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COMING ATTRACTIONS
Rather than peer into my murky crystal ball to predict the next issue’s contents, I’d like to use this month’s space to explain one aspect of our “Contents” page—Equipment Report “Follow-Ups.” Readers have complained that they can’t find “Follow-Up” reviews listed in that issue’s contents, specifically the coverage of the Graham and SME tonearms and Benz and Dynavector cartridge listed in August. The reason is that they don’t exist: when a review of one product contains significant discussion of the sound of another already reviewed in the magazine, I add a “Follow-Up” entry both to that issue’s contents listing and to the cumulative review index we occasionally publish. Readers interested in reading everything that Stereophile’s reviewers have to say on a particular component’s sound thus have no problem finding it.

Take, for example, LG’s review of the Gradient subwoofer in this issue. LG carried out extensive comparisons with the Velodyne ULD-18 subwoofer. As his comments reflect his continued experience of the Velodyne since his Vol.12 No.10 review, I feel justified in adding it to this month’s “Contents” even though no specific review appears in this issue. Similarly, T/N had carried out extensive re-auditioning of the four products mentioned during the preparation of his Oracle turntable review in August; his additional comments will be essential reading for anyone who owns or intends to buy any of these products.

“Follow-Up” should not be regarded in the same light as formal Equipment Reports. “Follow-Up” is where our ongoing product experience is published, either as separate short articles or as an integral part of a review of another component.

—JA

Erratum: In the concluding part of his headphone survey (Vol.14 No.8), BS stated that the $100 Sony MDR-V6 headphones had been “highly recommended” by John Sunier of The Binaural Source and the “Audiophile Audition” syndicated radio program. Mr. Sunier has since pointed out that BS got things upside-down: He does not recommend the MDR-V6 phones; he feels they significantly diminish the binaural “out-of-the-head” experience.

—JA

Stereophile, October 1991

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As I walked through Stereophile’s Taipei High-End Hi-Fi show (see the full report next month), I was startled to see four ladies in their 50s carrying Stereophile bags full of brochures. They’d just left a demonstration of Martin-Logan CLSes driven by Arcam electronics and were talking animatedly among themselves as they busily made their way to the next exhibit room. My surprise was repeated throughout the show as I saw an amazingly diverse group of people who had enough interest in high-end audio to get themselves to the Taipei Hilton and pay the show’s admission price. Young couples, old couples, entire families, and women were all there to see and hear high-end audio. This was in sharp contrast to the narrow demographic group seen at US and European hi-fi shows: predominantly young to middle-aged males to whom audio is a hobby.

I got to thinking about why I should be surprised to see four fiftyish Taiwanese women enthusiastically prowling a high-end hi-fi show. Are they inherently any less dedicated music lovers than anyone else? Do they intrinsically care less about playback quality than young male hobbyists?

Of course not. Any such presumptions are utterly groundless. Then why should I consider the four ladies’ presence unexpected?

My surprise is symptomatic of the tragedy of the high-end audio industry: its failure to appeal to music lovers instead of just audiophile tweakos. We don’t expect those four ladies to debate the audibility of nitrogen-filled rhodium relays in the signal path, yet we would not at all be surprised to see them at the concert hall. This juxtaposition throws into sharp relief the high end’s fundamental inability to encompass music lovers who don’t care about technical matters, but would enjoy music so much more with a high-end system.

High-end audio needs to mature beyond its technically oriented hobbyist genesis. It must expand its scope to appeal to the music lover who has no interest in equipment for equipment’s sake, but just wants to recreate the musical experience in the home. The pursuit of musical realism should not require an immersion in audiophile technical minutiae. I believe there are vast numbers of music lovers with the financial means to own high-end equipment, yet listen to mid-fi either out of ignorance of its very existence or because of intimidation by the technical side of high-end audio.

An example: Someone I know worked as a personal secretary for a wealthy couple who were ardent music lovers. The couple had spent 15 years in Italy and attended the opera...
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there weekly. In addition to contributing to the symphony, they enjoyed live music at least once a week. Without a doubt, music was a big part of their lives.

Part of the secretary's job was to pay the bills. She told me about one particular bill from a mid-fi audio emporium for a $269 receiver—a replacement for the couple's old receiver. Why did this music-loving couple buy a cheap, poorly performing audio system when they had the financial means, time, and musical inclination to own something that would bring them far more joy than what they had come to expect from a music playback system?

They had never been told about the high end. Had they ever heard a topnotch system playing their favorite music in a comfortable atmosphere, and presented the right way, I'm convinced beyond any doubt that they would have immediately bought the system, or at least begun investigating what other products the high end has to offer. But they were never given that chance.

The tragedy of this episode is that everyone loses: the manufacturer who would have increased his yearly gross, the retailer who missed a big sale, and, yes, the magazine that may have gained one more reader. Moreover, all high-end consumers suffer too: a larger market would bring prices down as the economies of scale went to work.

Far more tragic, however, is that this couple will never know the joy of selecting a piece of music and having it performed before them with a realism and emotion they never thought possible. The issue goes far beyond the financial health of the industry: it's a matter of altruism. It's such a shame to think of that couple—such ardent music lovers—listening to mid-fi and thinking that this is all recorded music can be. The high end has failed them just as much as it has failed itself.

The high end's problem is twofold: the public doesn't know it exists, and many who do know are intimidated by the technical jargon or turned off by the elitism that sometimes accompanies the high end.

The first problem is one of marketing. The high end tends to sell its wares to the same people over and over again. The guy who bought a Symphonic Bombast 101 amplifier last year is encouraged to buy the Bombast 201 this year—and advertising money will undoubtedly be spent trying to get him to buy a 301 next year. Instead of "fishing in the same hole," high-end manufacturers should make expanding the high-end audio market their primary concern. I'm not talking about promoting certain products—I'm talking about making the very idea of high-quality music playback in the home known to the general public. If people don't know how good music in the home can be, they have no choice but to be relegated to a life of poor sound, completely ignorant of the pleasure and joy a topnotch audio system can bring into their lives. Unfortunately, the industry is too small to launch a national advertising campaign, even with a concerted effort among manufacturers.

Whenever I meet someone and am asked what I do for a living, their reaction is, without exception, shock that American-made audio products even exist, never mind that they are among the finest in the world. No one knows.

The second problem is one of presentation; those people inclined to own good music playback systems are often alienated by either the high end's technical complexity or its snooty attitude. Many music lovers just want good sound without technical confusion elitism. We should remember that they are music enthusiasts, not equipment junkies. Furthermore, appealing to a person's sense of snobbery to increase the amount of a sale—something I've experienced firsthand—is equally distasteful to the music lover. The industry should promote, rather than hide, the fact that many musically satisfying high-end products cost no more than mass-market mid-fi.

The following experience exemplifies the presentation problem. When I taught a college program in recording engineering, I assigned the students—who knew nothing of the high end—to go to any high-end store and hear some music reproduced correctly. I told them to say up-front who they were, what their mission was, and to tell the salesperson that they had no intention of buying anything that day. They were also instructed to visit the stores during the slowest business hours.

They came back to class angry and frustrated. Many met with this response: "I'm not going to turn anything on for you if you're not buying anything." Others were treated condescendingly, the salespeople expressing a haughty, snobbish attitude: "This equipment is too good for you." Virtually all the students
The Promise Of Digital...

"The world's most advanced compact disc converter has just been assembled by Deltec... This is the truest sound yet from compact disc."

Hi-Fi World (June 91)

The PDM2 is setting a new reference standard incorporating the world’s first 4th generation Bitstream technology - the revolutionary DAC7/SAA7350 Philips chipset, combined with innovative design and manufacturing techniques.

"If you are hoping to develop a highly neutral and devastatingly transparent system then The Little Bit will prove a powerful ally."

Hi-Fidelity (March 91)

Deltec have developed a range of D/A's which will upgrade any system, starting with the affordably priced The Little Bit.

"Deltec offers a level of sound quality quite beyond anything I have encountered to date."

Hi-Fi Review (Nov. 90)

The 50S pre and power amplifiers have separately, and in combination, been lauded as not only being the best in their class, but the finest in any class.

This extraordinary line of British electronics is now available in North America. To discover more, please contact us...

...Is Finally Fulfilled.
were turned off by the experience. Some were quite outspoken in their disgust. The few who did hear good demonstrations with enthusiastic salespeople, however, came back to class transformed. Just that one experience made them converts—as I knew it would. Their zeal seemed odd to those students who hadn’t heard a high-end system. What was the big deal?

It is unconscionable that the rest were treated so churlishly. I found myself apologizing for the very same industry whose tenets and products I so enthusiastically endorse. Although I’d had similarly unpleasant experiences, I thought the stores would enjoy the chance to show off good sound—especially to recording students. Instead, they revealed just how shortsighted they really were.1

How much better engineers would those frustrated students have become had they been given good presentations? How much money might they have spent on high-end equipment after graduation if only they’d known how much better music reproduction could be? How many other people’s standards would they have raised in the course of their lives and careers in recording and music? How many other people have been turned off to the high end by similarly bad experiences?

Everyone in the high-end community—in any capacity—must take advantage of every opportunity to enthusiastically present high-end music playback to the uninitiated. This is why hi-fi shows are so worthwhile and why Stereophile devotes so much time and energy to organizing them: the general public can experience how good music reproduction can be, as well as get a taste of the participants’ enthusiasm and dedication that make our industry unique.

Every person who listens to music he or she cares about through a mid-fi system represents a failure of the high end. How can we get the message across to tens of millions of potential customers that home music reproduction can be much more than they ever imagined?

I wish I knew.

1 There was one notable exception: Havens and Hardesty in Huntington Beach, CA. They graciously accommodated the students, and it was always a pleasure to visit the store. I once took a friend there who was interested in Vandersteen 2s, but could not immediately afford them. Despite telling Richard Hardesty he was not going to buy that day, Richard spent the entire Saturday afternoon playing music for us through different equipment. My friend ended up becoming a more enthusiastic and dedicated audiophile after that experience.
In a class by itself

The Matrix 801 Series 2 has been, since its introduction, the world’s most popular loudspeaker in its price range. The 801’s extensive use worldwide as the reference monitor for classical music recording is well known. The 801 is listed in Class A—“Best attainable sound”—in Stereophile’s “Recommended Components” (Vol. 14 No. 4, April 1991). The 801 is also the only loudspeaker ever to win the prestigious Audio Video Hi Fi Grand Prix three years in a row.

The Anniversary Limited Edition

In celebration of B&W’s 25 year quest for perfection, a very special, limited production version of this legendary monitor has been produced. The 801’s crossover has been optimized for pure performance through the elimination of both protection and impedance regulation circuitry. Such refinements could only be achieved by B&W’s development of a new, higher power handling tweeter, further perfecting the response in the critical crossover region.

The Sound

The resulting enhanced performance is unmistakable. The sound is at once cleaner, and more detailed, yet slightly warmer sounding, with no trace of hardness. The 801’s incomparable soundstage width and depth are improved as well.

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  - Long Beach: Audio Concepts
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- **IA** Ankeny: Audio Concepts
  - Des Moines: Midwest Audio
- **KY** Lexington: Audio Video
- **LA** Baton Rouge: Audio Concepts
- **MA** Boston: Goodwin’s
  - Charlestown: Audio Concepts
- **MD** Baltimore: Soundtracks
  - Rockville: Myer Emco
- **MI** Ann Arbor: Stereo Shoppe
  - Dearborn: Almas Hi Fi
  - Farmington Hills: Almas Hi Fi
  - Lansing: Stereo Shoppe
  - Rochester: Almas Hi Fi
  - Royal Oak: Almas Hi Fi
  - Saginaw: Stereo Shoppe
  - Stevensville: Stereo Shoppe
- **MN** Burnsville: Audio by Van Aalstine
- **MO** St. Louis: Antech Labs, Flip’s Stereo Place
  - Cape Girardeau: Audio Concepts
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The NAD 5000 CD Player

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The NAD Model 5000 Compact Disc Player, pictured above, is a great example of NAD design philosophy: elegantly simple front panel, ease of operation, and terrific performance! In a comparison with several CD players, costing over three times the 5000’s price, Tom Norton of Stereophile (Jan., 1991, Vol. 14, No. 1) writes: "If you’re still awaiting the full evolution of digital, and believe that spending big bucks at present on an up-market player is money down the drain, the NAD might just keep you happy halfway to the next millennium."

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WorldRadioHistory
The humor is in the details . . .
Editor:
For JA to infer that Mies van der Rohe “doesn’t believe in God” from the latter’s brilliant observation that “God is in the details” (Vol.14 No.8) is fundamentalist reductionism in the absurd.

The pursuit of quality, which is to be found in the details, is after all the pursuit of perfection—that perfection idealized in all conceptualizations of God.

Norman Armstrong
Newtown, PA

Abem. This statement was meant to be, er, a joke, Mr. Armstrong. You see, as Mr. van der Rohe’s big-boned style of architecture seems devoid of visual detail, I thought I would make an amusing play on words; if there aren’t any details, then Mr. van der Rohe obviously . . . oh, never mind. I guess I shouldn’t give up my day job to appear at the Improv.

—JA

What a rag!
Editor:
Ah, Stereophile. What a rag. Forty or so people writing in print too small for me to read about differences too subtle for me to hear in equipment too expensive for me to buy, and I’m paying $50 bucks a year for the privilege.

Actually, it’s a great way to earn a living. Wouldn’t mind doing it myself.

Your magazine seems to be on the verge of redefining the term “high-end sound.” JA hits it squarely in “As We See It” (June ’91) when he says that a true “high-end sounding” system can be assembled for about the same price or less than the cost of some department-store Japanese rack systems.

Did you not register the collective quiverings from your readership? I think it would be most provocative if you gave each of your reviewers two thousand bucks (figuratively speaking, of course) and told them to put together the best-sounding system they could for this amount of money, right down to the cost of interconnects. If you want to be really cruel, cut that amount in half and really put them to the test.

The systems should consist entirely of new, currently available components at list price, and have at least one prime signal source: FM tuner, CD player, phono, whatever. Outside of that, each reviewer should place the amount they want in whatever link in the chain they feel is most important.

This would not be a trivial task. It’s one thing to find a beautiful flower at the florist, but quite another to find it in the wild. Why not ask Andrew Singer and other high-end retail advertisers for their recommendations based on the components they carry? We readers could gain the benefit of Stereophile’s keen-eared reviewers, and dip from the deep well of expertise we are always told is the strength of high-end audio.

Robert J. Spear
Accokeek, MD

Sampling & interpolation
Editor:
I have a point to bring up regarding the digital processing performed by the high-end multibit DA converters that use interpolation to obtain a purportedly better output signal.

I had intended to provide a little explanation of why oversampling is desirable, but it quickly expanded into a thesis. Thus, I refer readers not familiar with the consequences of sampling to one of the columns in Stereophile, TAS, or Audio for a cursory explanation.

The commonly held belief (due to both marketing and what appears to be common sense) is that if one is going to oversample a digital signal in order to remove some of the repeated periodic images, one must interpolate between the existing points (curve fit) to provide the correct signal to the DACs. Thus, the best-sounding oversampling DA converter box will be the one with the best curve-fitting algorithm (everything else being equal). Obviously for high oversampling rates (ie, 64 times), massive computer power must be used to run these powerful algorithms at such high speed. However, if the output stage (normally a very high-speed...
One of the most significant developments in CD player technology.

Audio Magazine USA, June, 1984

"The Meridian PRO-MCD is the best sounding compact disc player I have tested." — Jeff Wiles

The Decca Record Company
Limited, April, 1985

How a little company from Huntingdon, England, consistently produces the world's best-sounding CD players.

Meridian's first CD player, the MCD, single-handedly opened the door to higher CD sound quality. Each and every Meridian CD player that followed - the PRO-MCD, the 207 and then the 206 - set progressively higher standards for sound quality, winning the highest praise from audiophiles and critics alike.

This time, Meridian has refined a new type of digital signal processing to create the Dual Differential PDM BITSTREAM D-A Conversion System. Available first in the 208 CD Player, this breakthrough Meridian technology results in CD reproduction with unequalled clarity, resolution and accuracy. Now, the Meridian 208 CD Player/Preamplifier, the new 206B CD Player, the 203 and 606 Outboard D-A Converters, the 603 Control Unit, and the amazing D600 and D6000 Digital Loudspeakers all use the Dual Differential PDM BITSTREAM Conversion System.

Never satisfied with "good enough," Meridian always can be counted on to make the best sounding digital technology sound better.

For the technically-minded, this new Meridian conversion system employs two parallel, 256X oversampling BITSTREAM processors in each channel. Exclusive digital circuitry makes an inverted copy of each channel's signal and then sends this normal/inverted pair of differential digital signals to the converters. After conversion, a differential passive analog filter eliminates extraneous ultrasonic noise; then a differential amplifier combines the two audio signals into a low distortion signal.

This system offers a phenomenal linearity of ±0.003%, from 0 dB to -120 dB, a range as wide as that of human hearing and greater than that of existing live recording systems.
unity gain op-amp) contains a low-pass filter (and it always should) to reject the periodic images on the frequency axis, then the above approach is completely wrong.

It can be shown mathematically (I refer you to Discrete Time Signal Processing by Alan V. Oppenheim and Ronald W. Schafer, Prentice-Hall, 1989) that if one oversamples at a multiple of the original sampling rate, all new samples should be zeros rather than interpolated values between the already existing samples. Remarkably, the interpolation that would seem to be required by the digital curve fitting is already provided by the analog low-pass filters (LPFs) following the DACs. In fact, if one implements digital curve-fitting and then follows the DACs with LPFs, the curve-fitting performed by the LPFs is compromised and one introduces needless distortion in the output signal. As we are all aware, small amounts of distortion can lead to impressions of greater detail and air. This may explain why one high-end D/A converter box that measures badly can sound “better” than one that measures better.

OK, what if we believe that all capacitors are evil and thus any capacitor-based LPF should be shunned? Then we must oversample so high that the next frequency image in the analog domain is in the megahertz range and does not need to be filtered. Here, of course, we must use digital curve-fitting. First of all, this approach is extraordinarily expensive due to the computer power required. Second, while an anti-imaging filter may not seem to be required, the DACs will still output a waveform with a staircase-like appearance and very sharp edges. These edges are composed of very high frequencies that will propagate down the interconnects and into the preamp or power amp. Furthermore, the next frequency image is still present, though it is at a very high frequency. This signal will also propagate to the preamp; the assumption that the manufacturer of the preamp has a low-pass filter before any active devices may not be valid. This can lead to non-linear slewing distortion. Therefore, LPFs are still required, with the ideal case being a single capacitor not in the signal path (shunting the higher frequencies to ground).

In summary, to oversample a digital signal, zeros must be inserted for extra sample points and the anti-imaging filter will perform the interpolation. Attempting to outguess the signal and provide your own incorrect sample points only introduces nonlinearities and distortions that would not normally be present.

Patrick Wiers
Brea, CA

Thank you Richard Lehnert . . .
Editor:

. . . for writing such a wonderfully insightful review of Bob Dylan’s Bootleg Series (July ’91). It’s interesting to know there are others afflicted with the same dreams—ie, overlooked albums and titles you just can’t remember when you wake up. Maybe we’ll all meet someday at Devil’s Tower.

Anyway, as one who has loved having Dylan around (if you look closely in the book that comes with the set you’ll find my name), reviews such as yours help enhance the pleasure of such a magnificent set since the potential is there to lead others to it. (Of course, anything I say is suspect since I think Under the Red Sky is a good album.)

Terry A. Gans
Washington, DC

The People vs. Dylan

I read Richard Lehnert’s Bob Dylan Bootleg Series review in the July 1991 issue. It was a thoughtful, well-written article that clearly reflects a critical appreciation of his music. I have followed Dylan and his music for many years. Mostly, the reviews read like closing argument in the case of The People vs. Dylan.

Thanks for a personal yet informative presentation without the harangue.

David W. Osterman
Denver, CO

I am a Dylan freak
Editor:

I am what you may call a Dylan freak. I am the one who bought his first album back in ’63, loved it, and stuck with his music (released officially or not) ever since. I have been reading Richard Lehnert’s review of The Bootleg Series for the umteenth time now and cannot help but being moved by what he wrote. For a moment there, I wondered if I was alone in thinking that this Box was the most important piece of classical music released this year. (If Dylan music is not classic rock, I don’t know what is!)

Seriously, I am very happy that someone acknowledges (and in a magazine as esteemed as yours) the place Dylan occupies in the his-

Stereophile, October 1991
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Dylan is not God!

Editor:
After the first couple of pages of RL's review of Dylan's new Bootleg Series in July, I had to stop and shake my head in wondrment. It sounds like RL has finally come to the realization that Dylan is not God!—something that Dylan himself came to understand in the Slow Train Coming era. The feverishly fannish, reverent tone of this review reminds me of the way hardcore "Star Trek" fans used to talk, back in the '70s when I was a teenybopper with nothing better to do than correspond with other nerds about "Star Trek" and its intimate relation to the meaning of life. As Bill Shatner once said to a group of Trekkies in a "Saturday Night Live" sketch, "Why don't you guys get a life?"

Perhaps the "Trek" fans of that era felt that in some way, "Star Trek," or the "Star Trek ideals," could save the world. This is what many similarly naive people felt in the '60s about the revolution that their gods/heroes/rock stars were singing about. Welcome to reality! The musicians who were idolized 30 years ago have exposed themselves as mere mortals, many having succumbed to greed, addiction, hedonism, or apathy—just the normal human foibles.

Back to Dylan. My impression, as near as I can gather from his albums and cryptic interviews, is that he no longer believes that mankind can save itself, even if he has a spirit as impassioned and seemingly well-motivated as the "peace, love, and dope" generation. He's turned his back on his earlier "angry young man" stance. He believes that God made this world and only He can save it. As a consequence, I don't think Dylan sees any reason for being overly intense or overly serious anymore. Can't we be happy that the man has been able to mature and mellow in his middle age? That he has perhaps found a measure of contentment? As for the lackluster recordings he's put out lately, no one puts a gun to our heads to force us to buy them. 

Eric J. Anderson
Ankeny, IA

Foolishness?

Editor:
I was so disturbed by the foolishness of Richard Lehnert's introduction to his review of the Bob Dylan Bootleg Series recording in the July issue, that I just had to express my opinion. The actual record review was good, but the first part of the essay reminded me of the song "Energy Vampires," by British singer/songwriter Peter Hammill. It has the following line: "Excuse me while I suck your blood, excuse me while I phone you. I've got every one of your records, man. Doesn't that mean that I own you?"

I am greatly moved by Dylan's music. It is supremely important to me as well. But some of the things written about it have really gone off the deep end. To say, as Lehnert does, that Dylan made "absolutely perfect statements of truth no one had ever known before let alone spoken" is going too far. He is and was only human. Lehnert's definitely getting into religious experiences and deification here. It's talk like this, followed by angry and vicious denunciations and cries of betrayal by worshipping fans with love/hate feelings, that often drives artists insane. You wonder why Bob Dylan is crippled with pain? It's precisely because people treat him as though he's some kind of God—they won't let him be a real human being, and of course he can't live up to the infinite expectations, the unreality, and the madness surrounding him.

I remember when, in the late '60s, critics would perform literary analysis on Dylan's lyrics as though they were in the same category as Shakespeare's work or William Blake's poetry. Or people would go around thinking, after they'd heard one of his songs, that he'd written it about them personally. People were amazed at how he gave voice to their unarticulated thoughts and feelings. The same thing happened with John Lennon, and there's a scene in the movie Imagine, where he patiently explains to a fan that it simply isn't possible—that he (John) can only write about and express his own thoughts and experiences, and that the connections with other people through the songs just happen and there's nothing supernatural about it. It's the same
nique solutions are likely to emerge from those with a unique perspective on the nature of the problem to be solved.

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with Dylan. People derive all sorts of meaning from the songs, and read their own meanings into them. It becomes a very magical, personal thing. But you have to understand that a particular song like "Desolation Row," for example, may not have any real objective meaning. It may be just clever wordplay or a juxtaposition of fascinating images, or something from a dream that Dylan had. I think it's wrong to assign something like this the tremendous cultural-historical weight and profundity that Lehnerz does.

Most importantly, let's get one thing perfectly clear. Bob Dylan hasn't betrayed anyone. It's ludicrous to think that he owes people anything. Lehnerz wants him to stop "betraying" just long enough for him to deliver one more great album. Come on, get a life! At least have some compassion or pity. He was the greatest songwriter of the '60s, and occasionally he still flashes that genius. But, for crying out loud, one person only has so much to say and so much to give. Leave him alone! There are other artists with passion and great songs to listen to. Lehnerz claims that Dylan single-handedly invented the singer/songwriter. That just isn't true. Examples of truly great singer/songwriters preceding him that come immediately to mind are Hank Williams and Chuck Berry, and of course Dylan's own inspiration—Woody Guthrie. However, Dylan did make sure it was the only viable way left for those that came in his wake. He was the greatest of them all. But if you don't like what he's doing now, just remember him fondly the way he was in the '60s and get on with your own business! He's already given enough for ten lifetimes, and he doesn't owe you anything.

Harold Hofstad
Berkeley, CA

Why not?
Editor:
Why not listen to Bob Dylan's music before you write articles? Oh Mercy is a great record, Slow Train Coming is one of the greatest records ever made. If the tracks left off Infidels were put on the original record it would equal Blood on the Tracks. Dylan's music and especially lyrics are just as good, if not better, than ever.

Richard Galasso
Washington Township, NJ

Why not read my article before you write a "Letter to the Editor," Mr. Galasso? Of our supposed differences alleged by you, we only disagree about Slow Train Coming. Had you read the paragraph that begins at the end of p.173 of the July issue more carefully, you would have known that you and I are in complete agreement on all other points.

Sincere thanks, Mr. Hofstad and Mr. Anderson, for reading my piece so carefully. The phrase of mine Mr. Hofstad quotes ("absolutely perfect statements. ") merely paraphrases purplisbly what all good poetry does: articulate that which was "often thought but ne'er so well expressed"; I stand by it. Am I guilty of "defication"? No. "Religious experience"? You bet. In the article, I attempted to recreate a sense of the '60s seance-like approach to Dylan, the Beatles, etc. For better or worse, that's how it was for a lot of us. Dylan was inextricably intertwined with his time, both moved and mover.

Thanks for bringing up Blake—I'd meant to mention him in the same breath as Dylan, but had forgotten. I know Blake's work well, and I do place him and Dylan in the same visionary category (though Shakespeare, of course, transcends them both).

Yes, "Desolation Row" has no "real objective meaning." What is the "real, objective meaning" of Bach's Art of Fugue? The profundities are more created by the hearing than discovered in the writing—"a very magical, personal thing," indeed. There is exactly as much "cultural-historical weight and profundity" in a Dylan song as a Shakespeare soliloquy as one bearer/reader finds. Bob Dylan's betrayal (which I admit I did not spell out in my article) consists of his continuing to release "product" when he has nothing to say. That's what hurts: that the man who, more than any other, taught us to value song lyrics, has learned his own lesson so poorly.

