LCR speaker is an excellent speaker in absolute terms (taking its quirky THX-mandated vertical dispersion and restricted LF extension into account), as it should be at $3190/pair. —John Atkinson

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Tom Norton  •  Robert Harley
John Atkinson  •  Guy Lemcoe
Jack English

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(Summation of the relative ranking of 23 loudspeakers auditioned in three sessions.)

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Stereo, April 1994
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Few products elicited as much excitement, disappointment, and debate among the Stereophile staff as did the Snell Type B dynamic loudspeaker. Both Peter Mitchell and I praised the Type B for its low-frequency extension, smooth treble, high power handling, and excellent dynamics. Corey Greenberg and Robert Harrel faulted the speaker's sluggish and fat bass response, which they felt precluded a recommendation in Stereophile's "Recommended Components." Kickdrum recordings in pop and rock excited the Type B's bass character, a characteristic which was not so noticeable if one only listens to classical music. This bass peak was so prominent in RH's listening room that it colored the rest of the loudspeaker's range. As a result, he found that this otherwise fine loudspeaker was not as transparent as other high-quality dynamic systems in the same price range.

Help was on the way. Within six months of RH's review, Snell Acoustics introduced a smaller version, the B minor, at the 1992 SCES. Although this announcement was overshadowed by Snell's Digital Signal Processing (DSP) technology, the B minor's bass appeared to have been harnessed, even if the listening was done in a less-than-optimal hotel room. Although the B minor sells for less than the B ($3599/pair vs $4799), it appeals for additional reasons: The B minor is physically smaller and 42 lbs lighter than the Type B; its front baffle is narrower; and a new titanium-diaphragm tweeter is used.

**TECHNICAL DESCRIPTION**

The B minor has been described by its designer Kevin Voecks as being a "3½-way speaker" employing one woofer, two midranges, one tweeter, and the "half": a rear-firing tweeter that overlaps the front tweeter's range. The B minor resembles Snell's C/IV and E/III.

The B minor uses a single 12" acoustic-suspension woofer, not the two 10" units found in the B. Unlike Snell's flagship Type A/III Improved loudspeaker, the B minor's woofer approach does not take advantage of bass reinforcement from the floor, as the woofer is mounted halfway up the side baffle. The 12" long-throw woofer has a cast basket frame and its double-thick magnet structure allows linear, high-excitation motion. It was designed to have superior power-handling characteristics.

The same midrange/tweeter/midrange configuration is used in the B and B minor: i.e., the midranges are mounted above and below the tweeter. Snell's Kevin Voecks suggests that the B minor's narrow baffle enhances its imaging abilities. Like the B, the midranges and tweeter are slightly offset toward the inside of the cabinet, to spread the interactions with cabinet edges out in frequency. The felt surrounds for the drivers also yield a smoother off-axis response. Along with the side-mounted woofers, this asymmetry means that the B minors come in mirror-imaged pairs.

The B minor's tweeter is a brand-new titanium unit replacing the 1" aluminum-dome Vifa tweeter found in the Type B. The company's literature suggests that this new tweeter has excellent on- and off-axis frequency responses and is said to exhibit "true pistonic behavior" throughout the audible range. It has increased power-handling capability due, in part, to a conjugate impedance-compensation circuit and a steep filter network. The rear-firing, 3½" dome tweeter is identical to the unit used in the Types B and C/IV.

The B minor's crossover employs high-quality, non-polarized electrolytic capacitors, Mylar capacitors, and air-core inductors. The B minor's midrange drivers cover the same frequency passband, 275Hz-2.7kHz, with 18dB/octave low-pass and 24dB/octave high-pass slopes. The front tweeter takes over at 2.7kHz. The back-mounted 3½" tweeter begins to play when musical information includes frequencies higher than those of the midrange drivers.

1 See PWMA's CES report (Vol.14 No.5, p.5); RH's review (Vol.14 No.12, p.130); my Follow-Up (Vol.15 No.2, p.181); and "Manufacturers' Comments" with JA's replies (Vol.14 No.12, p.263 and Vol.15 No.6, p.291).

2 Many call this a "D'Appolito" configuration. However, designer Joe D'Appolito's original concept involved the use of 18dB/octave acoustical crossover slopes to get the optimal evenness of vertical lobing from the array. Not all vertical MTM drive-unit arrays are D'Appolito arrays.

Stereophile, April 1994
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5kHz, gradually increasing in volume using a first-order slope. At those frequencies, the rear tweeter contributes to the reverberant soundfield, reinforcing the speaker’s total radiated energy in the highs. Like the Type B, the B minor employs Monster Cable for internal wiring.

Below the tweeter on the speaker’s back panel is a connector panel with hardware identical to the B’s. There’s a rear-tweeter on/off switch, a fuse holder, and a front tweeter-level control with continuous action. Instructions from Kevin Voeps suggested that the tweeter-level control should be set around 12 o’clock for the flattest frequency response. There are two pairs of five-way binding posts for bi-wiring/bi-amping. The speakers are shipped with flat metal jum-

pers configured in the shape of a capital “E” to allow the owner to drive the speaker from a single speaker cable. The slightly recessed input terminals did not interfere with my speaker-cable connections, which included both Sumiko OCOS and Levinson HFC-10 types.

The B minor’s manufacturing process involves tuning each driver’s frequency response, with grilles in place, to within 0.5dB of Snell’s reference master standard. This tolerance is far better than the ±4–5dB quoted by the vendors supplying the drivers. Each speaker is trimmed to match each loudspeaker’s amplitude response to a reference master. This is done by overwinding inductors, then pulling turns off one at a time; starting with smaller capacitor values and adding trimmers; and, finally, adjusting variable resistors. The tweeter-level control is also calibrated against the reference master.

The cabinet work appears to be first-rate, with fine fit’n’finish—my review samples were finished in carefully matched dark walnut veneer. Cabinet sides are made from 3/4” high-density particleboard, while the front baffle features 1”-thick particleboard. During the review period Snell added more inter-

nal braces to the cabinet to increase rigidity. Like the B, the B minor rests on a particleboard plate and is supplied with carpet-piercing spikes.

**Speaker Location & Adjustments**

Detailed instructions for room setup were not included with the B minors sent for review. As with any installation, listening revealed the speakers’ optimal room positions and toe-ins. It seemed evident that the side-mounted woofer grilles should face each other across the center space between the speakers. Via telephone, Kevin Voeps told me that the B minors were designed to be used out in the room, not against the back wall. (This is very different from the company’s Type A/III, which was designed by the late Peter Snell to hug the wall and not intrude into the room space; it depended on boundary effects to support its deep bass.)

Listening-room dimensions are critical for any loudspeaker, and perhaps particularly so for the Type B. After RH’s critical review, JA wondered if the B had been designed “by tuning its bass for maximal flat low-frequency extension under anechoic conditions.” Thus, it would “tend to sound bass-heavy in a real moderate-sized room.” The B’s powerful bass might be better balanced in a large room. I tested the Bs in my very large listening room (5500ft², with an effective room length of 52’), and reported the results in February 1992. Readers should consult that article (Vol.15 No.2, p.181) for specific details of my room’s construction, exact dimensions, contents, listening positions, rugs, windows, bass modes, and results of Snell’s room-analysis software program.3

I concluded that the Type B’s over-


generous bass could be balanced so that it was not overpowering, but only after careful setup and room positioning. The speakers had to be placed 54” from the back wall and driven in bi-wired mode by certain solid-state amplifiers (eg, Bryston 4B or Krell KSA-250). Though improved, the B’s bass prominence in the kickdrum region was still noticeable. Would the B minors require the same time-consuming setup to avoid bass problems?

I began my review by placing the B minors near the room’s narrow back wall, as suggested by Snell’s room-analysis software. The B minors were positioned 24” between the rear of speaker enclosure and the wall, which put the loudspeakers’ front panels about 45” from the rear, 36” from the side walls, and 84” apart. The speakers were toed-in slightly. My listening position was 18’ away from a center line between the speakers, and the seat placed my ears about 34” off the floor (about the level of the B minor’s tweeter).

I then adjusted the tweeter-level controls. As Voeps had suggested, I found that the 12 o’clock setting gave the best treble response for my taste. After this,

I did the “sit down, stand up, walk around” procedure with pink noise, and found that neither on- nor off-axis treble responses differed markedly. I later tried other positions, but this initial setup proved to be the best.

Like the Type Bs, the B minors produced the best tonal balance when set up with bi-wired speaker cables. I disconnected the jumpers between the B minor’s tweeter and woofer five-way binding posts, and connected the double spade lugs at the end of each parallel run of OCOS cable.

I swept the loudspeakers with a Heathkit sinewave generator before I began listening to music. When I’d done this with the Type B, I’d heard the bass increase markedly as I swept the fre-

quency down past 42Hz, very near the crossover point between woofer and subwoofer. When I’d moved around the room, there were differences in the amplitude of this bass note, suggesting that room modes were being excited.

Not so with the B minor. No 42Hz prominence was found during the room sweeps—just a slight increase in output between 47 and 60Hz. Sweeping down-

ward, I was able to hear the low-frequency response clearly down to 35Hz; this differed from the B, where I’d found detectable output down to 28Hz. So far, so good: The B minors were easy to set up, and had a much less prominent bass emphasis.

**Setup & Reference System**

A variety of associated equipment was used in this review. For most of the listening, I used the Krell KSA-250—the amplifier that had proven so successful with the Type B. Tom Norton has written about how the KSA-250 tends to be lean in the mid to upper bass, which could offset the audibility of any mid-bass peak.5 The other amplifier that I found to work well with the B, the Bryston 4B NRB, was not available. I also used a Mark Levinson No.27.5, the newest Classé 15, and the Woodside M-50 tube monoblocks. I included the Woodside to determine if an amplifier with higher output impedance (tube amplifiers generally have much higher output impedances than solid-state units) would give a more elevated bass response, as Voeps had suggested in his two “Manufacturer’s Comments” on Stereophile’s Type B reviews.6

---

3 Snell provided me with a copy of the Room-Analysis Computer Program, CARA, and LEO. These programs analyze room-resonance mode distribution and suggest speaker/listener locations for each dimension of the listening room that minimizes bass nodes. The B minors were positioned in the room according to one of LEO’s suggestions for a “better” location (“best” could not be easily estimated).

4 These frequency-response measurements are purely qualitative and do not represent the loudspeaker’s true performance. However, they do yield a sense of the room-speaker interaction, and are used to confirm certain subjective impressions.

5 See T/J/N’s comments on the KSA-250 in his January review of the Krell KSA-300S (Vol.17 No.1, p.96).

6
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- AC master control power-sensing cable connects the MAX®1000 to the system.
Unfortunately, I didn’t have the Bs in the room at the same time, so any comparisons are based on similar recordings played at the same level over the B minors, matched at the same distance from the speaker by a Radio Shack spl meter. Comparison loudspeakers on hand included Quad ESL-63 USA Monitors, Chario Academy 1s, Totem Acoustic Is, and Snell A/III Improvised. I used a Musa Model 18 subwoofer to assess the deep bass. The Quads’ and the Snell A/IIIs’ midrange/tweeter sections were driven by the Mark Levinson No.275, the Classé 15, or the Woodside M-50s via parallel runs of Sumiko’s OCOS speaker cables, always used in a bi-wiring mode. The A/IIIs’ woofer sections were driven by the Krell KSA-250 via HF10C Levinson speaker cables.

Source material included LPs, CDs, and FM stereo broadcasts. LPs were played on a Linn LP12 Lingo turntable with an Ittok tonearm and a Spectral Reference moving-coil cartridge. CDs were played on a Krell MD-1 CD turntable connected to a Krell SBP-32X D/A converter. FM music was obtained from Day-Seguerra FM Reference and AudioLab 8000/T stereo tuners. Phono preamplification was provided by a Classé Six Mk II or a tubed Woodsie 2C-26. Analog interconnects included AudioQuest Live Wire Topaz and Krell Cogeco.

LISTENING
I’ll cut to the quick. Yes, the B minor had a mild midbass peak in my listening room, but it was not as prominent or overpowering as that of the Type B. The good news is that this more felicitous tonal balance allowed the Snell B minor to image well, show greater midrange and treble clarity, and play with transparency.

I tested the B minor’s bass performance with a variety of musical sources: rock recordings for kickdrum bass peak; male vocals, including FM announcers, for upper-bass excess; organ and synthesizer recordings for deep bass; and synthesizer recordings for bass transient speed.

First I replayed all the musical selections that had provoked the Type B’s misbehavior in my listening room, and that meant rock studio recordings featuring kickdrum. The B minor did better than the B with “Behind the Veil,” but as the kickdrum played together, bass notes remained more distinct than they had on the B. The drum kit had generous bass slam and snap without being overblown. The kickdrum on Richard Thompson’s “She Misunderstood,” from Rumor & Sigh (Capitol CDP 7 95713 2), showed decent pitch definition, but did not overpower the other instruments when played over the B minors.

Next I checked the reproduction of male voice. The B minor did not color the voices of FM announcers. (The Type B had produced overly resonant and barrel-like FM voicing.) José Carreras’s wonderfully light, lyrical tenor remained pure and open with the B minor, showing little of the nasality heard with the B at the beginning of the “Kyria” on Ariel Ramirez’s Misa Criolla (Philips 420 955-2). Harry Connick, Jr.’s rendition of “I Don’t Get Around Much Anymore,” from the When Harry Met Sally... soundtrack (Columbia CK 45319) was clear without any of the added warmth and overly resonant low frequencies heard with the B.

Next I checked for bass extension. With César Franck’s Chorale No.1 for pipe organ (Marcel Dupré, Mercury Living Presence 434 311-2), the Snell B minors sustained the deep growl of the organ pedals and shook the room. The B minors had ample bass dynamics, as shown by their rendition of the powerful bass drum in Owen Reed’s La Fiesta Mexicana (Fiesta, Reference RR-38CD). At the same time, the clarity of the upper registers was maintained. On the My Cousin Vinny soundtrack (Varése Sarabande VSD-5364), the Mark Levinson 275 delivered ample amounts of subterranean bass on Randy Elman’s “Something’s Wrong,” but did not muddy the keyboard notes.

However, the B minors’ bass did not equal the extension heard with the Type B, which has a built-in subwoofer. The stair-step descent of organ notes on Saint-Saëns Symphony 3 (Marcel Dupré, organ; Paul Paray, Detroit Symphony; Mercury Living Presence 432 719-2) was best heard through the Bs with the Krell KSA-250, or with the Muse Model 18 subwoofer coupled to Quad ESL-63s. The B minors’ woofers played a few notes at the beginning of the descending scale, but did not reach as low as the Bs or the dedicated, biamped subwoofer. This is to be expected, and is not a fault of the B minors.

The better-balanced low frequencies of the B minor mean that the bass does not interfere with instruments playing in the other parts of the sonic spectrum, as it does in the Type B. The B minor, however, can separate the flute, Maggie Boyle’s soprano, and the 35Hz bass synthesizer chords on “Main Title,” from the Patriot Games soundtrack (RCA 66051-2). There was an effortlessness, such that even the most dramatic fortissimo orchestral selections, and the loudest sections of Jeff Beck’s “Behind the Veil,” retained their senses of air and acoustical space. Richard Thompson’s voice on Rumor & Sigh, clear and unharmed by the kickdrum, floated between the B minors—well-defined and almost palpable.

Was the bass of the B minor amplifier-sensitive? To a certain extent, yes. The Krell KSA-250 proved again to be lean in the midbass where the B minor was not, and this produced a good balance. The Krell KSA-250 delivered open, spacious sound, with wonderful depth and space on choral works. Both the Classé 15 and the Mark Levinson No.27.5 played with vividness, speed, and bass definition, but not with the openness of the KSA-250.

If the KSA-250 “controlled” the B minor’s bass, did tube amplifiers, with their higher output impedances, worsen or exaggerate the mild bass prominence? The Woodside M-50 monoblocks, which have a 0.3 ohm output impedance, did not change the B minors’ tonal balance. The Woodsides produced exceptionally smooth sound with an even wider soundstage than the KSA-250 did, yet did not cause the bass to become congested, swollen, or fat. Their 50Wpc maximum power ratings were limitations, however. These tube amps ran out of steam when the B minors were playing rock music or movie scores at high SPLs.

However, both the Type Bs and the B minors lacked transient speed in the bass. Bass impulses were blurred and smoothed compared to the shock waves that the Snell Type A/III Improved or the Velodyne ULD-18 can deliver on bass drum whacks or sudden synthesizer chords. The Snell Type A/III Improved, playing the beginning of Dorsey’s “Ascent” (Time Warp, Erich Kunzel & the Cincinnati Pops, Telarc CD-80106), startled me with the explosive opening synthesizer chord. The B blurred and softened the note, removing all its slam and impact.

Despite this lack of transient bass
speed, the B minors have plenty of pace, as evidenced in listening to Giorgio Moroder's score for Cat People (MCA MCAD-1498). If playing track one—David Bowie's "Putting out the Fire"—on the B minors doesn't make you get up and dance, nothing will. Pace was also evident on "Assault on Ryan's House," from Patriot Games—composer James Horner tightens the emotional screws by mixing a variety of unusual rhythmic effects, including a synthesizer-generated one that sounds like a jet engine mixed with bass-drum whacks.

The B minor's midrange response contributed to its ability to image, producing a soundstage of considerable depth. My standard CD selections showed that the B minors' soundstage was able to hold its own with those of more expensive designs, like the Quads. On the Stereophile Test CD, the B minors placed the post-performance "Well done"! at the extreme left-hand stage—an accurate re-creation of the soundstage perspective. Similarly, Larry Archibald's voice on track 10 of Stereophile's Test CD 2 changed its apparent location in my listening room, as intended (see Vol.15 No.6, p.202). The B minors' imaging abilities can be heard at the very end of Richard Thompson's "Why Must I Plead," when the sonic image of Thompson's acoustic guitar plays just to the right of the right speaker. The B minors' back-to-front depth of imaging helped render a sense of the hall on Shostakovich's Symphony 6 (Leopold Stokowski, Chicago Symphony, RCA LSC-3133).

The B minor's prominent midrange produced a "forward" sound. Female vocalists sounded up-front and close. Sinead O'Connor's voice on Peter Garland's "Don't Give Up," from Willie Nelson's Across the Borderline, is one of the most challenging to bring out. O'Connor sings with a tiny, thin, thread-like voice that's compelling, and dramatically undercuts Nelson's rich tone. On the B minors, O'Connor's voice retained its character and was easily heard. Not so with other loudspeakers. For example, the colorations of the Charios damped and muted her voice so that it was barely audible.

The B minor's treble response was excellent, showing an ability to produce open, effortless highs. Driven this time by the Mark Levinson No.27.5, the B minors played Prokofiev's Romeo & Juliet, Suites 1 & 2 (Stanislaw Skrowaczewski, Minneapolis Symphony, Mercury Living Presence 432 004-2) with a consider-ably deep, transparent, detailed, up-front string tone. This extension was evident on the LP version of the Glory sound-track (Virgin 90531-1). In the opening cut, "A Call to Arms," the choir voices were spread from wall to wall and had considerable depth. The sound of the vibes on Joe Beck's "Unspoken Words," from The Journey (DMP CD-481), remained detailed, clear, and open.

**Comparisons**

Compared with the Snell A/III or the Quad ESL-63/Muse Model 18 combination, the B minor didn't extend as low in the bass; the midrange-presence effect made it sound more aggressive and forward. The bass was not as fast or as capable of delivering the hardest "slam"; the B minor continued to have a bass emphasis in the 40-60Hz range.

The Quad/Muse system, currently retailing for $7000, plays with greater speed and more transparency, midrange neutrality, and a wider soundstage. The $2500 Muse Model 18 subwoofer optimizes the response below 50Hz, yielding the best overall rendition of deep bass. This reference combination is capable of rendering the deepest organ notes, which are played at the beginning of the cadenza on Saint-Saëns's "Organ Symphony" LP (Eugene Ormandy, Columbia MS 6469). E. Power Bigs holds each note for about two seconds as he plays a descending scale. With the Muse, each note sounded as if it was a step on a staircase, with clean pitch and putting "a lock" on the room. The B minor/Krell KSA-250 combination did not reach as low, nor did it have the Muse's pitch definition. Through the Quad system the Stokowski/Chicago Symphony recording had an enormous, seamless soundstage that reached almost beyond the walls of the listening room. The Quad system was less compressed and more dynamic-sounding than the B minor.

The Snell Type A/III Improved loudspeaker ($5890/pair when it was last available) shared two of the B minor's characteristics: wide dynamic range and pellicid treble response. Its low frequencies had better pitch definition, however, and its soundstage was wider and more panoramic. On the other hand, the A/III was not as transparent as the B minor; its wall-to-wall soundstage didn't have the B minor's image depth.

**Measurements from JA**

The B minor's sensitivity, calculated using a noise signal and B-weighting, was exactly to specification at 86dB/W/m. Its impedance magnitude and phase, measured with the Audio Precision System One, are shown in fig.1. The minimum impedance is 4.9 ohms at 210Hz, while the woofer tuning is revealed by the 23 ohm peak at 32Hz. The HF control was set to its maximum for this measurement; reducing the tweeter level increased the impedance in the top octaves. Overall, this Snell should be relatively easy to drive.

Fig.2 is a composite, showing the nearfield response of the side-firing woofer, the nearfield response of one of the midrange units, and the overall response on the tweeter axis at a distance of 45° averaged across a ±15° horizontal window. The B minor is impressively flat in response, with only minor peaks and dips visible in the low treble. (The grille appears to have only a minor effect on the measured response.) As with the Dunlavie Audio Labs SC-IV (also reviewed in this issue), plotting the woofer level with the correct amplitude relationship to the rest of the range is not trivial. The woofer trace shown in fig.2 is my best guesstimate, and appears to show a bit of excess midbass energy before the response starts to roll out. The
-6dB point is a very low 25Hz, however. The fig.2 plot was taken with the HF control set to 12 o'clock. Fig.3 shows the difference in response with it set to its maximum and minimum positions. The entire tweeter range can be boosted by up to 4dB or cut by up to 2dB, giving a sensible 6dB swing overall. The rear tweeter really only covers the top octave, above 10kHz or so.

Vertically, the B minor is relatively uncritical when it comes to the optimal listening axis. As long as you sit with your ears on or between the midrange axes, you will perceive a flat, neutral balance. If you stand so that you can see the top of the cabinet, the sound will become very hollow and sucked-out; so sit, don't stand. Horizontally (fig.4), a couple of peaks develop off-axis, at 3kHz and 5.6kHz, particularly on the outside edge of the baffle, but the rolloff in the treble is otherwise well-controlled. The B minor's balance doesn't change appreciably until the listener is more than 15° to the speaker's side.

In the time domain, the B minor's impulse response (fig.5) is typical of a design using high-order crossover filters. Compare the Dunlavy SC-IV's for an impulse response which is time-coherent. The step response calculated from the impulse response (fig.6) indicates that the tweeter leads the midrange units by around 5ms, with then the slow rise of the woofer lagging by about 3ms. All three drive-units are connected with positive polarity. The waterfall plot (fig.7) shows a basically clean initial decay, but with some residual resonant modes present in the low treble.

—John Atkinson

LG SUMS UP

The Snell B minor does not suffer from the exaggerated bass that many of Stereophile's writers heard with the Type B. The B minor's redesigned midrange and treble sections give the loudspeaker better soundstage depth and overall transparency, even though the speaker has more midrange "presence." It's much easier to optimally set up the B minors.

At its $3599/pair price, the B minor encounters stiff competition, including the Thiel CS3.6 ($3990/pair), the Apogee Centaur Major ($3785/pair), and the Acarian Alón IV ($3400/pair). However, the B minor's transparency and imaging win it a "B" recommendation in "Recommended Components." While its bass is still prominent, the overall tonal balance is more pleasing than the B's. The B minor's trim tower configuration, easy setup, match with a wide range of amplifiers, good price point, wide dynamic range, and transparency will be key points for those interested in a full-range, floorstanding dynamic loudspeaker.

—Larry Greenhill
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Looking inside a high-end audio product is like looking into the mind of its designer—the product is a physical manifestation of the designer’s knowledge, acquired wisdom, and beliefs. The hierarchy of what he or she considers most important is revealed by a peek under the hood.

I was struck by this idea as I considered the new $1350 Meridian 563 D/A processor. The 563 was designed by Bob Stuart, one of the most talented digital design engineers, and a pioneer in good-sounding CD playback. To my knowledge, Bob, with his modifications of the first Philips players, was the first designer to address sound quality in CD playback. With more than ten years’ experience in making CD sound better, what does Bob Stuart think is important in digital-processor design? What is Bob Stuart’s design hierarchy as revealed by his latest product?

The answer is intriguing. On one hand, the 563 has a small power supply with few regulation stages, an older op-amp in the output stage, and high-quality—but not tweaky—passive components. Yet at the same time, the 563 has an extremely sophisticated and elaborate input receiver for low jitter, and very careful handling of the clock to avoid introducing jitter after the input receiver. In fact, the 563’s efforts to minimize clock jitter are Herculean, and worthy of a state-of-the-art processor.

**MERIDIAN 500 TRANSPORT**

The Meridian 500 transport and matching 563 digital processor share Meridian’s new cosmetics and industrial design. The new styling features rounded edges on the front panel and a sleeker look than that of previous Meridian products. The front panel has a large window for the alphanumeric display which indicates track times and mode (Open, Close, Play, Track, etc.). A sheet of black glass covers the top panel, finishing off the elegant new look. No remote control is supplied with the 500; because all Meridian 500 series products can be operated with one remote, the handset is sold separately for $100. The 500 can, however, be controlled by any Philips-based remote control.

Although the matching 563 processor accepts AES/EBU digital input as well as coaxial, the 500 transport has only coaxial (RCA) and TosLink optical outputs. The 563 processor’s reported ability to completely reject jitter in the digital interface (more on this later) may be the reason why the transport doesn’t have AES/EBU; The perfect input receiver would sound identical, regardless of the interface driving it. The 563’s AES/EBU input may have been included for compatibility with professional digital sources.

A unique feature of Meridian transports is their drawer-loading mechanism. Rather than having only a disc tray emerging from the front panel, the 500’s entire transport mechanism moves forward. This technique has several advantages. First, the disc can be enclosed in a chamber, isolated from acoustic energy, mechanical vibration, and electromagnetic radiation. This degree of isolation isn’t possible with a drawer mechanism (the exception being the Nakamichi 1000, with its Acoustic Isolation system). Second, moving the entire mechanism facilitates using a larger clamp than is possible with most standard drawer-loaders (the Krell DT-10 transport excepted). The 500’s clamp is 70mm (nearly 3”) in diameter and is made from a composite of glass fiber, carbon fiber, and stitched felt. The clamp is low-mass, has reportedly excellent damping characteristics, and uses a low-rumble bearing made of polycarbonate and polystyrene running in a lubricant. Bob Stuart believes it’s a mistake to underdamp the disc, but it’s also a mistake to overdamp it with too much added mass.

The transport mechanism is a Philips CDM4 with additional damping material applied to it. The servos controlling the transport have been redesigned by Meridian, and are powered by separately regulated supplies fed from an independent secondary winding on the power transformer. The servo board is a four-layer design, with careful attention paid to grounding. The servos have been optimized for highest data integrity and best “eye pattern” (the signal recovered from the CD) rather than for shock resistance, as is the stock servo system. In fact, Meridian claims that the 500 provides the best-looking eye pattern of any transport they’ve produced.

The 500 is controlled by two microprocessors running on Meridian’s custom code: One microprocessor controls the servos; the other receives input from

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1 To my knowledge, Meridian was the first company to address vibration damping in CD playback—back in the Dark Ages of digital (1984). For more discussion on disc damping, see my review of the C.E.C. TL 1 CD transport in Vol. 16 No. 7, p. 91.
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the remote control or front-panel buttons, drives the display, and handles the communications link between the 500 and other Meridian products. Like the servo board, the microprocessor board is a four-layer design. Because the microprocessors are controlled by a pair of socketed EPROMs, updating in the field is possible.

The decoder and error-correction circuits are reportedly the latest and most sophisticated implementations, resulting in there being less chance of uncorrectable errors. The S/PDIF output circuit re-clocks the data with a crystal oscillator, then buffers the signal with a high-current line driver and tooroidal output transformer. This robust output stage was designed to drive the very long digital interconnect runs between the 500 and Meridian's digital input loudspeakers (the D5000 or D6000).

Finally, the 500 has a port for communicating with other Meridian products. When this communication link is established, the entire system is controlled by a single remote. Although the 500 uses a faster communication language than that included in previous Meridian products (the 200 and 600 series components), with a communication link the 500 can still communicate with previous Meridian components.

The 500's overall appearance, build quality, and functionality were all excellent. One aspect of Meridian transports that takes a bit of getting used to is the seemingly delayed reaction time when skipping to another track: After pushing the skip button, the current track continues to play for at least a second before skipping to the next selection.

**MERIDIAN 563 CONVERTER**

The 563 is a descendant of the successful 263 converter I reviewed in Vol.16 No.6. Unlike the minimalist 263 (one input, no polarity inversion), the 563 has three digital inputs, including AES/EBU, polarity inversion, and balanced, as well as single-ended outputs. The 563's chassis is also wider than the 263's, and it shares the 500 transport's new cosmetic design—the two new products make a very attractive combination.

Although the 563 evolved from the 263's fundamental design, the new model is significantly more ambitious. First, the 563 uses dual two-channel Crystal CS4328 DACs for true balanced operation. By using a pair of two-channel DACs, the digital signal is converted to analog with four DACs, one each for left channel +, left channel −, right channel +, and right channel −. This true differential operation is a much better approach than simply creating a balanced signal after the DAC with a phase splitter. One advantage of true balancing: Any noise or artifacts common to both DACs will cancel when the + and − halves of the balanced signal are amplified differentially in a balanced input preamp or a balanced input power amp.

This approach also requires four analog output stages in addition to four DAC channels. The 563's analog output stage is a combination of the NE5534 op-amp and a discrete class-A output driver. The choice of the 5534 is curious in light of the great improvements in op-amps made since the 5534 was designed, but Bob Stuart believes it's the best device for the job when used with his discrete class-A output driver. The two op-amps per channel are cross-coupled, creating both a fully balanced signal and a single-ended signal derived from the balanced signal. This way, even users of the unbalanced outputs benefit from the balanced DACs. The output stage uses metal-film resistors and polystyrene capacitors. De-emphasis is passive, switched in by FETs.

The digital input stage is a more advanced version of the dual-PLL scheme first used in the 263. Rather than recovering the clock with a single Phase-Locked Loop (PLL), the 563 uses a dual PLL scheme based on a Crystal CS8412 input receiver. The first PLL is followed by a second, much tighter PLL that provides a clock with much lower jitter. The first PLL is loose enough to lock to jittered sources, or those whose clock frequency deviates from the standard. The second, narrow PLL takes the input from the first PLL and outputs data with a less-jittered clock. The oscillator for the second PLL is shielded underneath a metal can. This dual PLL technique assures that the input will lock to a variety of sources, yet assure low-jitter clock recovery from the S/PDIF datastream.

The 563's input receiver has a much lower jitter attenuation cutoff frequency than that used in the 263. The JACF is the frequency above which the input receiver rejects jitter in the incoming datastream. The lower the JACF, the better. The 563 claims a JACF of an astounding 5MHz, meaning that any jitter above this frequency won't be passed to the recovered clock. For comparison, the Crystal CS8412 has a JACF of 25kHz, and the UltraAnalog AES20 has a JACF of 1kHz. Note that this second PLL operates only at 44.1kHz, indicated by a front-panel indicator. The front-panel "Lock" light comes on instantly when connected to a digital source; the "44.1kHz" (double-lock) indicator takes nearly three full seconds—an eternity in digital time—to illuminate. The "Lock" indicator shows that the first PLL has locked, the "44.1kHz" indicator comes on when the second PLL has locked.

Most input receivers lock to the entire S/PDIF signal continuously. But because the audio signal modulates the clock signal embedded in the S/PDIF datastream, jitter correlated with the audio is generated in the interface. This jitter is passed to the recovered clock, where it degrades the processor's sonic qualities. The 563 addresses this problem by locking to only a small portion of the S/PDIF datastream called the "preamble" and ignoring the audio portion of the datastream. The preamble is part of the S/PDIF frame structure that identifies the beginning of a frame. By locking to only the preamble, the clock isn't modulated by the audio data.

The entire circuit (except the power transformer) fits on a 7.5" by 4.5" printed circuit board. This pcb is a four-layer design, and the top layer is poured copper, meaning that entire surface is copper except for insulating areas for the traces. This large ground plane protects the signals from noise contamination.

In sharp contrast to the many digital processors that have acres of power-supply caps, multiple transformers, and banks of regulators, the 563's power supply consists only of a single-laminate transformer, four filter caps (two 15,000μF Nichicon Muc electrolytics, one 6800μF, and one 2200μF electrolytic), and three regulation stages.

The 563's design is unconventional, to say the least. Although the input receiver is perhaps the most sophisticated ever designed, the power supply, DACs, and output-stage op-amps appear rather ordinary.

Finally, I must report a few problems with the review samples. The first unit blew power-supply fuses, and the replacement sample produced a noise from the loudspeakers when driven by the Theta Data Basic transport. The noise was a crackling that happened intermittently during music, and briefly when the double-lock "44.1kHz" indicator came on, suggesting the 563 couldn't securely double-lock to the Theta. The 563 didn't have this problem with either the Meridian 500 transport or the Linn Karik transport.

**REFERENCE SYSTEM**

The 500 transport and 563 processor were used as a pair for long-term listening, and evaluated individually with

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"This technique is used in Ed Meitner's custom input receiver. See Stereophile's Vol.15 No.9, p.51."
other transports and processors to isolate their characteristics. In addition to the single-presentation listening, I put the 500 up against what I consider the best-sounding transport near its price, the $1750 Theta Data Basic. Similarly, the 563 went toe-to-toe with the $2000 PS Audio UltraLink, the $750 Adcom GDA-600 (a terrific bargain in affordable processors), and for the ultimate reference, the extraordinary Sonic Frontiers SFD-2 ($4650). Digital interconnects included Aural Symphonic Digital Standard (coaxial) and Wonder Link AES/EBU.

The 563's balanced outputs drove an Audio Research LS5 tubed preamplifier, and the 563's single-ended outputs fed the LS5 through an ARC BL2 balanced line converter. Interconnects were AudioQuest Diamond for both the balanced and unbalanced runs. The LS5 drove either the ARC VT-150 tubed monoblock power amplifiers, or a Krell KSA-300VS via Expressive Technologies IC-1. Loudspeakers were Thiel CS3.6es, connected by an 8' run of AudioQuest Sterling.

LISTENING
The first order of business was to evaluate the 563 in relation to the 263, with the 500 transport driving both processors. The first two words on my listening notes tell the whole story: "No contest." The 563 sounded vastly better than even the excellent 263. In fact, I was surprised that a better input receiver and differential DACs could so transform a processor.

Although I've liked the 263, I had some reservations in my review (Vol.16 No.6, p.183) about its sonic characteristics for certain music. For example, the 263's soft bass and lack of dynamic impact are a liability on music with kickdrum and bass guitar. I have no such reservations about the 563; its bass extension, dynamics, and tautness were in a different league compared to the 263. In fact, the 563's bass didn't sound at all like it was coming from a 1-bit-based processor. The attack of bass guitar notes—somewhat slow and blurred through the 263—were crisp, punchy, and dynamic through the 563.

A good test of bass dynamics is any of the Bela Fleck and the Flecktones albums—bass player Victor Wooten's technique produces a sound that has extreme dynamic contrast and transient attack. Many components do not fully convey the instrument's dynamic structure, making it sound compressed and lifeless. The 563's ability to convey the full measure of dynamic contrast on these discs gave me a radically different musical experience compared to the 263. Although the 563 was good in this regard, it still didn't approach the Sonic Frontiers SFD-2 in extension, weight, dynamics, or bass articulation. Compared to the excellent Adcom GDA-600 (a processor whose bass is its strong suit) reviewed last month, the 563 didn't quite have the extension and dynamics, but it was close.

The 563 was also very refined, smooth, and sophisticated in the mids and treble. Timbres were more naturally reproduced through the 563 than the 263. In fact, this is one of the 563's best characteristics—instrumental textures were liquid, natural, and believable. The 563's excellent portrayal of timbre made the music more palpable, sounding more real—the presentation wasn't synthetic, hard, or sterile.

Instead, the nuance and delicacy in an instrument's fine structure were revealed, greatly adding to my enjoyment of the 563. The harmonica on the Robert Lucas Usin' Man Blues CD (Audioquest AQC-CD 1001) sounded less like a synthesizer and more like air moving through pipes and reeds. The slightly hard edge heard through the 263 was replaced by the 563's round warmth. As much as I've liked the 263 for the money, it sounded hard and mechanical compared to the 563. I say this not to disparage the 263—it's a terrific value for $895. Rather, I want to put the 563's vastly better performance in perspective.

On an ultimate basis, the 563 had some mid and treble grain compared to the SFD-2. The 563 didn't have the starting clarity and purity of timbre that characterizes the more-than-three-times-the-price SFD-2. In relation to the Adcom GDA-600 I reviewed last month, the 563 was smoother in the mids and had a more liquid presentation of instrumental textures. Although the 563's presentation couldn't be characterized as being forward, the GDA-600's presentation was more set back in the soundstage, somewhat mitigating the Adcom's harder midrange textures.

As much as I liked the 563's bass, dynamics, and beautiful portrayal of timbre, what really struck me about this processor was its wonderful soundstaging. The 563's open spaciousness, transparency, and bloom were evident seconds into my first listen to the processor. The soundstage just opened up and presented a space for the music to exist in. I also heard a delicious bloom surrounding instrumental images—like a halo of air that infused the presentation with life and palpability.

The 563's soundstage was the antithesis of flat, synthetic, congested, or made of "cardboard cutout" images.

Soundstage depth was also first-rate. On the Robert Lucas disc, the acoustic bass was far back in the room, well behind Robert. When listening to this disc on the 263, I didn't hear nearly the degree of depth and distance. Moreover, the 563 presented the room's acoustic around the instruments with much more space and resolution of reverberation decay. These characteristics were more apparent through the balanced outputs, although the unbalanced outputs still sounded excellent.

There wasn't as much difference between balanced and unbalanced as there is with the Theta Generation III or SFD-2.

Overall, the 563 had a wonderful liquidity in the mids and treble, with no hint of hardness or synthetic textures. The soundstage was equally impressive; the 563 had fine resolution of spatial detail, transparency, and a delicious bloom surrounding instrumental and vocal images.

Because it takes the 563 nearly three seconds to double-lock, I tried to listen to the effect of the second PLL. I positioned the 563 so I could reach its input-selector buttons from the listening seat. With music playing, I selected an input other than the one fed from the transport, then switched back to the active input. For the first three seconds, the 563 was running off one PLL, then the second PLL kicked in, indicated by the front-panel "44.1kHz" display. It's very difficult to hear something in only three seconds, but I did hear an increase in space, more liquid textures, and a greater ease after the second PLL became engaged.

Most of these impressions of the 563 were actually those of the 500/563 combination, indicating that the 500 transport was contributing to the system's high level of musical performance. I compared the 500 to the Theta Data Basic feeding either the Adcom GDA-600 or 563 via an Aural Symphonics Digital Standard cable. As mentioned previously, the 563 had trouble double-locking to the Data Basic, but it would double-lock long enough for meaningful listening comparisons.

Driving the GDA-600, I preferred the Data Basic to the 500. The Theta had more space and depth, tighter bass control, and presented more liquid instrumental textures. With the 500 driving the GDA-600, the bass was more woolly and less precisely articulated than when the Data Basic was the source. Kickdrum had more impact and power from the Theta, and the whole bottom end just seemed more solid. Further, the Theta's

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3 I would have liked to have used the Illuminati digital cable. Its stiff and unyielding construction makes it impossible to use with some transport/processor combinations, however. That's a shame, because the Illuminati cable sounds terrific.
more forward and incisive character was an advantage when combined with the GDA-600’s very-laid-back spatial perspective. The 500’s treble was smoother, however, which gave it a greater sense of ease.

With both transports driving the 563, it was a much closer call as to which one was better musically. Moreover, the sonic differences between transports were greatly reduced when they drove the 563, probably because of the 563’s ability to reject jitter from the transport. Nonetheless, the Theta had more bass extension and bottom-end kick than the 500 did, just as I heard with the GDA-600. The Theta’s more forward character was, however, less suited to the 563’s overall perspective, which was more forward than the GDA-600’s. The 500/563 combination had just the right balance between immediacy and ease; the presentation had life and palpability without being in my face. Similarly, the 500/563 combination never sounded laid-back to the point of becoming uninvolved or bland.

Measurements

The 563 had a maximum output voltage of 4.38V RMS from the balanced outputs, and 2.19V from the unbalanced outputs. Channel balance was within a tenth of a dB. Although the 563’s output impedance was a lowish 93 ohms (balanced outputs) at any audio frequency, the unit became current-limited when driving a 150 ohm load impedance. Source impedance from the unbalanced outputs was 46 ohms. The 563 had no trouble locking to 32kHz or 48kHz sampling frequencies, and the unit doesn’t invert absolute polarity unless the front-panel “Phase” indicator is illuminated. DC levels were extremely low, measuring less than 3mV from either the single-ended or balanced outputs. The 563 double-locked to the Audio Precision’s DSP signal generator without producing the problems noted with the Theta Data Basic transport.

The following measurements were taken from the balanced outputs; any appreciable performance differences from the single-ended outputs are noted in the text.

Fig.1 shows the 563’s frequency response and de-emphasis error. The response is extremely flat, with no trace of rolloff, even at 20kHz. Similarly, the de-emphasis error is negligible, and particularly low considering the de-emphasis circuit is implemented in the analog output stage (instead of in the digital filter) and subject to component tolerances. Interchannel crosstalk, shown in fig.2, was excellent, measuring greater than 105dB below 10kHz. The bump between 400Hz and 800Hz is unusual, and is likely the noise floor’s spectrum rather than an increase in crosstalk in this region.

A spectral analysis of the 563’s output when decoding a -90dB, dithered 1kHz sinewave is shown in fig.3. The noise level in the band below the test-signal frequency is a little higher than I usually see, but there’s no trace of power-supply-related noise getting into the audio circuits. The DACs appear well matched (indicated by the close trace overlap at the test-signal frequency), and the linearity appears good. Spectral analysis of an all-zeros signal (fig.4) showed the rise in the noise floor at ultrasonic frequencies due to the noise-shaping incorporated in the DAC.

The 563’s linearity (fig.5) was excellent, but not quite as good as that measured in other converters using the CS4328 DAC. There’s a slight negative error between -80dB and -100dB, although this is less than that found in many multi-bit DACs. Fig.6 is the 563’s reproduction of an undithered, 1kHz sinewave. The waveshape is excellent, though overlaid with some audio-band noise. Compare this waveshape with that of the Timbre DAC reviewed elsewhere in this issue.

The 563’s noise-modulation performance was outstanding, indicated by the tight trace groupings seen in fig.7. The peak between 400Hz and 800Hz, seen earlier in the crosstalk and spectral analysis plots, suggests that the noise floor’s spectrum is unusually shaped. Other processors using the Crystal CS4328 have had similar peaks in the noise-floor energy, but at different frequencies (see the Timbre review). The Meridian 263 (reviewed in Vol.16 No.6, p.189), which uses the same DAC, had a peak over the same frequency band, but also a peak centered at 5kHz.

Fig.8 shows the 563’s intermodulation spectrum when driven by a full-scale sinusoid, 1kHz input at 0dBFS.
mix of 19kHz and 20kHz tones. (The combined waveform peaks at the maximum positive and negative levels, meaning that each component lies at ~6dB.) The spectrum is quite clean, but with the 1kHz difference component rising just above the ~100dB horizontal division.

When I attempted to measure the 563's clock jitter, I ran into a problem: The 563 was performing better than the measurement instrument (the Meitner LIM Detector). The 563's jitter was so low that it was impossible to accurately measure with our jitter analyzer—I ended up measuring the analyzer and not the 563. Although I was unable to verify Meridian's claim of 1ps RMS jitter because of the test instrument limitation, the 563's jitter was the lowest I've measured.

Moreover, the 563's jitter spectrum was identical regardless of the input signal. Fig.9 is an FFT of the 563's clock jitter with a ~90dB 1kHz sinewave (a worst-case test signal) driving the 563. I took FFTs with a variety of signal conditions, and they all produced exactly the same plot. This indicates that the 563's clock is immune to interface jitter, particularly jitter correlated with the audio. For example, when driving a processor with a 10kHz sinewave, you usually see a spike of jitter energy at 10kHz. With the 563, the spectrum was completely free of periodic jitter artifacts. However, if you look closely at fig.9, you can see the slightest hint of 1kHz jitter energy. This is the best jitter performance I've yet measured. Fig.10 is a Meridian-supplied spectrum analysis of the 563's jitter with the first PLL engaged (top trace), and the second PLL locked (bottom trace). Without the second PLL, you can see a signal-correlated 4kHz component; with the second PLL, there is both a 35-40dB drop in jitter and a complete lack of discrete components.

I was unable to obtain the UltraAnalyzer SPDIF jitter analyzer to measure the 500 transport's jitter performance; there's only one such instrument, and it was unavailable during the time I was preparing this review. We will, however, report on the 500's SPDIF jitter measurements the next time we have the analyzer.

**CONCLUSION**

The Meridian 563 processor is a landmark product that sets a new standard of performance in its price range. It is vastly better than the excellent $895 Meridian 263, and it outperforms some more-expensive processors. At $1350, the Meridian 563 is, in my opinion, the new benchmark in under-$2000 processors.

My previous recommendation of Meridian's 263 included a caveat about the processor's missing bass extension, limited dynamics, and lack of articulation. I have no such reservations about the 563—the new processor sounds completely different. Although the 563's bass isn't in the same league as that of the Sonic Frontiers SFD-2, it is weighty, extended, and much more controlled. My only concern about the 563 was its inability to lock to the Theta Data Basic. This may be a problem only with the Basic (or even my sample of the Basic), but you should make sure the 563 works with your transport before committing to a purchase. On the other side of the coin, the double-lock feature reduces the sonic liabilities of lower-quality transports, allowing you to get better sound from even a modest transport.

While the 563 was clearly superior to other processors near its price, the 500 transport was a closer call. The similarly priced Theta Data Basic presented the 500 with some tough competition; indeed, the Theta is a better match for the Adcom GDA-600 processor. The 500 is polite and refined, but lacks the sense of space, dynamics, and bass control of the Data Basic. But coupled with the 563 processor, the 500 seems to form a synergistic musical match that transcends the performance of either product alone. Although I unhesitatingly recommend the 563, the 500 is better suited to some systems than it is to others. Consequently, I recommend you put the 500 on your short list of products to audition, particularly if your system tends toward the aggressive side of reality.

You can also consider the 563 and 500 as a $3045 digital front end. Taken as a whole, the pair offers stunning performance on an absolute basis and is a bargain at the price. With all the digital components on the market to choose from, the 500/563 combination would be my first choice anywhere near its price range. Recommendations don't come any higher than that.

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4 The Meitner IDAT has a similar ability to prevent the clock from being modulated by the audio signal. Since my review of the IDAT, Ed Meitner has improved his input receiver and C-Lock jitter-rejection circuit. Also, Ed is working on a third-generation LIM Detector that has a 40kHz bandwidth and a lower noise floor.

Although many manufacturers claim low jitter in their products, there are only a few companies that I believe have the ability to accurately measure clock jitter; and Meridian is one of them.
As the sides of the slim-line Timbre Technology TT-1 DAC are radius rather than flat, it's elegant compared to its typical boxy competition. While the TT-1's handsome shape stands out more than your average audiophile device, its curved sides help create a stronger, less resonant shape than the usual box, and serve as just one of the many elements contributing to a high degree of mechanical integrity and damping. There are no fasteners showing except those on the bottom and backplate, and the hefty unit feels solid as a rock. The faceplate—finished in black or silver—and bottom are fabricated of %4 custom aluminum extrusions; the rest of the black package is of %6-thick aluminum. The machined phase-inversion and input-selection buttons on the faceplate are custom-extruded and installed with custom springs and gold-plated switches. LED's indicate phase, power, lock, decoupling, and inputs 1-4. The informative user's manual is professionally written and pleasingly "art-department" modern.

On the back panel are ventilation slots in the rounded corners sufficient to evacuate the hot air created by the large, internally mounted heatsinks. The type and number of inputs included depend on which TT-1 you purchase: The fully-loaded, balanced package lists at $3895 (saving you $200 on a later upgrade to balanced configuration) and has an AES/EBU at input 1, a 75 ohm coax at input 2, AT&T ST glass at input 3, and the ugly duckling of the High End, an EIAJ (TosLink), at input 4. The balanced version also includes a pair of XLR outputs (Neutrik gold-plated numbers) in addition to two standard sets of single-ended, rhodium-plated Cardas RCA connectors—one set unbuffered, with a standard 1.5V output signal, the other buffered/amplified to 7V RMS for use with passive controllers or insensitive speakers. Many unbalanced audiophiles (aren't we all?) will opt for the $3295 single-ended version, which replaces the AES/EBU input with a second coax, and deletes the balanced outputs.

The dual silver-element fuses and voltage selector—user- (or, preferably, dealer-) selectable for 120V or 240V—are nicely implemented in a small pop-out module on the rear panel, next to the on/off switch and the IEC power-cord socket. The module neatly contains a pair of replacement fuses as well. It's a good thing it's user-accessible, as the TT-1 is designed so that it cannot be opened in the field. At your workbench, maybe, but not in a field. This also ensures that Heavy-Handed Circuit Gawkers wielding the old Audiophile Crowbar will wind up with a lot of twisted, unsightly metal lying about if they don't know how to open the TT-1.

This sensitivity to dropping its drawers and exposing itself is tied in with the TT-1's damping and mechanical/electrical grounding scheme. The top of the unit is tied down to the bottom when the processor is buttoned up at the factory, thus rendering the case super-rigid. In line with this Let's-Get-Rigid manufacturing philosophy, several possible foot-mounting schemes are provided for in the heavy, machined-aluminum bottom plate. Rather than just taking the easy route—ie, tapping the holes—Timbre uses high-quality PEM inserts (called Threaded Ports!) for the base holes. There are five of these recessed "ports"; the Rabid Audio Tweaker can support the TT-1 in either a tripod arrangement, or at all four corners.

Screw-it-to-the-floor fanatics, yrs truly included, can use three or four of the black-anodized brass locking-ring cones provided on 1/4" by 20 (quarter-twenty) shafts, or a trio of the larger threaded Goldmunds, which I found to offer superior performance. These Shun Mook SuperPassive Diamond Resonators made for the sweetest sound. For the Chippendale, Louis XIV, or Nouveau Contemporarie Glass-Shelving set, a quartet of rubber "Protection Disks" is provided, along with self-stick felt pads, to avoid marring your bee-yootiful finishes. If I were a nervous antiquities dealer, however, I'd stick with three or four of the alternative all-rubber industrial isolation feet also provided. Timbre offers adapters for any footer your little audiophile heart desires, from 10mm to quarter-twenty—very obliging folks.

**Technology**

As I hadn't received my pair of X-ray specs ordered from the last issue of *Audiofan Comix*, the following description was gleaned from peering intently at an open-case version of the TT-1, which David Goldstein and partner/designer John Kukulka brought with them when they arrived to install the review unit in our system. The first thing I noticed was the extensive amount of proprietary damping material used on the case top and bottom, faceplate, and backplate, and dotting the military grade (proprietary materials) pcb, the chips, and all the caps. Even the large toroidal 100VA transformer gets the damping treatment. Multiple fully regulated, filtered power supplies are separated for digital and analog sections, and separate ground planes are implemented for the supplies, the analog section, and the digital domain. Decoupling is passive and relay-activated.

The digital chipset used is the Crystal CS8412 input chip and their 4328 18-bit, 64x-oversampling Delta-Sigma DAC. John claims that the Crystal chips are implemented in a different fashion in his design, with special attention paid to the "support, care, and feeding" of the

**Timbre Technology TT-1 D/A Processor**

Jonathan Scull & Robert Harley

DAC. Internal wiring is all silver-conductor Teflon, with audiophile-grade silver–alloy solder used to secure the chips. The chips can't be upgraded in the field like this, but Timbre doesn't want the chips to “walk” out of their sockets (as chips have a tendency to do) and wander far from home—so soldered they are! Parts are located for minimal signal paths, and all metal-film resistors and caps were selected for sound rather than for specs alone.

John Kukulka may be a Technical Type, obviously with an RISC chipset in his meath, and David Goldstein a hand-waving, Type-A Personality Timbre Front-Man, but both John and Dave seem to be, first and foremost, audiophiles who care deeply about good sound. When I questioned them about their backgrounds, Dave informed me that he'd been in the electronics business for years, and John let drop that he'd been involved with the design of the inertial guidance computer for the Saturn 4 booster rocket! Oh. That old thing. He casually told me that he'd learned some interesting things with his work in PCM Telemetry deep-space shots, which added "resonance" to his claim that his DAC was a simple, straightforward design.

Yeah, John, but what are your real qualifications?

**SYSTEM**

Preamps included the debonair Jadis JP 80 MC seated on Harmonix RF-66 Tuning Feet, equipped with Ensemble Tube-Sox and a bright-green XLO power cord with the ground lifted. The Gryphon XT MC preamp also saw service during the test period, as did a Mark Levinson No.26S (more about this later). However, for most of the review period, the Timbre was hooked, via all-XLO Signature, to the line-stage of the burly "I-See-It-In-CinemaScope" All-American CAT SL-1 Signature, seated on Shun Mook Super Passive Diamond Resonators, powered by a TARA Labs Affinity solid-core power cord.

Interconnects and speaker cables were my reference XLO Signature, tri-wired for the big Avalon Ascents. Digital cables were a melange of XLO, Purist, Maple, shade, Pure Logic, and AudioQuest OptiLink Pro 2. I also used AudioQuest's hot new balanced Diamond x3 cable composed of three silver conductors with Teflon spacers to create an air dielectric, and another generic balanced cable supplied by Timbre. In addition to the power cords mentioned above, I used a Grace on the Forssell and a combination of Marigo, MAS, T&G, and Cardas on the other transports and processors.