Yes, Hank Williams and Chuck Berry were bona-fide singer-songwriters, but what they did was still, at core, indistinguishable from the entertainment mainstream—it was just better entertainment than anyone else was producing at the time. Woody Guthrie's protest songs were serious in political intent, but narrow in scope and not at all self-reflective or emotionally provocative. Dylan was the first to bring sharply focused, core-penetrating inner vision—and, yes, profundity—to pop music. I stand by my conviction in the matter.
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Dick blows his own horn

Editor:
Though occasionally tempted, I have restrained myself from joining the parade of hornblowers in your “Letters” column, preferring to blow my own French horn which I am teaching myself to do. The sudden need to write is due to an error of attribution in Lewis Lipnick’s charming chronicle in *Stereophile* (August 1991, p.111). The stunning Bliss *A Colour Symphony* mentioned was Nimbus recording N1 5294, not Chandos as printed. (Also includes premier recording of Bliss’s *Metamorphic Variations*.) And by the way, Lipnick graciously gives himself a round, in “drop the needle,” when indeed it was a draw! Get sharp for round #2 in Las Vegas, Lewis. Shouldn’t we now call it “raise the laser”? —Richard Shahinian

Shahinian Acoustics, Ltd., Medford, NY

Frank choices

Editor:
I hope that in the future you will assign someone other than Mortimer H. Frank to review recordings of classical music performances by so-called period-instrument ensembles. He admits that he dislikes them on generic grounds: “As the performances of Norrington and Goodman [of the Schubert Symphony 9] use period instruments, they are not really competitive with most other versions” (July 1991, p.185). While Mr. Frank is entitled to his choices, not everyone shares his obviously strong prejudices in this regard, and his invariably disparaging criticisms of period-instrument recordings tell me very little about them, other than of his aversion for period-instrument sound. He has expressed these opinions often enough already.

And, looking through the July 1991 issue, I feel that you could include more classical record reviews. If space is lacking, perhaps some could be taken from that allotted to Corey Greenberg. His stream-of-consciousness introductory paragraphs to both his equipment and music reviews seem totally irrelevant; they are also not funny. (While I do not share Mr. Greenberg’s musical taste, I do find his equipment reviews to be informative and interesting—even though, like some other readers, I was surprised at his very strong dislike of the Countertop SA-100 amplifier; no, I do not own one.)

But, despite these misgivings, I do enjoy *Stereophile*. And I recognize the basis for Mr. Frank’s preferences as regards Beethoven and Schubert. I would, however, like to ask, without prejudice, whether he holds the same views on the use of (admittedly different) period instruments in performances of somewhat earlier composers, such as Bach and Handel. —Peter Alzupitis

Arlington, VA

Frank thoughts

Editor:
As a new subscriber to *Stereophile* I must reply to several issues brought up in the “Letters” section of the July 1991 issue. To Mr. Reilly I would say to listen to *his* ears. I am grateful to *Stereophile*’s staff for their reviews, but the ultimate decision is up to me! I must ask, if we do not use listening tests or technical tests, how in the world can we have objective articles in a magazine which endeavors to bring the best products to our attention? I also canceled my subscription to *Stereophonic Review* because they were not very objective. To Mr. Tooze’s brilliant idea to stop “Recommended Components,” I say *bull*! If there were no “Recommended Components” issue I would not know about many fine products simply because there are no dealers in the area for the products. There are no B&K dealers or Vandersteen dealers in Lansing, for instance. The dealer in Lansing will get business from me, but not for my speakers. By using “Recommended Components” I found out about other products and can travel.

Stereophile, October 1991
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the 100 miles to Detroit or the 60 miles to Grand Rapids to listen for myself. I would never make a decision based solely on "Recommended Components," but I will use it to make an informed decision.

Finally, to all who hate Sam Tellig—shut up! I do not agree with Sam's language in his articles, or with all of his recommendations, but he does add a bit of humor to what could become a rather dry magazine. Sam, "call 'em like you see 'em." Keep up the good work! As for Corey...finally someone else who thinks rock music and high-end are not incompatible (yes)!!  

John R. Henley  
Lansing, MI

Tschirhart's Law  
Editor:  
I would like to remark on letters from G. Tooze; M. Frohlichstein; W. Illegible, MD; R. Caldwell; and M. Gindi (Stereophile, July, 1991).  

Congratulations, Sam Tellig! You have successfully defied Tschirhart's Law. That is: 1) Thinking is work. 2) People don't like to work.  

Shoot! These people thought so much they wrote letters! Could this be Mr. Tellig's true (devious) purpose?  

Donald Tschirhart  
South Pasadena, CA

PS. Sam Tellig is not invited to my house for any reason, especially to listen to music. I'll trip the circuit breaker if he even sets foot in my town. Maybe you should do the same...

#$%&*!

Editor:  
Well gosh darn and gee whillikers. Use of foul language is a lot of baloney. Even #$%&*! is unacceptable. It destroys the civility and correctness of Stereophile, which is its underpinning.

Vincent Mogavero  
Flushing, NY

Political correctness or psychosexual babble?  
Editor:  
Let me start off by saying that I'm no apologist for Sam Tellig. But if the letters to the editor about Mr. Tellig are typical of your correspondence, Stereophile has a rather stodgy, priggish readership. While I don't find Sam to be the stereophile's version of H.L. Mencken or G.B. Shaw, I haven't read anyone else's prose that has treated the High End with the jaundiced jocularity and wit that it so richly deserves and needs.

Having followed Stereophile and other journals on and off for years, it has become apparent that what is today's Rolls-Royce might very well become tomorrow's Yugo. Such is the ephemeral nature of the high end. Sam obviously loves listening to music and the equipment that goes along with the enjoyment. He is an aficionado, but at the same time appears to be aware of the fact that this subject isn't a life-and-death struggle for the Holy Grail. It is something to be appreciated with a healthy dose of levity. Too many people lay their egos on the line in this pursuit, and that is a shame. They should relax, kick back, enjoy the music, and stop being so damned defensive.

Sam's article of April 1991 is a clever piece that brings much of this to light—the trials and travails of going down the road in search of sonic perfection. When Sam tweaks his audiophile friends, whether intentionally or not, he points out the foibles and pitfalls associated with this pursuit. He seems to tease himself as often as the others, lest he be perceived as appointing himself to a more lofty position. What your readership should realize is that, while the High End can be a religion, you shouldn't attend every Sunday.

Regarding Mr. Richard Caldwell's letter of July 1991, it's obvious that Tellig's testicular references gave him a thinly disguised raison d'être to squeeze in his particular brand of (dare I say it) "Political Correctness." For one thing, I don't know of many women who become apoplectic upon the utterance of "balls," "Krell balls," or "cojones," particularly in the non-threatening manner and humorous nature that was obviously intended...When Tellig writes, "This is what these British speakers like: a proper American amp to grab 'em by the balls and lift 'em in the air," he uses an excellent metaphor to illustrate that the Spendors are overly polite and thrive on an amp that is more aggressive and gutsy.

Obviously speakers aren't females that need to be controlled by a masculine amp, as Caldwell suggests...Mr. Caldwell's digressions into psychosexual babble about the possible subtexts of Tellig's testicular metaphors are far more telling of Richard's mental state than Sam's. But all this upset is nothing more than Caldwell's excuse to rename manholes "people-holes"—to castrate language and reduce it to pablum. If Mr. Caldwell would like to de-nut himself and his prose on the cross of inoffen-

Stereophile, October 1991

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siveness, so be it. As for myself (I don't pretend to speak for women), I passed the stage of eating pablum long ago and now prefer a bit of spice in my literary lunch. Pass the Frank's Red Hot Sauce, please. When Caldwell says, "Maybe I've got it all wrong," I believe he is on to something.

**Greg Stern**  
Fort Lee, NJ

**Time for sensible editing?**

**Editor:**  
Your magazine has become an all-male publication. With words like "asses," "bastards," "balls," and "blow job," you are overlooking one half of the world's population. Perhaps it is time for The Sensible Sound or sensible editing.

**Tony Mauldin**  
Lewisville, TX

**Just in fun?**

**Editor:**  
I don't read male titillation magazines, therefore I am canceling my subscription to Stereophile. I found Corey Greenberg's "Best Babes of the Show" and his description of Anne Young, Communications Manager for Linn Products Ltd., demeaning, offensive, and irrelevant. It's a sad commentary on our industry that you feel your readers would be more interested in what a person was wearing than their capabilities and intelligence. While describing two of my colleagues, Stacy Harding and Anne Young, you failed to notice their professionalism. Your loss.

In my opinion, the Stereophile staff head the list of nerds in this industry. I view your tendency to value women only as ornaments as a reflection of insecurity about your own masculinity. I've noticed that people of color are also a minority in our homogenized industry. Perhaps you would like to exploit them in the next issue, "just in fun."

**Lisa Love**  
Midwest Representative  
Audiophile Systems, Dallas, TX

**Adding insult to injury?**

**Editor:**  
I was absolutely floored by Corey Greenberg's review of "Best Babes of the Show." For a magazine that purports to appeal to a discriminating and intelligent audience to publish such blatantly sexist material is a surprising disappointment. The indefensible Mr. Greenberg goes so far as to rate the women at the show First, Second, and Honorable Mention, reviewing them as though they are pieces of equipment. His language reeks of disrespect, and the stench permeates the magazine. "Downwind" of the AudioQuest "babes" reverberates with the sound of animals stalking their prey. How unfortunate for those "babes" to have thought they were being approached for their knowledge. Thanks to Mr. Greenberg, they have been nationally disillusioned of that apparent facade. Fortunately for Mr. Greenberg and Stereophile, there were men at the show with whom he could converse intelligently; the presence of women does seem to scramble his wits.

Adding insult to injury, Mr. Greenberg paints every male at the show with his own brush of inadequacy (and, by implication, every reader). Because he views women as objects, he assumes that every male is equally fixated. I assume the same is true of the editors of Stereophile, as evidenced by the publication of the article.

**Barbara Muller**  
Ronkonkoma, NY

**A bad dream?**

**Editor:**  
I sure hope Corey Greenberg's sexist remarks in your August issue were a dream! But as I sit here, renewing my Stereophile subscription, I realize that CG's remarks were all too real. Now, please don't get me wrong. CG's writing is obscene, perverse, insulting, adolescent mind masturbation... and I love every word of it! Really, I do! It's the freshest, most imaginative stuff to come out of your magazine, ever. A real laugh every minute. CG is one of the reasons I'm renewing, but now I'm getting second thoughts.

Don't worry, the check's in the mail, but would you please edit CG's outbursts a little more carefully? In the 1991 Summer CES report, CG "objectifies" the "AudioQuest Babes" and Anne Young, the "beautiful Glaswegian Empress" from Linn. Women have it tough enough in a man's world filled with "toys for boys" without this insensitive, adolescent ogling being glorified in a journal that too few women read. I would bet many female audiophiles are outraged with CG. And if Ms. Young is like many women I know, she would be embarrassed and intimidated, if not downright insulted. Put yourself in her place. Would you like it?
I don’t mind entertaining hyperbole being thrown into magazine articles, as long as it’s not at the expense of someone else. Beware, JA, there are more women than ever entering the world of hi-fi, and you don’t want to turn them off before they even get started. So please, get more of a handle on CG’s copy before it undermines a growing segment of enthusiasts.

Paul Taylor
New Orleans

Unrelieved?
Editor:
In his CES report, Corey Greenberg sounds frightfully “unrelieved.” The poor guy’s libido is pushing against his brain. Please find him a woman and lock him in a motel for at least a week before he is about to write another article. This way, we might be able to decipher which head is talking. Otherwise Stereophile is fun to read. I find JA logical, decisive, but a bit snobbish and obnoxious. For my tastes, Robert Harley is the man. I love this guy. Keep up the good work.

Theo Phalieros
East Hampton, NY

Fire the bastard
Editor:
Tell me something. Is Corey Greenberg really Edward Tatnall Canby in disguise? Fire the bastard before we come out there and have a hanging party. You can’t put a suit on an idiot.

Maron Horonzak
Webster Groves, MO

No more CES for Corey?
Editor:
Corey Greenberg should be forbidden to attend future Consumer Electronics Shows unless accompanied by an adult.

Edward A. Fagen
Newark, DE

Wonderful Corey
Editor:
Corey Greenberg is a wonderful writer. The only bight in his brilliantly written piece on the Chicago CES (August 1991) was JA’s footnote, p.87.

Jim Hulbregtse
New York, NY

Music is music, right?
Editor:
I find Stereophile extremely entertaining and educational. Corey Greenberg is a riot and a welcome addition . . . Reading the August issue (Vol.14 No.8), I became rather perturbed when I read about the way Mr. Greenberg’s choice of music was judged by fellow audiophiles at the CES. A monumental case of When Musical Tastes Collide. But music is music: Sex Pistols for some, Sibelius for others. That should be a high-end audio company’s creed if they want to win the hearts (and wallets) of potential buyers who would otherwise purchase a department-store rack system. (Lots of Lights, please.) Frankly, I think those guys should get their noses out of the air and listen to the consumer.

Kevin J. Lawrence
Wrightstown, PA

He who sleeps with the devil . . .
Editor:
Just when I thought I would have to cancel my subscription or relegate Stereophile to the piles of other magazines for which I’ve no longer any time, along comes a thoughtful addition to your staff who has deferred such a drastic step. I speak of Corey Greenberg and the “new” perspective and communication style which he has brought to this publication.

In my 5+ years of “high-ending” (and perhaps 20 of music listening), I don’t think I’ve read a more emotionally moving piece than CG’s August “Update” [on Motown “improving” classic Marvin Gaye recordings]. However, I believe that there may be more happening in the 1990s marketing world of “PC” people (Perfectly Computed—as in Perfect Sound Forever) than is perceived by CG (or most others, for that matter). While I concur wholeheartedly with CG’s “chill from the monkeybone” and the conclusion that such activities are anathema to real music for real people, I must admit to a certain feeling that his surprise at the existence of such evilness demonstrates a certain “innocence” representative of virtually all audio reviewers, both mass-market mid-fi as well as high-end. Who could have realistically hoped for anything else as a logical result after 10+ years of digital technology juxtaposed with the “feel-good” 80s and the pervasive “We’re from the [insert favorite social and/or political group here] and we know what is best for you”? After all, what else could we have expected from a society that increasingly tries to break all problems to be solved into little bits?
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Seriously, many of us who have hated digital for these many years knew that this would be the inevitable result, but then... nobody asked us! We cannot, in fairness, blame the companies that foisted this technology on us. We've only ourselves to blame. In a free market, we were required to vote with our pocketbooks for the technology we wanted. And most of us real people, who love real music—well, we didn't show up for the election, let alone campaign for analog success. Digital has won; it is the technology which created the capabilities CG so berates. CG does, however, correctly conclude that be won't vote for it. I think a better, more effective solution would be for CG and everyone else to boycott any all "music" made with MIDI, Sync, or any other digital legerdemain. After all, had we all done so initially in the dawn of "music by the numbers," this would never have happened, and the apparently creatively brain-dead such as Steve Lindsay, as well as the obviously real-music ignorant, would exist where they truly belong: as far from the real-music world as possible, where they could continue to pander their new "moneymaking" technologies to the sole service of the almighty dollar.

What if they made a new, high-tech product and nobody bought it? Save real music made by real people in real time with real imperfections and with real emotions: educate a few digital fans as to how wonderful and emotive the real thing can be!

He who sleeps with the devil awakens with no soul.

David Wagner
Fitchburg, MA

Do retailers have all the answers?

Editor:
It seems to me that a good number of "high-end" retailers are wearing blinders when it comes to accepting "something new" outside their realm of influence! If I may be so bold as to make an analogy: that of a gourmet chef in his preparation and presentation of his product to his customer, to the role of the high-end retailer! The retailer arranges various components in order for his customer to hear that audible difference. But why is the presentation so often neglected? As a manufacturer, my firm is on the cutting edge of new designs and new ways of displaying components for the end-user! In addition to our efforts in educating the consumer through advertising, mailings, trade shows, etc., we must have retail outlets to market our products! Yet trying to get the high-end retailer to listen to our pitch for a new and better system for displaying components has been extremely difficult. Why is it the high-end retailers think they already have all the answers? Aesthetics play a small part in the overall design of a system, but high-end retailers are doing their customer(s) a disservice by not being aware of new options in the marketplace!

Larry Gieseking
National Sales Manager, Billy Bags
Laguna Hills, CA

I see brothers fighting

I must congratulate you and your staff for the great work in making Stereophile a very respectable publication. Though we may not agree on everything you say, your effort to improve the quality of the content, and to stand behind your beliefs, should be recognized and commended. To build up credibility is important not only to this magazine, but, because of the large number of readers, it's also important to the industry. We as consumers can at least have some place to turn to for a piece of honest opinion. So please continue to say it as you see it, hear it, and feel it, as I believe that's the only way for the industry to prosper in the long run.

Second, I want to bring up a point rooted in the retailer/mail-order conflict. It's been a normal tactic for campaigning politicians to attack their opponents on their weaknesses, exposing their wrongdoings or any scandals that can discredit them. I am seeing the same tactic employed here by the merchants. I even saw an ad in your June issue (p.298) from a retailer attacking salesmen who work on commission; that they are only interested in their own benefits. I see brothers in one family fighting each other for small short-term profits.

Don't we see that the survival of the industry does not rely on one dealer, or on one type of merchandizing method? It's a world market, and the manufacturers need all the support from a free market to prosper. People have got to learn to coexist, and so do merchants. We do not have to belittle others to reflect that we are better. If we are good enough, we can prove this by our own success stories and convince our customers. Stop attacking Japanese mid-fi, the mail-order house, the salesman on commission, the guys who don't listen to classical

Stereophile, October 1991
"For once, an add-on subwoofer actually delivers true subwoofer bass with high quality and high quantity at the same time."

Larry Greenhill

Velodyne is one of the hottest names in today's audio/video industry. Why? Because whether you're upgrading a current system or building a new one, there is no other single component that can boost a system's overall performance like a Velodyne subwoofer.

"...the integration was seamless and changed the overall character of the system in a synergistic, beneficial direction."

Larry Greenhill
Stereophile, Vol. 12. No. 10

What makes the difference? Velodyne's patented High Gain Servo (HGS) technology, which represents a major breakthrough in loudspeaker design.

"I determined that a high performance accelerometer based feedback system would be the only way to truly correct the problems that plague low frequency reproduction. Such a system had never been successfully built before. But through a systems approach of redesigning the driver and electronics from the ground up, I have developed a system that delivers high output levels with unprecedented low levels of distortion."

David Hall, President/Founder
Velodyne Acoustics, Inc.

All Velodyne subwoofers are complete systems. Just plug one in to experience the full audio spectrum: Cleaner mids and highs with low frequency response that you never thought possible. It's a dynamic overhaul for your system.

"Other subwoofers had not moved much air and certainly hadn't coupled with the room. ...Not so with the Velodyne—I was there!"

Larry Greenhill
Stereophile, Vol. 12. No. 10

Experience All The Music:
Experience Velodyne.

Velodyne Acoustics, Inc.
1070 Commercial St., Suite 101
San Jose, CA 95112
408/436-0688 800/VELODYNE
music, the reviewers who don't go with public opinion. Instead of wasting time blasting the other guys, we can always look at something we can do better to improve ourselves. Lead by example, not rhetoric. **Bernard Wong**
San Gabriel, CA

**A little humility goes a long way**
Editor:
Andrew Singer in mail order? The KT90 the greatest tube or the greatest sham? Tice refusing to pay for an advertisement in *Stereophile*? While it does make for amusing reading between customers, it seems more like a script from General Hospital.

In my experience as a high-end retailer, I've found that a little humility goes a long way. A simple "I screwed up" shows more integrity and honesty than some of these lengthy rebuttals filled with technobabble. I also get sick when I see a mail-order outfit selling products cheaper than cost, but so what? We've flourished since 1946 and mail-order will continue to do business too. That's one of the things that makes this country great. Of course we will try to persuade a customer to purchase a product we carry. That's how we make a living. We sell our service and our experience; that's why they come to us. We go to painstaking lengths before picking up any lines of equipment, as would any reputable high-end dealer.

Sony says their new 2" disc is not quite as good sonically as the existing format. They also go on to say that only 2% of the future buyers will be able to hear this difference. We (readers) are that 2%. We're a pretty small minority. While we are all seeking sonic truth (if there really is such a thing), there has to be more tolerance for others' opinions and experience.

A customer was recently in our store auditioning a Yamaha vs Rotel CD player. He preferred the Yamaha. The ironic thing was that we were both hearing the same thing, but what I experienced as harshness he heard as more high-end detail. Is he wrong? Do I tell him he has a tin ear and shouldn't be shopping at a store such as ours? Send him on his way to Circuit City? Of course not.

It just bothers (as well as amuses) me when folks who are supposedly "respected" in hi-fi circles are reduced to character assassination in the name of hi-fi Truth. **Fred Abrams**
Vice President, Danby Radio, Ardmore, PA

**Bob's been helpful**
Editor:
Having been a subscriber to *Stereophile* for the past two years, I would like to praise your magazine and two high-end stores that regularly advertise in your hallowed pages for finally helping me put together a truly musical system after years of wasting a few thousand dollars following the recommendations of *Audio* magazine and the mid-fi stores that advertise therein. The two high-end stores worthy of recognition are: Innovative Audio and Sound by Singer. Both stores employ salesmen who are knowledgeable and concerned about the customer's satisfaction.

While I profit from reading most of the articles and reviews in *Stereophile*, Robert Harley's reviews of digital processors have been particularly helpful. His review, along with help from Dave L... at Sound by Singer, led to a very successful purchase of a Theta DS Pro Basic.

**Thomas P. Wengler**
Glendale, NY

**Well said, Bob!**
Editor:
I have been a subscriber since 1983 and have seen contributors come and go. Arrivals and departures have been welcomed over the years, as have "columns and corners." Of course, there have been regrettable losses as well.

Robert Harley's July "As We See It" is an opinion that provoked me to write. RH has clearly, honestly, and passionately explained what defines "high-end" audio, giving us all a new and better defined tool for argument. Well said! Well done!

In the relatively short time RH has been writing for *Stereophile*, it is his reviews, etc., that I most enjoy. His sentence structure (certainly better than mine) is an element that makes for a pleasant read, along with straight-ahead information that seems beyond any doubt.

Congratulations on jobs well done.

**John Gambardella**
Laguna Beach, CA

**Bob's wide of the mark**
Editor:
I feel compelled to comment about two items in the July *Stereophile*. The first is Robert Harley's "Just What is High End?" essay. I started reading this piece with great anticipation, as I usually find his writing interesting and
There can be no standard of quality without a Reference.

This is especially true in the audio field where everyone, from studio engineers to manufacturers and reviewers, needs a solid benchmark for accurate sound.

For twenty years, the KEF Reference Series has been a standard by which all other loudspeakers have been judged. The latest benchmark for loudspeakers is the KEF Reference Series Model 105/3.

The 105/3's draw upon KEF's ground-breaking research into the interaction of speakers and room acoustics: coupled-cavity bass loading for deep bass from the smallest possible enclosures; conjugate load matching, which uses amplifier power to its full advantage and KUBE, KEF's proprietary bass equalizer, which produces the bass of cabinets eight times as large. The four-way 105/3's are the first Reference Series speakers to use Uni-Q technology.

Uni-Q: the first coincident-source drivers.
KEF Uni-Q is an engineering breakthrough: the first truly coincident-source driver.

Many audiophiles know that an ideal speaker would be a point source; unfortunately, multiple-driver systems often fall far short of this ideal. With Neodymium-Iron-Boron, the most powerful of all magnetic materials, KEF has created a tweeter so small that it can be placed inside the woofer's voice coil. In effect, every Uni-Q driver is a point source.

Moreover, the woofer cone acts as a wave guide for the tweeter and controls its dispersion. The entire frequency range arrives at the listener's ears at exactly the same time, producing seamless sound no matter where the listener sits. Unwanted reflections within the room are actually reduced, and the music you hear is less colored.

If you appreciate music, audition the Reference 105/3's. For any audiophile system, they are "standard" equipment.
germane. In this case, however, he is wide of
the mark by several light years when he defines
high end in terms of the relationship between
the equipment designer and the product. Surely
any definition of high end must relate
only to the sound that a component or a
system is capable of producing. I will not attempt
to define this "high-end sound" beyond stating
the obvious: its main ingredients are 1) the
similarity of the reproduced music to the sound
of a live performance, and 2) its ability to emo-
tionally involve the listener in the music.

There's no doubt of the role that dedicated
and talented designers play in achieving this
quality of sound reproduction, but they can
hardly serve as its definition. In theory, and
occasionally in practice, mass-market compa-
nies can produce a component that is truly
musical. Is such a product to be denied the
"high-end" label simply because its designers
don't meet Harley's criteria of caring and in-
volvement? I think not.

My second comment relates to the turntable
reviews by Corey Greenberg. I have no quarrels
with his opinions, since I'm not familiar with
the equipment he evaluates. Surely, however,
a bit more maturity is called for. I have no
objection to reviews containing humorous
asides (as Sam Tellig does so well), but Green-
berg's "humor" is overdone, rarely funny, and
usually juvenile. Jokes about belching and fart-
ing might be appreciated by my 13-year-old
son, but I suspect that most of your readers
have a slightly more sophisticated sense of
humor. Perhaps the thing to do is restrict Mr.
Greenberg to reviewing rock and roll music
until he finishes high school.

A (usually) satisfied reader,

Peter G. Aitken
Durham, NC

The music always comes first,
Bob

Editor:
In reading Robert Harley's article "Just What
Is High End?" (July '91), I found myself dis-
agreeing with some of his concepts. It is always
difficult to absolutely define anything and any
such efforts are to be admired. Such attempts
will always find themselves wide open to scru-
tiny and criticism.

With this in mind I overlooked many of my
qualms regarding his opinions. His heart was
in the right place and I was not seeing crimson
red. That was until he moved into "musicality"
and the statement, "But for those to whom
music is a vital part of their existence, musical-
ity is very real." That one got to me.

For people who love music like myself (it is
at least as essential to me as it is to him), the
music always comes first and foremost. Rather
than further try and explain what my distress
was about, let me quote your own Richard Lehn-
ert from the very same issue: "Sound? Sorry.
Anyone who cares how a Bob Dylan album
sounds probably wonders how he could've
gotten so famous with such an awful voice. Not
relevant." Mr. Lehnerst possibly oversstates the
case (a concession to sound quality is made in
a footnote), but does capture the essence of my
thoughts. I do understand what Mr. Harley is
trying to say. The manner in which it was con-
voyed, however, struck me as sounding very
elitist, the kind of stuff that turns me off to
many audio-related articles. Is the music com-
ing out of a high-end system any better and
more important to its listener than the music
coming out of a "box" on the street corner is
to its listener? If I do not possess or desire to
possess a high-end system, then is music any
less important to me?

Other than that, great July cover!

Harvey Levine
Bronx, NY

Scientific bias

Editor:
It would be pointless, I think, to go over every
detail in Mr. Atkinson's treatise ("Subjective Fact
or Objective Reality?" August, p.5). My letter
from which he quoted (and which may eventu-
ally be reprinted in an issue of the BAS
Speaker, although that magazine has other,
more important things to print than my com-
ments on audio philosophy. . . ) referred to the
parallel I found between many of the writings
in Stereophile and what is currently being
printed by individuals supporting the "creation
science" viewpoint. If Mr. Atkinson's essay does
not stand as a perfect example of what I was
driving at, I do not know what else can. It is a
paradigm of backward-operating logic.

One of the things I pointed out was that
phony scientists love to expropriate the opin-
ions of reputable outside sources to support
their particular beliefs; creationists and some
of the writers working for Stereophile do that
all the time. JAs essay contains a plethora of out-

Stereophile, October 1991
side opinions and unrelated observations and quotes lifted out of context and manipulated in such a way as to support his theological view of the subject of audio. Stunts like this are used creatively by serious writers all the time to dramatize unrelated viewpoints, but the writers working for Stereophile continually gild the lily.

Second, it is tiring to continually read comments by high-end writers that they are "listening to a work by so and so" while writing, as if that will give them some insight into technical matters. (For the record, I cannot write at all when listening to music and I cannot see how anyone can do both things at once with any degree of competence.) It is also tiring to have the electro-mechanical aspects of sound reproduction described in metaphysical or mystical terms (which may be a valid technique when discussing the artistic merits of a performance), since they are completely out of place when used to characterize such behavior. Writers who use that technique appear fatuous.