Amplification was handled by both a stereo Gryphon DM-100, and, for most of the test period, the big, gorgeous, Jadis JA 200s on their sand-filled Bright Star stands. The 200s were accessorized with Ensemble TubeSox on the inputs and drivers, and Marigo 4mm VTS dots on the bottom plate of each 6550, powered by another pair of the TARA Labs cords. Toward the end of the review period, Ausbert de Arce (a friend we met on The Audiophile Network who lives in Holland) came to visit with holiday stock- ing-stuffers that profoundly changed my life, and that of my Jadis JA 200s.

**JADIS TIPS**

This dedicated, well-heeled audiophile employs two pairs of JA 200s in his home system: Gold Lion KT88s for the bass panels of his DXAced Divas, and Tungsol 6550s on the midrange/tweeters. His stuffers included a pair of NOS AEG 802S input tubes to displace the Gold National 12AU7s that lived there before. To choose a partnering driver (to replace the stock EL 12AX7), I had the delectable job of listening to the differences and choosing between gift pairs of ECC83s from Siemens and Telefunken, and Murlard M8137s. Ho! Ho! Ho! Merrrrrry Christmas!

I wound up with Ausbert's recommended setup: the 802S followed by the Siemens. The German Gold National/El ex-Yugoslav combo had lots of punch, but could've been a smidgeon more subtle. The overall presentation became more refined and delicate, while still allowing for appropriate slam— as when my Fave Wild Babe (after my wife, of course) Nina Hagen makes it onto the system. The Tellies were a touch too refined and polite in conjunction with the 802S, but worked nicely with the Gold National input. The Mullards were punchy, like the EL—a touch more refined, but not so delicate as the Siemens. My Amsterdam-bound—by-business friend has promised me more goodies from those far shores to juice up the 200s. Lift up your "Tung" and say "Sol."

**TRANSPORTATION**

I consider it my stunning good fortune to have auditioned the Timbre Technology TT-1 DAC with three Totally Drop-Your-Sox transports: the Forssell Air Bearing, the C.E.C. TL 1 Belt-Drive Gold Robbie the Robot (well, it looks like a Japanese robot to us), and the "Champagne Wishes, Caviar Dreams" Esoteric/TEAC VRDS P2S, $7k the pop. In many ways, the Tale of the Timbre was also the Tale of Three Transports. One of the more amusing pranks I've enjoyed playing on acquaintances, both audiophile and otherwise, has been to play a CD on one of these benchmark transports, then flip it into one or another of them, and watch my friends' jaws drop. (A rubber pad under the front of the listening chair would've worked just swell.) The Timbre revealed enormous differences in presentation.

But do divine the subtext here: The only reason each of these transports, using a variety of quite different-sounding outputs, were so well differentiated from one another was because the Timbre Technology TT-1 DAC had the resolving power to reveal these differences. In fact, the Timbre resolved so well that changes in footers under the various transports, from the big-threaded Goldmuns to the Shun Mook Super Passive Diamond Resonators, were also easy to quantify. Moreover, what the transport and its attendant footers were themselves mounted on could be heard to make a difference! In any case, consider the Forssell Air-Bearing CD Transport to be the Transport of Record for this review; read my article, "A Tale of Three Transports," in the next issue of Stereophile to get the poop on the differences between all three.

**SOUND**

First, let me point out that the TT-1 needs a few days to loosen up before it'll deliver good sound, and almost a week before it's in full voice. If you buy one, be patient. Rocketman John K. told me that you don't need to actually pass signal through the DAC to break it in—you only need to establish lock with a transport.

The first thing that grabbed my attention when I began serious auditioning with the Forssell was the way in which the TT-1 threw a truly world-class soundstage. Images were set well back behind the speakers, and stage width was mind-boggling, but always believable. I'm not speaking about the false depth that I've heard some processors deliver—a sort of fat slice of flat sonic Wonderbread set back against the rear wall. Rather, the Timbre threw a wonderfully layered front-to-back image which, depending on the material, was at times shaped like a "U" (especially on classical material), while at other times it changed its shape depending on the recording's venue.

I'm really a sucker for tight, wide imaging that's set well back, and I'm willing to spend hours setting up for it. The TT-1's ability to make the big, imposing Avalons disappear was uncanny. For example, on "The Hall of Mirrors," from Kraftwerk's The Model (Cleopatra CLEO57612), it sounds as if something"
or someone (an unbalanced audiophile) is being smacked quite hard, the TT-1 setting this whacking sound way back behind the speakers. “The Robots” also came across in Killer Audiophile 3-D.

But this set-back imaging wasn't restricted to one or two CDs. If the information was encoded on the disc, the imaging was there to delight, depending mostly on which transport was used for its final relative distance from the listener.

On CD after CD, and with all types of material, the Timbre proved its almost casual ability to throw an astonishingly huge, layered, and well-populated soundstage. “Round Midnight,” on Clifford Jordan's Live at Ethel's (Mapleshade MHS 512629A), recorded by Pierre Sprey and mastered in AAD by Bob Katz, is a fabulous take on the Monk classic. The soundstaging is truly amazing, open, effortless, and of grand proportions. The shimmery cymbals are perfect, Cliff’s tenor sax is delightfully rich, the bass is super-focused and tight out to the left, and the piano sounds effortless and powerful. You can pick up the sound of Clifford’s “afterspitz” so to speak, as he sensuously blows his sax (sit too close and you'll need a towel). This CD is beautifully recorded, very “present” and alive, and the occasional hoot and cat-call of encouragement from the audience comes through the mix transparently.

Yeah, baby!

A billowing soundstage can be nothing more than an artificially produced artifact if the images within are blurry, ill-defined, or amorphous. But in this too, the TT-1 is a knockout. We've been listening to the Holly Cole Trio's Don't Smoke in Bed (produced by David Was, Manhattan CDP 7 81198 2), and I know her voice and the sound of this CD like I know the back of my...remote.

I heard Cole live at last year’s SCES in Chicago, and this sexy singer and her trio are simply riveting. The CD (Danger! Reversed polarity!) is replete with rich, powerful bass work, superb, sexy vocals, and innovative piano work—all hard-to-reproduce elements of the musical spectrum, but they came across engagingly and vividly through the Forsell/TT-1 combo.

On “I Can See Clearly Now” the opening plucked bass will tell you all you need to know about your system's bass-reproduction abilities, and highlight any weaknesses. Through the Timbre the bass line was tight, powerful, deep, well-defined, and had excellent pitch definition. The attack of the bass strings when plucked was fast and alive. The decay characteristics of the bass, especially when bowed, and all the instruments and vocals, seemed natural and correct, creating that special sense of bloom this processor manifests. Cole is rendered in Glorious Living Audiophile Color, tightly focused between the speakers, set well back, and properly separated from the sound of the bass and the piano, which came across way out on the right side of the stage—as well rendered as I've ever heard piano on CD. The piano on “Get Out of Town” had frightening presence and “location.”

Trio Jeppy, a 1989 Branford Marsalis release on Columbia (CK 44199), was another recording that really showed off the Timbre's best qualities. This terrific CD, rich in tonality and spatial cues, provides a wealth of musical information. “The Nearness of You,” that old Hoagy Carmichael warhorse, begins with subtle bass bowing that came across growly and visceral as Branford’s horn noodled along, sounding warm, rich, and shockingly “present.”

The next Audiophile Magic Moment came at 1:48, when the brushed cymbals and snare enter; the cymbal, always difficult to reproduce, sounded amazingly real and shimmery, and faded to black in near-perfect decay. The drum-kit image, noticeably forward on the right, enhanced the TT-1’s U-shaped 3-D staging effect. Then at 3:11, a tremendous blast from far center rear (now, get your mind out of the gutter)—Branford with his back to the mike and giving us what for.

The spatial cues were perfectly rendered, adding to the heightened sense of realism that the Timbre delivers. Soon after, at 3:42, Branford begins to travel to the listener’s right; it’s child’s play to track his horn moving around. He's on the move again at 6:10, and gives us his back once more at 6:44, blowing a fab riff directed at the rear of the stage—unmistakable positioning. Throughout it all, the soundstage was incredibly realistic and wide, spacious, and airy, and the brushed snare and cymbals continued to give me goosebumps. Bass was ever tight, extended, and defined, creating a foundation upon which the trio melded into a cohesive group. By the way, producer Delfayo Marsalis’s liner notes indicate that this recording was “recorded and mixed without usage of individual microphone equalization or processing (maybe occasional reverb)—a knock-out. This is one CD you'll want to utilize to maximize best sound. Mine is treated with an RF-11 Harmonix Tuning Sheet, a green band of AudioPrism CD Stop Light, and is finished off with Italy’s Audio Olive Oil: A.R.T. Q-151 CD Coating Oil.

I decided to throw something dynamic and busy at the Timbre to see if its well-crafted presentation would fall apart when things got stressed. Among other material, I used Stravinsky’s Petrushka/The Soldier's Tale (Clarity Gold Zenox CCD-1003—and yes, Clarity's gold and Zenox do make a significant difference) for a bit of the old Wall-of-Sound Audio Workout. The instruments on this recording—by Eric Kujawsky and the Redwood Symphony—are superbly rendered, with a breathtaking sense of depth and image placement, delivering a palpable sense of real instruments playing in an actual acoustic space, with fully fleshed-out tonal colors on both “The Royal March” and “The Triumphal March of the Devil.” My notes read, “Clean, open, powerful, engaging, super-spatial, violins with not a hint of astrewing, timpani visceral, trumpets powerful and clean, blatty horns, harmonically rich and so deep.” And for something completely different—my collection of Art of Noise CDs cranked to the max sounded fantastic, as did my Dead Can Dance discs. No question about it, the TT-1 kept it cool under fire.

Another killer CD which we love was sent to us by my sister-in-law Martine, who lives in Paris: Michel Jonasz’s La Fabuleuse Histoire de Mister Swing (MJM 2292-42338-2). Golden String Import’s! Can get you this CD, but this German-pressed but oh-so-French double-disc isn’t too difficult to find—they had ‘em at Tower. We seem to always come back to “Le Temps Passe” and “Si Si Si Le Ciel,” on “Disque” 2.

Slapping on a set of Harmonix RF-11s once again cleaned up a touch of sssssibilance on this recording, oddly more apparent on Disque 2 than on zuh Disque 1. But what a great CD! You don’t have to be French to love it. The songs are lovely and romantic, and Michel is set far back between the speakers and a bit to the right, his voice sweeping, bloomy, masculine, and real. The stage is wide and natural, and it's easy to feel that special you’re–there quality that most audiophiles live for.

The bass is incredible, resonant, deep, and forms a unique counterpoint to Michel’s voice and the other instruments. The drum kit’s percussive qualities—both the snap of the initial transient and the resonant power of the “afterboom” —were handled beautifully by the Timbre.

A chunky, powerful bass line opens “Si Si Si Le Ciel,” followed soon afterward by the drums, and a neat melody is formed that I find myself humming all...
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the time. The Timbre rendered the syncopated rhythm perfectly.

**JUST ANOTHER UNBALANCED AUDIOPHILE**

Toward the end of the review period I received the Sonic Frontiers SFD-2 from Stereophile World Headquarters in Santa Fe. This $4650 DAC (no options available, balanced standard), recently reviewed by Robert Harley, made for a fascinating comparison with the Timbre TT-1. Cavets first.

Like many audiophiles, my system is single-ended; even though I had three preamps on hand, not one of them included balanced circuitry! I began the comparison in unbalanced mode, in spite of RH’s warning that only balanced will do ya with this unit.

The Sonic Frontiers sounded just okay single-ended. In brief, I’d say that the bass with the SFD-2 was chunkier and rounder than with the Timbre, but less well-defined and not as extended or controlled. The midrange had a certain appealing smoothness that I’ve heard before with UltraAnalog processors, and its upper midrange was more “spotlit” and forward than the Timbre’s. When the SFD-2 was hooked up, it was as if the stage director had decided to turn up the wick on the lighting in the presence region.

As a result, one could characterize the unit as being more open and airy on top than the Timbre, but it was also noticeably objectionable more grainy. This forward upper midrange was coupled with a soft, shelved-back treble which not only muted whatever sibilance was on a disc, but also killed the shimmery quality of the cymbals on *Trio Jeppy*, which came across sounding muted and rather pedestrian.

The Timbre presented a more natural and seamless top end than the Sonic Frontiers, calling no special attention to this region either by bringing it more forward or by receding it; rather, the Timbre integrated the upper midrange and the treble smoothly into the overall frequency response. It’s a little tricky: Was the Timbre’s more smooth and integrated top end, somewhat darker and more closed-in, correct (i.e., revealing of what’s on the disc or upstream electronics)? Or was the SFD-2 “right,” with its spotlight and open (but somewhat grainy) upper registers? A question of taste and system matching, perhaps. But more anon.

Another curious event further highlighted this “spotlighting” effect in the Timbre’s treble range. At first, the SFD-2 sounded somewhat more focused than the already supremely focused Timbre, images appearing rock-steady and center-stage. I noticed this immediately with the Holly Cole disc, for example. With careful listening, however, the seemingly less steady imaging of the Timbre turned out to be revealing of Cole’s movements around the microphone during the recording. Chalk up another one for the Timbre! The other salient comparison would be in the soundstage, where the Timbre consistently threw a wider, more spacious image, with better separation and differentiation between performers than the SFD-2.

On first listening to his own recording of Kenny Rankin’s *Because of You* (Chesky JD63), Chesky recording engineer Bob Katz criticized my system, going on about image wander with frequency shift. (Typical engineer—just call him Mr. Charm.) I got rather shirty and popped on a mono recording to illustrate for him image stability, and when he finally left at the end of the evening, audio-humbled and weak-kneed (if I do say so), he admitted that he had heard elements of his own recording he hadn’t been aware of before; eg, Kenny moving his head around while making the recording! Well, shiver me timbres. (Sorry.)

I realized that the Sonic Frontiers, single-ended, was doing me no service for comparison purposes, and I trust RH’s cars and wanted to thoroughly pummel and rip apart the Timbre, leaving it panting for mercy before I presented my conclusions here. So I arranged to borrow an up-spec Mark Levinson No.26S with balanced inputs from New York dealer Zoran Chanin at Audio Arts, who also handles the Timbre.

Balanced cables were once again every Jewish American Princess’s dream; AudioQuest Diamond Times Three between processors and preamp and from transport to processor in most cases, with occasional forays back to For- sell’s own coax and the AudioQuest OptiLink Pro 2.

The 26S is a killer preamp and makes a terrific balanced line-stage front-end through which to listen to CD. Supported on a trio of Shun Mook Super Passive Diamond Resonators resting on an Arcici IP, and using the supplied power cord, the 26S sounded clean and extended, with that “filigreed” top-end that RH has very appropriately ascribed to the No.30, a full, extended bass, and a midrange that belies its solid-state nature. Its imaging was also superb, very layered, and certainly wide enough for the most discriminating of punters. Its relatively lightweight build and thin case were not as massive and tank-like as the build of the 30/31 (which we once had the pleasure of having in our system for a week), but the front panel and controls exuded that quality Levinson feel. Perhaps this is why a trio of Shun Mook Mpingo Discs atop the case in conjunction with their Resonators had such a positive effect. Camac adapters were used at the main outs to power the JA 200s via the XLO Signature, and another pair of Camacs enabled a little single-ended comparison.

Listening through this setup both balanced and single-ended, and finally switching back to the single-ended CAT, we arrived at the following conclusions and caveats: First, the Timbre is only slightly improved by the use of its balanced outputs, while the SFD-2 is completely transformed. RH had it nailed right down: balanced, the Sonic Frontiers is *fabulous*. It exhibited more separation and air than the Timbre (tubes?), a chunkier, meatier, and deeper bass, and Kathleen remarked how Michel Jonasz’s voice seemed “closer and sexier” than through the balanced Timbre TT-1. On the other hand, she also remarked that Michel sounded more masculine and real with the Timbre single-ended through the CAT. “If a bit less open and involving, cherie,” I hastily added. Hey, if I don’t watch out, Kathleen will start taking the credit for these reviews. She’s got all the buzzwords down pat.

The SFD-2 also lost its “generic UltraAnalog sound” when balanced, becoming scads more musical. The Timbre sounded darker than the SFD-2 through the Levinson, perhaps better revealing the nature of the 26S, which the SFD-2 compensated for with its forward and brighter upper midrange in conjunction with its shelved-back upper treble. The SFD-2 seemed more emotionally involving in balanced mode, but you don’t sacrifice much if you use the Timbre single-ended through a toplight preamp like the CAT. Single-ended through the Levinson, both units were rather mediocre. I’d say if your system is already balanced, go for Sonic The Canadian Hedgehog, but if you’re unbalanced [insert unbalanced audiophile joke here], stick with the cheaper Timbre and get your audio jollies. In single-ended mode, the significantly less-costly Timbre gets my enthusiastic nod. In fact, it absolutely killed the single-ended SFD-2. Just feed the TT-1 through the best-quality linestage you can manage, and enjoy the music.

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2 Vol.16 No.12, p.140.

3 Hey, I'm Jewish—I can make these kinda jokes.
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CONCLUSION
The Timbre was a joy to have in our system. It allowed us to hear musical micromoments without forward, in—out—laps high, etching, or hardness. This was not some incredibly small microlevel thing that we had to strain our Golden Ears to hear; the changes in musical presentation were obvious and clearly defined, both when manipulating peripheral equipment and when listening to a variety of CDs. In spite of being able to change its effects via its many inputs, I'll generalize by saying that the Timbre TT-1 sounded layered, clear, grainless, enormously wide, tremendously and impressively deep, able to root out and light up any elements of the soundstage present on the disc, all the way back to its deepest corners. Musical timbres (you knew that was coming, right?) were excellent, tonal colors as varied, rich, and complete as live music itself. Frequency response seemed seamless, with no part of the frequency spectrum jumping out at the listener or recessing in an artificial manner. The quality of the TT-1's deep, powerful, punchy bass and certain elements of the soundstage depended more on the transport driving the unit than on any inherent limitation of the DAC. Its presentation offered no film—flam, no artificial smoothness, no artifact, just Music with a capital "M." The TT-1 was able to convey, with élan, the emotional intent of the music—I can think of no higher praise for a device than that.

Is the Timbre TT-1 perfect? Of course not. Unlike the soft—top Sonic Frontiers SFD-2, the TT-1 may emphasize CD sibilance on certain discs. On the other hand, it's got the high—frequency extension to do it, prompting that age—old adage, "Is the reviewer's head half—full or half—empty?" In other words, is it the processor or the disc? This same extension is also responsible for knockouts high—frequency reproduction of cymbals and snare. One could ask for slightly deeper, tighter bass à la the balanced Sonic Frontiers, or a frisson more openness, life, and transparency in the midrange on up, or perhaps a soupcon more dynamic slam.

But we have to leave the processors costing two and three times as much some room to justify their high prices. Anyway, these nits get picked out of the sonic fabric only in head—to—head comparisons with more expensive state—of—the—art contenders.

But I never felt shortchanged by the Sonic Wish List while listening to the TT-1 on its own. Highly recommended for the single—ended crowd.

—Jonathan Scull

MEASUREMENTS FROM RH
The Timbre had a low maximum output voltage, measuring just 1.36V from the single—ended outputs marked "Main." The single—ended outputs labeled "Buffered" produced a whopping 6.7V, a result of the additional buffer amplifier driving this output. The balanced outputs had a maximum output voltage of 2.7V. Source impedance was a low 52 ohms from the "Main" outputs, 500 ohms from the "Buffered" outputs, and 104 ohms from the balanced outputs. The much higher output impedance from the buffered outputs is incongruous; Timbre suggests the "Buffered" output should be used to drive a power amplifier directly through a passive level control. Although 500 ohms is a moderate figure, a lower output impedance on the "Buffered" outputs would seem more appropriate. DC level at the "Main" outputs was a low 7mV from both the left and right jacks, increasing to 36mV from the "Buffered" outputs. DC at the balanced jacks was between 9mV and 10mV. The Timbre doesn't invert absolute polarity from either the main or buffered outputs, and the XLR output jacks are wired with pin 2 "hot."

Fig.1 is the Timbre's frequency response and de—emphasis error. The frequency response is unusually shaped, with the midrange and treble shelved down very slightly in relation to the bass. The difference is only 0.2dB, but this will be audible over such a wide bandwidth. The sonic result of this measured response could be a slight darkening of the sound. This is exactly what JS and I heard in the auditioning.

The most salient feature of fig.1 is, however, the huge de—emphasis error seen in the bottom traces. Although you can't tell how severe the de—emphasis error is with our usual 0.5dB/division scale, I included it on the frequency—response plot for continuity with our other graphical presentations. Fig.2 is more illustrative: The de—emphasis error is more than +7dB at 10kHz. I initially thought that the de—emphasis equalization wasn't being switched in, but the Timbre's de—emphasis error doesn't quite match the pre—emphasis curve. This suggests that the Timbre's de—emphasis circuit is engaging, but that therolloff is wrong, perhaps due to a wrong—value capacitor or resistor. During the auditioning, I suspected the Timbre's de—emphasis circuit wasn't engaging; pre—emphasized discs, such as Three—Way Mirror (Reference RR—244CD), sounded extremely bright.

The Timbre's crosstalk performance is shown in fig.3. The channel separation was better than 85dB across the audio band—competent but not outstanding performance.

A spectral analysis of the Timbre's output when decoding a -90dB, 1kHz dithered sinewave (fig.4) revealed some power—supply noise in the audio circuit. This is seen as the peaks at 120Hz and 240Hz. Although the peak between 300Hz and 400Hz appears to be power-supply related (360Hz), later measurements show that it's actually a peak of energy in the noise floor. The overall noise level of fig.4 is higher than in many processors I've measured, particularly below 500Hz.

A wider—band spectral analysis (20kHz) of the Timbre's output when driven by

Fig.1 Timbre TT-1, frequency response (top); de—emphasis error (bottom) (right channel dashed, 0.5dB/vertical div.).

Fig.2 Timbre TT-1, de—emphasis error (right channel dashed, 1dB/vertical div.).

Fig.3 Timbre TT-1, crosstalk (right—left dashed, 10dB/vertical div.).

Fig.4 Timbre TT-1, spectrum of dithered 1kHz tone at —90.31dBFS, with noise and spuriae (3⁄octave analysis, right channel dashed).
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a code of all zeros produced the lower pair of traces in fig.5. The noise level is low, although the power-supply noise can still be seen. Because the CS4328 DAC is a noise-shaping type, I expected to see a rise in noise above the audio band. When I didn't, I suspected that the DAC's output is turned off when the input signal was all zeros.

This was indeed the case, shown by the top pair of traces—a spectral analysis of the Timbre's output when decoding a -90dB, 1kHz dithered sinewave. The noise floor rose significantly, and the effects of the CS4328's noise shaping can be seen as the rapid rise in noise above the audio band. Note that the top traces look less smooth than those in fig.4 (the same measurement), because the same number of data points were spread over a wider bandwidth.

The Timbre's linearity changed when the front-panel polarity-inversion switch was pressed. With no polarity inversion, the Timbre appeared to have a slight negative error between -80dB and -100dB. With the polarity inversion engaged, there was a positive error. I attribute this to a higher noise level with the polarity switch engaged, which dominated the linearity measurement. Fig.6 is the Timbre's linearity, with and without the polarity switch engaged, plotted on the same graph.

The Timbre's reproduction of an undithered, 1kHz sinewave at -90dB is shown in fig.7. Note the rather high level of audio-band noise overlaying the stepped waveform. The Timbre's noise-modulation performance (fig.8) was less than impressive. The traces, which show the Timbre's noise floor with five different input levels from -60dB to -99dB, diverge significantly below 2kHz, with wide separation below 1kHz. This means that the Timbre's noise floor shifts in level and changes in spectral distribution as a function of input signal level. The shifts are as great as 6dB, far higher than the 2dB of noise-modulation shifts reported in the literature to be audible. Notice also the large peak between 300Hz and 400Hz, which I mentioned earlier as being power-supply noise. The fact that the peak in this band changes in amplitude with signal level, and the relatively wide-band nature of the noise, suggest that the noise between 300Hz and 400Hz is an artifact of the DAC.

Fig.9 is the Timbre's intermodulation spectrum when driven by a full-scale mix of 1kHz and 20kHz. The IM products, seen as spikes at 1kHz and multiples of 1kHz, are moderately high in level and numerous. More than eight intermodulation products rise higher than -100dB.

Because the Timbre's chassis is factory-sealed and cannot be opened, I couldn't measure its jitter performance.

Finally, the review sample had a few glitches; eg, pressing the input selector button sometimes caused it to jump from input 1 to input 3. This can be caused by contact bounce, in which one press of the button causes the switch contacts to engage more than once, making the switch think it's been pressed twice.

When switching between sampling frequencies to make sure the Timbre would lock to 32kHz and 48kHz (it did), the Timbre would lose lock and not regain it unless the input selector was taken off the active input, then moved back to the active input. In addition, the Timbre produced a high-frequency whine when there was no music playing—a classic example of an idling tone. Though it could be heard through the loudspeakers, it wasn't very loud, and it could not be heard at all when music was present.

Overall, the Timbre's technical performance was less than impressive. The large dc-emphasis error, presence of low-frequency noise, high levels and number of intermodulation products, and the functional glitches didn't inspire confidence in the design.

—Robert Harley

RH TAKES A LISTEN

Accordingly, I auditioned the Timbre through the same playback system described in my review of the Exposure XVII preamp described elsewhere in this issue. I listened to the Timbre on its own and in direct comparisons with the Sonic Frontiers SFD-2, in both balanced and single-ended modes. The following observations were made by listening to both processors' balanced outputs.

From the outset, I was impressed by the Timbre. Although the TT-I sounded very different from the SFD-2, it had some appealing qualities. The most salient of the Timbre's strengths was its absolutely stunning image focus. Instrumental and vocal images were pinpoint spots within the soundstage, with razor-sharp outlines. The Timbre's soundstage was the antithesis of diffuse, vague, bloated, or confused. Consequently, I could easily hear exactly where each instrument was in the soundstage.

Moreover, the Timbre superbly resolved individual instruments and voices from the whole. Background vocals were a collection of separate voices, not an un

---

4 High-oversampling low-bit D/A convertors of necessity wrap a digital feedback loop around the DAC element. The large error is summed with the input data to produce overall higher resolution. When fed certain data patterns—most often representing silence, but not always—such DACs can produce an "idling tone," a false periodicity in the ultimate analog output due to marginal stability in the data loop.
differentiated continuum. By comparison, the SFD-2 was more diffuse and had a less analytical spatial presentation.

In its ability to resolve depth, however, the SFD-2 was clearly a notch or two better. The Timbre's soundstage was less holographic, and reverberation didn't decay as deeply into the hall as it did with the SFD-2. In addition, the SFD-2 revealed more air and bloom around instrumental outlines. This was true despite the Timbre's more distant perspective. Where the SFD-2 was up-front and incisive, the Timbre was more ethereal and gentle. Similarly, the Timbre's mids sounded more muted and dark in contrast to the SFD-2's greater "sheen" and sparkle.

The lower treble had a trace of grain, but it wasn't musically objectionable; the treble's laid-back character mitigated the slight lack of tidiness.

On a tonal basis, the Timbre was a little closed-in through the top octave and lacked ultimate bass extension. The bottom end tended to be woolly rather than taut and precise. Kickdrum didn't have the center-of-the-earth solidity exemplified by the SFD-2, and bass guitar lacked clear pitch articulation by comparison. Further, the SFD-2 had a much wider dynamic expression, particularly in the low end. The Timbre's bass was, however, excellent for a processor using the Crystal CS4328 DAC, a device not noted for its tight or extended bass reproduction.

A consequence of the Timbre's softish bass (compared to the extraordinary SFD-2's) was a lessening of the music's rhythmic expression. I felt a slowing of the rhythm and a less upbeat quality by comparison. The music had less pace and rhythmic coherence through the Timbre. Full-scale orchestral music lacked the weight, authority, and power heard from the SFD-2.

Overall, I thought the Timbre sounded excellent—it's a worthy contender in the price range. Further, the Timbre is beautifully built and visually appealing. The Timbre is not, however, in the same league musically as the Sonic Frontiers SFD-2 in balanced mode.

—Robert Harley
**FOLLOW-UP**

**ProAc response 3 signature loudspeaker**

Although the Response 3 Signature has not replaced ProAc's well-respected Response 3 (still available for $6500/pair, and reviewed in Vol.14 No.9, p.126), it is an evolved refinement of the basic design, and is intended to stand on its own. But is the 3 Signature worth $3500/pair more than the 3?

The Response 3 has a rich, full mid/upper bass; a lush, musical midrange with wonderful harmonic structures; a clean, quick presentation; a smooth, extended treble that lacks any textural coloration; and outstanding soundstaging which develops around and behind the speaker cabinets. It has wonderful resolution of width and depth, with pinpoint, three-dimensional images within the stage. Such superlative performance can be achieved when the speakers are set up well away from both the rear and side walls, with adequate distance between the speakers as well as from the speakers to the listening position. The proper amount of mass-loading, use of the supplied spiked feet, proper toe-in (ie, drivers aimed right at the listening position), and appropriate amplification are required to achieve this musically satisfying level of performance. Still, the 3 does suffer from slight but problematic resonances and a lack of true deep-bass extension.

The Signature's cabinet incorporates two significant improvements: additional internal damping to address criticisms of the speaker's resonance problems, and new veneers (burr oak, Madagascar ebony, birdseye maple, and silk oak/face-wood) specifically selected because their tight grain structures enhance cabinet rigidity. The new veneers look better, cost more, and aren't derived from endangered trees. The review pair was finished in silk oak and had a gorgeous, rich, golden hue with almost iridescent grain. More important, the new cabinet sounded deader than the old when I rapped on it in various places.

The driver complement of the Signature appears to be identical to that of the 3: dual 6½" polypropylene midranges from Scan-Speak surrounding a ferro-fluid-cooled, soft-dome, 1" tweeter. The tweeters, however, differ in their doping and tolerance selection/matching—the Signature's tweeter purportedly exhibits greater extension. Other major differences include the increased use of rhodium plating in the Signature's spikes, bolts, terminals, and crossover traces. There are also changes in the internal wiring and in the topology and parts (eg, silver film capacitors) of the crossover.

Knowing the best location for the 3s in my room, I installed the Signature's spiked feet, loaded the sand, and placed them in the same locations as their forebears—I didn't expect to have to do a lot of experimenting with room placement. Like the 3s, the Signatures worked best when placed well away from the rear and side walls, and toe-in directly at the listening position. I was surprised by the amount of sand recommended for each speaker—27 lbs. I'd found it necessary to use 32 lbs in my 3s to tame the cabinet resonances—any less, and the midbass boom was excessive. The Signatures, with only 27 lbs of sand, were significantly less resonant than the 3s. This confirmed the results of my rap test and verified the efficacy of the improved internal damping and the different veneers.

Recordings with lots of midbass information, such as Bela Fleck's _Flight of the Cosmic Hippo_ (Warner Bros. 26562), Suzanne Vega's _99 9°F_ (A&M CDB 0005), or Sara K's _Closer Than They Appear_ (Chesky JD67), amply demonstrated the Signature's improved bass performance. While there was no obvious change in the extension or quantity of the bass, its real-sounding, natural character was considerably enhanced—not only was it cleaner and quicker, it also sounded more open. These changes added to the 3's already dynamic, richly harmonic character. The reduction in resonance was also most apparent in the midbass region. These changes eliminated distractions to the music by reducing the overall noise floor; the sound was more transparent and more revealing of inner detail.

Subtle bits of musical information were more noticeable with the Signatures than they'd been with the 3s; eg, the descending bells on Lucia Hwong's _Secret Luminosence_ (Private Music 2021), or the purity of the rubbed water glasses on Rickie Lee Jones's cover of Jefferson Airplane's "Comin' Back To Me" (Pop Pop, Geffen 24426). Another example was the wonderful direct-to-CD _Dick Hyman Plays Duke Ellington_ (Reference RR-50DCD)—many of the non-musical sounds convinced me that Hyman really was there playing the computer-activated Bösendorfer. With many of the LPs and CDs I played, I heard either more information or improved clarity of subtle sounds.

My other major criticism of the 3s concerned their lack of extension into the deepest bass. Neither the 3 nor the Signature was able to recreate the realistic wallops of the timpani on _Symphonie Fantastique_ (Chesky CR1), the Telarcian whoops from _Alborada del gracioso_ or "Fandango asturiano" on _Capricio español_ (CD–80208), or the power of the mass of acoustic basses on Ray Brown and friends'. _Super Bass_ (Capri CPR 74018).

The Signatures reproduced everything more cleanly and with greater rhythmic precision, but there was nary an ounce of deeper bass.

Although not as substantial an improvement, the Signature's midbass did sound slightly more lively and dynamic. I didn't hear this effect on every LP or CD, but it was audible on recordings containing sweeping dynamic transitions, such as PJ Harvey's _Red_ _of_ _Me_ (Island 314 514 696).

The ProAc Response 3 Signature is indeed an improvement over the 3 in its lower cabinet resonance, better midbass articulation, improved resolution of inner detail, and slightly enhanced dynamic capability. Though the Signature costs $3500/pair more than the 3, the latter's deep-bass limitations remain unaddressed. The Signature is a sonic winner, but fares poorly in a price/performance comparison with the 3.

—Jack English

**Snell 500 thx speaker system**

Along with the Fosgate THX loudspeakers that Gordon reviews elsewhere in this issue, I finally received for measurement the Snell 500 THX speaker system that JGH reviewed in December 1992 and compares with the Fosgate system in this issue. I was intrigued by the idea that, despite the tight specifications included in the confidential THX agreement that licensees sign with Lucasfilm, THX-approved loudspeakers sound alike and measure differently from one another. I have, therefore, included this Follow-Up to the Snell measurements, for comparison with those of the Fosgate speakers.

Looking first at the MC LCR-500 loudspeaker, intended to be used, as the name suggests, as the Center, Left, and Right speakers in a THX Home Theater setup, its B-weighted sensitivity was 89.5dB/Wm. Though this is a little lower than the Fosgate MC-220's, this will be immaterial in normal use. The Snell's...
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Stereophile, April 1994
impedance magnitude and phase, measured through its Normal inputs, are shown in fig.1. Although it drops to 4.2 ohms in the upper bass, the impedance is high throughout the rest of the audio band, and the phase angle is low, meaning that the LCR-500 will be easy to drive. Through the Compensated inputs (fig.2), the speaker's impedance in the lower midrange and below is significantly increased in value.

The effect on the speaker's sound is to reduce the bass level, as can be seen in fig.3. Through the Normal inputs, the LCR-500's bass is bumped up a little before rolling out at 12dB/octave to reach a -6dB point of 52Hz. Through the Compensated inputs, the lows are shelved down, the -6dB point is now 128Hz, and the ultimate rollout is now 24dB/octave.

Higher in frequency, the speaker is relatively flat in response, though a slight lack of energy can be seen in the presence region, with then a little excess in the sibilance region. The effect of the tweeter-level control, normalized to the 12 o'clock position, is shown in fig.4. The control gives a maximum boost of 5dB at 5kHz and a cut of 7.5dB at the same frequency. The slight depression in fig.3 could be compensated for by turning the HF control a little beyond the 12 o'clock position, but this would also raise the top octave a little, which would add too much sibilance to the sound.

Fig.5 shows the manner in which the speaker's balance changes to its side. (Only the differences are shown, which is why the reference response appears as a straight line.) The top two octaves roll off in an even and controlled manner with increasing off-axis angle. The presence-region suckout noted in the on-axis response fills in off-axis; this is the ridge in the graph at the cursor position. Therefore, it's likely that the perceived in-room balance of the LCR-500 will be flat through the low treble.

Vertically (fig.6), the use of twin tweeters gives the speaker limited dispersion in the treble. Sitting even 5° above or below the tweeter rolls off the top two octaves by up to 6dB, while at more extreme angles, severe comb filtering can be seen. These two factors may contribute to the general feeling that THX-specification loudspeakers don't do as well with music as they do with soundtracks. Without the video image dominating the listener's experience, his or her perception of sound quality will be more finicky. I conjecture that the dulled highs and somewhat colored room reverberant field that result from the kind of off-axis behavior documented in fig.6 will be more noticeable with music program.

The MC LCR-500's impulse and step responses are shown in figs.7 and 8—quite conventional, non-time-coherent behavior—while the speaker's cumulative spectral-decay, or waterfall, plot (fig.9) indicates a clean initial decay, but with some delayed energy noticeable at the cursor position (4.4kHz).
Guy Lemcoe listens* to the

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*8 QUOTES FROM GUY LEMCOE, STEREOPHILE NOVEMBER 1992, VOL. 15 NO. II

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The impedance of Snell's MC SUR-500 surround speaker is shown in fig.10. Dropping to 3.3 ohms at 10kHz, it's higher in magnitude through the rest of the audio band. The highish sensitivity (89.5dB/W/m, B-weighted), however, and the fact that normal signals (other than Death Star explosions) have little energy in this frequency region, will give the partnering amplifier a break.

The SUR-500's on-axis response (fig.11) is commendably flat. As no one actually sits on the axis of a THX sur-
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Romanticized in the minds of persons with highly selective memories, the '60s opened with calmness and ended in turmoil. Jazz reflected the changes; it also suffered from them. Miles Davis began the decade by recording "Someday My Prince Will Come," a quietly lyrical song (from Walt Disney's Snow White) released on a Columbia LP of the same name (CK 40947); eight years later, in 1969, he recorded Bitches Brew, the watershed fusion recording which, if nothing else, helped ensure that electronic instruments were in jazz to stay. The mood had been transformed.

As the '60s opened, the jazz world was still in a buzz about the recent performances by saxophonist Ornette Coleman, who then seemed devastatingly avant-garde, and the "modal," or scalar, tunes of Miles Davis, as illustrated in compositions such as "So What." The excitement and challenge that Coleman, free jazz, Davis, and modal music seemed to represent were good for the music. To many young musicians, and to some veterans as well, jazz once again became not merely an accomplishment, but a quest. In the '60s, that quest could be purely musical, or partly political and religious.

Older jazz musicians still blame jazz's precipitous decline on the rise of rock, and on the splintering of jazz fans into the avant-garde and fusion camps. The decade began promisingly for jazz, but it saw the premature deaths of the likes of John Coltrane and Eric Dolphy, and, especially in the late '60s, the closing of many of the clubs where jazz had been played. The memory of this precipitous decline still astonishes older jazz musicians—they blame it on the rise of rock, of the Beatles in particular, and on the splintering of the remaining jazz fans into camps following either the avant-garde or "jazz-rock" (fusion). But in 1960, before all this, the scene was invigorated. Alto saxophonist Jackie McLean, who, at the age of 17, had played with Bud Powell, and who at 23 had recorded with Miles Davis, began the decade by recording several more or less conventional bebop LPs, including the exquisite Bluesnik (Blue Note 4089) in 1961. A year later he recorded Let Freedom Ring (Blue Note 84106). In the notes he describes the liberating effect of the new
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The search brought on a new generation of such young players as trumpeters Freddie Hubbard, Lee Morgan, Blue Mitchell, and Woody Shaw, and saxophonists Booker Ervin, Wayne Shorter, Archie Shepp, Pharoah Sanders, and Joe Henderson. The democratization of the rhythm section and the relative freedom from simple timekeeping revivified rhythm sections. This is heard in a mild-mannered way in the Bill Evans trio, more dramatically in the ensembles of Coleman and Coltrane. The '60s bore a new generation of rhythm-section stars: vibist Bobby Hutcherson; pianists Herbie Hancock, Andrew Hill, Chick Corea, and Keith Jarrett; bassists Ron Carter and Richard Davis; and drummers Billy Higgins, Elvin Jones, Joe Chambers, and Tony Williams. Williams was discovered in his teens by Jackie McLean; his snapping drum figures would light a fire under Miles Davis's mid-'60s quintet.

These new developments, and perhaps some coincidence, produced a burst of dazzling new recordings by newcomers and some veterans in the first half of the decade. It seemed that at least some jazz was on its way to becoming popular again, as musicians extended their range or consolidated their accomplishments.

Oscar Peterson opened the decade with his The Trio (Verve 823 008-2), which includes his "Sometimes I'm Happy," a charming tribute to Lester Young. The Modern Jazz Quartet rethought some of their classic pieces, such
The Product of the Year

In terms of the sheer impact its design and manufacture will have on our industry, there was one 1993 new product introduction which stands alone amongst the nominees: Chameleon, the world's first "tunable" speaker, designed by Michael Green for RoomTune.

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Michael Green Designs has already announced plans for a second, less expensive turntable speaker, as well as tunable amps, preamps, and digital front ends. Cost-effective resonance tuning is the missing element that finally closes the gap between high end analogue and digital.

Products of the Year

- **Overall winner: RoomTune Chameleon Tunable Speakers**
- **Digital Product of the Year: EAD T1000 CD Transport**
- **Analog Product of the Year: Sambo Blue Point Special/American Hybrid Technologies Phono Stage**
- **Solid State Design of the Year: Reference Line Preeminence One**
- **Vacuum Tube Design of the Year: Sonic Frontiers SFS-40 Amplifier**
- **Cable of the Year: Tara Labs Rectangular Solid Core**
- **Equipment Rock of the Year: SolidSteel (Italy)**
- **Room Acoustic Product of the Year: Camelot FFA-78 Room Tuning Device**
- **TWEAK Product of the Year: Envelope TubeSox Tube Dampers**

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as “Django,” in a definitive April 1960 concert issued as European Concert (Atlantic 2-0CS2-909). Tenor saxophonist Dexter Gordon spent the decade teaming himself with the new generation; some of the most invigorating playing of his career was produced on albums such as Go (Blue Note B21Y-46537).

Hard-boppers, too, continued to work. After being replaced in Miles Davis’s band by John Coltrane, tenorman Hank Mobley made the spunkiest album of his career: Workout (Blue Note B21Y-84080). It’s still a joy, as are Horace Silver’s tribute to his father’s Cape Verde background, Song for My Father (Blue Note B21Y-84185), and Lee Morgan’s funky The Sidewinder (Blue Note B21Y-84157). These recordings were all made for Blue Note, the decade’s most active jazz label, which also recorded tenor saxophonist Joe Henderson.1

ON OLIVER NELSON’S “HOE-DOWN,” DOLPHY CHATTERS LIKE AN IRRITATED HEN.

Organist Jimmy Smith teamed up with another of the ‘60s most popular jazz players, guitarist Wes Montgomery, to make Dynamic Duo (Verve 821 577-2)—a monument of good-time jazz. In 1961, Cannonball Adderley made Know What I Mean? (Fantasy OJC 306-2) with pianist Bill Evans. That same year, Oliver Nelson created his masterpiece, Blues and the Abstract Truth (MCA/Impulse MCAD-5659), with Evans, Eric Dolphy, trumpeter Freddie Hubbard, and drummer Roy Haynes. The album is beautifully recorded and contains the seminal recording of a jazz classic—Nelson’s “Stolen Moments,” with its thoughtful solo by Hubbard—and the humorous “Hoe-Down,” on which Dolphy chatters like an irritated hen.

Some of the successes of this period couldn’t have been predicted. In 1962, tenor saxophonist Stan Getz—prodded by his guitarist, Charlie Byrd, who had traveled to South America and heard the new rhythms and cool textures of Brazilian popular music—recorded “Desafinado” and “One Note Samba” for an album called Jazz Samba. By September, the album hit the Billboard pop charts and stayed there for 70 weeks, becoming, for at least part of that time, America’s top pop album. The rhythm was called bossa nova, and in Getz’s hands the music had a breezy lyricism as gentle as a spring shower. Simultaneously sweet and sophisticated, it was a soothing antidote to an indecorous time. (Jazz Samba and its sequels can all be found on Stan Getz’s The Girl from Ipanema: The Bossa Nova Years, Verve 823 611-2.)

Bossa nova spawned an industry. For several years, everyone made bossa nova albums, including veteran saxophonist Coleman Hawkins (Desafinado, MCA/Impulse MCAD-33118). With characteristic wit, alto saxophonist Paul Desmond, star of the Dave Brubeck Quartet, called his 1963 bittersweet bossa nova album Bossa Antigua (RCA Victor 2569). The music, and the Brazilian influence on jazz, has proved more lasting than anyone would have guessed.

Curiously enough, given the few opportunities for big bands to work, the ‘60s was a good decade for jazz compositions and for recorded big-band music. In 1960, Gerry Mulligan put together a stellar big band that, with its light swing, suggested a new path for big-band music. Some of his recordings from 1960, including “Blueport” and “Lady Chatterley’s Mother,” are on Gerry Mulligan’s Concert Jazz Band (Verve 838 933-2), which also features the wonderfully adept and hard-driving saxophonist Zoot Sims on “Apple Core.”

Mulligan was frustrated—and probably still is—that he couldn’t keep a big band together. Stan Getz didn’t try, but in 1961 did record one challenging, almost entirely successful orchestral album, Eddie Sauter’s Focus (Verve 821 982-2). It’s ecletic, with the tight, swinging opening number, “I’m Late—I’m Late” followed by the alternately lush and mysterious “Her.” In each movement, Getz improvises his own lyrical commentary over the figures of Sauter’s string orchestra, weaving in and out like a golden thread.

After collaborating with Miles Davis on a series of projects, composer Gil Evans made his own Out of the Cool in 1960; a year later Quincy Jones made Quinsessence, his most celebrated big band album. With its unique feel for color and mood, Gil Evans created dense textures on the ballad “Where Flamingos Fly,” supporting Jimmy Knepper’s solo trombone with everything from a tambourine thump to a flute duet. The results are haunting, as is the rest of Out of the Cool and, from 1964, all of The Individualism of Gil Evans (Verve 833 804-2). Quincy Jones has a more blithe spirit: Although his writing on Quinsessence is typically brash and brassy—eg, “Hard Sock Dance,” with its solo by Patti Brown—the title tune is a fetching ballad featuring alto saxophonist Phil Woods.

Charles Mingus conceived his Black Saint and Sinner Lady (MCA/Impulse MCAD-5649) as a ballet that would

1 Joe Henderson: The Blue Note Years (Blue Note CD 89287 2) is an excellent introduction to Blue Note recordings from the period, as Henderson recorded with Blue Mitchell, Kenny Dorham, Horace Silver, and others.

Stereophile, April 1994

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MELOS
summarize everything from "the day I was born to the day I heard Bird and Diz." With its shifting textures, sudden changes in tempo, and occasional multiple improvisations, this suite for big band frequently sounds as if written for a small combo. It captures the individual players' personalities, and, though sometimes loosely held together, it all sounds like Mingus. Black Saint shows that, had circumstances—including his own personality—been different, Mingus might have been Duke Ellington's successor.

For the time being, Ellington didn't need a replacement. One of the miracles of the '60s was Ellington's creation of a series of new masterpieces—often suites of music that reflected (albeit superficially) his travels. The best may be Far East Suite, from 1966 (Bluebird 7640-RB). In 1967, he responded to the death of his longtime collaborator, Billy Strayhorn, with And His Mother Called Him Bill (Bluebird 6287-2-RB), which has an exquisite version of "Blood Count," and "Lotus Blossom," Ellington's solo tribute to "Strays" (as he called him). This seems to be one of Ellington's most personal recordings.

By the mid-'60s, many of the young Turks were making their own records. Recordings by Herbie Hancock, Bobby Hutcherson, or trombonist Grachan Moncur featured new, often modal compositions played by active young rhythm sections who were comfortable with occasional free sections. On recordings such as Moncur's Evolution (Blue Note B21Y-84153) or Hutcherson's Happenings (Blue Note CDP 7 46530 2), we seem to hear the act of discovery and the joy of playing adventurous music with one's peers.

I F I HAVE TO GET COMPLICATED, I DO— BUT ONLY THEN.
—WAYNE SHORTER

The younger musicians' compositions typically were simpler than the average bebop number: plaid melodic lines and few, though sometimes surprising, chord changes. One of the period's great composers, Wayne Shorter, described his evolution in the notes to Night Dreamer (Blue Note B21Y-84173): "I used to be a true Virgo in that my writing had a lot of detail. Now I've been able to pare things down. I used to use a lot of chord changes, for instance. But now I can separate the wheat from the chaff. I don't get any more complicated than I have to; or to put it another way, if I have to get complicated, I do—but only then." This approach worked beautifully on the twelve-bar tune "Footprints," from Adam's Apple (Blue Note B11Y-46403), which results in relaxed, expressive solos over an energized rhythm section.

Shorter also brought this approach to the Miles Davis Quintet in the mid-'60s, leading Miles toward the electronic era. Herbie Hancock, the pianist in that quintet, wrote a jazz classic in the title tune of Maiden Voyage (Blue Note CDP 46339 2), which features the Miles Davis band with Freddie Hubbard subbing for Miles. "Maiden Voyage," a simple, rhythmically interesting piece that provokes one of Hubbard's greatest solos, demonstrates Hancock's growth as a pianist and his movement away from the hard bop of such earlier tunes as "Watermelon Man."

Jazz vocalists were also exploring new paths. Some veterans made especially fine albums in the '60s—eg, Mel Tormé's Swings Shubert Alley (Verve 821 581-2), Anita O'Day's Travellin' Light, and that wonderful collaboration, Betty Carter & Ray Charles (DCC DZS 039). Even more intriguing were albums by then-newcomers Jeanne Lee and Sheila Jordan. Lee uses her small, high voice dramatically on The Legendary Duets (RCA 6461-2-RB). This 1961 recording, made with Ran Blake's tense, percussive piano, is a striking partnership, as demonstrated on their eerily effective ballad "Laura," and the cheerful "Season in the Sun." Sheila Jordan's Portrait of Sheila (Blue Note B21Y-89002) has comparable buoyancy, intelligence, and commitment. Jordan, accompanied by guitar, bass, and drums, bends the melodies and redistributes the rhythms in a uniquely personal style that I never tire of.

The '60s saw the emergence—and the tragic, early demise—of saxophonists Eric Dolphy and John Coltrane. Dolphy—alto saxophonist, bass clarinetist, and flutist—worked before his death in 1964 with Mingus and Coltrane, and led his own groups as well. He played each instrument with a unique vocal style: pratting, chortling, lecturing on bass clarinet, playing more conventionally on flute, and on alto sounding like a more angular Charlie Parker.

On such numbers as "Status Seeking," from Here & There (Fantasy/OJCCD-673-2), Dolphy enters in such a rush that it feels as if he's dashing to catch a train. Mingus insisted that Dolphy could talk to him in music, and offers Dolphy's solo on "What Love" as an example (Charles Mingus Presents Charles Mingus, Candid CCD-7935). On Here & There, Dolphy plays a solo bass-clarinet version of "God Bless the Child"—a still-influential performance that alternates snatches of the original melody with swirling figures. Dolphy, who more or less invented the solo sax performance, created an alternative to the tension and intensity of other avant-garde playing.

In 1962 Dolphy was performing with John Coltrane—the colossus of the
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DeJohnette, pianist of some popular rhythms, that Saxophonist Impulse to features son,ute trane furrowed the aning helped (Atlantic 1311-2)—the title tune features an almost obsessively rapid sequence of chords.

Coltrane had other interests, as demonstrated on My Favorite Things (Atlantic 1361-2)—a recording that helped popularize the soprano sax for the first time since the '20s. The modal playing on that album would be more typical of Coltrane's work in the early '60s. Live at the Village Vanguard (MCA/Impulse 39136) features Dolphy with Coltrane. The contrast between the horn players is instructive: Coltrane, who plays swirling notes in a hard but expressive tone, nonetheless sounds direct and probing. Dolphy seems to dance around the music's edges.

Coltrane—usually pictured with a furrowed brow and probing eyes—was an intensely serious and religious man; his most popular album, A Love Supreme (MCA/Impulse: MCAD-5660), is a tribute to the Creator. By mid-decade, Coltrane was investigating free jazz; he added a second percussionist to his classic quartet of McCoy Tyner, Jimmy Garrison, and Elvin Jones. Their music, which features extended, sometimes shrieking solos over the drummers' clattering rhythms, is still controversial. It seemed that Coltrane was pulling away from this kind of performance before he passed away in the summer of 1967—one of his last recordings, Interstellar Space (GRP/Impulse GRD-110), is a dramatically effective collection of duets with drummer Rashied Ali in which Coltrane seems to have even greater control over his horn than ever.

Coltrane's death left a void. While some players worked on their own versions of his meditative suites—the best of these recordings may be Pharoah Sanders' recently reissued Tauhid (GRP GRD-129)—many others merely tried to emulate 'Trane as closely as they could. Saxophonist Charles Lloyd became popular in the mid-'60s with a melodic style that seemed to draw on Coltrane's meditative side. With their psychedelic covers, such Lloyd recordings as Journey Within (Atlantic 1493) and Soundtrack (Atlantic 1519) are best remembered today for having introduced two stars of the '70s and '80s—pianist Keith Jarrett and drummer Jack DeJohnette.

Bitches Brew fell on the jazz world like a bombshell.

More interesting was the reaction of a group of Chicago-based musicians to Coltrane. Several of these, including saxophonist Anthony Braxton and violinist Leroy Jenkins, heard a famous performance by the expanded Coltrane group in Chicago, probably around 1966. As Braxton told me, when he heard this music he knew he could never match its intensity, so he had to find something else. Others, such as saxophonists Roscoe Mitchell, Joseph Jarman, and pianist Richard Abrams, came to the same conclusion. They were part of a seminal cooperative organization called the A ACM (Association for the Advancement of Creative Musicians). In a time when even mainstream jazz players were having trouble finding work, these musicians banded together in an effort to develop their music and bring it to the public themselves.

They were remarkably successful. Rather than mimicking Coltrane's intensity, Roscoe Mitchell investigated different sounds and textures in Sound (Delmark 408). Coltrane had lived with his horn in his mouth; these players gave a subtly different message by performing on dozens of instruments, as heard on Anthony Braxton's 3 Compositions of New Jazz (Delmark DS-415). Braxton's heroes at the time were Coltrane and Schoenberg: With their references to contemporary classical music, Braxton's compositions and playing drew on Dolphy as well. Inspired perhaps by Sun Ra, the Chicago musicians included dance and poetry in many of their performances. Some of this poetry, with its references to Dada, can be heard on Joseph Jarman's Song For (Delmark DD-410).

The AACM was one response to the jazz world's changing fortunes. Miles Davis found another. Throughout much of the '60s, he fronted a crackerjack bebop band, featured with saxophonist George Coleman on his 1964 The Complete Concert (Columbia/Legacy C2K 48821). After Wayne Shorter replaced Coleman, things began to change, spurred in part by such Shorter compositions as the slow-moving, sometimes repetitive "Nefertiti" (Nefertiti, Columbia CK 46113).