Third, it is impossible for any individual doing an experiment in a discipline they are keenly interested in to do so without being at least a little "biased" toward the potential outcome. We would not be fully human if that were not the case. However, a mature and fair individual controls that bias and makes it "reasonable," so that things do not get out of hand. The use of blind testing, by the way, is one of the best procedures to secure an unbiased starting point for any kind of listening comparison.

(My suggestion to those who feel that long-term listening is superior to the rapid and blind A/B amplifier testing done by some technical types is for them to do a long-term blind A/B test. That could easily be done in one's own home by having a second party hook up either of two amps to be reviewed, keeping their identity secret, of course, and then having the test go on for as long as needed, possibly even for several days of off-and-on listening. Only after the subject was certain of his or her opinion of the amp would its true identity be revealed. The test could be repeated several times, of course, to get a good statistical sampling. A comparison like this is much more dramatic if it is between a high-end unit and a cheap one.)

Finally, the idea that Stereophile practices scientific method because, "when experiments give results which contraindicate reality, the experiment is rejected, not the reality," is a complete twisting of what any decent scientist does. As noted above, no one can come into a subject they are interested in without a bit of preconceived hope and/or bias, but the crew at this magazine are letting their prejudices lead them around by the nose. That would not be an altogether bad thing in itself, but they are also letting those prejudices lead a lot of other people around by the nose, too, and I find that repugnant.

Howard Fersler
Tallahassee, FL

It would be pointless to go over every one of Mr. Fersler's points, most of which devolve to "You disagree with me, therefore you are wrong." But to repeat the crux of my August thesis for the bard of hearing: If the results of an experiment seem to contraindicate one's perception of reality, there are two possible reasons: a) one's perception of reality is wrong; b) the experiment was inappropriate or poorly designed. For the Ferslers of this world to apply their "reasonable bias" by assuming that the former is always correct reveals that they are guilty of what they accuse others of: their philosophical position is based on an article of faith. I emphasize that a "true" scientist, human or otherwise—and the majority of Stereophile's equipment reviewers have had formal scientific and engineering educations—has no preconceptions concerning the outcome of an experiment, his or her only concern being that that experiment be correctly designed to test a hypothesis that has been formulated regarding the nature of reality. By contrast, in July's "Update," Robert Harley discussed a published experiment that appeared to have been performed by a scientist who did apply a "reasonable bias."—JA

Unscientific bias

Editor:

In July '91, Robert Harley penned a superb piece in "Industry Update." The usual bugaboo about "The Objective Science of Audio" vs "The Subjective Mysticism of Audiophiles" was given an unusual "turnabout is fair play" treatment by RH. Bravo!

The article exposed the unscientific bias of the testers. Plainly, they were out to prove their pet points. Unexpectedly, the results were unfavorable. Now they could only grasp at straws for excuses.

Mr. Dan Dugan, chief tester of the event, was "embarrassed" and felt "at fault." The test spon-

Stereophile, October 1991
The Mirage M-1s have garnered their fair share of raves from the industry. They've invoked such comments as "...I'm completely bonkers over this product..." and "The M-1 is and will be for many people their absolute reference."

Upon first listen, most people are astonished by their sonic transparency. The speakers virtually seem to disappear. In our view, that's the mark of a good loudspeaker.

We've extended that philosophy to the Mirage 60-Series loudspeakers as well. Each reflects an overall concern for naturalness, genuine musicality and transparency.

Like the M-1s, they're designed for optimum dispersion. The perceived sound stage is dramatically extended without compromising center imaging. The specially-designed woofers reproduce low frequencies with undaunted accuracy.

The mark that Mirage has made on the audiophile world is substantial. From the flagship M-1s to the wide range offered by the Mirage 60-Series, you simply can't do better. Just give them a listen. You'll hear what we mean.

For a free booklet of M-1 reviews from seven leading audio publications, write us or see your Mirage dealer.
ately reflects the truth of what happened; I assume that writers for other publications are as conscientious, even if they are writing an "informal news item" rather than a technical paper. If Mr. Dugan’s JAES report on his test was inaccurate in that it did not make it clear how sloppy his methodology had been, then a) Mr. Dugan himself should have shown a little more restraint when he wrote that report’s conclusions, and b) Mr. Harley’s discussion of Mr. Dugan’s apparent lack of understanding of the philosophical basis of Scientific Method seems even more appropriate.

—JA

Xanadu revisited

Editor:

Yes, Barry Willis’s piece “Pavane Pour Un Dealer Défunt” in the July issue was an entertaining read. Fiction? An imaginative account of the results of combining high-end audio with an unbridled wealthy narcissist? Those of us who live in “Xanadu” and witnessed the grating downward spiral, and those of you (probably all of you) in the high-end industry, knew immediately that the tongue-in-cheek disclaimer should have read: “Any resemblance . . . is, of course, entirely and pointedly intended.”

The motivation behind the writing of the article is transparent. The editorial judgment and motivation behind the inclusion of the piece as such in Stereophile are questionable.

Why the fictionalized guise? These litigious times do warrant a certain amount of legal circumspection in journalism. If the assessment of Murray Krebs’s character as presented is truthful, then there is some chance that an individual of this personality type would sue in a moment for character assassination. At the same time, if the story is true point by point, then would not a courageous periodical wish to stand behind the facts and present them openly for all of its readers to seriously consider? At least under the alternative disclaimer: “The story is true, but the names have been changed . . .” You did intend this to be more than a chuckle piece, did you not?

The amount of space allotted to the article indicates that the editorial staff at Stereophile felt it was indeed serious. However, what did you consider the average non-Xanadu reader (and non-industry insider) would think after reading the article? I spoke with a few fellow audiophiles who live in other parts of the country, and to a number of local non-audiophiles who knew nothing about the actual “Emporium” but to whom I showed the article. “What did you think of Willis’s article?” I inquired. “Thank God my boss isn’t like that!”

“Definitely a good read. I wonder if Scorsese has been contacted about buying the film rights. . . De Niro would be ideal . . .”

“It was painful to read about this guy and his poor employees. What is this nasty fictional article doing in Stereophile?”

That, of course, is the question. Stereophile is anything but a vehicle for the presentation of “fiction.” Those readers (perhaps the vast majority) who are not in the know about the actual tale would have to scratch their heads about the point of the article when they reflect on it at all.

But if it is not purely a construct of the imagination, then the interesting thing is not that there is a lesson or set of lessons to be learned about high-end retailing, but rather that if you combine a volatile egocentric leader with ordinary people serving as minions, an explosively destructive situation results: Group Psychology 101. The story could have just as well been centered around a jewelry store and its owner for all the light it sheds on the particulars of high-end audio. Be forewarned, current and would-be audio dealers: Do not allow your character to be mysteriously transmuted into the Murray Krebs type. Conversely, if you are already this type: Repent, see your psychoanalyst, and pray for spiritual redemption and total psychic restructuring.

However, there is a distinct moral to this story which was neither implicitly nor explicitly brought forward. What happens to all of those audiophile residents of Xanadu when one of their Dun tech Sovereigns blows a tweeter? Who will service the Audio Research Classic 150s when the tubes eventually need to be replaced and biased? What about the owner of the Goldmund Reference Turntable when his sculptural and sonic work of wonder doesn’t quite produce dulcet sounds anymore? Are those behemoth speakers to be boxed up and shipped to Utah? Do those massive monoblocks have to be entrusted to the vicissitudes of UPS and sent back to Minnesota? Will transatlantic passage have to be booked to get the Goldmund back to Switzerland? In other words, the purchasing of specialized high-end anything, even in one of the largest cities in the

Stereophile, October 1991
Refining the art of expressing the music

"The Monitor Audio Studio 10 joins that select group of minimonitors with which I could happily spend the next 10 years listening to music... If you have a smallish room and want superbly musical sound from a stunning looking minimonitor, then check out the Studio 10. It may be all the speaker you'll ever need."  
John Atkinson, Stereophile
Vol. 13 No.11 (Nov '90)

"(The Studio 15) is good enough to meet and beat the best on offer, and in view of its exceptional build quality and standard of finish, it deserves and receives our unequivocal recommendation."  
Hi-Fi Review (Jan '91)

*Gold dome tweeter technology and advanced metal-cone woofers act as one to produce stunning realism. Cabinets are of the finest matched real woods or hand-rubbed black lacquer.

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WorldRadioHistory
Stereophile, October 1991
country, can be risky. Without faith in your dealer, this risk could be idiotic. For most of this equipment (and the other names mentioned in the article), there is no dealer, hence no service to be had, for hundreds and hundreds of miles.

Yes, the story was entertaining. But it was also a disquieting tale of an autocratic character (who was perhaps seriously flawed) who adversely affected so many others. Willis naively closes by saying: "The tragedy is that Krebs really did have a beautiful vision. It might have worked. In the hands of someone else—anyone else—the Xanadu Emporium might be doing a brisk business now." For one to believe this, one must also be able to believe that Kane's visionary empire would have existed in the hands of the conventional albeit highly moral Jedediah.

Call the roller of big cigars,
The muscular one, and bid him whip
In kitchen cups, concupiscient curds...
Let be be finale of seem.
The only emperor is the emperor
of ice-cream.

—Wallace Stevens
Thomas Dorn
Xanadu

No High End in Xanadu?
Editor:
I live in Xanadu, and Barry Willis was almost right on the money about his "mythical" high-end stereo emporium. Even in its first incarnation that establishment had two types of customers: Those who bought at no other place and those who wouldn't buy dog food from them. The word is arrogance. Xanadu is a nouveau riche city that, to a great extent, has been affected by Circuit City—I can get it cheaper somewhere else. In the present economic situation even Xanadu is suffering—something the economic pundits of the area haven't seen in the previous national recessions; the emporium became grandiose at the wrong time. The high-end store where I bought my first quality equipment, which was there seemingly forever, recently closed its doors. A couple of upstairs who lasted a couple of years, with very good help and advice, also have closed their doors. High-end audio, although not the highest-end, can be had in our town discounted. Most people will not pay extra for extra service when a similar product can be had for less money. Let's face it: As the article stated, expensive goods compete with other expensive goods for one's disposable income, and a Lexus is more recognizable in the driveway than a Goldmund is in the den.

In the end, their bank auction was the most fun I'd had in years. It was like going into a pawn shop and knowing that just about everything you ever wanted was there for a song. The Sovereigns stood guard, the Goldmund turntable was separated from its power supply. For weeks afterward, "lucky" bidders advertised in the local want ads for equalizers for their Thiel 3.5s. Even owners of competing high-end stores were there. The piece I wanted came up for bid early and was hammered down for me at less than half of retail. Some stayed until way after midnight for the furniture that stocked all of those little rooms where the Spicas and Thiefs and the like were displayed.

It may be hell for someone to do something he loves for someone he loathes, but all I saw were salesmen when I went in to shop. My new preamp really did sound better than what it replaced, but it may have just been the fact that it was acquired at a bargain price—perhaps that's why high end fails to thrive in Xanadu.

Daniel Kingloff
Xanadu

This store was doomed to fail
Editor:
I was a customer of the "Xanadu Emporium of Audio & Video Wonders." For what it's worth (it has nothing to do with my comments), I was also a Senior Vice President of "The Bank of Xanadu," and was very involved in the buyout by "Wachovia." I would like to make a couple of comments about your very interesting and, for the most part, accurate article.

A) This store was doomed to fail before it ever opened its doors. I have been involved in high-end audio for about 17 years, 15 of which have been while living in Xanadu. In those 15 years, I have seen the shift of the high-end business from one store to another over seven times . . . all because none could make it. None of these was 25% of what "the Emporium" was. The reality is, this town will not support a full-scale high-end store. Every single acquaintance I met who was involved with high-end audio said the same thing when the opening of the store was known: "I hope it works, but I give it two years max!" The high end in Xanadu is now distributed over two or three
"Kinergetic’s KCD-20... the first CD player to crack the Class 1 Sound barrier"
Peter Montcriaff
“International Audio Review”, Hotline #43-45.

"...Kinergetics KCD-40 has become an integral part of my playback system. I recommend it very highly, especially to those who have had monumental difficulty coming to any terms with the CD format."
Neil Levenson
Fanfare, Jan/Feb 1990.

"...Kinergetics offers its purchaser more than a glimpse of what the best CD sound is all about."
John Atkinson
Stereophile Vol. 13, No. 1.

“A generation later, transistor designs by such companies as Levinson, Krell, and Threshold have gained my respect as being eminently musical despite their silicon hearts. To this list I can now add Kinergetics Research."
Dick Olsher
Stereophile Vol. 13, No. 1.

“Kinergetics pulled off what I considered to be a near miracle. They successfully integrated a subwoofer with the twitchy Martin-Logan CLSes... the tonal balance through the lower octaves was just right. The deep bass and midbass were tight and well-detailed”
Dick Olsher
Stereophile Vol. 13, No. 3.

We will continue to create improvements in areas of psychoacoustic that others have yet to discover.
small operations with very limited product lines, and a large and very successful chain (which also has a limited high-end product set). Within the last six months or so, two other high-end stores bit the dust, one of which had been around quite a while.

B) At the opening of the store, there was one very large system comprising Duntech, Krell Reference, Krell, Wadia, etc., with a list price of just under $110,000, if memory serves me correctly. Since (as Mr. Willis pointed out) there was no room treatment (although I wish my living room looked that nice), the sound was absolutely terrible. Bass was heavy, muddy, etc. Why would anyone be impressed with the high end if that’s what a $110,000 system sounded like?

C) “Ira Jackson” was the only employee of the store (while he was there and after he left) who ever had the foggiest idea about the high end. There were a lot of really nice, hard-working, helpful people, but none knew anything about high-end audio. Ira not only knew (or could convince people he knew), but was really enthusiastic about audio . . . he was fun to be around. When he left, it only accelerated the inevitable (see A).

D) The Bank of Xanadu (or its new name after the buyout) had nothing to do with closing the doors of the store. Not any more than a nurse who, at the request of family, removes life-giving equipment from a terminally ill patient. This does not come from a sour-grapes bank employee. I left the bank after the take-over because I totally disagreed with the management style.

Chuck Gerlach
Xanadu

When Barry sent me the manuscript, I was unaware of the true identity of the Xanadu store. I did feel very strongly that the power of his writing mandated publication, if not for any other reason than its demonstration of how people with the loftiest of motivations can totally destroy that which they value most highly. The fictional approach seemed justified by the fact that neither Barry nor I viewed the article’s value as a piece of investigative reporting into the demise of a specific store. Instead, we felt the wider implications of the story, for the high-end industry as a whole to be worth communicating, revealing the store’s identity was simply not relevant.

—JA
WHERE TO AUDITION AND PURCHASE CARY AUDIO

Listed below are some of the fine U.S. AUTHORIZED Cary Audio dealers waiting to serve your audio needs. We encourage all audiophiles to support you local "HIGH END" audio dealer.

<table>
<thead>
<tr>
<th>ALABAMA</th>
<th>FLORIDA</th>
<th>OHIO</th>
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The headline in the July 27 issue of *Billboard* said it all: "SELF-INTEREST LED TO HOME-DUPING PACT!" The guest column by Edward P. Murphy—president both of the National Music Publishers’ Association and of its subsidiary, the Harry Fox Agency—referred to the EIA’s capitulation to the record and music publishing industries’ demand for royalty taxes on digital recorders and blank media. With record companies slated to get 38.4% of the take, featured artists 25.6%, songwriters and publishers 16.66% each, the AFM 1.75%, and AFTRA 0.92%, it’s easy to see why the software people like this so-called "compromise." But where, an objective and disinterested observer might ask, does the "self-interest" of the hardware camp figure in this cozy little arrangement?

You may find the answer depressing.

Tandy Chairman John Roach reportedly brokered the talks that led to the agreement announced on July 11. Tandy is committed to promoting the Digital Compact Cassette as the successor to the analog cassette, and believes the DCC will enhance the position of its Radio Shack chain in the US market. Matsushita has also jumped on the DCC bandwagon. Meanwhile Sony is eager to introduce its Mini Disc, which it believes could take over the Walkman market. (As a bonus for Sony, the songwriters and publishers agreed to drop the frivolous lawsuit they brought last year when Sony introduced its consumer DAT line in exchange for Sony’s promise to support royalty tax legislation.)

One by one, other manufacturers were won over. Eventually there were enough of them to form a majority on the EIA’s 35-member board of directors. The decision reportedly wasn’t unanimous.

*Billboard* quotes Yamaha USA president Don Palmquist as saying that, “if we don’t do something to satisfy the desires of the software industry, we’re not going to have the support” of that industry for new digital formats—support in the form of prerecorded DCCs and Mini Discs. He didn’t seem to think the agreement would spur the growth of DAT as a consumer item. 2 “Basically, all of us are against royalties, but it’s a business decision,” he told the *New York Times.*

But both DCC and the Mini Disc use data-compression schemes predicated on what might well be faulty models of human hearing.

Both DCC and the Mini Disc use data-compression schemes predicated on what might well be faulty models of human hearing. If such formats become the principal carriers of prerecorded music, record companies will rush to cut production costs by using data-compression technology in the studio, and Robert Harley's dire prediction last May will come true:

"It’s conceivable that the majority of recorded music will be subject to some form of data compression in as little as ten years. Consequently, data compression is not merely a mass-market mid-fi system avoidable by the serious listener. Like it or not, we will all be subject to bit-rate-reduced digital audio," he wrote.

Perfect sound forever? Hardly! Not even the imperfect sound of 16-bit PCM, since some 1 For a discussion of the HFA’s unique, nearly monopolistic position as the nation’s only clearinghouse for mechanical licenses and royalty payments, see "Industry Update," Stereophile, March 1990, p.45.


leaders of both the hardware and software industries seem to think that's better than we deserve. To sum it up rather cynically, the mid-fi magnates cut a deal with the music moguls and the public be damned. Let 'em eat data compression. Radio Shack and the Japanese giants are apparently so eager to convince the mid-fi masses that their analog cassette machines are as "obsolete" as, well, turntables—and thus should be replaced as quickly as possible by some bargain-basement form of digital recording—that they are ready to join their erstwhile adversaries in supporting an unjustified and unjustifiable royalty tax on their own products. The price, it seems, is not too high—as long as they aren't paying it.

The mid-fi magnates cut a deal with the music moguls and the public be damned.

The worst news is that this "Audio Home Recording Act of 1991" is being sponsored in the Senate, as S.1623, by Dennis DeConcini (D–AZ), Daniel Inouye (D–HI), Albert Gore (D–TN), and Orrin Hatch (R–UT), and in the House, as H.R.3204, by Bill Hughes (D–NJ) and Jack Brooks (D–TX). DeConcini and Hughes have always opposed royalty taxes in the past; more importantly, they chair the subcommittees that handle copyright issues; while Brooks, whose record on home taping is less established, heads the House Judiciary Committee.

Still, passage of the measure is far from assured. For one thing, its sponsors are being deliberately misled, as the following paragraph, quoted verbatim from Bill Hughes's own press release of August 1, 1991, shows:

"Hughes pointed out that digital audio technology is so precise that sound recordings can be copied with little or no loss of quality. Without proper copyright protections, he said, there is great potential for a huge black market in copied tapes which could deprive record companies, songwriters and recording artists of the revenues they deserve."

Apparently, JA's analysis in last month's "Update" (Vol.14 No.9, p.35) was correct: we are expected to make up for the record industry's losses from commercial piracy. The record people have always tried to confound the issues of home taping and piracy in the past, but the hardware industry always refuted them, usually with reams of documentation. What is shocking is that this time the Neville Chamberlains of electronics are letting the same claptrap pass without a murmur. Still, there should be some witnesses opposed to royalty taxes testifying at some of the hearings.

The Neville Chamberlains of electronics are letting the same claptrap pass without a murmur.

And there should be plenty of hearings. As of this writing (August 8), we don't know whether the Senate Judiciary Committee will have sole jurisdiction over this bill; but the House's parliamentarian has already decided that its Judiciary Committee will have to share jurisdiction not only with the Commerce Committee, which handled the Copycode and SCMS bills (possibly because this one includes a provision mandating SCMs), but also with the powerful Ways and Means Committee. Bills are occasionally shared by two committees, but seldom by three. While we have no idea why the Ways and Means panel is interested in this bill, we're glad they are, since this three-way division of power will probably slow down its progress.

Unfortunately, we can't count on the help of the Home Recording Rights Coalition in this fight. In fact, they're supporting this one, just as they unsuccessfully supported SCMS legislation—and for the same reason. While their letterhead lists 11 member groups, the HRRC is financially dependent on the EIA, and must follow its lead even when, as in this case, that entails a 180° about-face, not to mention an abandoning of its principles. (If this makes you as angry as it made me, you may want to call and tell them through their toll-free number: (800) 282-TAPE.)

The Home Recording Rights Coalition is financially dependent on the EIA, and must follow its lead even when that entails a 180° about-face.
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There is also dissension within the EIA. Only five of the 35 EIA directors represent companies in the blank tape business, and two of them—Sony and Tandy—are among the most keenly interested in bringing out new digital formats. Officials from 3M reportedly objected to the EIA's endorsement of royalty tax legislation, but have made no public comments.5

The best news is that Consumers Union and the Consumer Federation of America are not backing the royalty bill. Mark Silbergeld, director of CU's Washington office, says that CU remains skeptical about the music industry's claims of losses from home taping, and concerned about the fairness of any royalty tax plan. While CU and CFA have no plans to appear at hearings on these bills, they may decide to oppose them later.

And don't be fooled by the endorsement of the National Consumers League. The NCL also endorsed legislation to establish even higher royalties on analog recorders and media five years ago, before Copycode was considered, while CU and CFA actively opposed the measure.

The League, according to an official of one of its state affiliates, "has traditionally felt as great a responsibility to the workers who provide goods and services as to the customers who buy them."6 Of course it has. As most Washington insiders know, the NCL is not a real consumer organization like CU and CFA. It's actually organized labor's voice on consumer issues. Labor's interest, in this case, is in that small percentage of the royalty tax that would go to the AFM and AFTRA.

Linda F. Golodner, the NCL's executive director, called home taping "sort of stealing," according to Billboard.7 Her zeal on this issue is easy to understand. She's the wife of Jack Golodner, who is director of AFL-CIO's Department of Professional Employees, a group of 27 unions within AFL-CIO, including AFTRA and AFM. They represent not only performers and show-business craft unions, but teachers, government workers, health-care workers, and all sorts of people. If you're a member of a DPE union, your Washington leadership is telling Congress that you support royalty taxes. If that's not the case, you should be writing three letters—one to your Representative, and one to each of your state's two US Senators—to set them straight. Mention your union membership, and point out that, at least on this issue, the union does not speak for you.

And if you're not a union member, write them anyway. We can stop this thing, but we're going to need all the help we can get.

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5 Billboard, July 20, 1991, p.80.

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US: Peter W. Mitchell

Following the July agreement between electronics manufacturers and the music industry to support a so-called "royalty" tax on digital recorders and media, legislation reflecting the compromise was filed in Congress at the beginning of August (see above). Supporters believe that since the proposed law has influential cosponsors, wide support, and (as yet) no organized opposition, it could sail through Congress this fall—especially since it represents exactly the sort of compromise that Congressional committees urged when they declined to approve earlier proposals for dealing with the copyright conflict (SCMS, Copycode, et al). On the other hand, both houses of Congress already have a lot of unfinished business to deal with this fall, for example a complex overhaul of the nation's criminal-justice system that includes controversial provisions about gun control, prisons, sentencing, etc.

Final action on the digital audio tax bill could slip into next year. Such a delay might affect Radio Shack's plans to launch DCC next spring, but Matsushita in Japan and Philips in Europe will proceed to start selling DCC in their respective home markets anyway. Perhaps reacting to Sony's emphasis on the portable market for its Mini Disc, Matsushita announced that its first DCC products will be portable. Evidently Philips still intends to launch DCC with an AC-powered home recorder; car stereos and headphone portables will follow.
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The spirit of compromise that surrounds the "royalty" bill was reflected by the cosponsors who introduced the Senate (S.1623) and House (H.R.3204) versions of the proposed law. For example, the Senate bill was sponsored by Sen. DeConcini of Arizona, who as chairman of the Copyright subcommittee has always opposed royalties, both in principle and because claimed losses due to home taping have never been proven. But he supports the compromise bill because it would settle any doubts about the legality of home taping and help to bring new products to market.

The bill is also sponsored by Sen. Inouye of Hawaii, chairman of the Communications subcommittee, who believes that home taping deprives musicians of income; he says, "the time has come for the people who create to get a piece of the action." Many other members of Congress have accepted the idea that home taping causes economic harm to the creative American music industry, despite the fact that a study authorized by Congress suggested otherwise. This may be an example of what comedian/advertiser Stan Freberg calls the Invasion of Normandy Effect: if you repeat a claim often enough, accumulated impressions will cause it to penetrate the forebrain—even though the claim remains unproven.

The money would go mainly to Top-40 performers and their record companies.

In light of this, the proposed allocation of proceeds from the tax, as outlined by Jack Hanold above, is peculiar! The money would be distributed according to record sales and airplay, meaning that it would go mainly to Top-40 performers and their record companies. Note the contrast between this result and the crocodile-tears claim from the music industry that losses caused by home taping threaten to rob music of its diversity by depriving creative composers and performers of the economic incentive they need to produce new recordings. The proposed law won't stimulate much new diversity; most of the money will go to Michael Jackson, Bruce Springsteen, and Sony/CBS—the folks who get the big bucks anyway. If anyone really wanted to promote creativity, the tax should be used to fund scholarships at music schools and conservatories. But that won't happen; students and emerging young artists don't have high-priced lawyers and PR firms to represent them in Washington.

It is especially difficult to understand why nearly 40% of the tax should go to record companies, for whom the CD era has been the most hugely profitable period in history. In the early days of the digital disc, when the actual cost to manufacture a CD was nearly $5/disc8 (reflecting the startup cost of the new technologies and the dust-free factories that were needed), the retail price of new CDs was set at about $15 in the US and £10 in England. This pricing took into account higher performer royalties as well as production costs and a healthy profit margin. Nearly a decade later we have excess production capacity, and the pressing plants were paid for long ago. The cost to get a CD made has dropped to $1/disc; yet retail pricing for new releases remains where it was: $15 here, £13 in the UK. Profit margins for record companies and a few very popular performers have skyrocketed.

The truth is that record companies are not concerned about any present-day economic loss due to home taping; they're worried about the prospect that new digital audio media might cripple their golden goose. The CD is the best thing that ever happened to them—especially since consumers so far haven't been easily able to copy it without a loss of sound quality. Record companies fought tooth and nail to get a tax in lieu of royalties, not only because digital dubbing will make copying more attractive but also because the very existence of alternative digital formats will cut into CD sales. Recorded MDs and DGCs will cost about the same as CDs to mass-produce but probably will have to be priced lower, yielding a less inflated profit margin. The royalty tax is an insurance policy: to the extent that DCC and MD become popular, the big record companies will be paid for every player, recorder, and blank tape or disc.

The cost to individual consumers will be small: 2% of the wholesale cost of a DCC, MD, or DAT deck, up to a maximum of $8, plus about 20¢ per tape or disc. (Manufacturers have said that they will absorb the tax instead of passing it on to consumers; but since it applies mainly to new products that don't exist yet, 8 When I produced the original Hi-Fi News & Record Review Test CD in 1985, Denon's FOB price to us, including jewel box and booklet but no production charges or royalties, was more than $8 per disc.

—JA

Stereophile, October 1991

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*According to Stereophile survey, Vol. 12, No. 2 (Feb. 1989)

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you'll have no way to know whether the price of a player might have been a few bucks lower without the hidden tax.)

Since the digital audio tax will not be economically painful, what remains is a question of principle: as JA put it last month, do we want to accept a new tax that will be paid by the general public but will benefit an already wealthy special-interest group9 (record companies and Top-40 performers)? If you oppose this tax, the time to write your Senator or Congressman is now.

Do we want to accept a new tax that will be paid by the general public but will benefit an already wealthy special-interest group?