But Davis was clearly fascinated by contemporary soul and rock—by their style, popularity, and perhaps their unrealized potential. He may have envied the popular success of the gospel-oriented Cannonball Adderley hit, "Mercy, Mercy, Mercy," written by Joe Zawinul and featuring an electric piano solo by the composer. Davis started to play more of Shorter's compositions, and began to include electric instruments—eg, Hancock's electric piano and George Benson's guitar on Davis's 1968 Miles in the Sky (Columbia CK 48954).

Though there were signs that it was coming, Davis's Bitches Brew (Columbia G2K 40577), recorded in 1970, fell on the jazz world like a bombshell. With its extended improvisations over a rocking beat, it sounded adventurous enough, but it also approached a new generation of listeners in terms—and with the instruments and simple compositions—they understood? Almost immediately, Bitches Brew became Miles Davis's best-selling album. Controversial, often denounced, and widely imitated, it set the tone for the jazz of the '70s.

2 Although I wouldn't disagree with Michael Ullman about the importance of Bitches Brew, I find Miles's 1969 album In A Silent Way (Columbia CK 40580) was equally influential in that its setting of melodies and improvisation over simple, repeated riffs set the stage for the funk explosion of the '70s and, if you think about it, even the rap explosion of the '90s.

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Tori Amos walks a thin line. On one side lie power and passion; on the other, pretension and preciousness. Like a gymnast on the balance beam, it’s less surprising that she falls than that she can stay upright at all while performing such intricate and expressive exercises as she does on *Under the Pink*.

On Amos’s debut, *Little Earthquakes*, she made it seem like a piece of cake. It would be understandable if, on a sophomore effort, she strove to expand her fan base by playing it safer, increasing accessibility, throwing in some hooks and hummable melodies for the ho-ho polloi. Instead, and to her credit, she pushes her limits even further, shaving down the balance beam to a mere sliver.

*Gone is Little Earthquakes*’ brilliant yet distancing cleverness. Lines like, “Got enough guilt to start my own religion” (a personal favorite) are replaced by “God, sometimes you just don’t come through” (“God”)—not as wry, but more direct. Not that *Under the Pink* could ever be accused of verbal directness—its lyrics present more of a dreamscape than a landscape. Words repeat, sentences begin and end in the middle, circling in frustration.

While some of Amos’s frustration is metaphysical, most is centered around relationships—with men, but more often with women. In “Bells for Her” she sees a friend slipping into an unhealthy situation with a man, one that will destroy the women’s friendship. She is frustrated because she “can’t stop what’s coming.” And the “Cornflake Girl” disappoints Amos because she has “gone to the other side.”

Though Amos has taken no pains to make *Pink* an easy listen, it is in some ways more accessible than *Earthquakes*. The grooves, when there are any (“God,” “Past the Mission,” “The Waitress”), are funkier thanks to George Porter, Jr. of the legendary Meters, and the supportive, creative drumming of Carlo Nuccio. Also, the sparer, more spacious sound reduces the bombast and increases the intimacy of this aural confessional.

Those who have seen Amos in any of her solo-piano concerts can attest to the fluid power she can summon on such evenings, if not wonder why she bothers with a band at all. She has retained all the accuracy and rhythmic precision of her classical training, and has learned the power of the note not played. *Under the Pink* surpasses the power of *Little Earthquakes* because its rhythms and dynamics flow all the more directly, even organically, from Amos’s Bösendorfer, unlike its predecessor, *Under the Pink* is not a band album.

Sonnically, *Pink* is a superb example of the modern rock-producer’s art: very clean, very good, very “wet,” entirely artificial—and just as entirely in the service of the music. No, it’s not natural; but when it sounds this good, the point is academic.

But the best part of *Under the Pink* is its open-endedness. By the second record, most new artists have pretty much shown us everything they’ve got. Not so Tori Amos—she seems to be only just beginning to reveal herself, both personally and musically. She has the guts to go where she will, and the talent to make it work.

—Michael Ross

**BEETHOVEN: Symphony 9**
Kurt Masur, Leipzig Gewandhaus; Sylvia McNair, soprano; Jard van Nes, contralto; Uwe Helmann, tenor; Bernd Weikl, baritone. Philips 432 995-2 (CD only). Clun Strüben, eng.; Heinz Wegner, prod. DDD. TT: 65:54

**BEETHOVEN: Symphony 9**
Wolfgang Sawallisch, Royal Concertgebouw; Margaret Price, soprano; Marjana Lipovsek, mezzo; Peter Schöffler, tenor; Jan-Hendrik Roetgering, bass. EMI 7 54505 2 (CD only). John Kurlander, eng.; John Fraser, prod. DDD. TT: 68:22

**CLASSICAL**

These performances share many features: generally traditional views with middle-of-the-road tempos; a second movement in which only the first repeat is observed; a preference for a short *appoggiatura* on the word *Freunde* when the bass solo enters in the finale; and a prevailing stiffness that conveys the ways in which this extraordinary score stretches to unprecedented lengths the boundaries of Classicism without ever crossing the border into Romantic excess.

Such similarities notwithstanding, key differences remain. In terms of text, Masur opts for brass reinforcements in the second movement that Sawallisch eschews. And, as in his previous recordings of the work, Masur imposes a *diminuendo* on the timpani outbursts in that movement. One
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wonders if such a practice is indicated in the new Beethoven Critical Edition, this Philips recording claiming to be the “first” to be based upon it.

More important is the overall impact of each account. Sawallisch’s is surprising in that its first two movements are a bit cool, even understated, without the fire in the first movement and the demonic edge in the second that one might have expected, given the intensity of the conductor’s previous releases in his ongoing Beethoven cycle. Masur, in contrast, offers a first movement with fiercer moments and more aptly piercing horns. But his approach is marred by some rhythmical adjustments that weaken cumulative force and make the first movement’s other-worldly coda seem more like an appendage than a part of the whole.

Sawallisch, for all of his apparent coolness, presents in the two initial movements a unified view that grows in cumulative force as each progresses, a force resulting in part from the uncommon clarity he extracts from some of the music’s crabbled polyphony and from his sharp profiling of key motifs. It is in the two concluding movements, however, that Sawallisch’s performance not only transcends Masur’s, but many others as well. The great slow movement unfolds with a haunting, unaffected simplicity redolent of the old Weingartner account, and the finale has an emotional breadth, cohesion, and climactic power that prove riveting. For once, the double-bass entrance sounds as if (as Beethoven’s directions imply) the human voice is being emulated. The V-major eruption of the martial theme that forms the basis of the movement is grand and joyful without being rushed or pompous, and there is sufficient contrast between each variation to heighten expression. Also, the chorus is superbly recorded, adding to the impact of the performance, and the coda emerges without even a hint of the frenzy that some conductors infer from Beethoven’s “prescriptio” specification.

Masur’s finale, on the other hand, features less accomplished soloists who sometimes sound precious, and his chorus, though well-recorded, tends at times to shout. Most significantly, Masur fails to hold this (admittedly sprawling) movement together as well as Sawallisch does. Finally, it should be added that the Concertgebouw Orchestra, despite a peculiar (and atypical) nasality of its brass in this performance, proves the more virtuoso ensemble.

Sonically, both recordings are good, but the American production (recorded in concert) features a more natural perspective and wider dynamic range. The coolness of its first two movements should not keep it from gaining a place among preferred stereo editions. —Mortimer H. Frank

BRAHMS: Symphonies 2 & 3
Seiji Ozawa, Saito Kinen Orchestra
Philips 434 089-2 (CD only), Wilhelm Hellweg, prod. DDD: TT: 76:45

BRAHMS: Symphony 2, Tragic Overture
Roger Norrington, London Classical Players
EMI Classic 7 54875 2 (CD only), Mike Hatch, eng.; Simon Woods, prod. DDD: TT: 55:11

Long-time listeners may recall a briefly available DG LP featuring the Boston Symphony under Ozawa in a Brahms 1 that ranked with the phonograph’s finest.

It was thus a bit disappointing to hear the conductor’s recent, and thoroughly competent, remake of that work with the Saito Kinen Orchestra, which lacked the heat and intensity of his earlier efforts. Now, with this, the second installment in a projected Brahms cycle, the gloires of Ozawa’s Boston Brahms are echoed. Put simply, his performances of 2 and 3 are as fine as one is likely to hear—texturally lean and transparent, tautly organized, and richly detailed—revealing the composer as a masterful orchestrator and staunch Classicist.

Nothing in Ozawa’s direction is manured or excessively lush, and he proves uncommonly successful in clarifying harmonic motion, instrumental balances, and the transformation of thematic material that generates the drama inherent in sonata form. Listen, for example, to how the gentle, lyrical second subject of the finale of 2 emerges in the movement’s coda as a grand, proud peroration—a result of Ozawa’s avoidance of the ill-judged acceleration imposed at this point by many conductors. Or listen to the apt ebb and flow suggestive of the sea in the work’s first movement, and note, too, the judicious voicing near the close of the two initial movements of 3 that reveals Brahms’s melodic and harmonic originality.

In short, these are two magnificent accounts recalling the tightly organized structure, aptly lean sonority, and rhythmic rectitude of such giants as Toscanini and Klemperer. Ozawa observes a first-movement repeat in 3—the only Brahms symphony in which such a repeat is obligatory—and wisely ignores one in 2. The Saito Kinen Orchestra—formed in 1984 and made up of soloists, chamber musicians, and teachers from Japan, Europe, and the US who get together for but two months a year—plays like a world-class ensemble. Philips’s relatively distant sound, enhanced by a wide dynamic range, preserves a convincing illusion of reality and is an ideal complement to such distinguished readings.

Norrington’s 2 is another matter: lean in sonority to the point of sounding scrawny, even ugly, with expressionless, vibrato-free strings and crass brass that seem utterly misplaced in this music. None of the weight and tonal allure needed to define the work’s character are present here, and its ebb and flow sounds more suited to a small pond than to the ocean that Brahms loved. Add to this Norrington’s crude phrasing, rhythmically rigid, and fundamentalist’s insistence on including a first-movement repeat that even the composer himself ultimately came to feel was redundant, and you have an idiosyncratic reading as mannered in its own way as the overly ripe, thickly textured, rhythmically slack readings of some other conductors. The Tragic Overture bespeaks Norrington’s consistency, suffering as it does from similar flaws. The virtues of EMI’s close, well-focused sound are, obviously, beside the point.

—Mortimer H. Frank

DEBUSSY: Complete Works for Solo Piano, Vols. 1 & 2
Paul Crossley, piano
Vol. 1: Préludes, Bk. I; Images, Scts I & II
Sony SK 52583 (CD only), TT: 75:46
Vol. 2: Préludes, Bk. II; Estampes; Children’s Corner; La plus que lente
Sony SK 53111 (CD only), TT: 76:00
Bret David Motley, prod.; Bud Graham, eng. DDD.

These first two volumes of Debussy’s complete piano works are for the most part even-tempered, understanding performances which effectively evoke the many varied moods without undue eccentricities or enormous splashes of color. The dramatic or satiric works tend to best bring out the pianist’s personality while the gentler, more atmospheric pieces occasionally sound slightly reserved. The palette is varied: Side by side with a “Sérénade for the Doll” (“from the Children’s Corner) that lacks ideal delicacy and simplicity is a Fermata des audences du claire de lune (Préludes, Book II) that grips the ear with its haunting atmosphere. Reflets dans l’eau (images I) sounds a little flat, while the first book of Préludes “West Wind” (No.7) is quite properly frightening. Crossley’s own well-researched annotations are a plus, and the agreeably reverberant reproduction is very satisfactory.

—Igor Kipnis

DVORAK: String Quartets 14
SMETANA: String Quartet 1
Arts Quartet
Sony SK 53282 (CD only, Georges Kadar, prod.; Pauline Heister, eng. DDD. TT: 56:13

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in the autobiographical Smetana work. I only wish the accompanying notes told us something about the artists. What their playing tells us is that they have a passionate affinity for these compositions and are able to communicate it with remarkable technical proficiency.

The musicians' pronounced tempo changes, dynamic contrasts, and enormously rich textures are employed to great effect in the Smetana quartet. Especially striking are the mercurial lightness of the second movement, which portrays the composer's happy childhood, and the transition from joy to sorrow in the final movement. This finale depicts the ringing Smetana heard in his ears as a harbinger of the deafness he would later suffer. The sforzando attack of the high violin note that represents the ringing speaks volumes for the composer's distraught emotional state. In fact, the Artis Quartett penetrates the entire score to the marrow, and presents it with startling conviction. I have not heard a stronger reading of the work.

The performance of the Dvorak seems a bit less fully realized. The restrained dynamics and the emphasis on cantabile phrasing impart a coolness to the work which contrasts with more rhythmically vibrant performances, such as that by the Cleveland Quartet on Telarc. But the spontaneity and exuberance exhibited by the Artis group remain very affecting.

Sony's Super Bit Mapping technique, as applied here, sounds quite good. Instrumental timbres are very realistic, and both detail and ambience are naturally presented. There is, however, a lean balance to the sound that lends the instruments a bright edge without ever becoming strident or fatiguing. The warmer, more full-bodied sound of the Telarc Cleveland performance is marginally more convincing, but regardless of sound quality, these performances beg to be heard. —Robert Hesson

GILBERT & SULLIVAN: The Mikado, The Pirates of Penzance, and HMS Pinafore are the "big three" of Gilbert & Sullivan operettas, and so I was not surprised to learn that Pirates is the second release in Telarc's G&S series. (The Mikado was reviewed by RL in Vol.15 No.6.) Once again, we have the same orchestra and chorus, Mackerras at the helm, and some of the same soloists.

One of the abiding issues in musical performance has to do with the extent to which contemporary performances should follow the style of the time of the work's introduction. Traditionalists go for as much authenticity as possible, others try to present the work in a manner that is thought to reflect more contemporary musical tastes. In the G&S world, the former is represented by the D'Oyly Carte Opera tradition, the latter by productions like the Linda Ronstadt/Kevin Kline Pirates. Mackerras is much closer to D'Oyly Carte than to Ronstadt, but he uses performers who, while having a good grasp of the classic G&S style, are simply better singers than those we hear on the old London G&S recordings. The one holdover from D'Oyly Carte days is Donald Adams, who still makes a terrific Pirate King. (His Pirate King is, of course, very different from Kevin Kline's.) John Mark Ainsley is a welcome change from the namby-pamby G&S tenors of yore, and Richard Van Allan makes a sonorous Sergeant of the Police. RL didn't care for Richard Suart's contribution to The Mikado, and I tend to agree

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with him, but I think Suart is much better as the Major-General, clear of diction and apparently having quite a bit of fun with the patter song.

I’ve usually found the women in G&S to be vocally superior to the men, but that is not the case here. Gillian Knight’s Ruth sounds timid and lacking in character, and Rebecca Evans, although having the requisite coloratura technique, appears to have taken diction lessons from Joan Sutherland; I would have preferred a fresher, more radiant sound, such as that produced by Mikado’s Marie McLaughlin. “Poor Wondering One” is a distinct disappointment, at least partly because Mackerras—who runs a tight ship—seems determined not to let things get too schmaltzy.

As this is only a single CD, not all of the music could be included, but, as with Telarc’s Mikado, the only significant omission is the overture. Sound quality is first-rate, with a good sense of the recording venue. Now, on to Pinafore! —Robert Deutsch

HOLLIGER: Scardanelli-Zyklus

Heinz Holliger has for many years been the name synonymous with oboe playing par excellence, but he is also a much-respected conductor, and a composer of undeniable distinctiveness. As with every musical exploit this artists tackles, Holliger’s compositions are technically adroit and intellectually informed, and his unique voice is one of the most interesting to have emerged in the latter half of this century.

This cycle is based on the life and poems of a German lyric poet, Friedrich Holdeer, whose life spanned the end of the 18th and the beginning of the 19th centuries. His last 40 years were plagued by the most debilitating “writer’s block”; he lost his grip on reality, locked himself away in a tower, and could only write using the pseudonym and penname of “Scardanelli.” It was this other character that the mentally unstable poet adopted that fired Holliger’s imagination, inspiriting a composition of over two hours’ duration, consisting of 22 fragments—for solo flute, mixed choir, small orchestra, and tape, in various combinations—of uncompromising and often frightening intensity. Holliger uses canon and homophonic choral-like sections to structure whole wastes of compression and extreme stillness, minute microtonal changes creating eerie, spine-chilling slides often at the extremes of the voices’ ranges.

Great demands are put on all performers here; flexibility is of the essence. Quite apart from the extraordinary tones and notes they are required to produce, the soloists, for example, are asked to follow such instructions as singing to the rhythm of their own pulse, or while they are inhaling. Thus, swaths of tranquil, static harmony give way to fragmentary, aelteric-like passages of frenzied activity that completely

Compositor/oboeist Heinz Holliger’s ambitious and ear-stretching Scardanelli-Zyklus, now available on ECM

very the constant rises and falls of the poet’s mental dilemma.

I have nothing but admiration for both performers and composition here. This is a new aural experience, admittedly not always a comfortable one, but one which hypnotizes by its intensity, its moments of great beauty, and its ongoing unpredictability. One is mesmerized in a chill of fear at the approach of the madman; once in the grip of this music, there’s no escape.

—Barbara Jahn

LISTZ: Sonata in b
With: Concert Paraphrases on Verdi’s Aida and Rigoletto, Violin of Obermaier (Années de Pêchage, I) Emanuel Ax, piano Sony SK 48484 (CD only). Bud Graham, eng.; Grace Bow, prod. DDD. TT: 59:07

Aside from Ax’s eloquently rhetorical manner in the Sonata, one cannot help but be impressed by the inevitability with which he leads each of its sections into the next—so far from the fragmentary kind of approach espoused by some pianists. The playing is quite beautiful tonally, with well-shaped melody and polyphonic. Here the restorative sections sound really improvisatory. Only at the start of the Sonata’s fugue did I find Ax to be a bit overcautious and controlled. It is obvious in the paraphrases, especially in Rigoletto, how well the pianist differentiates between melody and unimportant figuration, while shaping each according to romantic aesthetics. This is exciting playing, often reaching poetic heights, and is highly recommended. The even-toned solo instrument, not too closely recorded [with two BSK omnis—Ed.], is nonetheless captured with nice detail. —Igor Kipnis

MAHLER: Symphony 3

Bernard Haitink’s Concertgebouw recording of the Symphony 3 (Philips 420 113-2), made when he was in his mid-30s, is a scrupulously executed but dramatically inert reading in which he failed to exploit—indeed, seemed unaware of—the wide range of Mahler’s orchestral palette. The renaisse may seem beside the point, but, as this new Philips release indicates, old maestros can learn new tricks. Whether due to the passage of time, a deepening of musical insight, or simply the change of venue, we have a new Haitink, fully attuned to the music’s color and drama, and intensely involved in their projection.

The long-spanned first movement receives a cogent performance. The horns’ opening statement, square triolyn intoned before, is now forthright and well-shaped. The strings now attack their tremolos vigorously and sustain them energetically; marchlike figures in the low strings are consistently springy. The all-important trombone soloist is firm, without the trying, watery vibrato of the Amsterdam player; the E-flat clarinet interactions have a nose-thumbing perkiness. The buildup into the tutti march concluding the developmental section is thrilling. Wonder of wonders, Haitink even allows himself a moment of questionable taste, indulging in the same riddle before the climax at 72 which marred Mehta’s recent account (Sony S2K 52579). Haitink weights the phrase more heavily, so the device is more effective; but Hostenstein’s Unicorn (UKCD 2006/7), stepping smartly in tempo, has proved this affectation unnecessary.

The inner instrumental movements are gems. The Andante, formerly too stiff and restrained, now flows. The oboe’s firm focus and dark, cor anglais-like color are a welcome change from the traditional wooly Berlin oboe. The violins don’t quite match the Concertgebouw’s silken runs in the 9/8 sections, but they bring well-manicured articulations to the theme’s florid return. The piquantly phrased Scherzo boasts hairtrigger judgment of complex balances (at 10, for example). The posthorn soloist has a sweet tone, with a mildly fruity vibrato; the horns enter underneath to warmly glowing effect, and the answering divisi violins at 28 are breathtakingly beautiful.

The vocal movements are prosaic. Jard van Nes’s compact, lyric mezzo sounds throaty and unvaried in the Nietzsche song; she occasionally lets the tone go white for “expressive” effect. The angels’ song is flat, but the choral first sopranos are unexpectedly weak.

As the Adagio begins, the strings are deadpan, and there’s no magic in the contrasting passage for high violins at 2. However, from the woodwinds’ entrance onward, Haitink once again taps into the music’s character. He effectively conveys the curiously questing feel of the passage with synthesized accompaniment at 14 and the curving, twisting string lines at 17, and works up a gripping outburst at 23. The brass’s turn at the chorale melody is hardly pure as marked, but both attacks and ensemble are exceptionally secure. The final tutti statement of the melody, with a good strong marcatto feeling and powerful tone,
Martin Colloms’ 1994 review

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The Berlin orchestra is becoming a more idiomatic Mahler ensemble. The strings aren't capable of the Concertgebouw's miracles—the utter clarity of the counterpoint in the running passage after 19 in the first movement, for example—and the high violins can still sound inappropriately glassy and unfocused. On the other hand, I've already cited the excellence of the solo oboe and trombone, and the principal horn contributes warmly sculpted lines to the texture. The brasses in general can now play full-out with no sense of strain.

The recording is patently multimiked, but it balances warmth and detail well, and the capacious dynamic range encompasses truly walloping climaxes in the outer movements. I prefer this to the more "natural" sound of the old recording, where the Concertgebouw's resonance swallowed overtones and tended to neutralize orchestral timbres. The clarity picks up wind/string doublings and precisely pinpoint instrumental sections (try the string pizzicati which begin the third movement); it also picks up some individual cello vibratos in the Finale, as well as a false timpani entrance in the first movement (9 measures before 35).

Horenstein's magisterial account of this score remains unchallenged, but the many fine details and wide-ranging sound of Haitink's new recording make it an excellent supplementary edition.

—Stephen Vasta

**MOZART: Don Giovanni**

Andreas Schmidt, Don Giovanni; Alastair Miles, Il Commendatore; Armanda Halgrimson, Donna Anna; Lynne Dawson, Donna Elvira; John Mark Ainsley, Don Ottavio; Gregory Yurisich, Leporello; Nancy Argenta, Zerlina; Gerald Finley, Masetto; The Schütz Choir of London, The London Classical Players, Roger Norrington

EMI 7 54859 2 (3 CDs only). David H. Murray, prod. JDDJ. TT: 3:15:13

This recording includes both the Prague and Vienna versions of the opera, hence the overlong playing time—whole sections are repeated leading up to and away from inserted or replaced scenes. The problem is that there are only three cueing points per disc, so if you don't have index facilities on your CD player, you can't pick and choose—you have to listen in chunks. I found this unnecessary oversight annoying, but it's the music that counts—and here the music is beautifully, vibrantly served.

This Don is as good as Norrington's Flute was bad. He opts for light voices again, his tempi are fleet (aside from a few exceptions, such as "Finnish del vino," which mopes), his singers' articulation of the text paramount, the instruments authentic. Almost everything works. Schmidt, a baritone with whom I have been less than impressed before, turns out to be a rich-hued, strong, sexy Don—a dark stranger with no good on his mind. Yurisich, a new voice to my ears, is a truly working-class Leporello (not his singing, just his characterization), and he contrasts well with Schmidt. John Mark Ainsley is a gorgeous Ottavio—warm and understanding, and with extra breath for "Il mio tesoro." Alastair Miles's Commendatore is first-rate, and Finley's Masetto is the best I've ever heard.

Amanda Halgrimson is a real find as Donna Anna. With a hint of Gundula Janowitz in her voice, she has the power to project both the nobility and outrage of the character, and the sound itself falls nicely on the ear. The always-interesting Lynne Dawson is a fine Elvira, missing only a comic edge I like in the part (Norrington may have nixed this interpretation). The Zerlina of Nancy Argenta is pert and knowing.

The Schütz Choir and LCP perform splendidly, and, as I suggested, Norrington gets all the vibrancy and drama out of this work that one might want. It's close to the top of my list of Don's already; I could grow to really love it. I found Ostman and his singers on L'Oiseau-Lyre a bit light; there are no such problems here. Norrington believes in blood and thunder, and he delivers. Very highly recommended, despite the programming problems.

—Robert Levine

**ASTOR PIAZZOLLA: The Central Park Concert**

Astor Piazzolla, bandoneon; Pablo Ziegler, piano; Fernando Suarez Paz, violin; Horacio Malvicino, guitar; Hector Console, bass

Chesky JD107 (CD only). Christopher Czeh, Jane E. Pipik, Edward Haber, engs.; Joe Killian, prod.

DDD. TT: 79:11

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Composer Astor Piazzolla, who died in 1992, made a career out of revitalizing the tango. He was also the world's foremost bandoneon virtuoso (the bandoneon is a small German instrument similar to an accordion, but with buttons instead of keys). This 1987 live concert from New York's Central Park is dynamic, passionate, turbulent, and poignant, and on a par with the Vienna. Concert of 1983 (Messoror 15952)—the representative of Piazzolla's best work. The Chesky brothers apparently labored long to secure the rights to release this concert, and, while it was digitally recorded for radio broadcast rather than by Chesky's meticulous engineers, the close-miked sound is excellent.

There was always more excitement in Piazzolla's live recordings than in his many studio efforts. Each concert seemed to draw from his small virtuoso ensemble an intensity his studio releases often lacked. (An exception is the wonderful three-CD box on American Clave, The Late Masterpieces, AMCL 1022—an essential collection for the Piazzolla collector.) Here, the added bonus of hearing Piazzolla's comments between songs before an enthusiastic, receptive audience is pure magic. When he says, "Anything that interrupts music, I hate," he expresses an aesthetic that gives meaning and focus to a life devoted to art.

The quintet plays with razor-sharp precision and complete empathy. Violinist Paz gets many of the best lines, as is often the case in Piazzolla's compositions, and plays with extreme emotion, a throbbing vibrato, and impeccable accuracy. The rest of the group is equally outstanding. If you haven't heard Piazzolla's remarkably heartfelt music, there is no better introduction than this CD.

—Carl Baugher

PROKOFIEV: Alexander Nevsky Cantata
SHOSTAKOVICH: Symphony No. 9
Eduardo Mata, Dallas SO & Chorus; Mariana Paunova, contralto

Prokofiev re-scored his music for Eisenstein's film, Alexander Nevsky, as a cantata in 1939. In seven evocatively entitled sections of only around 42 minutes total duration, Prokofiev very successfully sums up the bleak, blood-curdling narrative of the film, and its survivors' hopes for the future. Such a strong program needs an equally strong interpretation, and while Mata has characterized well and rehearsed his orchestra, Prokofiev's technical near-perfection, they never quite summon the chill of the ice or the heat of the battle. Paunova sings with heartfelt commitment, but her voice is just a tad too heavy for my taste.

Shostakovich's Ninth is a near-contemporary work (1945), but provides a strong contrast in spirit to Nevsky. This Symphony made a radical departure from the tragic, ominous journey of Shostakovich's other symphonies; indeed, it provoked Stalin's wrath by its frivolity and lack of official dedication. In many ways, its neo-classicism and wit remind one of Prokofiev's Classical Symphony. Again, Mata has everything within his control, but the end result just lacks that snap and zest that really gives listening a special sense of occasion. I recommend looking elsewhere for recordings of both these works.

—Barbara Jahn

RACHMANINOFF: Piano Music
Oksana Yablonskaya, piano
Connosseur Society, CBS/CBS Special, DOR-91049 (CD only). Patricia A. Duciaume, eng.; E. Alan Silver, prod. DDD: TT 66:35

If there is no lack of good solo Rachmaninoff on disc—from the composer himself through Horowitz, Moiseiwitsch, Wild, Ashkenazy, and Biret, just to name a few—this recent assemblage is a superb cross-section of nearly every type of format that its creator employed, from variation sets to studies to partides to dances to transcriptions. Furthermore, Yablonskaya, a Russian emigré and US resident since 1977, is a powerful technician with a huge dynamic range and color palette. The performance of the Corelli Variations (to me, Rachmaninoff's best large-scale solo piece) is the most intriguing I have heard since Ashkenazy's earliest recording (of 1957). The excitement here (check out, for instance, the section about 7:30 into the CD) is almost elec- tronic. The sense of despair that so often permeates the composer's writing, as in the closing pages of the Elegie, Op.3 No.1, and the often unalayed somberness, are exceptionally well conveyed. If Yablonskaya's Mendelssohn Midsummer Night's Dream Scherzo lacks the gossamer lightness of the composer or, even more magically scintillating, of Moiseiwitsch (a truly legendary 1939 recording), this is still exceptional playing by any standard.

The piano, as is common with Connoisseur Society releases, is richly, almost tangibly, recorded, despite an underlying, very slight, low-frequency background noise.

—Igor Kipnis

ROSSINI: La Cenerentola
Cecilia Bartoli, Cenerentola; William Matteuzzi, Ramiro; Alessandro Corbelli, Dandini; Ennio Dara, Magnifico; other soloists of the chorus of the Teatro Comunale, Bologna, Riccardo Chailly London 436 902-2 (2 CDs only). Christopher Ram- burn, Michale Woolcock, Morten Winding, prod. DDD: TT 2:28:09

In case there's been any doubt in your mind as to whether mezzo Cecilia Bartoli is worthy of all the hype, this set tells all: She's as good as, maybe better, than everyone says. Cenerentola is Rossini's most winsomely sad heroine—an unwanted child in a dysfunctional household who mag-

ically gets to the Prince's palace and is later crowned Princess. Only in her final scene is she happy; she feels right with her family and her Prince, and can easily forgive those who have been cruel to her. Bartoli gets all of this—the youth, the loneliness, the wonderment, the innocence, the eventual freedom and ecstasy. And if you think she characterizes the expense of her singing, you're wrong. She's a superb Rossini stylist, with impeccable coloratura, an absolutely even range over more than two octaves, a stunning trill, and the good sense to embellish tastefully. Wow!

The rest of the cast is impressive as well. Matteuzzi's voice is not to everyone's taste—it's pinched at times, and he can sound whiny. But he's got all the notes and fluency, and sings off the text, he's a real Prince. As Dandini, the valet disguised as the Prince, Alessandro Corbelli draws a funny, full picture. He's having a ball, and he seems to like the music, too. We laugh with him while admiring his way with all those little notes. Dara's Magnifico is also well-played—he doesn't exaggerate, and we can see how Cinderella could forgive him. The rest of the cast is very good.

Chailly's score and genius, but rather than for its irony, and his tempi tend to be quick—no complaints. His orchestra and chorus are missing some of the vestiges of the Sir Neville Marriner's Academy (Philips) brings to the music, but they're good enough. The sound is crisp and clean, and, aside from the occasional smashed dish, the producers have happily decided not to include too much stage hoo-hah.

There are other very good readings of this opera on CD: Marriner's has Balsys in the title role, and she's wonderfully insightful and potent; Abbado (DG) has the ravishing Teresa Berganza. But Bartoli is really something. Hear for yourself.

—Robert Levine

SCHUBERT: The Eight Symphonies

As his career progresses, it is becoming increasingly clear that Nikolaus Harnoncourt is moving away from the extremes of the period-instrument movement that lent some of his earliest excursions into the 18th-century repertory an obtuse eccentricity as misplaced as the tasteless manipulations of the most egregiously Romantic conductors. Certainly his recent Beethoven cycle bespoke a musician of temperament and the conscientiousness with which he has approached this new traversal of the Schubert symphonies. Some performances in it may prove more appealing than others, but there's not a weak one in the lot.

Despite some difference in the conductor's overall approach from one work to the next, certain key traits stamp the entire cycle and contribute to its distinction. Balances are exemplary, with winds and brass well forward, italicizing color and
Harmonic motion. The strings have a tonal purity resulting from a lack of nearly all vibrato. The effect of all this is to suggest the best of authentically styled readings while remaining free of the pinched nasality that makes many of them unpleasant tonally. Furthermore, the Concertgebouw Orchestra plays with a responsive virtuosity that easily surpasses the work of most period-instrument ensembles.

Over and beyond these assets are other distinctive traits. Tempos, though not always orthodox, are well-judged; phrasing and dynamics remain free of the peculiarities that have marred Harnoncourt's earlier recordings; and all exposition repeats are observed—a virtue in every work except the "Great" C-Major, where the inclusion of six repeats (one in each of the outer movements, and four in the third) simply makes the work too long.

Also it should be noted that Harnoncourt employs the New Schubert Edition, which involves a variety of textual changes, most of which will probably pass unnoticed. Some, however, are obvious, especially those creating an alteration of a familiar melodic line, a prime case occurring in the finale of 1. Also, the last two symphonies are renumbered, the "Unfinished" becoming 7, the "Great" C-Major, 8.

Harnoncourt's accounts of these two towering works shine as the prizes of this set and rank with the best that either has ever received on disc. The first movement of the "Unfinished" is remarkable in its stark, expansive grimness, its poignant austerity, and its freedom from even a hint of sentimentality. In terms of pacing, it is similar to the admirable Szell edition, but Harnoncourt generates greater expressivity through a more unbuttoned approach that permits richer color, more angular phrasing, and more potent accents. And the Andante, without ever sounding rushed, unfolds at an aptly "walking" tempo that permits requisite flow and allows, where suitable, explosions of tremendous power.

More than anything else, Harnoncourt's approach makes clear that this work is on a scale every bit as grand as that of the "Great" C-Major.

And his performance of that capstone of Schubert's symphonies can hold its own with the extraordinary readings of Furtwängler, Toscanini, Mengelberg, Szell, and Karajan. Lean in sonority, rhythmically taut, and richly detailed, it conveys the music's heroic grandeur and lyric delicacy as few other performers have. The outer movements have thrust without haste, and the Concertgebouw articulates the triplets in the finale with a precision that few ensembles can match. The second movement sings and soars, yet is never distended as it builds to an imposing climax, and the Scherzo retains a lively buoyancy that presses forward while remaining relaxed. Note, too, that with his fine ear for balances, Harnoncourt never allows (as sometimes happens) the trombones to become too dominant.

If the accounts of the other symphonies do not seem as distinguished, it may be because they are lesser works. Surprisingly, Harnoncourt's 4 lacks some of the brassy richness of the magnificent Karajan reading, and Marriner and Wand have sometimes proven more animated in some movements of other works. Still, the gemütlich style of favor by Harnoncourt frequently proves attractive, notably in the finale of 1 and the outer movements of 5.
On the other hand, his relaxation in the finale of 6 simply confirms it as one of the weakest of all of Schubert's symphonic movements. But in the main, none of his tempos seem ponderous, and his pacing of minuets and the Scherzo of 6 is bracing and animated. Refreshing, too, is his refusal to add repeats in these movements' reprises. I wish, however, that he had not inserted breath pauses before and after the trios of these movements. This seeming affectation, interestingly enough, is not imposed on the third movement of the "Great" C-Major.

One other interpretative peculiarity in that work should be noted: the diminuendo with which the finale's final chord is executed. This has been a point of musico-

logical dispute, and some conductors, notably Klemperer, have favored it. But others feel that Schubert's marking specifies an accent, a view that, to my mind, gives the final chord greater emotional and aesthetic sense.

These few quirks aside, this set stands as a magnificent release. Beautifully re-
corded (in concert), it features a relatively close perspective that never becomes claus-
tious and preserves more of the richness and accuracy blemished only by an occasional harshness of string tone. A few noises from the audience simply add to the illusion of reality. Aside from glorifying Schubert, these performances suggest that Hannoncourt may be on his way to being a major figure on the international scene.

—Mortimer H. Frank

GERSHWIN: Blue Monday

GERSHWIN: Piano Concerto in F

VERDI: Rigoletto

THE TOWN: Studio Cast

Show Music

GERMANN: Piano Concerto, Arabesque


Yvgeny Kissin, piano; Carlo Maria Giulini, Vienna PO

Sony SK 52567 (CD only). Sid McLaughlin, eng.; David Mortley, prod. DDD. TT: 59:55

Somewhat literal rhythmically, Kissin and Giulini's Schumann Concerto could not be mistaken for the kind of romantic playing that one can hear in now-antediluvian recordings by the early greats. But Kissin's deportment in the past as Alfred Cortot, Myra Hess, or even Dinu Lipatti. Nonetheless, there are some lovely expressive moments in the slow movement, plus an impressive finale that has both excitement and shape. Kissin, in his solo Arabesque, does not yet seem to have burrowed into the interior of Schu-

mann's psyche; nor, as is evident in his charmless and piranha-like Die Forelle, has he learned to smile. Kissin's truck-ride performance through The Erlkönig calls for more attention to his super virtuosity than to Schubert's tragic ballad, and I found his Grieg lacking in tenderness and, in the moving Ich liebe dich, distinctly unlovable. Nowhere in the Schubert/Liszt Sœuvres de Vienne can one hear the kind of graciousness and charm that were so characteristic of the recordings of this piece made by Horowitz and Lhevinne. Sony's sonics, slightly distant in pickup in the Concerto, are quite natural for this live orchestral setup, and the non-live solo pieces also rep-

resent the piano without any of the hard-

toned effect that I have complained about in BMG's past recording of Kissin.

— Igor Kipnis

GERMANN: Piano Concerto


Yvgeny Kissin, piano; Maxim Vengerov, viola; Wiener Philharmoniker, conducted by Daniel Barenboim

Sony SSK 6683 (CD only). Sid McLaughlin, eng.; Steven Ho, prod. DDD. TT: 65:19

In Kissin's Mozart, there is a sense of something held back, of a power that is not quite released. Here, however, there is an immediate instinct of musicality that is rare and precious. Kissin's calm, seductive manner is never applied, and the playing is free and direct. His connection with the orchestra is a genuine, if somewhat disarming one, which is also true of his interpretation. The result is a performance that is both exciting and enjoyable.

— Michael Tilson Thomas

ON THE TOWN

Music by Leonard Bernstein, Book & lyrics by Betty Comden & Adolph Green

Michael Tilson Thomas, London SO


Deutsche Grammophon 440 072 297-1 (CD laser-
disc). DDD. TT: 107:00

The 75th anniversary of Bernstein's birth has prompted record companies to come up with a variety of releases to commemorate the event, but I doubt if any of them can capture the essence of Bernstein's music. There is heard what Bernstein did with Candide (DG 429 734-2), we may regret that he didn't live long enough to have recorded On the Town. But Michael Tilson Thomas has done himself and Bernstein proud: This is a performance as vibrant and exciting as Lenny himself would have wanted. The cast is an interesting mix of musical-theater performers and opera singers who do a lot of "crossover" work. Frederick Von Stade has evinced admirable development in her approach to this genre since her tentative debut in The Sound of Music (Telarc CD-80162); she sounds completely confident here. "Carried Away" is one of those songs spoofing operatic style that I think work only if the performers convince us that they could be credible in the real thing. This number is done by Betty Comden, as is insurance—original—cast recording, and she's funny, but sounds vocally out of control, and when the top notes come along, the results are rather painful to listen to. Von Stade is just as amusing, but possesses voice and technique enough to sing the number properly—we can thus enjoy it both as spoof and as song.

I've criticized Thomas Hampson and Samuel Ramey for being overly stiff and formal in their previous excursions into the world of show music. I can't say that either singer has loosened up that much, but the characters they play here are such that this doesn't really matter. Ramey's solo number is the seldom-heard "I Understand," and it's supposed to be stiff and formal. He is, by the way, in great voice, much better than in the ill-fated Carousel. Hampson sings two of my favorite Bernstein ballads, "Lonely Town" and "Lucky To Be Me," in a pleasant, straightforward fashion, with more apparent feeling than usual for him, David Garrison and Kurt Ollman make
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strong contributions as the rest of the trio of sailors, and it's good to hear a real singer—the delectable Marie McLaughlin—in the bits normally done by a dancer.

The recording has achieved something of a casting coup in having Tyne Daly in the part originated by Nancy Walker. Daly triumphed in the most recent Broadway revival of Gypsy, but she doesn't normally do musicals. She's simply terrific in her two numbers, with character and energy to spare.

This was my first encounter with a recording featuring DG's "4D" process; whatever the controversy about the nature of the process, the sound is stunning in its clarity and depth.

Then there's the laserdisc. I'm writing this review having just read all the pro and con video correspondence in the January 94 Stereophile, and, once again, I find my views can only hope to be in the middle. I suppose, if push came to shove, that I'm first and foremost an audiophile, but I don't want it to come to push or shove—I like video, too. However, I like video most when it offers something that goes beyond what one could easily imagine while listening to an audio recording. I would never buy a laserdisc of a symphony; I have no desire to see closeups of the cellist's hands and the conductor's furrowed brow. The laserdisc of a musical or an opera—now, that's different. Here, seeing the performers, including their expressions, gives me more intimate contact with the theater as well as with the music.

To those of similar mind, the laserdisc of On the Town is recommended even more than the CD. In fact, it's more than an audio-visual record of the concert performance; it's also a documentary of the lives of sailors on leave during World War II. Actual archival footage is used to show what it must have been like to have "one day, and not another minute, to see the famous sights." I didn't have a chance to check out whether the sound on the laserdisc is quite as good as on the CD (my video system is separate from my audio system, and its sound quality is more like "entry level" in audiophile terms), but it's certainly excellent by video standards.

—Robert Deutsch

JAZZ & BLUES

AZIZA: Aziza

Aziza Mustafa Zadeh, piano, vocals
Columbia CK 53415 (CD). Werner Huh, eng.; Reinhard Karwatky, Ingo Werner, prods. DDD. TT: 74:07

NNENNA FREELON: Heritage

Nnenna Freelon, vocals; Kenny Barron, piano;
Christian McBride, bass; Lewis Nash, drums; 3ave Tofan, tenor sax; Jim Pugh, trombone

The release of the debut Aziza was apparently held up while Columbia sought a photograph of this striking young pianist and vocalist—they had to locate her in her native Azerbaijan. The photographs depict a slight, wistful figure who either looks demurely at the camera or at the ground. The music suggests a more robust personality. Aziza opens with her composition "Chargah," and her playing is the closest thing I've heard to a piano version of flamenco music. Filled with flailing, flamboyant runs that swirl around a strongly stated tonal center, maintained here by her powerful left hand, Aziza's playing is dramatic, wide-ranging, and, to my ears, a little exotic in its melodies. She moves between strongly stated rhythmic pieces and the dreamy impressionism of pieces such as "I Cannot Sleep." I prefer the energy of "Moment" to the musings of "Quiet Alone" and "Aziza's Dream," in which she indulges in some new-age drifting through harmonically simple material.

Christian McBride, bass; Lewis Nash, drums; 3ave Tofan, tenor sax; Jim Pugh, trombone

Nnenna Freelon mixes standards old and new on her debut album, Heritage.

Aziza also sings on three of her compositions, including a fetching piece called "My Ballad" that I would have liked to have seen translated. She does some bobbing, high-energy scatting during the 45 seconds of "Moment." Her high, light voice shares the stage with her piano on the up tempo "Inspiration" as well: It's fascinating to hear her voice bending her melody's staccato notes in a manner that to me—relatively uneducated in these matters—sounds specifically Middle Eastern. She's an interesting musician who is bringing an intriguing new accent to jazz.

Compared to Aziza, singer Nnenna Freelon has a conventional repertoire, but to versions of "Bewitched" and "Prelude to a Kiss," Freelon adds a Stevie Wonder tune, Wayne Shorter's "Infant Eyes," as well as such lesser-known Ellingtonia as his tribute to his family, "Heritage." I've heard her compared to Sarah Vaughan, but I don't hear Vaughan's self-conscious virtuosity in Freelon's singing. I do hear an occasional echo of the clipped, brassy style of Abbey Lincoln.

But Freelon should be considered on her own. She sounds attractively buoyant on "Bewitched," and makes the difficult lyric of "Tis Autumn" sound natural, although she has some trouble dipping to the occasional low note. I don't think anyone can make poetry out of the awkward lyrics on "Girl Blue," with its lines such as "shifting breezes grace the inner spectrum of your dream"—surely one of the most curious and least convincing compliments I've ever heard in a love ballad. Freelon's "All or Nothing at All" loses its momentum. She's at her best in "Prelude to a Kiss," "Young and Foolish," "Bewitched," and while rendering the mock despair of "Come Love." Heritage isn't a perfect set, but it is graced by the wonderfully inventive and subtle pianist playing of Kenny Barron. Freelon is enough of a musician to recognize his great talent, letting him play lengthily solo.

The sound of both these discs is clear, up-front, and well-balanced, without creating a particularly effective sense of space around the music.—Michael Ullman

ELLA FITZGERALD: The Complete Ella Fitzgerald Songbooks


It's no wonder that Ella Fitzgerald was for decades the most popular singer in jazz. While she doesn't have the drama of Billie Holiday or the range of Sarah Vaughan, in her best recordings she's got everything else: a bright, buoyant voice that she can make sound tender and loving, or wistful; clear diction; sure pitch; and what the Gershwins called "fascinating rhythm." She had her first hit in 1938 with "A-Tisket, A-Tasket," which she recorded for Decca with the Chwick Webb band. Perhaps a little naive about business, she stayed loyal with Decca until 1956, when, in a deal discussed at length in the notes to The Complete Ella Fitzgerald Songbooks, Norman Granz acquired her talents for his new company, Verve Records.

It was a momentous signing. At Decca, perhaps because of her success with novelty numbers, Fitzgerald had often been recorded on second-rate songs, including "Ding l'ong Boogie," "Crying in the Chapel," "Little Man in the Flying Saucer," and "The Bean Bag Song." Her occasional masterful Decca recording, such as that made in 1954 with Ellis Larkins, didn't make up for the general misuse of Fitzgerald's skills.

As we now know, Norman Granz had a better idea: He signed Fitzgerald specifically to sing a series of songbooks, which are collected on the marvelous 16 discs of this collection. These have been remastered (again), and wherever I tested them, the new discs have more presence and warmth than the previous CD issues. With excel-
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lent arrangements by Buddy Bregman, and later by the likes of Nelson Riddle, Billy May, and Duke Ellington himself, the Songbooks brought out the best in Ella. The discipline of singing the usually wonderful songs, including many verses, on those discs was salutary. (I am one of a minority of listeners who sometimes find her lengthy scatting solos unconvincingly perky, even dull at times.)

What an accomplishment these Songbooks are! Fitzgerald sings hundreds of songs and manages to convey their spirit in unmanipulated performances that only she could produce. Anyone who's heard her sing something like "Anything Goes" will remember the bounce, character, and vibrancy of her rendition. She goes from that big-band arrangement to the intimacy of "Miss Otis Regrets (She's Unable to Lunch Today)," where, accompanied only by Paul Smith's piano, she sounds wistful and a little bluesy. The song's storyline is absurd: Miss Otis can't make lunch because she's blown away her boyfriend and is about to be lynched when she sends her regrets. But the performance is unforgettable.

Recorded in 1956, The Cole Porter Songbook was followed in the same year by the Rodgers & Hart. By 1959, Verve had issued the deluxe boxes of Ellington and Gershwin material, as well as an Irving Berlin set. That Irving Berlin personally requested his songs be recorded is a sign of the prestige of the series. The Gershwin is another joy, though not perfect: It was evidently not Fitzgerald's idea to sing "Lady Be Good!" at the normal tempo she does here. (Usually she used the tune as an excuse for up-tempo scatting.) I don't think the slow tempo works. But there has been a better "But Not for Me?" And what a pleasure to hear lesser-known Gershwin like "Stiff Upper Lip" alongside "I Got Rhythm." The Ellington set differs from the others in that, on most of the tracks, Fitzgerald is accompanied by Ellington and his orchestra. Ellington even wrote a suite in her honor that is included here. But he rarely rearranged many of these pieces, in some cases merely substituting Fitzgerald's voice for the instrumental sections. The result is that Fitzgerald sounds grafted onto the band. There's less variety in texture and sound quality than in the original arrangements, where a reed section, the brass, a solo clarinet, or whatever, might take parts now assigned to Fitzgerald. Some less-than-thrilling instrumental sections do survive, including a guest appearance by Dizzy Gillespie, who shows up the Ellington trumpeters on "A Train."

The new collection has eight previously unissued tracks—mostly alternate takes which prove that the original choices were wise. There's a long alternate take of "Let's Do It" which is bluesier than the original and has Fitzgerald singing charming variations on the melody—but she's forced to go over the same lyrics, which gradually lose their witty appeal. I find one new item invaluable: a 10-minute snippet of a rehearsal of Billy Strayhorn's "Chelsea Bridge" with Ellington. It opens with someone explaining the arrangement to Fitzgerald, followed by Ellington yelling to his band, "We're all straight now... everybody knows exactly what they're doing?" The following runs-through highlight Ellington's absolute ruthlessness as well as the astonishing efficiency of his rehearsals.
Strayhorn has written a new introduction and, after playing it and moving on, Ellington calls out almost as an afterthought, "Strays, I think we're going to take out the first introduction." Ellington fans will smile when he asks for an improvised fill from his old-time, mock-cynical alto saxophonist Johnny Hodges, who addresses him as "Sir." Ellington barely addresses Ella at all. In addition to the big-band arrangements are small-band Ellington numbers featuring the ineffable tenor saxophonist Ben Webster, and the cagey, swinging violinist, Stuff Smith.

After a week of listening to these discs, I found it almost pointless to pick favorites. There's a wealth of wonderful, even definitive, singing here. The packaging is excellent. Verve has reproduced the original LP covers and other material in miniature. (In the case of an extensive booklet on Gershwin, miniature means dollhouse size.) There are two valuable new essays on the Songbooks and their histories. Verve—and especially producers Michael Lang and Peter Pullman—should be congratulated on the care with which they have executed this project.

—Michael Ullman

KEITH JARRETT: At the Deer Head Inn
Keith Jarrett, piano; Gary Peacock, bass; Paul Motian, drums
ECM 78118-21531-2 (CD only), Bill Goodwin, prod.; Kent Heckman, eng. DDD. TT: 66:33

KEITH JARRETT: Bridge of Light
Elegy for Violin & String Orchestra, Adagio for Oboe & String Orchestra, Sonata for Violin & Piano, Bridge of Light for Viola & Orchestra
Keith Jarrett, piano; Michelle Makarski, violin; Marcia Butler, oboe; Patricia McCarty, viola; Thomas Crawford, Fairifeld Orchestra

As energetic as he is intense, Keith Jarrett, even in the midst of his most inspired performances, never seems satisfied with the piano. He rises slowly from the bench, writhing above the keyboard like a licentious snake—no wonder he has back problems—while singing in anxious counterpoint to his improvisations. Only rarely does his eerie chatter double his piano lines. Mostly, it represents something else he is hearing.

A particularly intelligent musician, full of what Kipling called natural curiosity, Jarrett is, as I discovered, eager to talk about everything from the latest stereo equipment to pygmies. He has what musicians like to call big ears—he's heard a lot, including 20th-century classical music, and is liable to be affected by what he hears. It's no wonder that he has become, as Bridge of Light demonstrates, a composer as well as the spontaneous improvisor who sparks the incandescent performances on At the Deer Head Inn. He's been hearing other lines, and other lines of development, all along.

The Deer Head Inn in Delaware Water Gap, Pennsylvania, is where Jarrett, then 16 years old, played his first jazz trio job. He returned to play piano there for the first time in 30 years on September 26, 1992. (In between, he had performed at the Deer Head on other instruments, mostly as a drummer—he says that Stan Getz heard him there on guitar, and offered him a job.) On what he describes as a warm humid evening, Jarrett and his trio played to an audience that spilled through the screen doors onto the porch. A friend, Bill Goodwin, recorded the date for Jarrett, who heard the digital tapes and decided to issue the date because what he heard was "what jazz is all about."

The Deer Head job was a reunion of another kind. Drummer Jack DeJohnette, Jarrett's usual trio drummer, couldn't make it, so the pianist called on the man he'd worked with in the '60s and '70s—Paul Motian, a drummer who first became well known with the Bill Evans trio. The differences between the drummers are subtle but fascinating. On the studio version of "Bye Bye Blackbird," recorded on the disc of the same name, DeJohnette accompanied Jarrett with little dancing figures on the cymbals that were both lively and playful. Here Motian keeps a regular beat on the cymbals and comments on the snares. At the end of the first chorus, he starts an Art Blakey–like roll, then pulls back delicately. It's a different feel, which I'm sure Jarrett responded to.

They open with Miles Davis's "Solar," a piece that Bill Evans recorded with Scott LaFaro, in a jumpy, swinging performance...
that Jarrett sidles up to indirectly—it's a wonder the others knew what was coming. They leap on the uptempo "You and the Night and the Music," but mostly Jarrett seems in a lyrical mood, as we see in his variations on "Bye Bye Blackbird," and most exquisitely on "It's Easy to Remember," a gentle performance whose last quiet chorus seems magical, the equal to Bill Evans or any master ballad player.

Bassist Peacock is not as clearly recorded as the others—his sound is set back, and uncharacteristically sodden. But his playing is as agile as ever—he enters "You Don't Know What Love Is" in a rush, pushing his way into the gaps of Jarrett's playing like a man trying to squeeze through a closing door. This performance takes an unexpected direction when Jarrett settles on a pedal point and turns a ballad into an ecstatic improvisation on a limited harmonic basis. The trio plays Jaki Byard's basic blues line, "Chandra," which will remain a favorite of many listeners of Charlie Parker. (It was first recorded by Byard with Charlie Mariano, but I suspect that Jarrett heard Byard's 1968 recording of it on *Sunshine of My Soul*, on Prestige.) Perhaps Gary Peacock brought it to him—the bassist on the Byard date was Peacock's teacher, David Izenzon.) Informally recorded, the Deer Head performance reveals that, except for the bass, is is equal of many studio gigs, if not with ECM founder/producer Manfred Eicher's trademark fullness and spaciousness. More importantly, the music has the dash and the unabashed lyricism of Jarrett's best work.