Perhaps the most worrisome aspect of the digital audio tax is the precedent that it would set. The MPAA, a trade group that represents Hollywood movie studios (and has attempted over the years to block VCRs and videotape rentals), welcomed the digital audio compromise as a model; the MPAA hopes to "work amicably" with manufacturers to reach a similar "intelligent solution" to deal with emerging technologies like the digital VCR and the recordable laser disc. Magazine and book publishers, already frustrated by the enormous volume of photocopying that occurs around libraries and college campuses, could follow up with a plan to tax Xerox-type copiers, blank paper, CD-ROMS, and other document technologies.

In British parlance, this could prove to be "the thin edge of the wedge," with very broad consequences.

Another unfortunate precedent is the "consumer protection" aspect of the bill. Advocates proclaim that the new law would clarify the legal status of home taping, immunizing consumers and equipment makers against claims of copyright infringement. This is bovine excrement, and it attempts to turn the law on its head. The Constitution states that all powers not explicitly granted to the federal government are reserved to the States and to the People. In practical terms, any act not prohibited by law is legal. US copyright law was rewritten by Congress in 1976, and after deliberation the Congress decided not to restrict home taping. The Supreme Court, in its 1984 Betamax decision, took note of this fact and explicitly confirmed our right to make recordings for private use. A decade of controversy has created a lot of confusion in people's minds, but—as JA said last month—since no law prohibits it, home taping is legal. We don't need a new law to make it OK, and we don't need a precedent implying that acts may be of doubtful legality unless explicitly permitted.

Home taping is legal.

Organized opposition to the digital audio tax may doom the DCC, Mini Disc, and recordable CD in the US.

Be aware, however, that organized opposition to the digital audio tax may doom the DCC, Mini Disc, and recordable CD in the US. Japanese electronics manufacturers (except Sony) are notoriously weak-kneed when threatened with lawsuits by the US music industry. DAT recorders could have been in stores in 1986, but the format was blocked, crippled, and nibbled to death by threats and groundless lawsuits. Even if manufacturers deliver new hardware next year, neither DCC nor MD is likely to succeed without plentiful software from record companies. In effect, the digital audio tax is the price we must pay if we want digital recording (on disc or tape) at con-

Stereophile, October 1991

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9 In last month's "Update," I wrote that the proposed digital recorder and media "royalty" is "perhaps uniquely in American history...a tax to be imposed on the public at large for the benefit of a special interest group." Unfortunately, I was wrong. It appears that the network TV companies are also lobbying Congress hard for a tax to be imposed on those who subscribe to cable television services. This tax, a percentage of the monthly cable rental fee, will directly benefit the networks to the tune of a reported $5 billion a year, purportedly to compensate them for the "fact" that cable subscribers get network programming for free. (Presumably their case rests on the supposition that cable subscribers do not buy the goods advertised on network channels, whereas those who simply throw up an antenna do.)

The real reason, of course, is that the networks' diminishing market share means that their advertising revenue is dropping. The alternative solution—increase the quality of their programming to attract more viewers—is not an avenue they want to, or are able to, pursue. On the same principle, perhaps Stereophile should lobby Congress to impose a tax on the sales of all audio magazines other than Stereophile, the money raised to go into our pockets to compensate us for putative lost income. Sound ridiculous? It is—but I don't see that it's any different from either of these proposed new taxes. —JA
"The Vandersteens made the Beethoven sound more like Beethoven. The 2Ci's make music and they make sense."
2Ci Hi-Fi Answers, April 1990
Alvin Gold

"The 2Ci is one heck of a fine speaker at its price ... Always musical ... Enthusiastically recommended as an affordable loudspeaker for Everyman."
2Ci Stereophile, May 1989
John Atkinson

"You'll surely rediscover your record collection."
21W Ultra High Fidelity Magazine
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sumer prices. High-end audiophiles can buy professional-level DAT decks. But if we oppose the tax we may deny the benefits of digital recording to our sisters, nephews, and everyone else.

In order to define precisely the class of products (consumer digital audio recording formats) for which the new law would require taxes and SCMS copy-control circuits, it contains a curiously restrictive definition of the "professional" recorders excluded from coverage. In addition to pro-standard inputs and outputs (eg, balanced XLR instead of single-ended phono sockets), a professional digital recorder must have an error-correction display (which some pro DAT decks do not have now), a standard system for recording time-code, and read-after-write heads for off-the-tape monitoring during recording. (Monitor heads are available in some Sony pro DAT decks and in a high-end consumer model but not, for example, in the Panasonic 3700, one of the most popular pro DAT machines. Of course, in view of its excellent sound and modest $1600 price, the 3700 is also an ideal audiophile deck.) The law makes no provision for the growing "prosumer" market bridging consumer and professional applications—for instance, the home recording studios popular among musicians, often blending pro and consumer equipment. In case of doubt, a decision about whether a product is subject to SCMS and tax may depend on what sales records reveal about the occupations of purchasers.

Coincidentally, Denon made a splash in the prosumer market by introducing its new $20,000 write-once CD recorder—see the next story from Tom Norton—not through a pro-audio distributor but at a mass-market hi-fi store. It is unquestionably a pro product, similar to the Sony/START CD recording system used by recording studios to produce small test runs of up to 50 CDs (for example, to give performers a "proof" disc for approval, illustrating what a finished mixdown will sound like). The system records on pre-grooved $40 blank discs made by Taiyo Yuden and other suppliers. Similar write-once CD recorders may retail for $10,000 next year and $5000 a couple of years later, suggesting that there may eventually be a place for them in the prosumer market. But Denon grabbed headlines by launching it in San Diego at Dow Stereo/Video—a large consumer-electronics discount chain where my sister bought a TV and I bought a portable CD player. Reportedly Dow took orders in the first week for three of the $20,000 Denon machines.

US: Thomas J. Norton

It's anybody's guess where home-recordable digital systems are headed. First it was digital processors, such as Sony's PCM-F1 feeding VCRs as storage devices. Next limped in DAT. Apparently firmly established as a professional medium, DAT continues to fight an increasingly difficult battle as a home format. Then, in a flurry of activity in recent months, Philips announced their Digital Compact Cassette and Sony their new recordable mini-CD, both claiming sound quality almost indistinguishable from, or nearly as good as, CD. (Where, one wonders, has the sound of the original master tape disappeared to in all of this? Oh, I almost forgot: a CD is like having your own copy of the master tape. Yes, yes indeed.)

To surprisingly little fanfare, Denon introduced their own recordable CD cartridge recorder at the Summer CES, apparently designed for professional use—as reflected in the price. Still, for the digital equivalent of the Versa Dynamics crowd, the DN-7700R CD Cart recorder might have some appeal. It's a modular system; buyers purchase what they need. The DN-7700R is the recorder itself, able to record directly from digital sources. The cartridge-encased optical discs can record 63 minutes of 16-bit/44.1kHz audio. Partially recorded discs may be played back, though they lack a TOC (table of contents), on Denon's DN-970 CD Cart Player, and additional tracks added on later until the disc space is used up. The TN-7700R provides for full computer generation of TOC information. After this information is added to the completed CD, the latter may be removed from the cartridge and played back on any standard CD player. Users who need D/A conversion (the DN-7700R has only a digital input) may choose to add Denon's own BU-0170A Audio Interface Unit. Needless to say, the system is Write-Once-Read-Many (WORM), as are all the recently proposed and demonstrated recordable CD systems of which I am aware.

Stereophile, October 1991

WorldRadioHistory 57
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Denon did not elaborate on the mechanism by which the recording is accomplished. The price of all of this? The DN-7700R will be $16,000, the BU-0170A Audio Interface Unit $4000. (Told you it was for professional use!)

In another, perhaps more potentially useful (from a consumer standpoint) demonstration of technology, Denon also showed a laboratory prototype of its quad-density, 3" CD having an 80-minute capacity. (See Peter Mitchell's "Update" pieces on this development in the November 1990 issue, Vol.13 No.11, of *Stereophile.*) They have achieved this by using one-half the CD-standard track pitch (the space between the tracks) and one-half the CD-standard track velocity (thereby having to put twice the data into the same track length). For the more technically inclined, a track pitch of 0.8μm and a linear velocity of 0.7m/s are used in Denon's system, which is compared in the photograph with standard CD data.

Pit size on Denon quad-density CD (right) compared with conventional CD (left)

To generate the far smaller laser spot required to read the resulting smaller pits, Denon has used a shorter-wavelength laser and a larger-aperture focusing lens. Whereas the standard CD laser operates at an infrared frequency (the wavelength is 780nm), the new laser chosen by Denon's engineers (which is commercially available but expensive) operates at 630nm. Together with a larger-aperture lens, the resulting spot size is said to be equivalent to a light source of only 530nm wavelength. The optics-to-disc distance, while smaller than that of conventional CDs (a requirement for focusing the larger-aperture lens), is sufficient to operate within the flatness limits of current 3" CDs.

The recording is made and played back with the same data format and error correction as that of the standard CD system. The significance of this is not that the new CDs can be played back on existing equipment—they cannot—but that data compression is not required to achieve the small size and long playing time.

On the recording end, an ionized Argon gas laser with its wavelength in the blue end of the spectrum generates the smaller required spot. Since the size of the pits is equivalent to that of dust and smoke particles, extra care is needed in manufacture. But cost problems are less of a concern on the recording side than they are at the mass-market, consumer end, where any player costing over $200 is regarded as "high-end."

Denon is not only touting this system for home playback use, but also for use in improving the data capacity of CD-ROMs. The system is, however, still just a laboratory prototype. It may or may not become a commercial reality as is.

Or it might provide another piece of useful technology pointing the way to some future higher-bit, higher-sampling-rate CD format. Before that ever happens, however, someone has to convince the powers that be that the current CD format isn't already perfect enough for everyone's music needs—a "revealed truth" which the public now seems to accept as gospel.

**Someone has to convince the powers that be that the current CD format isn't already perfect enough for everyone's music needs.**

**US: Peter W. Mitchell**

William Busiek, the radio engineer responsible for the first live broadcasts of symphony orchestra concerts in stereo, quadraphonic, and digital audio, died in June at 68. After joining Boston's WGBH-FM in 1951, he engineered thousands of concert broadcasts and hundreds of other programs, such as "The Spider's Web" and The Nakamichi International Music Series, which were broadcast throughout the US. While the widely circulated Boston Symphony concerts served as a model for the concert tapes of major American orchestras that are now syndicated to FM stations in every state,
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The synthesized first-order acoustic crossover is a 26 element unit implemented with 35 parts. It provides completely phase accurate transitions between drivers to preserve the recording's spatial information and utilizes custom-made polystyrene capacitors and low-oxygen copper, air-core inductors for very low distortion.

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New England listeners were especially fortunate because they heard the broadcasts live—without the fidelity losses of tape. (Most US orchestras allow their concerts to be broadcast only after a delay for possible tape editing, but BSO concerts are heard instantly in thousands of New England living rooms while the orchestra plays in Symphony Hall or at Tanglewood.)

During the 1960s and '70s those broadcasts provided the highest-fidelity sound available to audiophiles on this continent. They offered subjectively wide dynamic range, spacious stereo imaging, and remarkably uncolored sound whose freedom from noise and distortion made most LPs and tapes sound coarse and primitive by comparison. Years later, when I found myself recording a concert in parallel with Busiek (for another FM station), I was startled to see that his hands were frequently on the controls—in contrast to the "set and forget" procedure that was regarded as the ideal for miking classical music. With his intimate knowledge of the limitations of FM broadcasting, Bill was gently compressing the dynamic range of the sound, boosting quiet passages and taming loud peaks in a gradual and unobtrusive way that sounded entirely natural at home. He brought to this task a sensitivity to musical values that no mechanical or electronic compressor could match; not incidentally, he thus minimized the action of the automatic compressors and limiters that FM stations always keep in-circuit to save themselves from FCC citations for overmodulation.

**Unobtrusiveness was Busiek's watchword.**

Unobtrusiveness was Busiek's watchword; it described his modest and quiet style of life and dress as well as his lack of braggadocio. Always behind the scenes yet utterly reliable, he produced consistently good sound in tense live-concert situations where other engineers (including me) screwed up. One night in 1961 the building containing WGBH's studios and equipment was totally destroyed by fire. Less than 24 hours later, after installing a turntable in a cramped Symphony Hall announcer's booth and rigging a direct link to the transmitter on Great Blue Hill, Bill got the station back on the air. Eventually the disaster became an opportunity to outfit new studios with state-of-the-art Neve consoles and other top-quality gear, making WGBH a leader in broadcast sound.

During the late '50s, when stereo was just being introduced to hi-fi, Busiek worked with another FM station to broadcast live BSO concerts in true wide-stage stereo, transmitting the left channel on one station and the right channel on another. Listeners with two FM tuners (each receiving a mono signal) heard stereo sound with total separation and a remarkably low noise level that even now is rare in single-station FM multiplex stereo broadcasts.

A decade later a similar experiment gave Boston-area audiophiles a convincing taste of the enveloping ambience and impressive you-are-there realism of four-channel surround sound. Four omni microphones were hung in a living-room-size rectangle in Symphony Hall, two broadcasting via WGBH and two via WCRB. Ironically, during the first season neither station wanted to be known as having the "rear" or "ambience" channels, so one station carried the left channels (front and rear) while the other station carried the right pair. Of course, listeners to either station heard a peculiar stereo perspective with that arrangement, so WGBH eventually took the rear left-right pair while WCRB got the front channels. Sadly, I didn't have a four-channel recorder to preserve those broadcasts, but their effect on me—and that of hearing four-channel tapes in the old Acoustic Research demonstration room—was indelible. After experiencing the sensation of being immersed in the same space as the musicians with the acoustics of Symphony Hall all around me, the sound-painting that two-speaker stereo projects on the front wall seemed artificial by comparison.

Digital radio is just getting underway now in a few cities and won't be commonplace in most of the country until the mid-'90s, but digital audio broadcasting began in Boston fully five years ago, in 1986. Live concerts miked by Bill Busiek (without gain-riding) in WGBH studios and in local concert halls were encoded on-location into 16-bit PCM using a Sony PCM-F1 processor (which formats the code as an NTSC video signal intended for taping on a VCR). The code was broadcast via TV channel 44 and remained in digital form until it was received and decoded in hundreds of living rooms around Boston, yielding sound vastly better than the best FM in clarity, stereo imaging, and freedom from noise.

Stereophile, October 1991
FROM THE LEADERS IN RIBBON LOUDSPEAKER TECHNOLOGY COME THREE NEW HYBRID PERFORMERS. CENTAUR MINOR, CENTAUR AND CENTAUR MAJOR EXPAND THE CUTTING EDGE OF AUDIO.

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William Busiek might have said that he was lucky to work at a station where innovations such as stereo, surround sound, and PCM broadcasting were encouraged. But in fact the station's reputation for sound was due in large measure to the consistently fine engineering that Busiek himself provided for nearly a third of a century.

US: Thomas J. Norton

Each year the EIA (Electronic Industries Association) publishes statistics on sales of consumer electronics products of all kinds. These statistics are compiled from (the confidential) data submitted by individual manufacturers; their accuracy is therefore dependent on manufacturers' inputs. They reflect factory sales—not, specifically, sales to consumers—and therefore do not precisely gauge the health of the retail market. Still, they provide a unique insight into the marketplace.

Unfortunately the statistics for sales of separate audio components are not broken down into either high-end sales or sales in individual component categories—save for CD players. From the figures published at the 1991 Summer CES, total (factory) sales of audio components for 1990 were $1.935 billion—a figure which includes all manner of separate components including those from the major, mass-market manufacturers, but not one-brand rack systems (a separate category which itself accounted for $804 million in 1990 factory sales). Despite the relatively depressed retail market conditions for audio in 1990, factory sales were up over the previous years ($1.854 billion in 1988, $1.871 billion in 1989).

But if you look closely at the statistics, an interesting fact emerges. Home CD-player factory sales were at $654 million (nearly 4 million units sold). That figure is included in the total figure for separate audio components. If you subtract it, you wind up with total factory sales of separate audio components, minus home CD players, of $1.281 billion. Total factory sales of separate audio components in 1983, when CD-player sales were little more than a blip on the chart, were $1.268 billion. In short, total sales of separate audio components in 1990, leaving out CD players, were virtually the same as in 1983.

Total sales of separate audio components in 1990, leaving out CD players, were virtually the same as in 1983.

Where are the consumer electronics dollars—such as they are in a down economy—going? Into VCRs, with factory sales totaling $2.439 billion (nonetheless down significantly from 1987 sales of 3.442 billion). Or into camcorders—$2.260 billion. Aftermarket autosound sales totaled $1.192 billion (with an overall autosound market, including factory-installed equipment, of $4.292 billion—a figure which dwarfs sales of home audio gear).

Despite heavy sales of CD players over the past few years, EIA statistics indicate that only 28% of US homes have them. Since the statistics also indicate that 94% of US homes have audio systems of one sort or another (a figure that certainly includes everything from boomboxes to high-end audio), and since LP as a mass-market medium is a dead issue, one can only infer that the program material being played on the vast majority of home audio systems comes from radio and analog cassette. Depressing thought.

The Netherlands:

Peter van Willenswaard

Over the last six months I’ve been evaluating a dozen or so separate DA converters. In addition to the usual measurements I undertook a few special measurements to get a technically founded idea as to what extent jitter could influence sound quality. Among DA converters tested were Wadia X-32, PS Audio Superlink, Meridian 203, Deltec PDM One series II, Philips DAC 960 (similar to the Marantz CDA 94), Arcam BlackBox 3, Sphinx PJ-3 (by Siltech), and another Dutch product called JK Acoustics DAC (more romantic and less see-through than the Wadia; I love both—the Wadia makes me blink in admiration, or even gasp, but the JK, though not totally free of digitalis, goes straight.

10 Or, at an average cost—these are factory sales, remember, so we’re talking wholesale—of about $170 per unit. Now there’s an interesting statistic.

Stereophile, October 1991
Remember a time, not too long ago, when we just listened to music? There was no worry whether the source was analog or digital, no debate about digital strings, harsh brass or the lack of sweetness and air in a good recording.

There was only the music.

Well, the music is back. Audio Research, the most trusted name in high-resolution electronics for over twenty years, is proud to introduce its own digital-to-analog converter for digital-source playback: the DAC1.

This very carefully conceived product delivers unprecedented musicality, beauty and realism. It brings back the joy to listening that never should have been lost, getting us back to where we belong.

The result is music.
to the heart).

Audio signals basically consist of information concerning the development of amplitude vs time; all other ways of looking at the signal (like frequency spectra and phase) can be derived from there. If between the input and the output of a device under test there are no changes in amplitude-time relationships other than a constant time-shift (due to a storage medium) or a constant multiplication factor for the amplitude (due to amplification or attenuation), the waveform will exactly conform to the original and no difference will be audible because there simply isn't any.

In the analog domain both amplitude and time are continuous phenomena. Practically, that is; at the level of quantum physics this no longer holds true.11 In digital (PCM) audio amplitude and time are perceptibly discrete, at least to the eye if you hook up an oscilloscope to the right spot inside a CD player. Maybe to the ear as well—but that battle isn't over yet. Each discrete amplitude is stored as a 16-bit word, and time is rendered discrete by the tick of the clock controlling, for instance, the ADC at the recording side and the DAC at the reproduction side. If you connect a given separate D/A converter to different CD transports, or use a different optical or electrical interface cable, and hear a change, something at the digital level must have altered either with respect to amplitude or with respect to time.

If you hear a change, something at the digital level must have altered either with respect to amplitude or with respect to time.

Bit errors are extremely unlikely. Inside a CD transport, error-correction is so powerful that even if the CD is moderately scratched or the laser makes a read-out error for some other reason and mistakes a 1 for a 0 (or misses entire blocks of bits), the original information can be entirely and faultlessly reconstructed. I have modified an older Philips CD player so that I can count correctable errors, and I can report that most well-pressed and well-treated CDs don't cause any such read-out errors at all, let alone uncorrectable ones which would activate the interpolation mechanism (or, if that too should fail, shut down the output). Bit errors due to the digital link between transport and converter are extremely unlikely: it either works or it doesn't. A subtle change of audio information is impossible because if a 1 would be mistaken for a 0 a firm click would result from the output of the DAC. So we can rule out bit errors, and therefore changes in amplitude information (other than those due to the initial A/D conversion). This leaves only timing errors, more often referred to as jitter.

To be able to see just how much jitter is necessary before you can observe a change in the output signal, I constructed a circuit that allows the timing of the serial digital signal from the transport to the D/A to be modulated (fig.1). In this circuit a Phase-Locked Loop (PLL) is used to recreate the clock buried in the serial data stream, and this stable and reliable clock is sent to a second PLL which has its VCO-input (controlling the instantaneous oscillating frequency of the PLL) connected to a low-frequency (0-200kHz) generator, thus modulating the phase of the clock signal emerging from the second PLL. Both the original serial data stream and the modulated clock are provided with a suitable delay and sent to an edge-triggered flip-flop, which then clocks out the serial data stream in a modulated pace: the serial data is now jittered with the frequency of the modulating generator. The circuit was then inserted between the digital generator of our Audio Precision Dual Domain analyzer and the D/A converter to be tested. The AP's analog generator was used as a jitter modulation source; the AP's DSP to perform a spectrum analysis of the D/A converter analog output.

11 I once carried out a rough calculation on how many electrons per second you would need in an amplifier input stage to reliably cover the needs of an audio signal. I estimated that lower than 0.1mA bias current would be unadvisable due to quantizing effects; 0.5mA appeared to be on the safe side. Does time also become discrete if you look close enough? I don't know. I'm not a specialist on that side of reality.
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I first sent a digitally generated 9kHz sine-wave of −60dBFS (dB below Full Scale) to the DAC and modulated it with different amounts of 4kHz (squarewave) jitter. I was hoping to see 4kHz sidebands (meaning second-order intermodulation) around the 9kHz signal component, or even 1kHz sidebands (third-order), but no such luck: I never saw any intermodulation product above the −120dB measurement noise floor (see fig.2). Then I changed the digital generator frequency to 18kHz, as high frequencies are theoretically more vulnerable to jitter, and its amplitude to −20dBFS. I wanted to remain realistic; as 0dB, 18kHz signals just don’t occur in music; a second reason not to go to 0dBFS was that even a 16-bit spectrum analyzer (like the Audio Precision’s) has a limited vertical span as its own distortion products begin in the −96 to −100dB range. I wanted to be able to look at what was going on down to −120dBFS, which set the upper limit of the high-level 18kHz signal to maximally −20dBFS. This time I was a bit more lucky, because a series of 4kHz sideband components did show up. But only a bit: I had to push the jitter hard to obtain the maximum −75dB intermodulation components shown in the typical example of fig.3.

The jitter level (observed on an oscilloscope) necessary to cause such intermodulation effects amounted to ±20ns, which is only some 20dB below “100% jitter” (ie, the transitions in the serial datastream being shifted over a full clock period). [It is also four times the specified jitter of the ubiquitous Yamaha S/PDIF receiver chip.—Ed.] The amplitude of these intermodulation products decreased linearly with jitter level, as could be expected (but it also meant that I wasn’t inadvertently overloading any circuits in the D/A).

Quite a lot of jitter is needed to cause distortion products of only moderate amplitude.

Although apparently quite a lot of jitter is needed to cause distortion products of only moderate amplitude, we must take a look at what happens when we consider the boundaries of perception. It’s generally accepted that, under certain conditions, we can hear some 12–20dB into the noise floor. In 16-bit digital audio the quantizing noise across the audio band measures around 96dB down (if you have a well-functioning piece of equipment), meaning that components down to −116dB below full scale might be heard. That would set the threshold of hearing for jitter in the digital link to 116−75 = 41dB less than the 20ns used in the above test, at 200ps (picoseconds). To put things in perspective, a full cycle of length 200ps corresponds to a 5GHz frequency— we’re entering the microwave area here! In a one-piece CD player it takes a great deal of effort to keep timing inaccuracies to 200ps or less. The crystal clock’s phase noise itself is already of that order of magnitude. How accurate the digital output of a transport is in this respect remains to be seen. I haven’t yet constructed a device with which I could measure that. Such a device might also quantify the jitter contribution of different cables and/or the influence of non-optimal cable termination (see “Industry Update,” Vol.13 No.5, p.51).

Before I forget, one and only one of the D/A converters mentioned at the beginning didn’t show any sign of stress at all when fed with the jittered S/PDIF-signal: the measured spectra

**Fig.2** Spectrum of DA converter output signal when fed with 9kHz −60dBFS signal and 20ns 4kHz jitter. No converter reacted to the jitter; the spectra taken with jitter were identical to those taken without.

**Fig.3** Typical spectrum of a D/A converter (in this case the JK Acoustics) output when fed with a 18kHz −20dBFS signal and 20ns 4kHz jitter: note the appearance of the 14, 10, 6, and 2kHz sidebands.

Stereophile, October 1991
Sennheiser headphones.
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If music is important in your life, Sennheiser has the headphones that recreate all the impact, all the emotion of the original performance. Whether it’s Brahms or Bowie, Sennheiser products blend German craftsmanship with state-of-the-art engineering to create a new standard of listening pleasure.

Hear the Sennheiser difference at a dealer near you.
with or without jitter were totally identical (and pretty clean; see fig.4). It seems that the Wadia X-32's Rok Lok circuitry actually does what Wadia promises in its accompanying literature. When I consulted my listening notes I found that the Wadia was indeed the least sensitive to type and quality of the digital interlink used; for the first time even my buffer amp (Vol.13 No.5, p.53, and Vol.12 No.9, p.213) gave no improvement.

![Spectrum](image)

Fig. 4 Spectrum taken from the Wadia X-32 (same conditions as in fig.3). With or without jitter produces identical spectra.

**US: Thomas J. Norton**

Stereophile is not a video magazine—as we've been reminded ad infinitum by readers following the few video reviews we've published. Yet the future of HDTV (high-definition television) is intimately tied in with the future of audio, like it or not. The eventual availability of affordable HDTV is certain to have a dramatic effect on the sales of audio components—dwarfing, in my judgment, the impact of CD—as consumers realize the value of good sound to go along with top-quality video. And, at the top of the market, there's a large untapped reservoir out there of consumers with the resources to purchase high-end audio systems but little interest in the program material presently central to the enjoyment of such systems. They are not, in short, passionate enough about music to expend those resources on a first-rate audio system just to play back radio and CDs (not to mention their old Mantovani and 1001 Strings LPs). But they will see the personal and social advantages in first-rate sound to accompany high-end video in a home theater system.

While the willingness of the public at large to settle for execrable audio and video quality must not be underestimated, one can only hope that, in the immense marketplace for "TV," even a minuscule percentage interested in top quality translates into BIG numbers. This potential should not be lost on the high-end audio industry. Even readers with no interest in such matters must realize that such a market will enhance the availability of new audio equipment and music recordings as the industry as a whole is put on a more solid financial footing.

Currently four major players compete for acceptance of their HDTV systems in the US, and all participated in a panel at the June CES in Chicago. The panelists agreed that, whichever system is adopted, the first sets will be very expensive and that true commercial acceptance is unlikely to occur before the turn of the century. While a number of estimates were made concerning eventual pricing relative to current sets and the expected rate of market acceptance, all such estimates must be considered highly speculative considering prior experiences with consumer electronics products of various descriptions. Who in 1970 would have predicted the giveaway calculator? And did anyone really anticipate the rate at which CDs have decimated the LP marketplace?

In any event, nothing will happen on the commercial front for at least several years. The FCC must decide which of the six competing systems (from the four proponents) to adopt for the US. The Advanced Television Test Center (ATTC) is scheduled to begin an evaluation of these systems as I write this—a process which will take a year and a half. The FCC's decision process will follow that, then manufacturers servicing both the transmitting and receiving end must design, build, and market the equipment.