The connection between Jarrett's improvisations and the four moody, passionate compositions on *Bridge of Light* may not be obvious, unless one thinks of those compositions as Jarrett's response to the music he has heard and been open to. In his notes, Jarrett says he is not trying to be a composer, to offer something unique, but rather to demonstrate what he calls a "certain state of surrender." I'd call it a record of what Jarrett has surrendered himself to as a listener—it's a term that T.S. Eliot used often, as when he spoke of "the awful daring of a moment's surrender," and claimed that a critic could not analyze a work that he or she had not first surrendered to. With its dark, passionate sound, its broad strokes for the strings and insistent melody for the solo violin, Elegy for Violin and String Orchestra is a rhapsodic piece written for Jarrett's Hungarian grandmother. Michelle Makarski is the solo violinist here—she plays with a throbbing intensity that sounds more appropriate on this Elegy than on the dance movements of Sontz for Violin and Piano, a more lively and playful work that suggests at times both Bach and Bartók. Only the fourth movement, "Birth," with its effortful double-stops on the violin, its grinding forward motion, breaks the mood. *Bridge of Light* is a "multi-cultural hymn" that is prayerful throughout, and that features some interesting textures. The recurrent mixture of trumpet and flute (I believe) is muddled in the body of the work, but the emergence of the trumpet melody in the final bars is touching. What ties these works and the pastoral Adagio for Oboe and String Orchestra together is the emphasis on the solo line. Like his jazz playing, Jarrett's compositions are restless and impassioned rather than analytical, pastoral rather than intellectual. Rather than suggest new directions for 20th-century music, Jarrett aims for the heart.

On *Bridge of Light*, he usually hits the mark.

—Michael Ulman

ROB MULLINS: One Night in Houston

In a genre often maligned for its lack of substance, Rob Mullins proves that pop jazz needn't be a commercial skeleton with some aesthetically satisfying meat on its bones. In its best moments, this recording evokes the infectious, groove-gliding lockstep of the Crusaders at their peak. With former Crusader Wilton Felder's trademark funky reed suavity on board, pianist/electric keyboardist Mullins hits the mark consistently. The polished rhythm section is also exceptional, with bassist Larry Kimpel deserving high praise for his virtuosic, inventively fluid lines. Drummer Ndugu Chancler rounds out the well-rehearsed, sharp-as-a-tack ensemble.

The tracks are all Mullins originals. The title tune is representative of this well-oiled electric ensemble, virtually crackling with rhythmic spark and precision. Mullins's solos are logical, inventive, and delivered with considerable technical command. Obviously, a fondness for the contemporary approach will enhance one's enjoyment, but One Night In Houston is easily one of the best, most intelligently programmed pop jazz recordings of recent memory.

This recording is another vivid AudioQuest success. The LP gives the most satisfying audio presentation, but the CD is only slightly less impressive. The drums and bass are particularly well-recorded. This 30ips analog beauty presents a realistic soundstage rather than the exaggerated depth one encounters on some audiophile recordings. I invariably prefer AudioQuest's LPs over their CDs, but committed digiphiles will miss only a touch of warmth with the CD, which is a worthy alternative, detailed and dynamic.

—Carl Baughner

BLUES MASTERS: The Essential Blues Collection
Rhino R2 71121-35 (15 CDs only). Bob Fisher, remastering; James Austin, series prod. AAD: TF: 14:57:49

With any release of a 15-CD set, one must ask, "Why?" Considering the licensing and researching nightmare of issuing tapes not previously owned by the company, why would anyone want to undertake such a massive project?

When the company is Rhino, it's a good bet that the quest for big bucks is farther down the motivational totem pole than usual. Not that these guys are the Smithsonian or some other non-profit do-gooders, but their track record indicates that filthy lucre is but a small part of what moves the Rhino execs. Any company that licenses all the Todd Rundgren albums that didn't sell obviously puts music over money.

The music is definitely what *The Blues Masters* series is about. Its organization offers interesting insights into the mixture of proselytizing and profit that Rhino represents.

**Volume 1: Urban Blues** sets the tone, offering well-known names (T-Bone Walker, Albert King, Jimmy Witherspoon) as come-ons, then introducing less famous artists (Pee Wee Crayton, Earline Hawkins) to expand the listener's horizons. The volume numbers represent no particular order, instead serving as a marketing device to encourage you to buy all 15. The CDs are loosely organized by region (Texas Blues), time period (Post Modern), instrument (Harmonic Classics, Slide Guitar Classics), gender (Classic Blues Women), or any other category that provides an excuse to offer blues, blues, and more blues.

The true genius of the selections is that any one volume leads to almost any other volume. The Doors fan who buys Blues Originals (Vol.6) to hear Howling Wolf's "Backdoor Man" is led to Mississippi Delta Blues (Vol.8) for more Wolf; there to discover Albert King, leading to more Albert on Blues Revival (Vol.7), only to be introduced to B.B. King, leading to... You get the point.
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Our Doors fan gets blues education courtesy of booklets by such scholars as Robert Palmer and Jim O'Neal, and player/scholars like Billy Vera and Cub Koda. Meanwhile, Rhino gets rich—capitalism at its best.

While not an exhaustive collection, even the blues aficionado will find treasures here. You may be surprised to learn that the Muddy Waters classic “I Got My Mojo Working” was neither written nor first recorded by Waters. Blue Originals features Ann Cole’s stunning earlier recordings. The Lightnin’ Hopkins fan who picks up Blues Roots will not only receive exposure to African originators like Mandingo Griots, but will also be delighted by the wacky “Russia Leave God’s Moon Alone,” by Sister Dora Alexander.

These kinds of discoveries abound. It’s a shame, then, that they don’t sound better. Even a cursory comparison of Robert Johnson’s “Crossroads” with the Columbia LP release reveals that the Rhino version sounds much scratchier, with a muddy midrange, than the LP’s remarkable clarity. Also, Albert King’s “Blues Power” is harsh and piercing compared to the Stax LP. Inconsistent, inferior sound is not the only problem—one disc was unplayable from about three-quarters of the way through to the end.

While these problems are not minor, I’d hate to discourage you from owning this set. There’s a wealth of music here, with exposure that’s hard to come by elsewhere of artists that deserve to be heard. This set is an important part of American culture that belongs not just in homes, but in public and school libraries. Full recordings by some of these artists are harder and harder to find in the Camelots, Warehouses, and even Turner’s, that are many people’s only record outlets.

In its own way, The Blues Masters could help create a demand for the full recordings. I can see the Billboard charts now: (1) Mariah Carey, 2) Pearl Jam, 3) Hop Wilson and His Chickens—the Complete Goldband Recordings. —Michael Ross

ROCK

BODEANS: Go Slow Down
Slash 45444-2 (CD). Mark McCraw, eng.; T Bone Burnett, prod. AAD. TT: 50:46
UNCLE TUPELO: Anodyne

It’s always sad to hear a band run smack into the limit of their talent—kind of like seeing a grade-crossing accident without hearing the squeal of brakes. Don’t be fooled by the lack of shattering glass or crumpled sheetmetal; that’s what these two albums represent.

In 1985’s Love & Hope & Sex & Dreams, the Bodeans put themselves on my short list of Bands to Watch. But four albums later, it’s obvious that, like another band on that same short list (Cowboy Junkies), these guys shot their wad on the first go-round.

Go Slow Down sees the Bodeans reunited with Love & Hope… producer T Bone Burnett. While this is the best Bodeans album since that first one—mostly because it rocks—it still bumps along as nothing more (but nothing less) than good journeyman rock’n’roll. A song like the cooly sexy “Still the Night” is replaced here by the title track, a Buttafucco-inspired ode to the pleasures of physical love that Dean Martin would be embarrassed to cover. And the kinda clever “The Strangest Kind” gives way to the more than obvious “Closer to Free”: “Everybody wants to live / Like they wanna live / Everybody wants love / Like they wanna love,” indeed.

The plus side is that the sound is right up there with Love & Hope…, one of the best-sounding rock records I know of. Engineer Mark McCraw (an associate engineer on Love & Hope…) strikes a balance between a beefy guitar sound and the Everyly-like harmonies of Sammy Llanas and Kurt Neumann. Too bad the songs aren’t as good as the sound. Go Slow Down isn’t a terrible album—more like a proud papa whose son has just enrolled at DeVry Institute. I expected more.

Likewise, Uncle Tupelo has come up a couple Rolling Rocks short of a sixpack with Anodyne. If there’s any justice, we won’t have to listen to another Uncle T. album. Sounds to me like they got their “concept” from watching Neil Young jamming with Pearl Jam on the MTV Music Video Awards:

“He’s old. Old guys suck.”

“But his hair’s cool.”

“You said but. Heh-heh-heh.”

If you don’t listen too closely, you could mistake Anodyne for Harvest Moon—Young at his most pedestrian. Delve deeper and there’s a certain adenoidal whininess that reminds me—shiver, shudder—of that first wave of singer-songwriters. Conjure, if you will, Paul Williams in a flannel shirt. Pretty scary. Why do critics like these guys? Maybe because Jeff Tweedy sounds like Ray Davies.

But listen to the lyrics on the aptly titled “We’ve Been Had”—“if you dare”—and you’ll realize who this is really aimed at: “Republican, Democrats / Can’t give me the facts / Your parents won’t tell you ‘til you’re grown / Every star that shines in the back of your mind / I just waiting for its cover to be blown.” This product is packaged for 14-year-olds with CD players—like my niece Nicole. Except that she’s too smart to fall for this deck. You are too.

—Allen St. John

SHAWN CAMP: Shawn Camp
Reprise 45450-2 (CD only). Mark Wright, prod.; Warren Peterson, engr. TT: 30:05

When RL gave me Shawn Camp’s debut disc to review, I took one look at him on the cover—standing in a bedroom, his

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Hancock, and Clinton's own son, Tracey "Treylew" Lewis—I wondered whether this CD would contain more tribute than creation.

Clinton does just fine. This record is very much a new creation—more pointedly political and rap-inflected than his last effort, The Cinderella Theory of four years ago, yet also more consistent in imagery and mythology with '70s P-Funk records. Fifteen years ago Clinton stressed the theme that you can't afford free speech, but now his message is starker: From "High in My Hello": "He who has the gold makes the rules / He who has the perspective choose the news / Genocide in prime time." It sounds much like a dire Frank Zappa warning. "Paint the White House Black" is an amusing enough rap, but there's no doubt in this song as to which Clinton would be the better White House occupant.

And George raps mightily. He really airs it out with "Rhyme and Rhyme," where the dramatic scene is rap cliche—George at a performance where he defeats and humiliates all comers with his mike, following a tradition going back to the funk bands of the '70s, the titanic tenor sax battles of the '40s and '50s, and God-knows-what before then. You've never heard such rap: wildly, intrinsically rhymed and altered, puns and quotations all over the place, and hilarious religious/scatological images. No younger rapper can touch this, and no gangsta ever dreamed of being this funny.

George Clinton wants you to smell his finger

No wonder the young guys stand in awe.

But humor is not a complete antidote to the genuine anger Clinton expresses in much of the music. Clinton's real solution remains the basic Funk mythology: free your mind, free your body; "sexual healing," in the lexicon of another great black musician. Gratefully, this solution keeps the music light-years away from all that PC. Many will be angered to hear women portrayed as objects of desire (though in "Get Satisfied," the woman talks back strongly and, as far as I can tell, has the last word). "The Big Pump" is guaranteed to offend. Dancing as sex, fat beat as big booty—these are the oldest metaphors of all kinds of American pop music. If they bother you, then maybe you'd better cloister yourself at Oberlin.

Clinton remains the mythic Star Child, proclaimed as made messiah by himself and a good portion of America's black popular musicians, warning us of the dangers of separating mind from body and of allowing ourselves to be anaesthetized by consumer culture. The most telling song along this line is "Maximunness," celebrating "the freedom of information gettin' funky / History, Mystery, new-age world philosophies." On this number also appears Clinton's old nemesis, the character Sir Nose D'VoidofFunk, "the subliminal seducer," who won't dance and maintains that "the freedom of information is too expensive for you." All this, we are reminded in a later song, is simply un-American. With the Funk, with the freedom of information and of body, "Waving on while we dance / the flag is still there."

George Clinton continues to amaze, influencing and making real music with yet another generation of young Turks, as evergreen a figure to Black pop music as Coleman Hawkins was to jazz. Dr. Funkenstein, still teachin' and preachin' and healin'. There's still hope for us all.

—Kevin Conklin

COWBOY JUNKIES: Pale Sun, Crescent Moon

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plenty enough to decide whether or not the nodding pony they slouched in on knows more than one admittedly impressive trick. On their first LP, *Whites Off Earth Now*, and its amazing followup, *The Trinity Session*, the Junkies married classic blues songs and hard-country ballads to a super-slow, super-quiet, super-white deadpan delivery that left space enough and time for the most guarded heart to rush out to meet them in a suicide embrace. Those two records are so intimate they make Springsteen's *Nebraska* sound like *Born To Run*. And the fact that *Trinity* is that rarity—a bona-fide *audiophile* rock album (*Whites* sounds almost as good)—makes it an R2D4 if ever I heard one.

But Margo, Michael, and Peter Timmins, and bassist Alan Anton, must have gotten nervous about being locked into smacked-out acoustic blues for the rest of their professional lives. On *The Caution Horses* and Black Eyed Man the Junkies moved on to country-rock originals—something Michael Timmins really can't write. Still, there were a few gems on *Horses*: "Cause Cheap is How I Feel" and "Where Are You Tonight?" But on *Black Eyed Man* the Junkies tried on optimism for size, and folks, it did not become them. It's a short step from the hypnotic to the soporific; mostly, those two albums took that step.

Pale Sun, *Crescent Moon* is just more evidence that the further the Junkies drift away from the blues, the more lost they are. They try contemporary country, guitar-driven rock, and neo-psychedelia, but have little or nothing to offer in any of these genres. Michael T's dark songs are monochromatic, vaguely solipsistic, and instantly forgettable; even the seemingly unflappable Margo T. seems at a loss as she slogs through an interminable version of Dinosaur Jr.'s "The Post." Makes me think Dylan's right: We've got more than enough good songs already—let's just learn how to sing 'em.

The sound is seductive studio plush, but as ersatz as *Trinity* was real. And for the fourth straight album now, all the best playing is done by non-Junkies. Pale Sun, *Crescent Moon* just sounds dog-tired until the very end: a cover of Ray Agee's "Hard to Explain"—a blues—and the all-too-brief (2:04) "Floorboard Blues." I rest my case.

—Richard Lehnert

**Djur Djura: Voice of Silence: The Best of Djur Djura**

(Adventures in Afropop 2)

Luaka Bop/Warner Bros. 45211-2 (CD). David Byrne, Yale Eveylev, exec. prod.; Scott Hull, mastering. AAD. TT: 60:19

Like Billie Holliday, Tina Turner, and Edith Piaf, the story of Djura's life—violence, imprisonment, arranged marriage as an independent-minded North Africa Berber woman growing up in France during the war for Algerian independence—cuts through slick suburban interpretations of the blues like a switchblade. For close to 40 years as a (mainly) Paris-based filmmaker, author, and singer, she's walked it like she talks it. For instance: Seven years ago and pregnant, she was attacked savagely by her youngest brother and niece for refusing to live as a traditional Berber woman. Her face and lips were slashed and mutilated by her oldest brother, who has vowed to kill her.

It's nothing short of a miracle that this keening voice of heaven continues to create lovely and atmospheric songs, drawing both on modern pop music and, more richly, on her work and travels in Morocco and Ifigna, her native Berber village. Evoking the struggles of women in North African society and the diaspora of Algerian villagers, this is a "best of" collection that gives voice to the swirling folk rhythms...
and harmonies of a people of whom, in the normal course of events, you’d never ever hear.

Most of the songs (“Ad Cethen Tulas,” “A Selata Nat Maslant”) are in the Berber language; the liner notes provide English translations. You’ll need a system that’s pretty transparent and provides strong midrange separation to get the best from a style that pretty much stitches an atonal solo line across a cloth of harmony. Compiled by SoHo’s own ethnomusicologist David Byrne, folk music this ain’t.

—Beth Jacques

DEBORAH HARRY: Debravation
Sire/Reprise 45303-2 (CD); Andy Paley, prod.; Rich Travali, eng. (Hit Factory, NYC); Mark Linett, mix (Your Place or Mine, LA); Jack Adams, mastering (The Townhouse, London), ADD TT: 59:20

All too soon after antsy, anerotic, five-piece Blondie was the biggest New York thing since bagels, Debbie Harry—the thinking man’s cover girl and former Play-Boy bunny—chose to stand by her ailing man, bandmate Chris Stein, and move to the back of the New Wave bus. Harry, even faster on the draw than Chrissie Hynde or Cyndie Lauper, could deliver a lyric, an off-the-cuff one-liner, or an excoriating put-down with a grace, style—and vocabulary—rarely seen in New York since Myrna Loy. (God knows, in a decade when female tough girls were rated on their underwear and the state of the skin on their hands and neck, a gal had to be quick with a quip.) Not much for original composition, it’s a shame Harry can’t make her periodic reappearances on the recording scene as a reincarnation of Adele Lutz: then she’d be married to David Byrne, get to do windows for Barney’s, and have her pick of terrific material. As it is, she’s kind of dressed up in an Anna Sui outfit but booked into Atlantic City, cast in second-rate SoHo/BoHo cinema like Union City, Videodrome, and the big one—John Waters’ Hairspray.

Life ain’t fair: This is a woman who crawled out on top from under the high style of a Bernie Edwards/Nile Rodgers disco production (KooKoo), who refused to give up on smart-ass (Def, Dumb and Blonde), who sang it like she saw it, and who surely doesn’t deserve a Touchstone Pictures—style career save of the eight-man production team and all-star guest cast (including instrumentals and productions on two “bonus track” golden oldies, “Tear Drops” and “My Last Dance with You,” via R.E.M., who themselves might be casting speculative glances toward some fairy dust from the aging Mouseketeers).

Collaborating with Chris Stein, this is Harry’s first release in four years. The tracks stand or fall pretty much by who’s producing: On the first, “I Can See Clearly,” Arthur Baker goes for shimmering transparency and wins; “Stability” (“I heard you / But what did you say?”) reprises lines straight out of “I Know But I Don’t Know” (Parallel Lines); and John Williams kicks out the jams for “Standing in My Way” without re-creating the ungodly punk muck of room sound at CBGB’s. On the other hand, the less said about her overproduced, off-in-the-ozone eco-oriented stuff (“Mood Ring,” “Rain”) the better: Picture, briefly, Stevie Nicks scoring the soundtrack for a PBS Nature documentary. Anything less than perfect separation and you get symphony stew, which also pretty much epitomizes the content, style, and delivery identity-crisis

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But however much she lived to excess her all-too-public private life, on stage and on record Joplin never stooped to grandstanding or self-indulgence. From her very first recording, from 1962, singing her own "What Good Can Drinkin' Do" (it appears here for the first time) and accompanying herself on autoharp, to a timeless classic like "Turtle Blues" (from Cheap Thrills), to the complete confidence of every full-voiced bent note on "Try Just a Little Bit Harder" (from Kozmic Blues), that big, scared, brawling voice can only be what it feels, and exactly what it's doing.

This unconditional intensity and commitment to the song, and to her unique vision of it, are what made Joplin one of the greatest singers of soul and blues who ever lived, and a true American original. In her unvarying consistency of performance she followed closely the two singers she always named as most important to her—her own close friend, Bessie Smith's, and Otis Redding's. Those who have heard all of Smith's extant alternate takes invariably remark on the fact that her performances of any given song are virtually identical from take to take. And Redding, for all his passion and soul, rehearsed every show down to the last drop of sweat.

This is why the raw energy of Big Brother & the Holding Company, Cheap Thrills, and I Got Dem Ol' Kozmic Blues Again Mama! But after the posthumous release of Pearl, all but finished when Joplin OD'd in October 1970, there wasn't much: Live, a solid July 1966 Big Brother concert briefly available on Rhino vinyl in the mid-'80s; In Concert, a live double album evenly split between gigs with Big Brother and Full Tilt Boogie. Janis, the soundtrack to the film of the same name, and which included a disc's worth of very early acoustic folk and blues from 1963-65; and the best of the bunch, Farewell Song, a brief disc of previously unreleased songs collected from sessions with all three of Joplin's own bands, plus Paul Butterfield's.

This relative dearth of unreleased material is easily explained. Unlike Hendrix, whose music was grounded in blues itself, Janis was a songwriter and despised her own repetition for spontaneity and exhibitionism, Joplin was primarily a soul singer with rock accents who always subordinated her awesome passion to the song. Listening to her sing the various in-concert versions of her standards reveals the same tortured raps, word for word—even to the stutterings—the same swoops and howls, whispers and screams, the same wrenching shifts in dynamics. This is no criticism—Joplin never once sounds rote or insincere, or anything less than as if her very life depends on the words she's singing.

Great artists must always balance passion and craft. But Joplin the legend is known exclusively for her flamboyance and excess, her wallowing in woman's pain and misery, even as she tried desperately to sing her way out of them. And the effect of a good cigar and paranoia on her voice make it even easier to overlook what a consummate blues and soul stylist she was. Her timing was impeccable, she was never off-key, and every fillip, ornament, and blues melisma and grace note was perfect—she just did it all with so much more strength and volume than any woman, black or white, had ever done before.

5 Yes, 1970 was part of the '60s. Believe me.

Most revealing is the demo version of "Me and Bobby McGee," Joplin accompanying herself on acoustic guitar. This was taped two weeks before she laid down her final vocal track on the Full Tilt Boogie version that was to become her greatest hit. What's interesting is how fully realized—how finalized—this early version is; Joplin's vocal differs from the final version only in volume. This track also gives a hint of just how good an all-acoustic Joplin solo album might have been.

Vic Anesini's remasterings put to shame Columbia's original low-rent CD reissues, and are easily the best of the three, and also (from 1988) Best of Joplin: Janis, includes all but a track or two from each of Joplin's first four, most important, albums—the only one I miss is Cheap Thrills' "Ball and Chain," one of the great apocalyptic blues workouts—you could easily get away with buying Janis and never picking up another Joplin record. But after hearing this, how could you not want it all? Highly recommended. Get it while you can.

—Richard Lehner

SARA K.: Play On Words

I must be one of the few who would've liked Sara K.'s Closer Than They Appear even if it hadn't been a Chezky recording. Maybe it's because Bruce Dunlap's guitar arrangements gave such deftly understated form and hinted at a greater substance—to K.'s somewhat undisciplined pseudo-scatt ing and indifferent songwriting skills. After all, K.'s got talent, even if I ultimately don't believe her soul stylings, which too often sound like mere vocal gymnastics à la another Sarah (Vaughan). Still, I found myself coming back to that album, and to this one.

K. shares with middle-period Joni Mitchell a husky, deep, back-of-the-throat breathiness that draws the listener in, but the voice itself is stronger and richer than Mitchell's. This is singer-songwriter jazz-blues that's one step past James Taylor's polite funk, if lacking anything like Taylor's songcraft. Sara K. is at that point in her career where she needs to learn that less is more. She needs to trust the songs and melodies more, and not try so hard to
something meaningful happen by ornamenting every note. The one cover on this album, Lerner & Lowe's "Wouldn't It Be Loverly," smoothers under K.'s cascades of bluesy embellishment. The listener may be impressed with her skill, but because K.'s performance has nothing to do with the song, the performance is ultimately meaningless.

Much better handled are tracks like "Maritime," "Burnin' Both Ends," and especially "History Repeats Itself," in which the stories seem important enough to K. for her to get out of her own way and sing it more or less straight. Otherwise, Play On Words, like Clever Than They Appear, makes better designer background music than it demands to be listened to. As for the songs themselves, I find I have as little to say about them as K. does. The album's title is apt: Sara K. plays on words but seldom seems to mean them.

Fifteen instrumentalists play on this album, but the arrangements are so tastefully understated that the impression is of a solo set. This is good and bad—K.'s acoustic backing musicians are so good, so confident in their skills, so tasteful, and so well-recorded that it's difficult at times to realize that real people are playing. Bruce Dunlap plays on half the tracks, replaced by the deft Larry Campbell on slide guitar for the rest. Only in the ill-conceived string arrangement on "Second Wind" does the album's almost smug self-confidence crack.

But this is a Chesky record. The persuasiveness of the illusion of a small group of musicians spread out in a deep arc behind the speakers is startling. Small groups recorded this well always sound fragile to me, I think because only in such recordings is it made clear just how rarely any of us hears the incredibly subtle cues—the echoes of the snare brushes off the studio walls, for instance—that we take for granted when we're actually in the same room where and when the music is being made.

Amazing sound in the service of a lot of directionless talent. Now, if only Sara K. could find a producer confident enough to rein her in a bit, we might get some equally amazing music. We might even have the first-ever audiophile–crossover star.

—Richard Lehnert

OTIS REDDING: Otis! The Definitive Otis Redding

In the early '60s, when urban bluesmen were still engaged in often amusing macho posturing ("I'm a Man," "Don't Open the Door"), soul singers were trying a little tenderness. No one did it better than Otis Redding, whose first hits for Volt Records included "These Arms of Mine," "Pain in My Heart," and "That's How Strong My Love Is." The songs not only created his persona, they fitted his personality: The lavish booklet to Otis! The Definitive Otis Redding is full of personal tributes to this warm-hearted family man, whose basic decency included a loyalty almost unprecedented in the music business to the managers and musicians and businessmen, White and Black, who helped him achieve fame.

He was the nicest person I ever met," wrote guitarist Steve Cropper, a member of the Stax house band that played behind virtually all of Redding's recordings. Al Bell, Stax's director of promotion, called him simply "my heart," and noted that when rumor circulated that Redding was about to be signed by a larger record company for a small fortune, Redding called him from Europe to reassure him that he would be going nowhere.

For the pop market, Redding had a rough sound: His early singles were denigrated in some circles as "bama music," for southerners only. He had a somewhat hoarse but expressive voice. He shouted on the early "Hey Hey Baby," his voice rising to a kind of growl. He decorated the slow songs with turns, slides, and extra syllables. He could make the dreamiest songs a percussive tour-de-force, as he does on the last piece of this new collection, a breathless live version of "Try a Little Tenderness" with some flamboyant additions—"Try a little, try a little, try a

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StereoPhile, April 1994
little tenderness." The song ends in a doubletining, shouting chorus that sounds like a cross between a drum solo and a machine gun.

It’s a style that ties Redding to James Brown. Redding’s folkier than Brown, though, as we hear on “Down in the Valley,” a traditional song that fellow soulist Solomon Burke had already remade—Redding’s rocking midtempo version has him grunting, and popping out disjointed syllables that provide an extra rhythmic push to the tight, beautifully played horn arrangements typical of Redding’s accompaniments. All the hits are here, including the gospel-tinged “I’ve Been Loving You,” “Shake,” “Respect,” “Satisfaction,” “Fa-Fa-Fa-Fa-Fa,” “Love Man,” and the posthumously released No. 1 single, “(Sittin’ On) The Lookout of the Bay,” which promised to complete Redding’s crossover to the pop market.

There are three discs of singles, with a few surprises, including Redding’s radio ad for Coca Cola and his public-service single “Stay in School.” Where the sound was better, the producers have given us the mono single mixes of these songs rather than stereo versions found on some issues. The final disc, in mono, is taken from Redding’s various live performances in New York clubs, the Apollo Theater, at Monterey, and in Europe. The sound of these dates is mostly raw, with edgy highs and vague bass. Redding’s voice is frequently under-recorded—evidently this is the way he liked it. But it’s this thrilling final disc that I’ve been playing over and over. Who else but Otis Redding would make a song called “Mr. Pitiful” into a rip-roaring shuffling testimonial? His recording career was devastatingly short—his earliest singles, including “She’s All Right,” which is included here, were made in 1960, and Redding’s plane crashed into a Wisconsin lake on December 19, 1967, when he was 26 years old. At home and in private, Redding was unabashedly friendly and considerate. In his music he was the quintessential, charismatic “love man,” a soul singer with a rough edge and country charm. Everyone interested in popular music should listen to Otis! The Definitive Otis Redding.

—Michael Ullman

Otis! Yes! On OTIS! The Definitive Otis Redding

cold winter. The first cut covers a classic, contemporary tribute to the Yankee Clipper back before he became Mr. Marilyn Monroe: “He’s started baseball’s famous streak / that’s got us all aglow / He’s just a man and not a freak / Joltin’ Joe DiMaggio.” Never were truer words written about the legendary horseshide–sphere-glitter. This big-band lovefest is countered by the “Ballad of Denny McLain,” the sad story of the Detroit Tigers pitcher who won 31 games in 1968 and rode a downward slide of greasy food and bad company out of the majors and into the slammer. “He left that courtroom a broken man / 300 pounds on the frying pan.” “Duck Ellis,” the one original, is a Byrds-esque tribute to the only man to pitch a no-hitter while tripping on LSD: “When the Reds came to bat / He hit them hard, he laid them flat.” It seems somehow appropriate that it was Pete Rose who stood in against a pitcher on acid.

Baseball Trilogy will be on repeat play during my Opening Day party/poetry reading. Let’s see... “The outlook wasn’t brilliant for the Mudville nine that day...”

—Allen St. John

MAVIS STAPLES: The Voice

Paisley Park/Warner Bros. 25049-2 (CD). Every¬one from NY to LA, engs.; more importantly, mostly mixed by Tom Tucker; Prince, exec. prod. AA? TT: 53:48

There are two great breathers in pop music: Van Morrison and Mavis Staples. As examples, I give you Van’s “Crazy Love”—"She gives me love [Audible Breath Intake], love [AB], love [AB], love [AB], AB, crazy love"—and the Staples Singers “I’ll Take You There.”

Mavis shares more with Van, though, than respiratory magic. Like most great musical artists, she inhabits that limbo where spirit and flesh clash and come together. With the Staples, Mavis always brought a rampent sensuality to even the most reverent of the family’s repertoire. This is a voice that invites—nay, demands—carnal knowledge.

Who better to executive-produce her last two solo records than Prince, himself no stranger to reconciling religion and sex. The Voice is a vast improvement over ‘89’s Time Waits For No One. It has better songs, better sound, and, whether due to rest or surgery, Mavis’s instrument no longer sounds on its way to that inarticulate garge that afflicts raspy-voiced singers over time. In fact, this CD finds her restored and rejuvenated—Hallelujah.

Though Prince actually produced only one cut here, he did write 8 of the 12 tunes, and his hand is strongly evident throughout. Fortunately, the evidence is all in Mavis’s favor, from the slammint’ funk of “You Will Be Moved” to the moving melody of “Blood Is Thicker than Time.” Unlike the last CD, which could have slotted—in any of his current bimbos, on this one Prince shows a deep respect for Ms. Staples’ gospel roots, providing her with material that fits her magnetic voice like one of his dancers’ costumes. Although she sounds quite comforta
cingly cloying the blues, it is in reading us the riot act that Mavis excels. Ever since “Respect Yourself,” no one has sounded more convincing and less self-righteous dishing out sociopolitical advice. Who else could sing “Bang, A gunshot rings out / 13-year-old baby falls to the ground / See the killer runnin’ down the street / Tell me killer can you hear the sound?” without making one cringe in embarrassment? Maybe Aretha. Maybe. “The Voice is just a steady callin’ / Until you give in, until you give up.” Amen.

—Michael Ross

VÄRTTIINA: Selene


Here we have no mighty epics of the lively Lemminkäinen, or the doozy Väinämöinen, but instead a Finnish pop group well-known in World Music circles—and featured on All Things Considered. This is nothing like Sibelius, featuring but simple lyrics (some old, others modern) set to tunes of ancient rune-songs, much updated. Some of this sounds strongly Celtic, otherwhiles rings it more Balkan, like Greek or Croat folk-song. If you’ve heard Tolkien’s “Elvish,” in the saga of the Ring-lord, you’ll have an inklng of how Finnish is crafted. Here the songs are lightsome as well as the water from the mountains, flowing down in Finnish springtime. Lovely voices blend together, harmonies as old as mountains, new as a fresh-fallen snowflake. The sound is processed like a Western pop recording, and I doubt that of our readers there are any who speak Finnish. Nonetheless, I recommend this. Never since the Pennyswhifters (folk group of the early ‘60s) have I heard this kind of singing outside purist folkic labels. This is guaran¬teed to please you, by the shores of Gitchee-Goonee, or the mighty Big-Sea-Water. (Long I warmed you, Richard Leh¬nert, I was a frustrated poet.)

—Les Berkley

SF SEALS: Baseball Trilogy

Matador OLE 064-2 (CD). Greg Freedman, eng.; prod. AAD. TT: 11:01

Why Time Begins an Opening Day. How Life Initiates the World Series. The Gospel According to Casey. My bookshelf reveals that a lot of people take baseball just a little too seriously. In my other life as baseball writer for The Village Voice, I learned that one look at John Kruk in the buff will quickly douse any tendency toward hero worship. Barbara Manning and the SF Seals* understand—it’s a game.

This three-track EP has kept me from lapsing into fuzzy reveries during a long...
Enough

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DUNLAVY AUDIO LABS SC-IV

Editor:

Dunlavy Audio Labs, its management, and its staff wish to sincerely thank those at Stereophile who made possible the review of our SC-IV loudspeaker. We especially wish to thank Robert Deutsch and John Atkinson for the considerable time and effort they expended, including a trip to our new Colorado Springs facility, to ensure the completeness and accuracy of the review. Their comments and conclusions help to make worthwhile all of the midnight oil and dedication to perfection that go into the design, engineering, and production of a product like the SC-IV.

We particularly appreciate Robert Deutsch's assessments, which seem to vindicate our own contention that the accuracy of a loudspeaker must first be verified by a full set of credible measurements before it can be said to possess the potential to truly mimic the original live performance. Of course, the bottom line will always be how a loudspeaker "sounds" to an experienced listener under carefully controlled conditions within a familiar listening environment, using good electronics and superb recorded material. However, simple logic would appear to dictate that a loudspeaker which does not fare very well when properly measured may provide subjectively "good" or "pleasant" reproduction, but can never sound truly accurate if compared directly to live music or a loudspeaker that measures and sounds accurate by objective evaluation. In this regard, Robert's comment that "The most startling of the SC-IV's many strengths was the impression it gave of providing an unimpeded pathway to the musical source and to the sonic characteristics of other components in the reproduction chain" seems to say it all. We could not have said it better!

Likewise, the observations of John Atkinson that "This speaker is more like an electrical component in its phase performance," and, "Although the subjective effects of a loudspeaker featuring time-coherent behavior are not fully understood, my subjective impressions have been that such designs always feature superb imaging and soundstaging. The SC-IV is no exception," certainly warmed the hearts of our technical staff. Of course, his final comment, "This is one heck of a loudspeaker!" really made our day.

John's suggestion that we comment on his method of determining the SC-IV's frequency response in the range below about 200Hz was well made. His technical expertise wisely led him to suspect that any attempt to simplistically splice together the nearfield response of one of the 10"-diameter woofers to the farfield response of the midrange/tweeter combo might yield wrong answers. First, an array of loudspeaker drivers like that of the SC-IV exhibits behavior very similar to that of a complex array of multiple antenna elements. And, as antenna engineering teaches, it is not possible to accurately deduce the gain of such an array at farfield distances over a wide range of frequencies by knowing only the nearfield properties of a single element. Proper determination of the farfield gain vs frequency (frequency response) requires the "complex addition" of the amplitude and phase components of the signals received from each element at the particular point in space being evaluated (listening position).

DAL determines the frequency response of "large" loudspeakers (those with dimensions exceeding about 24") by using at least two different and independent means, with the results compared to ensure an accurate conclusion. The first method requires a large anechoic chamber (DAL's is 16' high, 20' wide, and 24' long, with large, highly absorbent foam wedges covering all internal surfaces). An extremely accurate, omni-directional B&K 4133 mike is located about 10' directly in front of the loudspeaker along its intended listening axis. Using both the computer-based MLSSA system and time-domain spectrometry equipment (employing the Technion 12 and/or an HP 3580A, with an external HP frequency-synthesizer), a "raw" measurement of the amplitude vs frequency response of the loudspeaker under test is made. The amplitude values vs frequency of this response plot are then modified by the "correction factor curve" of the anechoic chamber (previously determined by multiple measurements of a calibrated radiating source of suitable dimensions). The second method involves a proprietary technique that utilizes an analysis of the step response of the loudspeaker compared to that of a "perfect" loudspeaker.

Fig.1 is the DAL measurement (using MLSSA) of the SC-IV's frequency response at a distance of 10', corrected for deviations introduced by response aberrations of the anechoic chamber. (The accuracy of this curve has been verified by an analysis of...
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MUSICAL SURROUNDINGS
demand of one additional line-level input and the deletion of the phono preamplifier stage. The Exposure XIX has a suggested retail price of $1295.

Thank you again for your time and attention.  

CASEY MCKEE  
VP, Exposure Electronics North America

NAD 502 & 304 Editor:

We would like to thank StereoPhile for the thorough review of the NAD 502 and NAD 304, as well as for the complete set of measurements on each, and their subsequent evaluation.

We would be remiss were we not also to thank CG for his clearly exhaustive testing procedures and circuit evaluations. It is not often one sees relatively inexpensive equipment tested and evaluated in a system of similar price category, as well as with equal rigors. However, among the highest price and questioned playback standards, to clearly determine its performance in a potential actual use situation and "push the limits.

We were also pleased that Corey noticed the results of NAD's continuing efforts to upgrade the performance levels of all our new models to further ensure we continue to provide the user with some of the best value-for-dollar equipment.

C. VICTOR CAMPOS  
Director, Product Development & Engineering, NAD

FOSGATE/AUDIOINICS 7AT THX Editor:

Our thanks to J. Gordon Holt and StereoPhile for the review of our System 7AT. Reviewing a single component can be taxing enough; we salute him for undertaking a complete system review.

We have just a few comments and clarifications. The System 7AT reviewed was delivered just as the new Model Three A processor/controller was going into production. It was delivered with a Model Three instruction manual instead of the revised Three A edition. Information on software upgrades designed for the Model Three A was, therefore, missing from JGH's manual. We apologize for failing to follow up with a copy of the revised manual; current production is shipped with the proper manual.

The variable range of the remote control has been of ongoing concern to us, although most production units have certainly not suffered to the degree experienced by JGH. Nevertheless, current production uses a new IR receiving sensor which dramatically extends the range of the remote control and provides improved off-axis reception.

Gordon also comments regarding his disappointment in the split-surround performance of the Three A. It is important to remember that dipole surround speakers, by their very nature, diffuse the soundfield. Our patented dual-drive dipoles allow a point source to be created in the music modes, but, like all dipoles, still do not match the ability of a point-source design to create pinpoint images behind the listening area. If pinpoint imaging rather than diffuse imaging is the listener's goal, we manufacture a smaller speaker, the MC 110 (non-THX certified), which is quite similar to our MC 220 in spectral balance. It uses the same tweeter as used in the MC 220, along with a 5" version of the 6" driver used in the 220. Listeners who prefer precise surround imaging, as opposed to diffuse, may wish to consider the MC 110 for surround speakers in lieu of our SD 180 or other dipole surround speakers.

Also, we have never claimed our split-surround modes to be SQ Quadraphonic-compatible in terms of image positioning. While we could certainly produce a state-of-the-art SQ decoder, it is unlikely that there is a commercial demand for such a product.

Please note that Dolby Laboratories has not acquired official stand against Home THX. Rather, their policy is that THX is one of several ways of achieving a state-of-the-art Home Theater audio system.

We do agree that individual input-level trim controls would have been a nice touch. In fact, we considered them, but they would have required a larger chassis at added expense and complexity. Delivering the highest-quality analog signal performance was our design goal; we elected not to use additional electronic volume controls unless absolutely necessary. The sonic results achieved with the Model Three and Three A, and comments from JGH and other reviewers, indicate that our original decision was correct.

Again, thanks for undertaking a review of the system. As J. Gordon Holt noted, we sought experts in various design categories to achieve an affordable, state-of-the-art sound system. Fosgate is an acknowledged expert in the area of surround-processer design and steering-logic circuitry. Likewise, the talents of John Dunlavy and Stephen Mantz are also appreciated.

One final note: The complete system was designed and manufactured in the USA.

CHARLES WOOD  
Product Manager, Fosgate/Audioinics

MERIDIAN 500 & 563 Editor:

We are delighted with Bob's very positive review of both the Meridian 500 transport and our 563 D/A converter. He has researched it well, and I like the balance in his exploration of the technology and the sound. This is the kind of writing that makes StereoPhile unique.

Problems Bob reported some difficulty getting the 563 to lock reliably to the Theta transport. Maybe it was sulking? Seriously, though, the 563 should lock to any digital source that meets IEC954; it cannot fail to achieve reliable double-lock when the incoming signal has a skewed mark: space ratio. We have no experience with the

\[1\] Is that enough to keep my copies coming? !!!!!

Theta, but this kind of difficulty has been very rare with the 563 in the field. We have recently found a way to improve the 563's immunity to mark and space problems, and have applied it to current production. If a reader has a genuine locking problem with the 563, then he should contact us.

I was intrigued to see how Bob described the design balance of the 563. I suppose it is unusual—but it is very deliberate.

It is misleading to think that the output stage is an op-amp. While this stage incorporates a 5534, it only forms the input section of an otherwise discrete class-A amplifier that uses overall feedback. The resulting amplifier has none of the problems of the 5534—and, in fact, the very large-die output transistors basically eliminate thermal-modulation effects, for which reason we do not use the 5534 or any modern op-amp alone.

At Meridian we have been closely studying the question for 10 years, and, yes, the 563 takes "Here, the improvement is both subjective and objective, including jitter and to deliver synchronous, clean waveforms to the differential DACs. We are sure that this is extremely important.

In your fig. 10, you show your measurement of jitter using an instrument based on a fundamental FM detector. By our calculations, the PLL in the 263 gave a clock jitter of 5.6 picoseconds. Theoretically, the improved design in the 563 should be 16 times better. However, although we now see readings in the 1ps region, this plot is also the noise-floor of our instrument, and the recovered clock in the 563 is actually indistinguishable from the reference crystal in the 500 transport. Our deduction of 1ps rms jitter refers to the clock applied to the DAC. We know no way to confirm or deny the improved (over the 263) result in the audio output of the DAC other than by listening—when it is clear. To our ears, the improved soundstage and extra sense of "being there" are in the main due to this lower jitter (and its lower corner frequency).

The sweetness and palpability Bob found in the sound also derive from the synchronous differential mode of the DACs.

Bob says of the sound of the 500/563 combination: "very refined, smooth, and sophisticated in the mids and treble," "excellent portrayal of timbre," "nuance and delicacy in an instrument's fine structure," "open spaciousness, transparency, and bloom," "first-rate...soundstage depth," "bass...crisp, punchy, and dynamic." It's hard to add to that, but I think we should always, although RH hears more bass "slam" in some other converters, we remain absolutely convinced that such bass "delineation" is the result of noise-modulation and is therefore not only less correct, but can only be bought at a cost to overall capacity, openness, and sense of realism.

The real strength of this combination lies in its ability to convey a natural and long-term satisfying musical result. We firmly believe that the better products like the 500/563 behave in terms of jitter, modulation noise, and distortion, the more they adapt..."
sound like live music. And that is what it’s all about.

Bob Stuart
Chairman & Technical Director, Meridian

Timbre TECHNOLOGY TT-1

Timbre Technology, Inc. would like to thank Jonathan Scull and Robert Harley for taking the time to evaluate the Timbre TT-1 D/A converter. We are impressed that so much effort and reporting has been dedicated to our unit, especially by Mr. Scull. We believe that Jonathan Scull’s conclusion that the Timbre TT-1 sounded “layered, clear, grainless, enormously wide, tremendously and impressively deep,” while musical timbres and tonal colors were as “rich and complete as live music itself,” describes all the characteristics we attempted to impart to our D/A converter. Throughout the intensive research and development of the Timbre TT-1, our design imperative was to create a converter that reproduces music in the most natural and involving manner possible. When we began developing the Timbre TT-1 DAC, we believed that a good-sounding converter was a converter that was digitally precise. That is to say, we thought a converter that was clinically correct and tested well would also sound terrific. Were we surprised to learn that our clinically correct prototypes didn’t sound the way we had hoped. We found that, to achieve the ultimate in musicality, we had to make extensive modifications to our prototypes. These refined units did not test as well as the originals, but they sounded simply ethereal.

In light of our design philosophy to create a musically involving digital reproduction instrument, we faced many hurdles in its design. We were concerned about general criticisms that “digital sound” was harsh and fatiguing. As a result, we employed over 10 different analog tunable/arm/cartridge combinations to voice the TT-1. We used an analog front-end to voice it solely because we could not afford to hire the Philadelphia Orchestra for the duration of the TT-1’s development.

In our search to create a natural, effortless, analog-like sound, we chose to use the Crystal 4328 Delta-Sigma chip. The Crystal is a terrific alternative to other chipsets, due to its inherent sonic benefits and its flexibility in circuit-board applications. The use of the Crystal allowed us to implement the chip in a manner resulting in the most accurate digitally reproduced music possible. Our unique design choice allows the listener to hear more detail and decay than was previously possible in a digital converter.

Digital audio design is a series of trade-offs. We feel, therefore, that focusing only on testing results can be misleading. Unfortunately, at the current state of technology, an improvement in one area may readily produce sonic benefits that cannot be substantiated through bench tests. The sonic performance of the TT-1, though, has spurred Mr. Harley to state that “Timbre’s soundstage was the antithesis of diffuse, vague, bloated, or confused.” Mr. Scull, who listened intensively to the unit for several months, added that “the seemingly less steady imaging of the Timbre [in comparison to the Sonic Frontiers SFD-2] turned out to be revealing of... movements around the microphone during the recording. Chalk up another one for the Timbre!” No wonder Mr. Scull had the confidence to use our unit to evaluate the differences between world-class CD transports.

Timbre Technology appreciates this opportunity to interact with two very distinguished audio-component reviewers. We have slightly modified both the balanced outputs as well as the internal circuitry of the DAC to correct the minor issues identified in the review. For the 5% of all audiophiles who operate fully balanced systems and to whom Mr. Harley’s evaluation only applies, the TT-1 has further refined its world-class balanced-output performance. Additionally, for the other 95% of audiophiles operating in single-ended mode, and to whom Mr. Scull’s glowing assessment applies (and we suggest that anyone interested in the Timbre TT-1 should reread Mr. Scull’s comments), the identified mild darkness has been corrected, and the overall transient attack of the unit has been improved. This upgrade is offered at no cost to current Timbre TT-1 owners; all future production-run models will reflect these improvements.
We are excited by our new Timbre TT-1 D/A converter, and we urge anyone considering a digital front end to audition the Timbre. We are confident that you will be amazed at the quality of music reproduced from our DAC. The Timbre TT-1 D/A converter is the shape of sound.

David Goldstein, John Kukulka
Timbre Technology

Snell 500 Home THX Speaker System

Editor: John, how could I resist responding, given your invitation to do so in your Snell Acoustics 500 Home THX System Follow-Up? Now you'll have no one to blame but yourself! I promise to be concise, if not brief.

You mentioned your intrigue generated by the idea that loudspeakers from different manufacturers could sound different, even when all meet Lucasfilm's THX guidelines. The reasons are simple: The THX technical requirements are a set of minimum specifications, not exact specifications. A manufacturer has considerable flexibility in choosing how to implement the required parameters in the product, and certainly has the freedom to exceed the minimum specifications according to their wishes.

I have only a small point to make regarding the LCR measurements. Splicing a quasi-anechoic curve to a close mike curve (your fig.3) is a nontrivial task, as you pointed out in your review of B minor in this issue. Fig.1 is a true free-space measurement of an LCR 500 (through the "normal" inputs), indicating the correct low-frequency balance. It can also be noted in fig.1 that a greater measurement distance (2m), and a slightly below-tweeter on-axis microphone position, eliminate the high-frequency irregularity that you noticed.

The philosophical questions that you bring up in your comments are, however, far more important than minor details regarding the LCR 500. You note that the intentionally limited high-frequency vertical dispersion, and extreme off-axis vertical comb filter effects "...may contribute to the general feeling that THX-specification loudspeakers don't do as well with music as they do with soundtracks." You go on to conjecture that the effects noted may be more noticeable with music than film sound, which is accompanied by a visual image.

Perhaps surprisingly, I agree on both counts, but for somewhat different reasons. The controlled vertical directivity is new and foreign to audiophiles, therefore it is automatically suspect. This suspicion is without technical merit, as explained below. I also agree that any flaws, or indeed superior qualities, of a particular loudspeaker are much more noticeable with music than with film. I believe this to be the case for two reasons. First, I have never heard a film soundtrack that I would consider to be of even near-audiophile quality. (Whether this is due to the degradation resulting from the many, many generations to which a film soundtrack is subjected, to ceiling and floor reflections, while allowing wall reflections. Some results of the five-year European Eureka project will be released by the time this is published. These reflect the results of over 6200 presentations to the subjects in one experimental round alone. A major finding is: "The results have shown that only the first-order floor and ceiling reflections will contribute individually to overall timbre of the sound field." (Soren Bech, "Perception of Reproduced Sound: Audibility of Individual Reflections in a Complete Sound Field," Preprint 3849, presented at the Audio Engineering Society's 96th Convention, Amsterdam, 26 February-1 March, 1994.) Our research at Snell Acoustics into DSP room correction has indicated the very same thing.

In your final comment, you express alarm that the THX specifications require narrow vertical dispersion. The most compelling argument might be a controlled listening test comparing an example of a loudspeaker that meets this specification with one that you regard most highly that does not, and using music as the only source. I encourage you to compare our new Music & Cinema Reference THX System with any speaker at any price on your choice of music. If you prefer the THX-specified loudspeaker on music, it will prove that Lucasfilm's requirements do not inherently degrade the reproduction of music.

Kevin Voecks
Chief Engineer, Snell Acoustics

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Toshiba Toslink Fiber Optic Cable—$19.95

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Stereophile, April 1994
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ROWLAND MODEL 5, balanced, latest, immaculate, ($500) $2700; Muse model 18 subwoofer, oak, balanced, new, ($3250) $1950; Theta Data II transport with ATX, immaculate, low use, ($2900) $1800; Cardas Hexlink Sc 2.5m, balanced, ($812) $425; Theta optical cable, 2m, att., ($180) $80; AudioQuest Quartz interconnect, 1m, RCA, ($150) $75; two custom oak power-amp covers 21" W by 28" D by 12" H, ($500) $250. (412) 492-0418 EST.


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This isn’t the last issue you’ll get before the Stereophile High-End Hi-Fi Show is held in Miami (April 29 & 30, May 1), but it’s the last announcement that you can respond to in time to get reservations at the Doral Resort and Country Club, where the Show is being held. We don’t usually promote our Shows editorially—except by covering them after the fact—but the quality and number of exhibitors at this Show deserve special mention.

The venue is also spectacular: The Doral is by far the nicest hotel we’ve ever signed up for a Show. The gated community has relaxed—feeling accommodations, loads of tropical flowers and plants, beautiful trees and birds, three 18-hole golf courses, good-sized exhibit rooms with acoustically excellent concrete walls, and, of course, the best hi-fi equipment you could ever listen to.

Some subscribers have expressed dismay that Stereophile has chosen Miami as a Show site, given the recent incidents of Florida highway violence which have attracted so much negative attention nationally. I understand the concern, but I feel that some perspective is in order. After all, our last New York Show was across the street from Madison Square Garden at 32nd Street and 7th Avenue, and our San Francisco Show was on the edge of the Mission District! The only casualty from those two Shows was a gentleman who tripped on a wheelchair ramp and hit his head on one of the New York hotel’s support columns. (Fortunately, he was not seriously injured, much to our, and the hotel’s, relief.) I could be wrong, but I don’t feel that a gated community in a bank—and office—building neighborhood only 20 minutes by cab from the Miami airport will be any more dangerous than downtown San Francisco or New York. I look forward to Miami, and to seeing you there.

And the products you’ll hear! B&W and Krell will be putting on the first public demonstration of B&W’s Nautilus loudspeaker (driven by eight Krell Audio Standard 2s)—a most unusual-looking new flagship model, the sound of which fully justified its unusual looks when I last auditioned a pair almost three years ago.

Dave Wilson will be demonstrating not only his WATT/Puppy/WHOW combination—the WHOW recently redesigned for greater low-frequency output—but also his latest speaker, the $64,500 X-1GRAND SLAMM. (The latter requires an off-site bus trip to dealer Peter McGrath’s Sound Components.) And we just came in that Apogee is enlarging its exhibit to afford adequate room for their Studio Grand.

NHT will be demonstrating their more reasonably priced 33—which Tom Norton liked, and which Corey Greenberg thinks are the best speakers available, price no object—as well as the Super Zeros and powered subwoofer. Front Row Centre will be demonstrating the new Thiel CSI.5 speaker, which Jack English thought so much of in this issue’s WCES report.

This is just a small sample of what will be in Miami in the loudspeaker department—see our Show ad on p.56 for a complete list of participating brands.

Home Theater will also be stunningly represented—just as it was in San Francisco, where consumers were able to sample literally the world’s best. There will also be real-world-priced Home Theater systems—by Atlantic Technologies, among others—which almost everyone can afford.

One of the most edifying aspects of recent Stereophile Shows has been the overwhelming musical support offered by both software and hardware companies. Reference Recordings is supporting the presence of Mike Garson (of Oxnard Sessions fame) at the Show. MIke, who has appeared at two previous Shows, puts on a knockout show. The legendary Lincoln Mayorga will be playing Friday and Saturday, courtesy of Sheffield Labs, and Sound Advice is sponsoring the Brass Ensemble from the Miami New World Symphony. Chesky will be represented by the brilliant David Chesky himself. I’m typically pretty busy at our High End Shows, but in San Francisco I was tempted to spend the entire Show just listening to the great music.

Our Fringe Events will include the usual “Ask the Editors” sessions, along with “Meet the Designers” and “The Future of Home Theater,” with Widescreen Review’s Gary Reber. (This technically fascinating review of video technology played to a packed house in San Francisco.)

We’ve also been blessed this year with an in-house auction of used equipment! The Academy for the Advancement of High End Audio is raising money by auctioning off used and demo equipment that has been contributed by members. There’s no “reserve” on any of this equipment; some of it will undoubtedly go at low prices—determined, of course, by the enthusiasm of the attendeé bids. The equipment can be viewed and examined—but not played—on Saturday. The auction will be held on Sunday.

The Academy auction, and the day of trade-only seminars they’re hosting at the Doral before the Show starts, ensures an even higher than usual turnout of high-end manufacturer personalities. My thanks go out to the Academy for scheduling their events in a way that enhances the High End’s sense of community—something which has become such an important aspect of the Stereophile Shows.

I’d be exaggerating if I said that I hate to toot my own horn, but I do feel immodest in describing this Show. We have an embarrassment of riches. Don’t just read about them in the Show report—be there! Hotel reservations can be made at (800) 223-6725 (mention HI-Fi ’94 and get our special rate), and Show tickets are available from Maura Rieland at (505) 982-2366.

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