**UK: Ken Kessler**

"Most definitely positively certainly possibly maybe."
Vanishing Act... Timeless as they are, with elegant sculptural lines and modular proportions as classic as the Froebelian cubes inspiring Frank Lloyd Wright, Nobis speakers virtually disappear when the music begins.

That is when the magic happens. You find yourself enveloped in a splendid, sound-stage experience, where each instrument is heard in the purity of its own clear voice, with the brilliance, subtlety and power every artist intends.

Magic is not easy. For Nobis, it takes the best of two worlds. Both are found in Milwaukee, where the Nobis is designed and built. It is a city of Old-world craftsmanship, where experience, skill and the artisan's pride in work well done prevail. It is also a leading New-world center for superb industrial design. Both traditions demand that great care is taken in every step of design and construction, to ensure the fine instrumental integrity of each Nobis speaker.

Premium hand-matched components make every pair of Nobis speakers an exquisitely compatible set of electronically-engineered twins. Precise engineering determines each exacting specification for a Nobis speaker. From its solid, hand-crafted cabinet and powerful components, to their dynamic union.

These are the realities that evoke magic.
That's what Linn's spokesperson—who shall remain nameless so he doesn't get into trouble—said when I phoned Glasgow to ask, "Will the Linn CD player be on view to the public at the Hi-Fi Show in September?"

The Linn CD player, formerly the industry's best-kept but now worst-kept secret, is already shrouded in mystery—even to those who've seen and heard it. I admit to being none the wiser about any of the specifics after a press function face-to-face with Ivor Tiefenbrun. But I'm still amazed that it even exists in prototype form. Remember: Linn launching a CD player is like the PLO opening a kosher restaurant.

Here's what I've gathered so far, from various sources including Linn staff, industry know-it-alls, fantasists, and enemies.

Ten Things You Didn't Know About the Linn CD Player:
1) It will sell for £2000 ($3440).12
2) It will sell for £3000 ($5160).
3) It will sell for £6000 ($10,320).
4) It may be called the Linn MEK plus Linn DAK.
5) It won't be called the LP-13.
6) It's a "two-bit" player, according to the US distributor. "This bit turns the disc and this bit contains the electronics."
7) It will reach the shops in January 1992.
8) It won't reach the shops in January 1992.
9) Linn designed and built the transport.
10) Linn didn't design and build the transport.

There. Does that make things clearer? I thought not. So we wait until the Hi-Fi Show at Heathrow Airport. If it does appear, I have no doubt that it will be the talk of the show, no matter what anyone else launches. In the UK, the appearance of CD with a Linn badge will be akin to an Elvis Presley sighting, only less believable.

And what will the Linn CD player—I still can't get used to those words—overshadow? Plenty, because the Hi-Fi Show is gonna be a whopper, the biggest yet, with every room booked by the first of August and a long queue waiting to fill in for any cancellations. Here are just a few of the pending highlights:

12 Rate of exchange as of early August 1991. —KL
Lecson is back, the once-revered name now attached to a line of amplifiers designed for biwiring. To be launched at the Show is the Quatra preamp and two loudspeakers described as "radical." As the Lecson name still means "outrageous styling" to those over 35, the new company has a tradition to uphold. Will there be a cylindrical power amp? A preamp with piano-key operation? Watch this space.

Arcam will give the public its first glimpse of the Alpha 3 integrated amplifier, a sub-£200 ($344) unit fighting in the most competitive sector of the UK market. Its role will be to regain the glory of the A60 era, when A&R controlled the just-above-NAD price category. Also on show to the public will be the Delta 100, the first UK-made cassette deck since the days of the NEAL and featuring Dolby-S.

The Studio Series from Monitor Audio has earned the company its best reviews in ages, but the models ain't cheap. So welcome the Studio 5 at £650 ($1085)/pair and a new quality mini, the Monitor One. I wonder if MQ Iqbal has found any new venirees to flog to the fashion-conscious.

A treat for fans of the wee AE1: Acoustic Energy has produced its first floor-standing loudspeaker, conceived no doubt to take advantage of all the high-end amplifiers now imported by the company into the UK. On a personal note, I'm pleased to learn that AE will handle Air Tight, those luscious little tube jewels from Japan. This room will also feature the hot new products from Audio Alchemy, announced in Chicago.

Acoustic Research threatens to show the mind-boggling M1 budget loudspeaker, the mini which wowed Mark Levinson and inspired a Cello/AR collaboration (see last month's "Update"). Remember: this speaker had been held back from distribution in the UK despite success everywhere else, because the UK is such a bizarre market with too many homegrown products and rabid xenophobes to make it worthwhile. My prediction? This baby is going to humiliate a lot of British loudmouths: manufacturers, retailers, and scribblers. It's hoped that the demonstration system will feature Cello electronics, so AR can duplicate the demonstration in New York which dazzled all who attended.

Best known for turntables, Alphason has thrown its hat into the digital ring and will show a Bitstream D/A converter, apparently to be demonstrated with live recordings made by Alphason on digital tape.

The first-ever tube/MOSFET hybrids to wear the Beard name should make their debuts at the Hi-Fi Show. The lineup will feature a 40Wpc integrated amplifier selling for £450 ($775), and a preamp to retail at £400 ($688).

Glimpsed at the Summer CES was the Creek CD60 CD player, which I seem to recall was only a mockup; the one at Heathrow should be fully functional. What with Creek, Naim, and now Linn offering CD players, how long before the few remaining down-with-digital Brit brands change sides? And how long before the most anti-CD of all the reviewers start writing pro-CD remarks? Answer: It's already happened, which proves that where Linn and/or Naim lead, many are content to follow, ring in nose. And believe me, there are plenty of UK hi-fi notables gagging with nausea at the turnabouts by certain scribes.

Another speaker set to make its first public appearance in September is the mind-boggling Extrema from Sonus Faber. At £6000 ($10,320)/pair, it may be too much to expect record sales, but the speaker is nothing short of sensational. Distributor Absolute Sounds is known for its Hi-Fi Show, by-ticket-only demonstrations: if one of the rooms features this baby, expect a fight for seats.

Hustling along with a new range of tube products, Michaelson Audio plans to follow the just-launched Odysseus integrated amplifier with a separate pre/power combination based on the design. Dubbed the Da Vinci, it should offer double the power of the 45Wpc integrated. Expect the parent company, Musical Fidelity, to have its usual room full of too many new products to absorb in one visit.

Turntables still excite us in the UK (whether anyone buys 'em or not), so the £4500 ($7740) Mentor from Nottingham Analogue should elicit a few oohs and aahs, as will the return of Pierre Lurné to the UK market. Lots of new-to-the-UK tube ranges are slated to appear, while new distributors concentrating on high-end imports are appearing like zits on a teenage chocaholic. No longer are there many brands without UK representation, with Rockport Technologies, Genesis, McIntosh, Aperature, Vandersteen, Straight Wire, and Metaxas (from Australia) among the most recent to be subjected to British scrutiny.

I'm still amazed at the continuing success of
a trend started a few years back by Sumo. That company was the first to exhibit at the Hi-Fi Show without having a UK distributor in place. By the end of the trade days one had been appointed. Now the show guide is peppered with unfamiliar names, brands looking for a UK presence or an easy way to deal with their distributors in other territories. And special note should be made of the Scandinavians, the most aggressive and hard-working of the lot, who come over in droves.

It’s going to be an interesting show for other reasons, not the least being that the Summer of 1991 has been the gloomiest in years. I spoke to one supplier—pans, not whole components—who deals with something like a dozen of the biggest names in British audio. The best performer of all, according to this source, the one least harmed by the economic nightmare, was down 19% from last year. And I heard tell that one of the seemingly most successful of all the UK makes has been shedding staff like dandruff off a wino.

But the Chancellor of the Exchequer says that the end of the gloom is nigh, with the economy making its recovery before you can say “23% APR”—not a surprising remark when you realize that an Election is imminent. All I know is that Autumn 1991 had better be a good ‘un, or this column will be reading like the obituary pages come 1992.
Audition the B&K M-200s at a Dealer Soon:

"That's the big news with the Sonata Series M-200 Monoblocks: they are real high-end amps, not very far short of the best solid-state amps available. And like I was telling Apogee's Jason Bloom the other day, 'What a bargain!'"

— Sam Tellig, STEREOPHILE, January 1991, Vol. 14, No. 1

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In airline pilots, brain surgeons, and CD players, steadiness is a pretty fundamental requirement.

In the case of our newest CD player, the Elite* PD-75, its rock-solid stability has rocked the world of music lovers and audio critics. As the reviews have rolled in and the awards have been bestowed, it is apparent that the standard for CD players has been advanced dramatically. Behind this success lies a principle that Elite has brilliantly exploited: The mechanical elements of a CD player are just as critical to its quality as its electronic components.

The first significant innovation to come out of this insight is at the heart of the PD-75. The stable platter.

Two basics of physics—mass and inertia—combine to make the stable platter an obviously superior platform to support a disc spinning at high velocity.

Next, the stable platter, by supporting the entire area of the CD disc, minimizes wobble and chatter.

A wobbling disc presents a difficult target for the laser, while a chattering disc creates resonance, distorting the signal, which distorts the sound.

Another problem for CDs is gravity. Spinning above the laser pickup and supported only in the center, the disc sags microscopically. Which to a laser beam is significant degradation.

But on the Elite CD platter, the disc is turned upside down—that is, label down, information side up. The disc lies firmly clamped to a solid surface.

Meanwhile, the laser pickup reads the disc’s digital code from above, where it is immune to dust settling on the laser optics.

We invite you to bring your favorite CD to an Elite dealer and demonstrate the advantages for yourself. Give that disc an audience on the PD-75 for what one critic called “a dimension of sound that you have never heard before.”

And usher in a new era of stability.
"Maybe you should get a pair of Celestion 700 Special Editions." It was Brass Ear on the phone with a recommendation. I had shipped my Spendor SL100s to Stereophile. It was time for a change, that's all. Plus, I expected to move into smaller quarters.

"They're right up your alley," said Brass, leading me to suspect immediately that he was trying to sell me his pair.

"I didn't know you had a pair," I told Brass.

"I didn't until last week."

"What are you doing with Celestions? I thought you ordered a pair of Unity Fountainhead Signatures after you heard them at Ben Rose's Harlequin store."

"Oh, those. They're coming next week."

"And you needed a pair of speakers this week."

Brass laughed, but I think it was true. I could name a number of speakers which have spent but a week or two at the Brass Home.

Actually, I didn't buy Brass's Celestions—I bought my own pair. And, as I write, Brass still owns the Celestions although they are out on loan to one of his friends. But what Brass said seemed to make sense.

"You like imaging, right?" queried Brass.

"Yup."

"And smoothness. And detail. And soundstaging."

"Yes."

"And you're too cheap to buy WATT/Puppies."

"You got it."

"Celestions. They're just the ticket for you."

Brass said it with as much conviction as if he were selling a new Infiniti (the car—not the speaker) or a Porsche. That's the thing about Brass: he's so convincing.

I told Lars what Brass had suggested.

"Harumph!"

"Is that all you have to say?"

"Well, the Celestions may be a real step up for you," said Lars patronizingly. "You haven't had a first-rate pair of speakers in your listening room."

"Meaning I haven't shelled out like you for a pair of WATT/Puppies. But I've had Quads. I've had Spendors. Good speakers."

"True." But I could tell what Lars was thinking: not in his league.

"Look, Lars, I don't want to play in that league. I'd rather spend the money on recordings. On concert tickets. Or travel. Hell, I'd rather spend my money on a good meal."

This pleases Lars because I don't compete. Nor does Lou. So we're no threat. Brass, on the other hand, is a wild man. He just might mount a challenge to Lars.

"How does my system compare with the Swede's?" asks Brass.

"How's the sound over at the Brass Ear's?" inquires Lars.

I play the two against each another.

"Oh, Brass, Lars has better soundstaging than you have. But he doesn't have the bass." Brass beamed.

"Lars, Brass may have better bass than you have, but Brass can't touch your system for soundstaging." Lars lapped it up.

Meanwhile, Lars bas made some notable improvements with his system: a Mike Moffat Theta processor, a Krell KSA-250, and a pair of WATT Series 1I5 with Puppies. Cabling by Yim—I mean Jim—Aud of Purist Audio Design, the water-wire guy.

Yim's cables have helped Lars tame the system.

"Yee, Lars, this is the best I've heard your system. You've made your WATT/Puppies sound as good as my Celestion 700s." (I'm getting ahead of myself here.)

Lars snorted.

"Really good. Smooth. And you've solved the problem of the hump" (the excess energy
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in the upper bass).

Lars has solved the hump by decoupling the WATTS from the Puppies. First he tried all manner of Tip toes, Sorbothane, Navcom. Then he stole some Legos from his kid's toy box and filled them with Blue Tack. You laugh. Lars has achieved incredible transparency. Even Hyperfy is impressed.

"You like Lars's system, Howie? Tons of bass, huh?"

"Yes, it's excellent. I'm impressed."

"Tons of bass, Howie. Bass all over the place."

Lars has achieved this great transparency without benefit of the Coherence Technology clocks—the $20 Radio Shack lookalikes that some lady named Amanda has been retailing for $500. Lars had bought two of them.

"Where are the clocks, Lars?"

"I took them out."

"You're not even using them to tell time?"

"The LEDs may be bad for the sound." (He'd been reading Auntie Enid.)

"Better disconnect your microwave oven, then. And your VCR. But how does your refrigerator run now that you don't have the clocks to keep the electrons flowing in the right direction? Don't you have anarchy now in your house wiring?"

"We have a new refrigerator." Before, Lars had told me how the Coherence Technology clocks made his old refrigerator run better—quieted the compressor or something. "The fridge is purring now," Lars had said, with Scandinavian seriousness.

"And the washing machine, too? How's the Whirlpool?"

"Everything runs better now that we have the clocks. And I feel better, too."

"You mean a sense of well-being, of wigo. You feel reYOOOvenated."

But Lars has now changed his mind. The clocks are kaput. The real solution, of course, was to buy a new refrigerator.

"That's a nice new fridge, Lars. But has it been specially treated to make the electrons flow in the right direction? You have to be careful what you plug into your house wiring these days. You can't have all that anarchy."

The fridge is fine. But get this—the door can't open all the way. Despite Lars's careful measurements before purchasing, the door hits the wall.

"This is ridiculous," I said, as I helped myself to a beer.

"I have a solution," said Lars. "We're going to take down the wall and expand the kitchen into the dining area."

"Good move." This should keep Lars out of hi-fi trouble for several weeks.

"More mischief for you," said Lars. "Are you going to write about the clocks and my refrigerator?"

"Absolutely. In fact, I don't ascribe the improvement in your system to Yim Aud's new speaker cable or to your experiments in Lego land. I attribute the improvement to General Electric and your new fridge."

It's a wonder anyone invites me anywhere. Meanwhile, I phoned Brass. "Can I come over to hear the Celestions?"

"Too late—they're gone! They're out with a friend. I just got the Unity Audio Fountainhead Signatures. Gotta go get them up from the basement—just came in."

Poor Brass. He's going in for a hernia operation; a contributing factor must be all the speakers he and his son have moved into and out of his fourth-floor apartment.

The next day Lou called—somewhat aglee, I thought.

"Have you head about Brass?"

"His hi-fi hernia?"

"No, the Unity Audio Fountainhead Signatures. One of the speakers is cracked. The faux marble Fountainhead cabinet is a total loss."

"Brass had to get the speakers four flights up and now four flights down to be shipped back? And him going in for another hernia operation?"

"Yes," said Lou. "He didn't notice until he set the speakers up and could hear a vibration from one speaker but not the other. He looked closely and he saw the crack."

To be continued . . .

Audio Alchemy Digital Decoding Engine v1.0

The Audio Alchemy
Digital Decoding Engine v1.0

Would you believe $399 for a digital processor? Now this is my kind of product. I'm a real
Application of high purity copper (99.9999% or purer) to audio and video products in the U.S.A. is a patent of Nippon Mining Co., Ltd. (U.S. Patent No. 4,792,369)

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cheapskate when it comes to anything digital, because the technology changes so fast. Think about it: your new $3000 processor will likely be superseded in six months or so by a Mk. II or III version; if you only paid $399 for your Alchemy, you won't be too worried when v2.0 comes out. If you do want to spend big bucks on hi-fi, do something sensible like buy a pair of Quicksilver Silver mono amps, or a Jadis Defy 7, or a VAC amp. Or get a better pair of speakers.

Digital should be done cheap.

First there was the Digidol processor from Musical Fidelity in Britain. No longer available even in Britain, it was an excellent unit for the money. If you were lucky enough to get one, keep it. Then there was the $995 Meridian 203 Bitstream processor—good-sounding unit, but maybe not the biggest bargain on the market.

On the basis of bang for the buck, I think Audio Alchemy knocks out the Meridian decisively. The performance is at least as good in most areas, perhaps better in some, and the thing sells for 60% less. Critics are oohing and aahing over the Alchemy even in Britain, where it sells for $600 while the Meridian 203 sells for $800. In other words, the Alchemy retails in England for three-fourths the price of the Meridian, while here it's two-fifths, and still the Brit-crits in Hi-Fi News and Audiophile are raving over the Alchemy.

I'll skip the technostuff! The Alchemy is a Bitstream baby, and if it looks like something that might fit inside a car dashboard console, that's the idea. The thing is small. There is a coax in and a Toslink in (yeah!). There are three idiot lights—I don't know and don't care what they do. Oh—and there's a phase-inversion switch, which I find very handy. If the sound isn't right—if there's a lack of air, if everything sounds compressed—then a flick of this switch will often set things right.

I brought the Alchemy over to Lou's house to put it up against Mike Moffat's Theta Basic—a $1995 multibit processor. The Theta won, particularly in the area of dynamics and soundstaging; the sound was bigger. But the Alchemy didn't disgrace itself. In fact, it has its own virtues: very good clarity, good low-level resolution, a lack of grittiness...plus very good retrieval of ambient information, especially when I used an IDOS, which I'll get to in a moment. Does the Alchemy have any weaknesses? Sure. I didn't have the Meridian 203 on hand for a direct comparison, but I think the Meridian sounds slightly more delicate—refined. On the other hand, I think the Alchemy is more dynamic. It boogies better. Actually, the sound of the two units—the Meridian and the Alchemy—is quite close. But the price isn't—especially in the US, where the Alchemy carries no import penalty. Here's KK on the Alchemy, just in case you missed Ken's write up in the July 1991 HFN/RR, dangling participle and all:

"Although costing nearly ten times as much, I used the Audio Research DAC-1 as a reference, and it did not embarrass the DDE."

Taking a cue from Ken, I compared the Alchemy's sound with the sound of my Philips CD60 player's on-board processor—no contest. The Alchemy had more air, more life, more dynamics, greater delicacy and detail. And the Philips CD60 is a well-respected player.

The DDE is my absolute first choice in a digital processor. It's cheap and it's good. To do better, you have to pay more than twice as much. And what would be my choice if you do want to pay more? That's easy: the Altis Audio DAP Reference for $2995, described as "the ultimate Bitstream." More on the Altis in a couple of months—but it easily surpasses the Alchemy in delicacy, detail, smoothness, and retrieval of ambient information.

The Perfectionist Audio IDOS

When I was at the Summer CES, someone—I forget who, but it might have been David Chesky—thrust an IDOS into my hands. "Sam, take this thing and play with it. It's fabulous." Before I could say anything, the person who was maybe David had slipped away and I was left holding the IDOS (which stands for Isolated Digital Outlet Strip).

I had little enthusiasm until I read the write-up in the July/August issue of The Absolute Sound. I mean, I didn't even bother to plug the thing in—this is how yaded I've become when it comes to anything to do with AC power lines. Frankly, I think this is an area fraught with fraud.

Then I read the TAS article by Arthur S. Pfeffer (I borrowed Lars's copy of TAS; I don't buy hi-fi mags, including Stereophile), and thought to myself, "Well, I have this thing. Why not give it a try?"

First, what is it? It looks like a $15 power strip you might find in a hardware store. But it retains

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1 See the August issue for RH's in-depth review of the Digital Decoding Engine.

Stereophile, October 1991
for $150. Yeah, rip-off, right? Wrong. I'm not technical and neither (probably) are you—but the IDOS is supposed to drain away the digital RFI without letting it get back into your system via any of your analog components, including your amps. That's why everything has to be plugged into the IDOS.

The IDOS has five outlets. You plug everything digital into the outlet marked digital—that means using a multi-plug adapter if you have a player and a processor—and everything that doesn't have a digital clock into the analog outputs.

Holy smoke! This is one of those CD tweaks that really works—for me, anyway. For you, who knows? It makes the little Audio Alchemy DDE even more of a killer. I swear—the sound of the Alchemy is even smoother, sweeter, with better ambience retrieval yet. Too bad I didn't take the IDOS over to Lou's. I'm getting what I feel to be near-state-of-the-art digital sound from a $399 processor and I attribute at least some of that to the IDOS.

Find a dealer who'll let you borrow an IDOS, or buy one on approval and listen for yourself. But don't yump to conclusions. Don't leap up from your seat in five minutes if you don't hear an improvement. Listen for a day or two, because some of the improvement in sound—less listener fatigue—will probably become apparent only over time. You may find that the digital gear you already have sounds better than you thought.²

The Perfectionist Audio DIF
One good thing leads to another, right? Not always! But in this case, yes. The Perfectionist Audio Components DIF (Digital Interference Filter) is described as the "companion device" to the IDOS—"a second line of defense against digital pollution." That's a clever piece of promotional copy. I mean, do you want digital pollution in your system? It's unhealthy to listen—your ears may get clogged. You might even die sooner. Besides, you're not a dirty person. The PAC DIF is said to provide a "clean" ground reference for the analog signal.

You have to look at a chart to follow this. You plug the DIF directly into the back of your CD player or processor, then plug your interconnects into the DIF. Meanwhile, a ground wire connects into the DIF and terminates into two double-ended (male and female) RCA sockets. Stick the penile end of the androgynous plugs into your preamp or line drive. Then stick your interconnect into the female end of the androgynous plug. Voilà.

What does it do? In my ever-changing system (every day), it makes the sound even smoother, more listenable—strings, especially. Harsh CDs seem less so. But based on my experience with the IDOS, I recommend that you audition the DIF in your own system before you solidify your purchase. Price is $250—not steep, considering the quality of the device and the not inconsiderable labor cost involved.

Any of these tweaks are worth it, because they're painless to everything but your wallet—you don't have to use green marker pens or CD surface treatments. I still treat the surfaces of my CDs, but I use Pro Sona, not you-know-what.

Here's a tip for those who decide to use such CD surface treatments—your choice. If the stuff has a spray container, repack it. Get a small bottle with medicine dropper (about $5) from your local pharmacy. Pour a quantity of your favorite magic CD elixir into the bottle. Then use the dropper to apply three small drops to each CD. Use a cotton ball to cover the disc, then buff carefully, always using radial, never circumferential, motions. This way, you'll waste none of the liquid and you won't have to breathe it. I figure that a small container of Pro Sona, for instance, can treat several thousand discs when used in this fashion. To spray is to waste. Too much of the fluid evaporates into the air or is breathed up your nostrils.

² Results will vary from system to system. I tried the IDOS at Victor Goldstein's house, and Victor and I agree that the sound became too smooth, too polite. Addition of the IDOS to the system did have a dramatic effect, though. It's essential that you buy this thing on approval.

The Univocal Isopod
From San Jose, California, and the same company which produces the well-regarded (by me) Aural Symphonics line of interconnects and cables, comes the Isopod—black ceramic cones which retail for $45 for a box of three. I was glad to get this alternative to Tip toes, Counterfeet, German Acoustics cones, and the like.
THE CD PLAYER.

"It's fair to say that the Rotel RCD 855 is the steal of the century... Musically, the RCD 855 is very refined, with a degree of transparency and harmonic neutrality found only with the real expensive stuff... As an integrated unit, the 855 is truly extraordinary."

Lewis Lipnick
Stereophile Vol. 13 No. 7, July 1990

"It's rare to find a product that offers so much music for so little money as the Rotel RCD 855... One would have to spend a thousand dollars, however, to better the RCD 855's performance."

Robert Harley

"In fact, it is one hell of a player at the price."

Martin Colloms

THE ONLY REAL COMPETITION.

"The winner of the WHAT HI FI? Best CD player award is the Rotel RCD 865... All those positive aspects of the PDM (Bitstream) sound—the spaciousness, effortlessness, and fluidity—combine here to afford a honey sweet sound that is, quite literally, music to the ears!... So it's only fitting that this excellent silver spinner is rewarded with the high accolade of BEST CD PLAYER."

Winner: Best CD Player
Awards 1990, WHAT HI FI? (U.K.)

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The problem with the pointy cones is the points—they’re sharp. I mean, man, have you ever left a Tiptoe on the floor by accident and then stepped on it with your bare foot? Tiptoes and the like are also tough on tables, floors—in fact, just about any surface they come into contact with... unless you have those special cups designed to accept the points, or use pennies under them.

Enter the ceramic Isopods, whose “points” are rounded, so they won’t pierce anything—including your foot. The unreadable literature that came with my samples talked about the benefits of ceramic vs metal—seems that the steels, metal alloys, etc. don’t provide enough rigidity and inert quality “for the work to be performed.”

Who knows? Who the heck cares, except maybe Tom Dzurak, whose company developed the “Isopod System”? Do these things work? In my system—note the qualification—the answer is a resounding yes. I would have tried these under my CD player, too, if I’d had enough to go around. As it was, I put them under the B&K balanced ST-140 monos and the B&K Pro 10 MC preamp... and, dammit, I heard a difference. It sounded like the music got louder. Dynamics improved. There was more spaciousness to the soundstage. Overall clarity seemed to improve, too. These were very subtle differences, to be sure—but worthwhile.

Interestingly, the B&K ST-140 monos were already isolated—with all manner of stuff on hand, used mainly to lift the amps off the floor so that I wouldn’t accidentally run the vacuum cleaner into the faceplates. I had a homemade wooden stand, then original Tiptoes, then a RATA Torlyte platform, and then the amps standing directly on the Torlyte, using their own rubber feet. I left everything as it was, but put three Isopods under the amps—that is, between the amps and the Torlyte platform. The Pro 10 preamp was sitting on plate glass, which in turn was placed on upside-down wooden door-knobs (the Cheapskate’s Tiptoes). I left the glass and wooden doorknobs in place, but put the three ceramic Isopods under the preamp.

I won’t tell you the sound was transformed, because it was already damned good to begin with—a heck of a lot better than any sound I heard in Santa Fe at the recent Stereophile writers’ conference, and with equipment that cost a damned sight less! I will tell you that the Isopods do have what I consider to be a beneficial sonic benefit, and they don’t scratch tables, floors, or pierce feet (your own). I’m getting some more of these to put under my CD player, preprocessor, and maybe under my speakers. As always, though, with any tweako accessory like this, try before you buy.

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Stereophile, Vol. 13 No. 4, April 1990

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DISPATCHES FROM THE FRONT

Andrew Singer

An hour has gone by since he first walked into the store. Consultation, selection, demonstration, comparison, discussion, and finally, a decision! The salesman brings out his order pad—and then it spews forth. "I just don’t know. I don’t think my wife will let me bring those speakers into the house. They’re so big. I’ll have to come back with her and let her see them. If I bring those things home without her okay I’ll be sleeping on the living-room couch for the rest of my life. I’d better wait. I’ll call you and set up a time to come by and bring her in. By the way, don’t talk to her about how much it costs. You understand how it is."

The scene portrayed above takes place a number of times each day in hundreds of audio stores across the nation. The follow-up act is equally distressful as the husband, boyfriend, or whatever, drags his reluctant Significant Other into the store. An otherwise rational, intelligent adult female becomes Genghis Khan. Her spouse regresses to pre-pubescent infancy in a vain attempt to cajole, beg, convince, and/or bribe her into going along with his previously made decision.

The salesman acts like a chorus in a Greek tragedy, echoing his customer’s sentiments, trying to break through the armor. To no avail—he might as well try to get Yassar Arafat and the Lubavitcher Rebbe to sit down to tea. And so they exit, he dragging his tail between his legs, she subtly resentful and feeling not a little bit guilty about depriving him of something he really wanted.

One has to ask whether this trip is really necessary. No, but it will probably continue and increase in frequency so long as the audio community fails to take account of women, embrace them, and attract them at all levels: as designers, manufacturers, marketeers, retailers, salespeople, and customers.

It’s no secret that the audio industry has historically been dominated by men. Today, especially in the high end, some breaks have appeared in the wall. Consider Rondi D’Agostino, President of Krell Industries; The Mod Squad’s Joyce Fleming; Karen Sumner of Transparent Audio Marketing; Sheryl Wilson of Wilson Audio; Kathy Gornik of Thiel; etc. It’s evident that women have made some inroads in the areas of manufacturing and marketing sophisticated high-fidelity systems. By and large, however, very few women occupy positions directly responsible for making the decisions of what to make, who to make it for, and how to market it. Find me some female high-end audio salespeople. There certainly aren’t many. Whether this is because of ignorance, misogyny, or simply a lack of interest on the part of women, is beyond the scope of this column. What is eminently clear, however, is that whatever the cause—and I think it is, to a large extent, the lack of involvement by women with stereo—our industry has failed to capture their imaginations, and effectively has come close to alienating what is probably the last untapped segment of the marketplace: the single professional woman.

Even assuming that we can afford to ignore the single woman as a potential customer—convert (a near-suicidal attitude), it’s clear that when couples are involved, even if manufacturers of other kinds of products traditionally considered to be boy-toys might be able to offend over 50% of the population and continue to do business successfully, we cannot.

Other big boys’ stuff—cars, boats, etc.—are "my" things. They are objects which can be used by men alone or with other men. But the stereo goes in the home. It is aesthetically, symbolically, psychologically, and economically

Stereophile, October 1991
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one of the possessions that "we" must choose together. This was not always the case. Twenty or thirty years ago, most men wouldn't have paused for a second to consider their mate's opinion. No longer. The sociological and economic achievements made by women in the '60s, '70s, and '80s have endowed them with position, money, and power; in this case, the power to share equally in a major purchasing decision that will affect both partners.

Nevertheless, with audio, that is rarely what happens. Instead of going together to select a hi-fi, men, in concert with their audio dealers, first make the decision themselves, then try to gain their spouse's acquiescence. Ganged-up on by her man and his partner in crime (the audio retailer), left out of the decision-making process altogether, the subject of an obvious and an ill-conceived conspiracy, it's no wonder that women feel betrayed, ignored, and manipulated to the point that they may become downright hostile to the whole thing.

Ask most men why they don't go to the hi-fi store with their partner in the first place and they will usually respond that their wives and/or girlfriends are not interested in hi-fi components and couldn't care less about the sonic differences between a good system and a bad one, even if they recognize them; that they don't want to spend a lot of money on audio gear; and, most important, that they don't understand why you can't get a nice small pair of speakers and a diminutive mini-receiver instead of refrigerator-sized, floor-standing transducers and gargantuan high-end separates. So, reasons the male, the best he can do is hope to get his wife to accept the decision that he makes.

This concept of foisting acceptance on one's mate has become so pervasive that the phrase "Wife Acceptance Factor" has become a term of art in the audio industry to denote components which will meet women's supposed economic and aesthetic criteria. A high WAF is associated with moderately priced components that are small, highly finished, and kind of "cutesy." It is presumed that, although women might be able to hear and appreciate the differences between such systems and state-of-the-art high fidelity, they are unwilling to pay the price in terms of cost or the living space necessary to accommodate such systems.

I believe this is a fallacy. In my experience as a retailer, when women are given the same

attention, respect, and opportunity as men to discover for themselves the differences between state-of-the-art reproduction and conventional stereo, they not only appreciate it every bit as much, but are also every bit as willing to commit their pocketbooks and living space to obtain it. In most cases, women who actually venture into our store seem to both appreciate and describe the differences between systems on a musical level better than men. This is not surprising, considering that women's high-frequency hearing is, on average, more acute than men's.

It may be true that currently more men than women are dedicated audiophiles. It is also true that the low value women have traditionally placed on music reproduction is simply the result of having been forced to accept rather than being given the opportunity to decide; of having been excluded rather than being included; of having been ignored rather than being attended to.

If women have not embraced high-end audio it is because high-end audio has never embraced women.
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<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
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<td>16 oz</td>
<td>$14.95</td>
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<tr>
<td>SuperCleaner</td>
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<td></td>
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<td>Nitty Gritty &quot;First&quot; Record Cleaner</td>
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<td>1 gal</td>
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<tr>
<td>LAST Record Cleaner</td>
<td>#1 Power Cleaner</td>
<td>$19.95</td>
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</tr>
</thead>
<tbody>
<tr>
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<td>&quot;Kontak&quot; electronic connection cleaneners.</td>
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<td>AG Laserglide CD polish improves CD sound</td>
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<td>and readability 14.95</td>
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<td>CF Feet (4)</td>
<td>Vinyl CD Optical Clearcoat Enhancer</td>
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<td>Full Size Kit 29.95</td>
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<td>Sumiko CD Rel Bands... 12 (17) 95... (50) 69.95</td>
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<td>Analog Survival Kit 49.95</td>
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<td>AudioPrism &quot;CD Stoplight&quot; green paint pen 14.95</td>
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<th>VINTAGE RACKS</th>
<th>AUDIO INTERCONNECT CABLES</th>
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<td>Call for prices on Audioquest, As-One, Cardas, Siltech, Monster, Tara Labs and Von der Hul.</td>
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<td>Custom lengths and with custom terminations including right-angle RCA and XLR &quot;balanced&quot; available. Call for prices</td>
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<thead>
<tr>
<th>Audio Interconnect Cables</th>
<th>Taras Labs Paragon Digital Coaxial Cable</th>
</tr>
</thead>
<tbody>
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### Premium Digital Optical Cables

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Stereophile, October 1991

WorldRadioHistory 91
ENOUGH ROOM?

Thomas J. Norton takes a look at your listening room (and ours)

Room acoustics, and their importance, may not be subjects which we ponder daily here at Stereophile, but they are never far from our consciousness. Two recent events served to spotlight them yet again: the setting-up of our first-ever panel listening test of moderately priced loudspeakers (Vol.14 No.7), and a letter from a reader requesting advice on room problems. Both reminded us—if a reminder was needed—that although the perfect room does not exist, there are things that can be done to make the most of even an admittedly difficult situation. That reader's letter, in particular, brought home the fact that we cannot really discuss this subject too often. It's easy to forget that comments made here months (or years) ago are beyond the experience of newer readers. A new audiophile's most frequent mistake is to overlook the significance of his or her listening room, while the experienced listener will too often take the room for granted.

What are the important factors at work here? They are many, and they interrelate in complex ways. What size is the room? The problems presented by a room 11' by 15' are very different from those in an 18' by 26' space. Where are the windows and what type of window covering has been chosen? How high is the ceiling; is it flat or sloped? Is the floor fully carpeted? Is the room a dedicated listening space or must it, as is usually the case, be used for other purposes?

Designing the "ideal room" from scratch is usually the best approach. JGH's article in Vol.13 No.4 dealt heavily with room shape and construction (including the vitally important...
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topic of standing waves). But building a listening room from the ground up is seldom possible for most of us. Fortunately, there is usually a great deal that can be done to make the best of an existing situation. True, short of major and expensive remodeling (which might turn out disappointing, in any case), you’re generally stuck with a basic room shape and configuration. But beyond that, you can improve matters, or at least do much to minimize the negatives.

Acoustics is at least as much art as science, and offering specific advice is more than a bit dicey. Even the experts don’t entirely agree on the recipe for the “best” listening room. But I won’t let that stop me. Just remember that you’ll be able to find knowledgeable individuals who will not agree with everything in this article, and in a particular circumstance they may very well be correct.

For reproducing music I personally prefer a room that is slightly too dead acoustically to one that is too live. How can you determine this without instruments? The room should be, first of all, comfortable to converse in. Do voices sound smothered and overdamped, echoey, or just about right? When you clap your hands sharply in the room, does it sound “alive” enough, yet without a zippy “aftertaste” that takes a noticeable period of time to die out? In home acoustics, a second is an eternity, a half-second a lifetime. This “ringy” quality is known as “flutter echo,” and if clearly audible can defeat the best efforts to produce decent sound. Flutter echo is due to the successive reflection of (generally) higher frequencies back and forth between flat, untreated, opposing walls. It may be cured either by damping those wall surfaces or by doing something to break up their flat surfaces — making the reflections less directional by dispersing them. The best solution is to provide the room with a reasonable balance of dispersion and absorption. Wall hangings, pictures, bookshelves, and drapes and floor coverings of modest weights, are usually pluses; large areas of uncovered windows, bare floors, and totally bare walls are seldom desirable. Nor are their opposites—an abundance of overstuffed furniture, heavy drapes, and a heavy, thick carpet and pad.

Room symmetry is generally a plus. The environment to the rear and sides of each loudspeaker, especially, should be as well-matched as possible with respect to absorptive and reflective qualities. JGH had a number of important things to say about this topic in his article.

The environment to the rear and sides of each loudspeaker, especially, should be as well-matched as possible.

There has been, unfortunately, a lot of otherwise well-intentioned advice bandied about in other quarters which can defeat the concept of symmetry. The most common is a generalization: opposing surfaces should differ in their absorption characteristics. There is a kernel of truth in this, but taken as gospel it can destroy symmetry. The concept seems to have originated in the days when no one was concerned with stereo soundstaging. In actuality, the left and right side walls, as you face the loudspeakers, should be as symmetrically damped, and as physically symmetrical as possible in the area around the loudspeakers—as should the wall areas immediately behind them. To consider an extreme example of a poor situation, let’s say you have your loudspeakers on the short wall, each 3' from the closest side wall. If one of those walls has bookcases against it, and the other a large, undraped patio door, you may have satisfied the “requirement” of differing opposing walls, but you’ll likely get a rather poor overall balance and stereo imaging. To a lesser extent, the left-right environment around the listening area is important. A very dead wall on one side and a very live one on the other will create an odd auditory sensation that something “isn’t right,” the severity of the situation depending on the proximity of those walls to your listening chair.

Symmetry of the floor and ceiling surfaces is less important and difficult to control in any case. Here, dissimilar opposing surfaces are the norm, with full carpeting on the floor and a generally reflective ceiling. The absorption characteristics of a wall-to-wall carpet and pad are less than ideal. It is concentrated mainly at upper-mid and high frequencies, though its specific characteristics vary significantly with different types of carpet and pad. Use of area rugs in place of wall-to-wall carpet has been proposed by some as a possible, less drastically absorptive alternative. It might work, though experimentation would prove costly. I prefer

Stereophile, October 1991
Most loudspeaker designers do their final listening tests and "voicing" in fully carpeted rooms.

The wall behind the listener should be reflective with good dispersive properties.

dimensioned room might make the modes due to the other walls subjectively more prominent.

I do recommend avoiding cathedral ceilings which rise to a peak in the center of the room; they tend to focus the sound in a fashion which might cause problems. A one-way slope is likely to be better. JGH has cautioned about setting up loudspeakers in such a room in a manner which places one loudspeaker under the low end of the ceiling and the other under the high; his concern seems intuitively reasonable (symmetry again). In practice, however, RH (whose sloped ceiling is one-way) uses such an arrangement with no complaint about imaging or other soundstaging problems. As an aside, I should point out that JGH has recommended strategically placed damping material on the surfaces of a cathedral ceiling to help kill the troublesome reflections. He prefers a "deader" room than I do; my only reservations about such an approach involve possible overdamping of a room which probably already has wall-to-wall carpeting. (See again my caution about carpeting combined with acoustic tile.) Perhaps some type of diffusors on the ceiling might work better than absorption, though they would be difficult to incorporate, physically. As to the symmetry of the front and rear walls, there are many proponents of various arrangements. Most (but not all) seem to agree that the wall behind the listener be reflective with good dispersive properties, but there is disagreement about whether the area behind the loudspeakers should be the same, or heavily absorptive. The most extreme example of the latter is the live-end, dead-end room, in which the walls, floors, and ceilings around the loudspeakers and extending out slightly in front of them are completely covered in thick acoustical foam or other similar material in an effort to soak up all random reflections from the area. Its advocates — mainly from the professional arena — are vocal.2 One thing is certain: the domestic acceptability of such an arrangement is severely

---

1 Some experts hold that a thick, foam-rubber pad is worse than a natural-fiber pad because it tends to absorb more selectively: 14, while some frequencies will be significantly damped, others won't be at all. A natural-fiber pad is said to have an absorptive character that is more even with frequency. — JA

2 See Brian Cheney's "Dispatches from the Front" article in Vol.14 No.9, September 1991.
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limited. Domestic acceptability remains a central problem with all radical room-treatment schemes.

In general, then, the setup of a good listening room should aim for a reasonable distribution of dispersion and absorption, keeping in mind the requirements of symmetry. An additional point I haven't mentioned is the desirability of absorptive surfaces on the sidewalls just in front of the loudspeaker locations (to minimize close sidewall reflections). Some experts also recommend a similar treatment of the ceiling just in front of the loudspeakers, and while this might be more difficult to manage, it could prove useful, especially with the low ceilings common in modern construction.

While the above discussion applies to just about all listening rooms, if your room is a small one you are best advised to approach with caution loudspeakers having a strong low-frequency output. The Spica Angelus, for example, has a somewhat lightweight, though tight, low end; it does not usually overload a small room. ST, who raved about the Spicas, has a rather small, square listening room, which was apparently quite compatible with the Angelus. But generalizing about acoustics can be risky. GL recently fell in love with the Mirage M-3s; they put out a lot of bottom-end energy, and his listening room, though rectangular, is small. Regardless of that, the Mirages seem to work for him.

Anyone desiring to get the most out of their environment should have patience and a willingness to experiment—within the bounds of domestic tranquility. Experiment with both the positioning of room furnishings in the room and the setup of the loudspeakers. Try long-wall and short-wall placement. There is no loudspeaker, be it Class A, B, C, D, or X, which will not profit significantly from proper placement in a good room. The majority of loudspeakers, in our experience, work best when well clear of side and rear walls on good stands (unless they are designed to be floor-standing), though there are exceptions. The more flexibility you have in being able to experiment with loudspeaker placement—2-3' away from the side and rear walls at least, except for those loudspeakers specifically designed to be used closer to the wall—the better chance you'll get the loudspeaker to sound its best. That does not mean that you will need to have this clearance with every loudspeaker. It means, however, that for the majority of loudspeakers, placing them away from the walls might make the difference between rather ordinary sound and a system which "sings." (Incidentally, RL, who uses the next-to-most recent version of the Vandersteen 2Ci, reports that in his modestly sized room he gets good results—if perhaps with just a touch too much bass—by positioning them about a foot from the rear wall.)

The majority of loudspeakers work best when well clear of side and rear walls on good stands.

Avoid placing large pieces of furniture between the loudspeakers.

Avoid placing large pieces of furniture between the loudspeakers (but not always) improve soundstaging and low-end smoothness, though sometimes at the expense of low-end weight. If domestic considerations require that the furniture be flush against the wall, a solution I have found to be satisfactory is to have a light, movable chair—a director's chair, perhaps, which I can easily maneuver in front of the wall-mounted furniture arrangement for use when I want to listen critically. In my opinion, listeners often sit too far from their loudspeakers. The farther away you sit, the more the room itself affects the sound you

Listeners often sit too far from their loudspeakers.

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hear, particularly at mid- and high frequencies. Yet sitting too close can also present problems: the ideal listening position—the "sweet spot"—is smaller, and if you sit too close, the outputs of the individual drivers in the system may not blend properly. The answer, again, is being open-minded enough to experiment. Don't automatically sit 15' away because that seems the most logical location with your normal furniture arrangement, or because that position worked best with your last pair of loudspeakers, or in your previous listening room, or simply because "you always have."

The height at which you listen is very important.

Furthermore, the height at which you listen is very important. With a stand-mounted loudspeaker, that means trying different stand heights before making a final choice. You might even find that the height recommended by the manufacturer, or their "dedicated" stand itself, is not always optimum for your personal listening situation. Getting the tweeter at or slightly above ear height, for a seated listener, is usually best. But not always. Experiment.

A number of manufacturers are now in the business of selling room-treatment products of various types to help optimize room acoustics. The most widely used are damping panels placed on the walls of the listening room. These range from shaped acoustic foam (available from Sonex, Audio Advisor, Audio Express, and Audio Concepts, among others) to decorative hangings and free-standing panels usually made of rigid fiberglass in a fabric-covered frame. The latter are not that easy to come by commercially (Monster Cable used to market them, but has not been promoting them recently), but the resourceful do-it-yourselfer could build them without a great deal of difficulty. Rigid fiberglass sheets of varying thickness are available from most insulation suppliers. Or you could use fiberglass of the flexible, attic-insulation variety. But be careful—avoid skin contact with the raw fiberglass (it's nasty, itchy stuff), and try not to shake fiberglass dust into the air. The most difficult part of the project will be framing and covering the fiberglass. I strongly recommend a fabric cover of some sort over it, for both cosmetic and health reasons.

Beyond this, the products tend to get more specialized and more expensive. Tube Traps are by now known to most audiophiles. They are designed primarily to reduce low-frequency pressure buildup in the room corners, where such frequencies are known to get together and party, disturbing the acoustic peace of the rest of the room. Traps are also often used against wall surfaces as well. JGH and LA reviewed them way back in Vol.9 No.3. A more recent variation on this idea is the Phantom Acoustics Shadow, which RH reviewed in Vol.12 No.12; it takes an active approach to reducing pressure buildup in the corners.

Also new are the products from RoomTune. Their line consists of small, freestanding panel absorbers and smaller devices designed to fit into the upper room corners and high on the walls near the ceiling. Some of this company's ideas on room acoustics are decidedly unconventional. GL is currently living with their products, and will report his findings in a future issue. Stay, ah, tuned.

Then there are RPG Diffusors and related products. These operate on the principle of establishing a smooth, controlled diffusion of sound (though they also make a device called an Abffusor, which combines diffusion and absorption). These are perhaps the most expensive of the room-treatment devices, and while mainly designed for recording studios, they have found their way into some home listening rooms. Keith Yates commented on them for Stereophile in Vol.11 No.4.

Many of these products, and others which pop up from time to time, are effective, but I strongly recommend working to obtain the best results you can with normal domestic furnishings before resorting to them. Again, try various furniture arrangements and loudspeaker (and listener) locations first, remembering to do something about those flat, reflective walls to improve both their dispersion and their absorption in the appropriate places. Then, if the results continue to defeat your best efforts, you might look into specialized room treatments. If you need such dedicated products, and they are acceptable to the budget- and decor-meister in the family, they should be your final room tweak, not your first.

3 We're not talking asbestos-type problems here, but inhalation of brittle, non-degradable fibers is unlikely to help promote rosy cheeks. Nor is getting them in your eyes a good idea. Which are two reasons why I have reservations about recommendations to use this material to reduce the noise of an air-conditioning system by lining the inside of the ducts with it.

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The Stereophile Listening Room

I’ve discussed this room briefly in several previous articles, often with the proviso that “experimentation is ongoing.” As I mentioned in the past, it measures 15.5' x 20' with a 9' ceiling. The ceiling is more dispersive than normal, with open beams in Santa Fe viga style (whole barked logs supporting pine planks which form the main ceiling structure). The interior surfaces of the two outside walls are of plastered block (not adobe, as I mistakenly stated in a previous article). The other two walls are plaster over drywall. The floor is suspended over a basement. Fig.1 shows the general layout of the room. The window behind the loudspeakers is approximately 6.5' square, but is broken up into nine small panes with thick, high relief, and therefore dispersive framing around each pane.

The room treatment, up until recently, remained quite similar to that which I described in my review of the Signet SL280 almost a year ago (Vol.13 No.10). Medium-weight Berber-style carpet with an artificial jute pad covers all but a 6" perimeter around the floor. The corner fireplace (and the opposite, diagonal corner) promised to be problematical (any concave area—bay windows included—tends to focus the sound in undesirable ways). To minimize any possible adverse effects from this, two stacked (6' tall total), 16" diameter Tube Traps were placed in each of these corners, near the center of each diagonal wall segment. The Trap on the fireplace wall was placed directly in front of the (unused) fireplace opening; a sheet of Sonex was also placed in the opening to minimize its acting as a resonant cavity, although I am not certain of the need to use something like Sonex in this application. An old pillow might do as well (it’s a small fireplace).

Originally, nine decorative fiberglass panels measuring about 18" by 4' were scattered around the room in what appeared intuitively to be appropriate locations; five of these were used on the sidewalls just forward of the loudspeaker locations (later reduced to four—two per side—to improve symmetry). Up until recently the wall behind the listening position was, unconventionally, very absorptive, with Distech acoustic foam5 covering much of its area. Originally this foam was affixed to two 4' by 8' plywood sheets which were simply propped against the

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4 A prior article erroneously indicated this dimension to be 15'.

5 Distech foam was similar to Sonex, though with a more elaborate pattern. The Distech used in this case was 4" thick. Distech is no longer in business, I understand.
I've found the Stereophile listening room to be a superb place in which to listen to music and evaluate components.

Furnishings in the room are relatively sparse. A single low-back, medium-weight upholstered love-seat is the main listening chair. Two director's chairs provide extra seating when needed, as does a medium-weight upholstered chair. The equipment is located on open racks (units from Arcici, SimplyPhysics, and Sanus Systems have alternated in recent weeks).

In the past year I've found the Stereophile listening room to be a superb place in which to listen to music and evaluate components. It's not ideal, of course—I'm not certain that such a room exists. Stereophile's room was, as described above, just slightly dearer than what some might feel to be ideal. This, combined with the more rigid than normal walls and ceiling, gave the room a bit more warmth than I would prefer. Loudspeakers which in themselves tend in that direction—the B&W 801 Matrix Series IIs spring to mind—were less than perfectly happy there. But in general I found the sound of the room to be excellent—as apparently have a number of visiting firemen.7 Soundstaging, in particular, can be striking with the right equipment.

Some months back we received a large shipment of RPG products to experiment with in

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6 To further his quest for the ideal listening room, DO has actually built a second house! The Viera, JM Lab, and Nestorovic speaker reviews in this and the previous issues were the last DO carried out in the Stereophile listening room. —JA

7 Visiting manufacturers bringing products, none to date wielding axes or resembling Kurt Russell.
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the listening room. In their shipping cartons, they practically filled an entire adjoining vestibule, making ingress by that route next to impossible. And there weren't all that many of them—far fewer than Keith Yates had used in his earlier RPG assessment, but more like the quantity that a dedicated hobbyist might consider in his or her domestic environment. The time to actually put them to use finally came recently (we did find a better place to store them in the meantime!) when DO moved his listening room closer to his home, leaving sole use of the listening room to me—special projects excepted.\(^8\) Dramatically changing the acoustics of a shared room runs the risk of disorienting two reviewers instead of just one. I had already done this to DO last year when I moved to Santa Fe and undertook the revision of the listening room into the configuration described above. I had no desire to do it again. But Dick's move made a move to the RPGs possible.

The first step was to remove all of the absorptive panels from the wall behind the listener. An area of RPG Diffusors 8' wide by 6' high (two 2' by 4' panels and two 4' by 4' panels) was substituted. These were raised about 18" off the floor (using spare loudspeaker stands as supports) to get them higher up, where they should theoretically do the most good. Next, the fabric-covered fiberglass panels on the side-walls were removed. In their place was substituted one 4' by 4' RPG Abffusor per side, hung from the ceiling so that it was positioned about halfway up the wall. Above that, between Abffusor and ceiling, one of the just-removed fiberglass panels was re-hung to continue the absorption in this area nearly to the ceiling. Ideally, another pair of 2' by 4' Abffusors would be used in that location, but JA had made off with two of the three Abffusors of that size that we had available, for use in his listening room; I also had to beat back with whip and chair both RH and, after his move, DO to keep them from absconding with stray Diffusors and Abffusors and thereby negating the chance to try a full complement in the *Stereophile* listening room!

My auditioning of the new room treatment is still in its early stages, but it does appear to be an improvement over the old. The room sounds livelier, but without harshness. Loudspeakers tried so far seem to have "lighter" sounds than before, yet are still recognizably the same loudspeakers. The room seems less warm than previously, with more clarity through the mid bass region. This is most likely due to substituting a large area of reflection and diffraction for a large area of absorption (that rear wall). The result is a change in the overall room balance. Fewer of the highs are absorbed, making the mid- and upper bass seem less prominent than before. It took me a brief period to become accustomed to the slightly brighter resulting sound, but the less prominent mid- and upper-bass warmth appear to be a worthwhile tradeoff. All of these are preliminary observations based on just three pairs of loudspeakers, one of them not heard in the "old" room. But the result to this point seems to be a net improvement.\(^9\)

As to the quality of the room's soundstaging capability, it was excellent before and remains so. One addition to the current treatment recommended by RPG is placement of a Diffusor or Abffusor between and slightly behind the loudspeakers. Extra panels are on hand to try this; it is the next planned step in the ongoing saga of experimentation with the listening room.

**Back at your place**

You can improve the performance of your listening room. This article in no way claims to be exhaustive, and if you really want to address the subject in detail, you'll have to do some homework on your own. There are several places you can go to get information about room acoustics.

Start with your local library. Investigate not only books, but articles in back issues of this and other magazines. Good audio dealers are also becoming aware of the importance of this subject, though naturally they'll hope to sell you one of the aforementioned specialized room-treatment products.

If you have a computer, you might wish to investigate two programs designed to help you choose the best room locations for your loudspeakers. The *Listening Room* was reviewed in 1988 by an audio enthusiast (see list of credits at the end). There are also companies that will give you advice for a fee. The *Listening Room* article describes what *Stereophile* concluded about the different procedures.

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8 I have to repeat here, lest I compound the confusion, that the listening room described here is used for my listening tests as well as for special projects—which include such things as manufacturers' visits and panel listening tests (as in the one written up in Vol. 14 No. 7). Other *Stereophile* equipment reviewers do their critical listening in their own listening rooms (nearly all of which are either purpose-built or converted dedicated rooms). As will I when I build—as is presently being contemplated—a new listening room for my own use. But that's a story for a later article.

9 For information on RPG products, contact RPG Diffuser Systems, Inc., 12003 Wimbledon Street, Largo, MD 20772. Tel: (301) 249-5647; Fax: (301) 249-3912.
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discussion of room isolation techniques, a matter of real concern to those able to build a dedicated listening room that can be used without disturbing the rest of the family.10 Curiously, however, only the Master Handbook covers techniques for suppressing noise from heating and air-conditioning systems—another subject you won't want to ignore if you're building a listening room from scratch. You might, in addition, want to investigate Handbook for Sound Engineers, The New Audio Cyclopedia, edited by Glen Ballou, from Howard W. Sams & Co. (reviewed in Vol.11 No.2), though this book is considerably more expensive than the above (and covers many other audio subjects in addition to acoustics).

The bottom line to all such assistance, including that attempted in this article, is to avoid being a slave to it. Acoustics, especially as applied to small spaces (ie, home listening rooms), is still very much an art. Experiment—along with liberal use of your own two ears and the gray matter between them. And when all is said and done, the furniture and loudspeakers in their chosen positions and, if you really went off the deep end, the sawdust swept up and the last of the carpenters' empty Coke cans, cigarette butts, and discarded candy wrappers cleaned up, how can you be certain that you've made the absolute best choices of listening-room layout and treatment for you and your circumstances? You can't, and you never will. This is real life. If you've made choices which significantly improve your enjoyment over what you had before—choices which provide you with genuine musical pleasure, all at a price you feel comfortable with—then you've done your job. Sit back and enjoy.

10 The techniques used to provide proper absorption characteristics within a listening room are almost totally worthless in providing isolation between rooms. There is a tremendous amount of confusion among both the public and many supposed experts on this point. If this matter is of concern, I can recommend not only Everett's books, but also his article "Muffling the Neighbors" in the November 1990 Audio (pp.69–78, with a useful appendix).
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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 currently available products in the USA offered through the usual hi-fi retail outlets.

**How recommendations are determined**

The ratings given components included in this listing are predicated entirely on performance—i.e., accuracy of reproduction—and are biased to an extent by our feeling that things added to reproduced sound (flutter, distortion, various forms of coloration) are of more concern to the musically oriented listener than things subtracted from the sound, such as deep bass or extreme treble. 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.

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and defects that show up after extended auditioning. The fact that a product received a favorable review can’t therefore be regarded as a guarantee that it will continue to appear in this listing.

The price indicated is that current at the time the listing was compiled (August 1991). We make no guarantee that any of these prices will not have changed by the time this issue of Stereophile appears in print.

We indicate products that have been on this list in one incarnation or another since the “Recommended Components” listing in Vol.11 No.10 (October 1988) with a special symbol: ☆. Longevity in a hi-fi component is a rare enough commodity that we felt it worth indicating (although, as in the case of pickup cartridges and separate MC head amplifiers, it can apparently indicate that the attention of design engineers has moved elsewhere).

We are not sympathetic toward letters complaining that the Symphonic Bombast A-123 Mk.IV, which we recommended heartily two years ago, no longer makes it into “Recommended Components” at all. Where deletions are made, we endeavor to give reasons (there always are reasons). But remember, deletion of a component from this list does not invalidate a buying decision you have made.

How to make use of the listings
Read carefully our descriptions here, the original reviews, and (heaven forbid) reviews in other magazines to try to put together a short-list of components to choose from. Carefully evaluate your room, your tastes, your source material and front end(s), your speakers, and then yourself: 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!

Turntables
Editor’s Note: Any audiophile worth his or her salt (unless they are exclusively committed to CD) should 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—“Buy while you can” is Larry Archibald’s advice. 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: $6900
“...a natural for a Class A recommendation,“ said AB of this thoroughly worked out, beautiful-looking suspended-subchassis design. Interchangeable armboard has been designed in an ingenious manner that doesn’t compromise structural rigidity. A natural mate for the Airtangent tonearm. A vacuum hold-down upgrade is now available. (Vol.13 No.12)
Verso Dynamics 2.0 ★
Ingenious vacuum holddown, air-bearing, suspended-subchassis turntable with integral air-bearing tonearm. JGH felt the complete player to give the “best sound from analog disc” that he had heard, particularly in its presentation of silent backgrounds and tight low-bass response. Though the 2.0 is no longer in production, it is retained in this listing due to Versa Dynamics being about to offer an update kit to allow existing owners—including Stereophile, we assume—to bring their turntables up to what John Bicht terms “2.3” level. (Vol.10 No.8, Vol.11 Nos.1 & 4)

B
Linn Sondek LP12 with Lingo power supply: $2690–$2790 (depending on finish)
Compared with the basic Valhalla model, the Lingo-equipped version minimizes the LP12's propensity for a slightly fat mid bass and subjectively extends the low frequencies by another octave, resulting in a Class B rating overall. The upgrade alone costs $1295. (Vol.14 No.1)

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 carriages 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. West Coast price is $3600. A dustcover and dedicated stand add $1100 to the price. (Vol.13 No.7)

C
Linn Sondek LP12 Valhalla: $1495–$1595 (depending on finish) ★
The standard against which newer turntable designs have been measured for 15 years now, the Linn is felt by some to be more colored than the other Class C 'tables (particularly in the upper bass). Latest version has a laminated armboard which, with Zener mods to the Valhalla board, results in a considerably more neutral sound. Certainly it is harder to set up and more likely to go out of adjustment, though with the latest springs and glued subchassis, it is now much better in this respect (low-bass extension suffers when the LP12 is not set up correctly). Superbly low measured rumble and excellent speed stability reinforce the feeling of musical involvement offered by this classic turntable. Good isolation from shock and vibration—essential in view of the fact that JAA's cats like to use his LP12 (with the lid down) as a springboard to jump onto the equipment cabinets! (This application is not recommended.) 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 frequency: Despite fluctuations with other decks, JA remains true to the basic design he has used now for over 12 years. (Vol.7 No.2, Vol.13 No.3)

Oracle Delphi Mk.1V: $1995
Latest version of this elegant Canadian turntable offers greater subchassis stability, a hard polymer mat, a new bearing and bearing mounting, and a revised platter that concentrates its mass at the rim. Its basic sound is analytical rather than romantic, being "detailed, tight, quick" with "excellent clarity," according to TJN, who did note that it lacks warmth. Turbo power supply adds $450 to the price, though TJN found the improvement offered to be relatively small. Owners of earlier Delphis can have their turntables upgraded for $795. (Vol.14 No.8)

Roksan Xerxes: $2100
Unusual but well-made design that eschews a conventional sprung suspension for a semi-rigid construction. Easy to set up and align, therefore, but a stable support essential. Excellent pitch stability, though the bass is a little lightweight. Provides a firm musical foundation for the SME V, Rega RB300, and Eminent Technology ET Two tonearms. (Vol.15 No.3)

VPI HW-19 III: $1200 ★
The Mk.III version of the VPI 'table, cosmically more elegant than the original, achieves a standard of sonic neutrality that puts it close to the latest SOTA Star Sapphire, and at a significantly lower price. The HW-19 readily accommodates a wide range of tonearms—the ET 2 air-bearing design in particular—and is very stable. The $400 Power Line Conditioner (see Vol.12 No.2) is an essential accessory. New as of 1991 is an upgrade path to the TNT, as well as a new bearing and platter. (Vol.18 No.4, Vol.9 Nos.4 & 9, Vol.12 No.11; see also Vol.13 No.7, p.112, and Guy Lemcoce's ET Two report in this issue.)

Well-Tempered Turntable: $1995 (inc. arm) ★
An integrated belt-drive turntable/ tonearm combination featuring an acrylic platter and a unique four-point wobble-free bearing. Lacks a suspension, but designed with attention to detail, particularly concerning the maximizing of speed stability and the rejection of motor noise. Most obvious sonic characteristic is stability; both in speed and harmonic structure, coupled with cleaned-up sound quality: "The quiet between the notes is suddenly more silent," said AB in his review. In addition, dynamics seem to be enhanced, though the sound is more lightweight than that of, say, the VPI. Only significant drawback, as far as mix'n' matchers are concerned, is its dedication to the Well-Tempered Arm. No other can easily be fitted—we've had reports that the Wheaton Triplanar works well—but it's available w/o arm for around $1195. A high-gloss finish adds $200 to the price of either version. (Vol.11 No.3)

D
Acoustic Research ES-1: $600 ★
Although an increase in price means that it is no longer the bargain it once was, this is still a turntable we can heartily recommend. Compared with the original AR, this has much better cosmetics, comes with its own arm (for $725), or can be fitted with yours—Sam Tellig just loves the AR with either the Rega RB300 or the SME 309, while Guy Lemcoce enjoyed the sound with the AudioQuest PT5. Intrinsic character is a bit fat in the upper bass, but is nevertheless musical. Availability is limited, but the Audio Advisor has supplies. The AA's metal armboard should be regarded as mandatory (Vol.11 No.4), the Anarchist then feeling the sound with a felt mat to be Class C and rivalling the Linn LP12. Merrill's modifications of the AR are also said to be worth investigating. (Vol.8 No.7, Vol.11 No.4, Vol.12 No.8)

Linn Axis: $995 (inc. Akito tonearm) ★
Versatile, "turnkey 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 original arm. "Smaller" sound than the Sondek, 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 owner to enjoy the music. CG preferred the sound with the Linn cables replaced by AudioQuest Emerald.

Version without arm costs $695. (Vol.10 No.1, original version; Vol.14 No.7)

Rega Planar 3: $599 ♠ Synergistic mix of non-nonsense deck with superb arm. Lack of environmental isolation may be problematic; some recent reports of variable wow & flutter—but see "Manufacturers' Comments," Vol.14 No.9—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)

VPI HW-19 Jr. turntable: $600
Well-constructed belt-drive turntable featuring an excellent disc-clamping system. No suspension, due to upgrade path to fully flegded HW-19 being incorporated into design. GAG therefore recommends a wall-mounted isolation shelf to get the best performance from the Jr. Available for $950 ready-fitted with AudioQuest PT-6 tonearm. West-Coast price is $25 higher. (Vol.12 No.10)

Well-Tempered Record Player: $1195
Somewhat fuzzy to set up, but when done right the WTRP 'table/arm combination produces coloration-free sound with a clarity and resolution that belle its price. Possesses a more laid-back, more musically natural balance than the Linn Axis, but does not 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, according to some. (Vol.14 No.7)

K
Rockport Technologies, Immedia RPM-1, SOTA Cosmos and SOTA Deluxe Star Series III.

Deletions
Goldmund ST4 discontinued; SOTA Cosmos and SOTA Deluxe Star Series III due to change in manufacturer.

We hope to audit the latest versions of these turntables in time for the next "Recommended Components" in April 1992.

Tonearms

A
Airtangent 1B: $3650
Setting a new price level in this listing, this beautifully made Swedish parallel-tracking tonearm, distributed in the US by Basis, was felt by AB to achieve new standards of transparency, smoothness, and retrieval of detail with every cartridge with which it was used, coupled with the ability to present a "bellowing" soundstage and a well-defined bass. Better in the highs than the SME, it's a little lean in the bass compared with the English arm. It does, however, allow for easy adjustment of VTA and features interchangeable, prebalanced arm-tube assemblies to allow easy cartridge changes. (Vol.12 No.2)

Eminent Technology Two: $950 ♠
The ET Two corrects its predecessor's cueing difficulties and comes up with a host of ingenious extras, including VTA adjustable during play. More important, it has "an extraordinarily live and open soundstage," according to Anthony H. Cordesman, 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—to give of its best. MC also reports excellent performance with the ET Two mounted on the Roksan Xerxes. Surpassed overall by the SME V, which has as neutral a midrange and significantly better bass definition and extension. At less than half that fixed-pivot arm's price, however, the ET Two is an excellent value. Latest version incorporates a viscous damping trough and a revised manifold to take advantage of the higher pressure offered by Herb Wolfe's modified Wisa air pump and surge tank. GL reports excellent results—"Class A on the VPI HW-19"—from this combination. (Vol.8 No.7, Vol.13 No.3, Vol.14 No.10)

Graham Model 1.5: $2340
Beautifully engineered unipivot design using an SME-type armboard cutout that offers interchangeable armwands and easy adjustment of VTA, azimuth, and geometry. Superb bass definition, though not as much ultimate weight as the SME, but astonishingly good retrieval of midband information due to a very low resonant signature, exceeding even the performance of the SME in this area. (Vol.14 Nos.3 & 8)

Linn Ekos: $2295
Cleaner-sounding than the Ittok, upon which it's 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 English arm, which loses control of the bass when mounted on the Scats turntable. Martin Colloms also found the Ekos's bass to be more tuneful and "open" than that of the original Ittok. Azimuth adjustment is not possible. (Vol.12 Nos.3 & 4, Vol.13 No.3)

SME Series V: $2550 ♠
Pivoted tonearm with extraordinarily neutral midrange, with one of the lowest resonant signatures in this region (though DO feels the Graham to offer slightly more midrange detail). Easy to set up, VTA and overhang are adjustable during play, but no azimuth adjustment, something that DO feels to be a significant drawback. The best bass performance on the market, said SWW, but JGH, DO, and LL feel that the whole bass range is somewhat exaggerated. Certainly JA feels the latter to be the case when used with the Linn LP12, which is a poor match for the arm. Some compatibility problems with cartridges having low height. Ergonomically and aesthetically a work of art, with a finish worthy of Tiffany's. A less versatile version, the IV, appears to offer many of the IV's sonic virtues at a lower cost ($1500). (Vol.9 No.6, Vol.14 No.8)

B
Linn Ittok LVII: $1195 ♠
The original Ittok LVII had slight resonant colorations
in the upper midrange compared with the best arms, which could add both harshness and a false sense of “excitement.” Its bass and lower midrange were still among the best, however, and superior to the similarly priced competition in these areas. New version incorporates refinements based on the Ekos and is significantly more expensive but not yet auditioned: this recommendation must be regarded as provisional. (Vol.8 No.7, original version)

**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 head of the V. A less relaxed, less warm sound than the SME V, thought TJN, the more expensive arm also offering slight improvements in depth and overall high-frequency balance. Nevertheless, he found the combination of the Oracle Delphi IV and SME 345 arm to be very satisfying. (Vol.14 No.8)

**SME 309: $1195**
Preliminary rating following the Audio Anarchist’s continued use of this detachable-headshell arm on an AR turntable. Lacks any damping mechanism. (NR, but see Vol.11 No.10, p.53, and Vol.12 No.12, p.63)

**Well-Tempered Arm: $900 ★**
One of the most neutral arms available, 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/softness in the low bass and, according to some listeners, an undynamic sound, but virtually no other problems. Good value for money. Removing the armrest, which adds a thickening in the lower midrange when the arm is mounted on the Well-Tempered Turntable (see Vol.11 No.6), further improves the sound, as does replacing the standard counterweight with a more massy one nearer the pivot. (Vol.8 Nos.4 & 7, Vol.9 Nos.3 & 5)

**C**

**Rega RB300: $299 ★**
The Rega offers very good detail, depth, midrange neutrality, ambience, and precision of imaging, almost creeping into Class B. Works well with the Rega and Rogers’ tables, but also recommended by Sam Tallig as an ideal substitute for the arms that come with the AR and Sonographe’s tables. (The Audio Advisor offers it as a package with the AR.) Lacks any form of height adjustment, however: VTA can only be adjusted by adding spacers under the base. Even-cheaper RB250 dispenses with the spring downforce adjustment and the sintered tungsten counterweight, but sacrifices little in sound quality. (Vol.7 No.7, Vol.10 No.1)

**K**

Morch DP-6, Naim ARO.

**Deletions**

AudioQuest PT-6 replaced by PT-6, ’7, and ’8 (not yet auditioned); Wheaton Triplanar III replaced by substantially revised version.

**Pickup Cartridges**

**A**

**AudioQuest AQ 7000: $1595**
RH’s auditioning, confirmed by RD and AB, suggests a top-ranked musical performance for this sophisticated MC manufactured for AudioQuest by Scan-Tech in Japan. Superb rendering of depth, astonishing retrieval of recorded detail, and “razor-sharp” transient leading edges are coupled with a slightly emphasized top octave (that becomes sweeter after significant run-in) and a somewhat lean overall balance. (Vol.14 No.6)

**Benz-Micro MC-3i: $1750**
Low-output MC from the manufacturer of the van den Hul and Magrifth Carnegie cartridges that TJN thought to be overall the best he had heard to date in his system. Possessing a similar, somewhat softish balance to the vH MC One—"rubey-sounding," said TJN—the Benz MC-3 offers a slightly more transparent view into the soundstage. More warm-sounding than the Rowland Complement, feels DO. RH also feels the MC-3 to be warm-sounding compared with the more incisive AQ 7000; he also feels the latter’s presentation of depth to be a little more coherent. Latest version has anti-resonant vented body. (Vol.13 No.3, Vol.14 No.8)

**Jeff Rowland Design Group Complement: $2500**
The high-mass Complement, which lacks any kind of cantilever, sets a new standard for performance above our existing Class A, felt AB in his review. “Astonishing” ability to replicate transient attack is coupled with an almost unique ability to decode spatial cues within the recorded information, as well as Stygian low-frequency extension. However, it needs a tonearm with a secure mechanical foundation to achieve its best—the Wheaton Triplanar was a better match than the air-bearing Airtangent, for example. Stereo separation dependent on downforce, 3.5gm or more shifting the coils from their optimum position, effectively resulting in mono reproduction. (Vol.12 No.7)

**Koetsu Rosewood Signature: $2150 ★**
The latest version of Martin Colloms’s reference pickup “matches the Troika for bass definition and overall definition.” It offers a superb balance between the ability to decode space and perspective and to present a detailed retrieval of groove information, and allowing the listener to be swept away by the music. (Vol.13 No.3)

**Linn Troika: $1995 ★**
Lightish balance, but musical integrity not compromised by superb retrieval of information. As good as the Koetsu Rosewood at presentation of the soundstage, in JAS opinion, with one of the best-defined bass registers in the business. Unique three-point fixing maximizes mechanical integrity but means that it can only be easily used in the Ittok and Ekos tonearms. (Vol.10 No.6, Vol.13 No.3)

**Ortofon MC-3000 II: $1500 ★**
This ceramic-bodied, higher-output child of the MC-2000 has a slightly warm balance, with silky highs producing a sumptuous sound from massed violins. Lateral imaging excellent but presentation of depth not as good, paradoxically, as the more forward MC-2000. Matching T-3000 transformer not in the same sonic class as, for example, the Vendetta Research phono preamplifier (which renders the transformer unnecessary). (Vol.11 Nos.1, 10, & 11)

**Talismen Virtuoso DTi: $1200 ★**
Warmer balance than the Talismen S, with first-rate imaging and excellent harmonic contrast. One of the champs when it comes to retrieval of HF detail, with a top end free from the problems of fuzz and hash that
plague many MCs. According to SWW, it has the "uncanny ability to reproduce the natural weight and authority of live music," with DO concuring that spatial detail "is sketched out with exquisite dimensionality"; vdf1 stylius requires careful setup; output a little on the low side for some MM Inputs. Somewhat forward balance, but up with the best in terms of transparency. With the cartridge optimally set up, the music emerges from a near-silent background akin to CD. (Vol.9 No.4, Vol.10 No.5, Vol.12 No.4)

van den Hul MC One: $1125
Not particularly cable-fussy, but does require attention to arm damping. Works very well in the WTA and SME. Carries the vdh MC-10's resolution of soundstaging, tonal neutrality, and naturalness of midrange timbre a stage farther to compete with the best. Bass a little slow, perhaps, when compared with best performers in this region. (Vol.9 No.8, Vol.10 No.5, Vol.12 No.2)

B
AudioQuest 404i-L cartridge: $650
A slightly forward treble and a minor lack of image depth didn't prevent TJN from enthusiastically recommending this MC, the sound being naturally detailed without any HF exaggeration. Current production samples have FTC-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.5)

Dynavector XX-1L: $1000
Better-sounding, overall, than the high-output version reviewed by AB in Vol.12 No.6, the XX-1L still has a rather HF-forward, "cool" balance that just keeps it from achieving a Class A rating. Offers excellent low-frequency extension and "punch," thought TJN, who also noted its superbly defined imaging. (Vol.14 Nos.5 & 8)

Grado Signature TLZ II: $500
The only MM model to break out from the confines of Class C, the TLZ features slightly more open highs than the AudioQuest 404i-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," feels GL. (Vol.12 No.7)

Monster Cable Sigma Genesis 2000: $600
Early samples seemed to be very arm-sensitive, but when mounted in an optimum tonearm—the ET Two, for example—the Sigma Genesis offers an airy and open sound with superb dynamics but a rather soft bass. Rather a 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 already a little larger than life. Further auditioning in Santa Fe suggests high Class B is the appropriate rating. Now available only from the Audio Advisor, but a bargain at the new price. (Vol.13 No.3)

Monster Alpha Genesis 1000 II: $400
Almost as sweet in the top five octaves as the Koetsu Red Signature, but more detailed. For a long time one of Dick Olsher's favorites, while DAS finds it "to play a wider variety of material with superb detail" than any cartridge he had heard up to February 1990. GL also thinks highly of the Genesis 1000. As with the Monster Genesis 2000, now available only from the Audio Advisor, but again a bargain at the new price. (Vol.10 No.5)

Signet AF-OC9: $400
"The best ever from Audio-Technica," said TJN of this MC, until early 1989 only available in the US as a "gray" import. Neutral through the midrange, the OC9 is less sweet and three-dimensional than the Class A vdh MC One, but not by much. Highly recommended (and an excellent tracker). The OC9 has very high output for a low-output 'coil, minimizing phono-stage noise. (Vol.12 No.2)

Talisman Virtuoso Boron vdh: $850
A neutral sound, coupled with good retrieval of inner detail and a smooth, well-controlled treble, thought DO of this high-output MC. Less good soundstaging than the more expensive DTi version, which offers a greater sense of depth, a more palpable image, and a less "exciting" sound. (Vol.12 No.4)

van den Hul MC-10: $825
The first vdh to provide midrange and bass extension to match the typically excellent vdh high-frequency extension and detail. Tonal balance more like CD than the Koetsus. Superb decoding of recorded detail, but requires careful setup. (Vol.9 No.6, Vol.10 No.5)

C
AudioQuest Ruby: $225
High-output MC, available only from The Audio Advisor, offers excellent retrieval of detail without sounding too forward or bright. Mates well with the AudioQuest PT-5 tonearm. (Vol.12 No.8)

Grado Signature MCZ II: $300
Although basically similar to the more expensive TLZ, the MCZ is less "fast"-sounding, with less well-extended highs and a less-focused sound. A "steady shortstop" rather than a "home-run hitter," said TJN. (Vol.12 No.7)

Shure V15 Type V-MR: $297
Very neutral midrange and bass, slightly soft high end, high compliance. You sacrifice a bit of detail compared with both good MCs and the more expensive ($400) Shure Ultra 500. A "budget reference," according to Sam Tellig who, given his druthers, would place it in Class B, though he notes that its sound "doesn't open up like a good CD." Recommended for its unsurpassed tracking ability, excellent reliability, and listenability. Excellent value, frequently available at significant discount. (Vol.7 Nos.5 & 8, Vol.10 No.5, Vol.12 No.11)

D
Grado ZTE+1: $25
The best buy in a really cheap cartridge, this $25 MM has excellent trackability and sounds rather like a good MC. Readers of this magazine should consider spending more than $25 on a cartridge, but when they are asked by friends what they would recommend 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 wobbly pumping, even flutter, with high- or even medium-mass arms. (Vol.7 No.8, actual review was of an earlier version, the GTE+1)

Shure VST III cartridge: $105
Sounding best when used with its integral damping
brush, this inexpensive MM lacks transparency and detail, but tracks superbly and offers a neutral tonal balance. (Vol.12 No.3)

K
Audio-Technica ART-1, Ikeda, Benz Reference, Koetsu Irisu and Pro IV, Lyra Clavis, Sumiko Blue Point.

Deletions
Dynavector XX-1 not as good as newer low-output version at same price; Linn K9 and Ortofon X5-MC not auditioned in a long time; Signet AFFS replaced by new model.

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 in effect becomes 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 units, eventual replacement of the latter being the best way to stay abreast of continuing development. However, it now seems that deficiencies in the A/D converters used to master CDs may well be the limiting factor in CD sound—see Robert Harley’s interview with Doug Sax in Vol.12 No.10. It’s also worth comparing the performance of the industry-standard Sony PCM-1630 with Chesky’s 128x-over-sampling ADC on the appropriate tracks on the Stereophile Test CD.

B
California Audio Labs Aria Mk.III: $2395
Though he felt that in absolute terms its highs lacked a little air and its bass was too warm in balance, “it’s music,” wrote TJN after his first listen to this tubed player, feeling that its sound combined a striking three-dimensionality and palpable bloom with a sense of tactile presence. MC demurs, feeling that the Aria sounds too soft, lacking pace and dynamics. (Vol.14 Nos.1 & 2)

Kinergetics KCD-40: $2295
Quite the best single-box CD player JA had heard until the multi-bit Meridian 206 came along, the KCD-40 offers a rather laid-back balance, but with a superbly detailed soundstage. Less soft-sounding than the Wadja, the KCD-40 lacks a little image depth in absolute terms, but not to the detriment of the music, which never fails to communicate. Current version differs from that reviewed in having “Platinum” cosmetics. (Vol.13 No.1)

Meridian 208: $2950
Unique combination of Bitstream CD player and remote-control preamplifier that JA and MC found to offer a very musical sound. A somewhat laid-back balance and a slight diminution of soundstage space compared with the $12,000 Stax, but more open-sounding than Meridian’s 203 processor, JA found. With the 203, the 208 is the only unit JA has so far heard that delivers the promise of Bitstream DAC technology. Preamp has a good sense of LF weight and is free from solid-state “glare,” but sounds veiled when compared with the best passive control units. It also lacks a balance control, though its “Comms” data link allows it to be controlled by the remote control for the Meridian D600 and D6000 active loudspeaker systems. Phono module (untested) costs $250. (Vol.13 No.12)

Proceed PC2: $2150
Featuring a new analog board and a revised power supply, the second generation of Madrigal’s idiosyncratically styled CD player offers a less-forward HF balance, textures that are “more liquid and smooth,” and a soundstage that is more transparent compared with the original, according to RH. Overall, the sound has a “nice feeling of bloom,” he noted. (Vol.13 No.2, original version; Vol.14 No.5)

C
California Audio Labs Tercet Mk.III: $1295
A very involving sound, thought GL, with a palpable bass, analog-like handling of dynamics, and a superb soundstage presentation. (Vol.14 No.2)

California Audio Labs Icon: $795
Rather than picking out aspects of the Icon’s sound that impressed him in his review, GL preferred to concentrate on the Icon’s ability to present music with an excellent across-the-board balance. When pressed, he pointed to the player’s natural presentation of instrumental tone and its lack of “hi-fi” glare. Digital output module costs an additional $95. (Vol.13 No.4.)

D
NAD 5000: $499
Very listenable sound, but with slightly etched highs compared with the Sony ’77 and CAI. Aria III. Well-extended low frequencies and a well-defined soundstage led TJN to give a Class C recommendation to this inexpensive MASH-system player. Note that the variable outputs both measure and sound worse than the fixed-level outputs; our recommendation is to pretend the former don’t exist. (Vol.14 No.1)

Rotel RCD-855: $399
This inexpensive player—based on Philips’s 16-bit, 4x-oversampling chip set and CD44 transport—so impressed LL that he recommended it to 20 other fellow members of the National Symphony Orchestra. “Great sound for a peanuts price” was the thrust of his review’s conclusion. Very sensitive to the cables with which it is used, though in the right context LL feels the ’855 offers “a degree of transparency and harmonic neutrality usually found only with the expensive stuff.” Fitted with a digital output, RH agreed that the ’855 offers a sound that is musically involving, adding the opinion that its sins are ones of omission rather than commission. Both CG and MC point out that the ’555 sounds better than Rotel’s more-recent Bitstream RCD-565, due to a better-developed sense of dynamics. (Vol.13 No.7, Vol.14 No.2)

K
Meridian 206B CD player, NAD 5425, JVC XLZ-1050TN.

Deletions
JVC XLZ-1010TN and Sony CDP-X77ES discontinued, Adcom GCD-575 and Harman/Kardon HD7500 II now too expensive for Class D in view of the performance offered by the inexpensive NAD and Rotel models.

Stereophile, October 1991

WorldRadioHistory

117
Digital Processors

A

Audio Research DACI-18: $2995

Perhaps the finest value in a separate processor, ARC's first digital product uses a single UltraAnalog dual-channel 18-bit DAC module. (A version with the 20-bit module, the DACI-20, costs an extra $500—review underway.) The DACI-18 offers a "glare-free and natural presentation of instrumental textures" that are "the antithesis of sterile, cold, or "digital,"" noted RH. The best sound, he felt, is to be obtained from the glass-fiber optical input, when the reproduced ambience swells, instrumental outlines become more distinct, and the treble becomes smoother and more coherent. This kind of musical performance from digital hasn't been previously available at anywhere near this price," was RH's overall conclusion. (Vol.14 No.6)

Krell SBP-64X: $8950

JA is currently working on a review, but the Krell offered some of the finest sound from CD that Sam Tellig had heard. Larry Greenhill also recommends this processor, though Martin Colloms points to excessive distortion at high frequencies and high recorded levels. Don Scott feels that the Krell processor works well with the inexpensive Luxman D13-D transport if you can't afford the $5400 Krell MD-1 CD turntable. Current production is said to offer an AT&T glass-fiber optical input as an option. (NR)

Stax DAC-Xit: $12,000

A tube output stage, superb dual-monaural construction, and expensive, hand-adjusted, 20-bit UltraAnalog DACs operated in push-pull lead not only to the finest-measuring DA processor Stereophile has encountered, but also to the best sounding such unit, in the opinions of LA and JA. RH puts the Stax up there with the VTL processor, both sounding "more like analog than any other digital processor I've heard" (and he's heard a lot). Lacks low-frequency impact compared with the Thetas and Wadias, but its fatigue-free sound easily becomes addictive. Note that its balanced outputs are polarity-inverting. (Vol.13 No.8)

Theta DS Pre Generation II: $4000

Providing extensive digital-domain functions, including a tape-monitor facility, this massive processor features user-replaceable ROM chips containing the coefficients for the digital filter. The analog section includes one additional set of line-level inputs. LL felt the sound to be the best he had ever heard from CD, with a vividly three-dimensional stage and superb transparency. DO found the best sound from the DS Pre is to be had from its Tape Out sockets. Less expensive DS Pro dispenses with the preamplifier functions. Preliminary auditions of Generation II versions by AB, LL, and DO suggest that this performance has been taken one step further. (Vol.12 No.3, original version)

Theta DS Pro Basic: $1995

The DS Pro Basic's resolution of fine detail and soundstage depth was among the best RH had heard: "Vivid" was his word to describe its overall presentation. While he felt it to lack the sense of bass weight possessed by the Wadia processors, he described it as having a more precise pitch definition and subtleness. Nevertheless, he felt it lacked the ultimate sense of ease so typical of good analog replay. Maximum output level is 11dB higher than the industry standard 2V, which will optimize the Pro's use with passive control units. Due to be replaced by the low-bit DS Pro Prime, we understand. (Vol.13 No.8)

VTL Reference: $7000

Like the Stax, this tubed unit features the UltraAnalog 20-bit DAC, though this has its output level reduced to provide a better match for the tube output circuitry. "A complete freedom from hash and grain," said RH. Though he noted that the Stax better defined image outlines, he found the VTL's warm presentation ultimately to be more musically believable. Review sample had a large de-emphasis error, said to have been corrected in subsequent production. (Vol.13 No.12, Vol.14 No.6)

Wadia Digital Digimaster WD2000: $7450

This processor features a digital filter that differs from just about every other around in that it uses an algorithm different from the ubiquitous (sine x)/x impulse-response reconstruction filter, intended to more closely synthesize the original analog waveform before sampling. (See "Manufacturers' Comments," Vol.13 No.8, p.191.) AB thought the Wadia 2000 to be "a sonic knockout," particularly when fed a digital signal from the Esoteric P-2 transport. He also enthused at length about the Wadia's ability to throw a deep, detailed, and stable stage, and felt that the balanced outputs give the most musical sound. RH feels the 2000's bass performance to be exceptional in terms of extension, dynamics, and "drive." High frequencies are a little rolled-off in comparison with the other Class A contenders, which might mean more-than-usual care in system matching, while relatively high levels of ultrasonic and RF spurious present in the analog output might lead to trouble with some pre- and power amplifiers. As with the Theta and Krell processors, the Wadia's DSP program is held on replaceable ROM chips, allowing for relatively inexpensive performance upgrades. Low-level linearity of the review sample of the WD-2000, surprisingly, was quite poor compared with the other Class A recommended units, but RH's auditioning of a 2000 fitted with ROMs that gave better measured low-level linearity confirmed Wadia's trade-off as being the musically optimal one. Peter van Willenswaard's measurements in this issue's "Industry Update" confirm that Wadia's Rok Lok circuit virtually eliminates data jitter. Price is with AT&T glass optical-fiber data input. Digilink converter unit adds $950 to price. (Vol.13 No.1, Vol.14 No.6; see also "Follow-Up" and "Industry Update" in this issue.)

B

Bitwise Musik System One: $1991

Two-box processor that DO felt to sound relatively "analog-like." Resolution of detail was not up to that offered by the similarly priced Theta DS Pro Basic, but while the Theta can sound a little unforgiving with less-than-optimum amplification, the Bitwise processor presents harmonic textures with "a round, liquid, edgeless quality." Latest version (as of 2/91) has revised isolation and synchronization of the digital signals (registered owners of older units can have their units upgraded free of charge). (Vol.13 No.12)

Esoteric D-2: $4000

"A highly detailed yet unfatiguing presentation, a smooth and silky treble, tight, powerful, and effortless bass reproduction, ability to reveal subtle tonal..."
shading and nuance, and resolution of wide dynamic contrasts" were the reasons RH put forth in his review as to why the D-2 allowed him to forget the hardware and become immersed in the music. Beautifully made, but expensive for Class B, which auditing by JE and MC confirms is the appropriate rating. (Vol.13 No.10)

Esoteric D-10: $2000

"An open, spacious, and lively presentation," wrote RH. with good retrieval of detail, a round, liquid bass, and a deep soundstage, while falling short of the standard set by the otherwise similarly balanced Theta DS Pro Basic. (Vol.13 No.10)

Meridian 203: $990

Sam Tellig felt that this relatively inexpensive but beautifully made basic Bitstream processor was perhaps the best, in terms of being the most musical, he had heard (but see also his column in this issue); Martin Colloms is also mightily impressed—"the 203... is something of a revelation compared with the average standard of CD replay"—but points out that a high-quality transport is required for the 203 to achieve its sonic potential, when he feels it betters the 208 and the Esoteric D-2. RH agrees that, along with the PS Audio SuperLink and Audio Alchemy DDE, the 203 is one of the best values around in digital processors and adds that the sound, which initially can have a slightly hard, forward treble, improves significantly after the unit has been on for a week or so. Once warmed up, the 203's overall balance is softish, by contrast with the Theta Basic and PS Audio Superlink, which represent the opposite, more forward and incisive, approach. (Vol.13 Nos.9, 10, & 11, Vol.14 No.2)

Museatex Mellor Digital Control Center: $2250

A "digital" preamplifier in that its volume control operates in the digital domain, the DCC sounds similar to the Meridian 203 but with a slightly sweeter treble. Overall, however, there was a somewhat uninvolving nature to the DCC's sound, felt RH. (Vol.13 No.11)

Proceed PDP 2: $1595

Although it has a similarly tight and punchy bass, similarly excellent dynamics, and similarly good soundstaging, the original version of the PDP had a musically much more involving sound than the Proceed PCD which uses the same digital electronics, RH found. "Follow-Up" on the Mk.II version of the PDP suggests that the latest version represents a significant step up in quality. Again, RH felt the Mk.II versions of the PDP and PDT, connected by the XLR-fitted balanced digital interlink, to offer a more musically appropriate sound than the PCD 2. (Vol.13 No.6, Vol.14 No.5)

PS Audio Superlink: $1195

Though lacking the ability to throw as deep a soundstage as the best processors, the inexpensive Superlink offers a superbly defined feeling of recorded space, "rock-solid" yet detailed and agile bass, and a superb sense of dynamics. Overall balance is rather forward, with a dryish midrange, though its treble reproduction is naturally clean and unfatiguing rather than fizzy. Ultimate noise level is a little high, but this will not normally be audible. (Vol.14 No.4)

Wadia Digital Digimaster X-32: $2500

Lows were almost as dynamic as the Class A Wadia 2000, RH felt, but its soundstage wasn't as deep as those of the big Wadia or the Theta DS Pro. The extreme treble sounds a little rolled-off— it measures that way too—but this is offset by a forward presentation in the mid-treble and a rather dark-sounding midband. Nevertheless, the X-32's sound is very musical, with excellent dynamics, an effortless, weighty presentation of low frequencies, and a good presentation of transient detail. The most recent version sounds sweeter than the original, particularly if fed via the glass-fiber link from Wadia's WT-3200 transport. Price includes AT&T glass fiber-optic data input; coaxial digital input uses BNC socket; version with plastic fiber-optic data input costs $2300. (Vol.13 No.8, Vol.14 No.6)

C

Audio Alchemy Digital Decoding Engine v1.0: $399

Overall balance of this very inexpensive Bitstream processor is on the forward side of neutral, with an upfront presentation of detail and a somewhat restricted image depth. The DDE has a sharper sense of image focus than that other giant-killer, the Rotel RCD-855, but with a less laid-back musical presentation. Some disagreement among Stereophile's writers about the quality offered by the DDE: ST says it's basically as good as the Meridian 203; RH feels it not to offer as well-developed a sense of palpability. Both recommend it highly to music-lovers on a tight budget, however, ST saying that readers who own CD players with coaxial digital data outputs should "buy the DDE, forget the hardware, and enjoy their music!" (Vol.14 Nos.8 & 10)

Music And Sound DCC-1 DA preamplifier: $1195

A versatile line-level preamplifier that offers digital decoding, the DCC-1 throws a narrower soundstage than the Meridian or Theta processors and lacks ultimate transparency, but still manages to present a good illusion of image depth. Low frequencies are a little lean and highs a little dark-sounding, though the midrange balance is smooth, not thrust forward at the listener. Remote control costs $150. (Vol.14 No.3)

K

Wadia X64.4, Theta DS Pro Prime, Audio Research DAC1-20.

Deletions

Esoteric D-500 now too expensive for Class C; Aragon D2A replaced by revised version and Arcam Delta Black Box 2 replaced by Bitstream version, both yet to be auditioned; Sansui AU-X91IDG now too expensive for Class D.

CD Transports

A

Esoteric P-2: $4000

Robert Harley, Arnis Balgalvis, and Peter Mitchell all swear by the improvement wrought on CD sound when this expensive, beautifully constructed transport is used. Astonishingly low measured jitter, found RH (see Vol.13 No.5, p.87), lower even than that intrinsically typical of a CD. Internal clamp renders it incompatible with CDs fitted with the central retainer disc for the Mod Squad Damper, however. (Jack English reports that the P-2 works fine with both the Sumiko/Allsop edge rings and the Monster/AudioQuest surface rings.) (Vol.13 No.12, Vol.14 No.4)

Wadia WT-2000: $5600

Based on the Esoteric P-2, the big two-box Wadia trans-

Stereophile, October 1991
port, fitted with an AT&T glass-fiber optical data output, exceeds even that high-filer's performance. "Establishes new standards for digital playback equipment," said AB. (Vol.14 No.5)

B

Meridian 602: $2750

With this expensive but beautifully built and finished British transport feeding the Stax processor, JA felt the sound to be superbly natural, particularly regarding the reproduction of bass frequencies. Comparison with the similarly priced Wadia WT-3200, using Mod Squad Wonderlink for the coaxial connection, revealed the American transport to produce a rather more forward midrange, a less deep soundstage, and occasionally more emphasis of the top octave. Borderline Class A, and superb error correction. (Vol.14 No.6)

Proceed PDT 2: $1695

Cosmetically identical to the Proceed CD player, the PDT offers both balanced (via an XLR socket) and unbalanced (RCA) data outputs. Compared with the Esoteric P-2, the PDT 2 offered a more forward treble and fatter and deeper low frequencies, but a less well defined bass performance overall. The best performance is to be obtained with the XLR data connection, when it offers "more than a hint of cost-no-object performance," said RH. (Vol.14 No.5)

Wadia WT-3200: $2500

Though outclassed by the Meridian 602 via its coaxial data output, the Wadia's glass-fiberopticon output enables its bass to go lower, its low-frequency timbral shadings to become better developed, and its dynamics to become more extreme—as in real life, showing a clean pair of heels to the English transport as a result. "Difficult to go back to coaxial," was how RH summed up these improvements. Error correction doesn't seem to be as powerful as that of the Meridians 208 and 602, however. (Vol.14 No.6)

C

Arcam Delta 170: $1300

A high-quality CD transport using Philips's top mechanism with optical and coaxial serial digital outputs. (Vol.12 No.10)

K

Theta Data.

Preamplifiers

A

Krell KBL: $4500

This line-level preamplifier offers midrange smoothness, top-to-bottom coherence, clarity, transparency, and incredible dynamic punch. Though the KBL throws a less deep soundstage than that presented by the Mark Levinson No.26, Lewis Lipnick feels that it is more true to the information on the CD: Similarly, LL feels that the KBL's less romantic vision of music's tonal colors than that of the No.26 is more accurate. Whatever, with appropriate ancillaries the KBL will enable its owner to attain musical Nirvana. (Vol.14 No.8)

Mark Levinson No.26: $5450

The No.26 has a more laid-back presentation of the music than the Krell preamps, coupled with superb definition of detail and soundstage delineation. One of the two finest solid-state preamps JA has heard, the other being the Vendetta phono unit. With internal switches set for minimum gain, the sound lacks dynamics, however. Has both balanced and unbalanced outputs, a choice of internal balanced line-level input or high- or low-gain phono input, and front-panel-switchable signal polarity. The price quoted is for the version with the balanced input module. Digitbuffers can obtain a basic version lacking phono stage. Should they change their minds but wish to keep their balanced input option, an outboard phono unit, the No.25 ($2150/$2050, High/Low Gain, $3220/$3140 with additional PLS-226 power supply) is available but needs careful positioning to avoid hum being induced into its circuitry from the power supplies of other components. More expensive "S" version, available from Spring '91, features Teflon circuit boards: our preliminary auditioning suggests that it sounds significantly more transparent. (Vol.11 No.5)

Jeff Rowland Design Group Consonance: $3340

TNJ's current reference, the remote-control Consonance offers a superbly clean, neutral, transparent tonal balance with a treble that is open-sounding, airy, and detailed. A more laid-back midrange balance than the Kline SK-5A, but with more top-octave air, and more detailed overall than the Audio Research SP14. Price includes phono stage, line-level-only version costs $2900. Balanced and unbalanced outputs are provided. (Vol.14 No.3)

Threshold FET Ten/e: $5700

A two-box unit with separate High-Level ($3200) and Phono ($2500) sections, each with its own power-supply module. While its soundstage depth was a little shy of that provided by the best tubed preamps, DO—that well-known tube enthusiast—was sufficiently impressed by the Threshold's superb presentation of musical detail and lack of grain to make it his reference preamplifier. "An exceedingly pure and pristine window on the sound," he summed up. JGH also loves this preamplifier's line stage. Balanced and unbalanced outputs are provided. (Vol.14 No.3)

Vendetta Research SCP-2B phono-preamp: $2495

A dual-mono MC-/line-level RIAA equalizer and preamplifier from John Curl that redefines the definition of "quiet." JGH felt that this well-made unit imposed less of a signature on the signal than any other preamp he has 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. Current version is non-polarity-inverting. (Vol.11 No.6)

B

Audio Research SP14: $2995

Borderline Class A sound for this versatile hybrid tube/FET preamp. The SP14 is one of those rare components that lays out every sonic detail clearly without destroying the essential sense of musical wholeness. It allows the listener to hear into the soundstage in an addictive manner, without having individual instruments thrust forward at him or her, though that soundstage is a little less wide than with the best preamps. The quality of its line stage doesn't quite match that of the phono: though GL enthused that at last he "could hear through the electronics to the music itself," CG found the line stage to have more of an editorial
effect than he would have liked. JA feels the SP14's treble is perhaps a little more etched-sounding via its phono stage than, say, that of the Conrad-Johnson PV9, but, as GL noted in his review of the SP9 Mk.II in Vol.13 No.11, both share a similar quality—"magic." (Vol.13 No.6)

Audio Research SP9 Mk.II: $1875

Offering an almost identical tonal balance to the excellent SP14, the original version of the '9 had a softer overall presentation but a grainer midrange that detracted from what would otherwise be a superbly musical, Class B sound. The recent $40 tube update dramatically improves the sound, says GL, endowing the '9 with better dynamics and a rich, full-bodied, non-fatiguing sonic character to both phono and line inputs. (Vol.13 No.11, Vol.14 No.6)

Conrad-Johnson PF-1: $1295

Moderately priced FET preamp offering a pure-sounding treble, a slightly crisp, well-delineated midrange, and excellent soundstaging via its phono input. Limited headroom would seem to dictate that high-output MM pickup cartridges are best avoided, and a highnish level mandates careful matching with low-output MCs. More important, felt MC, what lifted the PF-1 out of its price class was its superb presentation of musical dynamics. Via the line input, the overall balance was a touch lightweight, but again with a realistic sense of scale and natural dynamics. (Vol.13 No.12)

Counterpoint SA-3000: $1995

The sound from LP of this well-made tube preamp bore a resemblance to the Vendetta Research, felt GL, with a superbly transparent midrange, excellent soundstage depth, and well-extended lows. (ST demurs.) The line inputs, too, seemed to add very little to the sound of CD. However, a rather clinical overall balance—"piquant" 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 $1495. GL is currently working on a review of the more expensive SA-5000. (Vol.13 No.11)

Klyne SK-5A: $3450

Incredibly clean, quick, detailed, smooth, open, and solid, with superb imaging and soundstaging. One of the most neutral preamplifiers, but a lack of sympathy for extremes having a forward balance precludes a Class A rating. TJN's long-term reference. Particularly suitable for moving-coils (includes a variable-gain head amp and HF rolloff switching). (Vol.10 No.6)

Krell KSL: $2000

Line-level-only control preamplifier (an optional phono stage adds $500 to the price) with balanced as well as unbalanced inputs and outputs. The sound is "amazingly close" to that of the two-box 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 otherwise excellent preamp from attaining a Class A rating. (Vol.14 No.7)

The Mod Squad Phono Drive: $1695

Beautifully engineered, stand-alone MCM phono stage with line-level output. Includes low-output impedanceline stage with volume and balance controls. Excellent delineation of detail; superb soundstaging; only a rather high noise level with moderate output MCs precludes a Class A recommendation. Also now sold in conjunction with the Mod Squad's Line Drive Deluxe as the Duet. EPS version with external power supply costs $1895. Owners of Phono Drives manufactured before 1990 can have them updated by the factory to current specification for $250. A "Follow-Up" review of the latest version is underway. (Vol.12 No.3)

Music Reference RM5 Mk.II: $1150

Tube design unique in offering user-adjustable line-stage negative feedback. DO found the music to sing with the preamp's overall feedback set to 1840B of gain, with the RM5 in this condition he felt there were no sonic weaknesses, apart from a slight lack of dynamics. Otherwise, soundstaging was excellent, the treble free from grain, the lows tight and extended. "Wonderful," was how he summed up the performance. Best suited for a good MM or a high-output MC, the RM5 represents superb value at an affordable price. (Vol.13 No.4)

C

Adcom GFP-565: $800

An excellent preamp with good parts quality, buffered tape outputs, low output impedance, and high-current, low-impedance power supply, that incorporates Walt Jung's designs. GAG feels the '565 should convince even the most skeptical listener that IC op-amp circuits can sound both musical and accurate. Full-sized, but purist outputs are supplied that bypass tone control and filter switching. MM phono preamp is one of the quietest ever, with accurate RIAA EQ. The best under $1000 preamplifier, according to GAG, offering stiff competition to far more costly units. GAG felt Class B was the most suitable rating, but further auditioning by JA, LL, CG, and ST puts the '565 on the cusp between Class B and C, provided the listener uses the bypass outputs. Otherwise, the sound quality drops to solid Class C. (Vol.13 Nos.2 & 10)

Audio by Van Alstine Super-PAS Three: $950

Owners of vintage Dynaco PAS2 and PAS3X tube preamplifiers can send them to Frank Van Alstine to be modified for $500, or can rebuild them themselves with a $200 AVA parts kit; otherwise, AVA offers Super-PAS preamps constructed on new Dynaco chassis for $950. Featuring a lean tonal balance with less well-defined low frequencies than should otherwise be the case, the Super-PAS Three has excellent soundstaging and is still the least expensive way for an audiophile who prefers to use MM cartridges to acquire Class C preamp sound. Limited LP headroom on phono input mandates careful matching of cartridge and tonearm. Now uses gold-plated Tiffany connectors and Chinese 12AX7A tubes with 25% higher gain. Optional "Omega" output buffers (not yet tested) cost $150. (Vol.11 Nos.10 & 12)

B&K Sonata Pro 10MC: $698

Inexpensive preamp with one of the best MC stages ST has heard—"neutral, detailed, never spitty or splashy." Line stage not quite as good, but can be switched out of circuit. (Switch power amps off when you do this!) Balanced outputs add $100 to price. (Vol.14 No.5)

Hafler Iris: $900

Ingenious, all-FET remote-control preamp designed by Acoustics Jim Strickland, with analog volume and

Stereophile, October 1991

WorldRadioHistory 121
balance controls. Line stage a little on the dry, wispy side, with slightly restricted soundstaging, but fundamentally neutral tonal balance. Low-noise phono stage (MM and MC) is lightish-balanced, resulting in a sound that overall doesn’t quite approach the PS 4.6/M-500 combination, although more musical than the Class D contenders. DAS disagrees, feeling the Iris to belong in Class B. Version without the remote control and IR receiver card is available for $700. (Vol.12 No.6)

Linn LK1: $1295
Unusual but exquisitely made solid-state preamp with digitally switched volume control and all-XLR input/output sockets apart from phono (MC and MM). (Linn dealers can supply suitable adapter cables.) Line stage is polarity-inverting. Only four line-level inputs may be a drawback. Fundamentally on a par with the PS Audio 4.6 sonically, with a similar slight veil drawn over the sound (though less bright overall), the LK1 is far more civilized. At its best with the matching LK280 power amplifier, when it provides “fit-and-forget” high-quality sound, particularly from LP. Owners of high-output MMxs should note that the MM input has limited headroom, particularly at high frequencies. Remote control—essential—adds $120 to price. A separate power supply, the Dirak, is now available for $845 if the owner returns the original power transformer. (Vol.12 No.7)

Music And Sound DCC-1 D/A preamplifier: $1195
Versatile switching unit for analog, digital, and video sources includes an excellent D/A section and a line-level preamp that, while slightly veiled in absolute terms, is free from the thickness or muck that obscures the sound of many inexpensive preamps. Passive preamp mode is more transparent than the active, though the sound is still less sharply focused than the best passive control units. Excellent value for money. Remote control of volume, balance, and mute adds $150 to price. (Vol.14 No.3)

NAD 1300: $399
Full-function preamp with versatile tone controls. Superbly quiet, delicate-sounding MC Input; excellent dynamics; extended highs; slightly forward tonal balance better suited to rock or jazz than to classical music. Rather lightweight bass makes the 1300 an unsuitable match with the NAD power amplifiers, which are also a little lightweight. (Vol.11 No.12)

PS Audio 4.6: $699 ★
Excellent phono stage (switchable between MM and MC), if both a little bright and lacking air when compared with the Class B contenders. Though sweet-sounding, the line-section is colored and a little wispy in the highs, rather than punchy and dynamic. It can be switched out, however. TjN suggests that the overall performance is of almost Class B standard when the 4.6 is coupled with the M-500 power supply (which raises the price to $1104). (Vol.11 Nos.9 & 12)

PSE Studio SL: $850
Inexpensive solid-state preamp with balanced and unbalanced outputs that sounds its best after ‘72 hours’ warmup. Includes a mono switch! Good transparency, dynamics, and rendition of instrumental tonality, but the PSE can sound rather cold with some power amplifiers. MM input has limited headroom, so high-output types best avoided. (Vol.13 No.1)

D
Adcom GTP-400: $400
GAG enthused at length in his review over this inexpensive IC-based tuner/preamp combination that has had op-amp guru Walt Jung’s magic wand waved over it. Very low noise on all inputs; euphonically warm-sounding rather than accurate phono circuit; reasonable soundstage depth; line stage rather laid-back in the top; not the ultimate in inner detail; the overall sound, however, is musical and enjoyable. Errors are of omission rather than addition. Tuner section, although not offering the ultimate in selectivity, will be good enough for most users and, again, offers musically satisfying sound. (Vol.12 No.9)

K

Deletions
Electrocompaniet EC-1 no longer distributed in the US; Meitner PA6I and David Berning TJF-12 not auditioned in too long a time to be sure of their current ratings; Krell KSP-7B replaced in this listing by as good-sounding-but less-expensive Krell KS1; Parasound PPFET900 replaced by new version not yet auditioned.

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 and the advice of your dealer will be essential in putting together a musically satisfying system around a passive unit.

A
Electronic Visionary Systems Attenuators: $60—$675
RH enthused over the transparency offered by these passive control units, sold by mail-order only. Ranging from the dual-mono Ultimate Attenuators, which plug into the power amplifier’s input sockets ($60/pair with single volume control, $175/pair with 12-position attenuator, $350/pair with 31-position attenuator), to the more convenient stereo Stepped Attenuators available in balanced versions and with two or three-five inputs, those primarily interested in CD replay should investigate these well-made units. (Vol.13 No.7)

The Mod Squad Deluxe Line Drive AGT: $1150
Its passive nature places demands on upstream components to be able to drive a fairly demanding load, but if that’s the case, the Line Drive Deluxe offers the most transparent, least colored way of achieving Class A sound from CD and other line-level sources. Must be used with short interconnects, however. (The improvement offered by the Deluxe over the conventional Line Drive is not subtle.) Sets a new standard for Class A sound at an unreasonably low cost, as well as offering considerably more versatility than the barebones EVS units mentioned above. JA’s reference for
(lack of) preamplifier sound. The latest version, with Cardas jacks, revised internal wiring, and a new volume pot is astonishingly transparent even when compared with the bare-bones EVS Ultimate Attenuator. (Vol. 12 No. 1)

C

The Mod Squad Line Drive AGT: $650

The ideal Class C "preamplifier" for a CD-based system, given that its passive nature will mean that cables must be kept relatively short. Latest version has AGT (Advanced Grounding Topology) feature. (Vol. 10 No. 3)

K


Deletions

QED PCC passive preamplifier.

Moving-Coil Step-up Devices

A

Expressive Technologies SU-1 transformer: $2950
A 35 lb step-up transformer that offers "utter transparency" and "exquisite resolution," according to RH. JA agrees, finding his LP sound with the SU-1 feeding the Mod Squad Phono Drive'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. A review is underway. (NR)

Mark Levinson No. 25: $3220/$3140
(High/Low Gain)
MC-line-level phono preamplifier featuring identical circuitry to the phono section of the No. 26. Above price includes PLS-226 power supply. See "Preamplifiers." (NR)

Vendetta Research SCP-2B: $2495
Ultra-quiet dual-mono phono preamplifier includes RIAA equalizer to give line-level output. See "Preamplifiers." (Vol. 11 No. 6)

B

Klyne SK-2a: $750
Offering superb bass, very deep and tight, excellent high-frequency extension, excellent imaging, the SK-2a lacks the three-dimensionality of tubes, but only slightly. Adjustable high-frequency rolloff and cartridge loading are boons for those with several MC cartridges. (Vol. 7 No. 3, Vol. 8 No. 5)

The Mod Squad Phono Drive: $1695
Matches both MM and MC cartridges with versatile loading options. Line-level output. See "Preamplifiers." (Vol. 12 No. 1)

Deletions

Electrocopiamenit MC-2 no longer distributed in the US.

Power Amplifiers

A

Editor's Note: 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.

Air Tight ATM-2: $5950
A classic stereo tube design from Japan that eschews the use of printed circuit boards in favor of point-to-point wiring. Dick Olsher's reference for midrange accuracy: "the most refined tube amplifier money can buy" (though he's alarmed that after the review sample broke, it did not sound as superlative when fixed). Though its highs are free from grain or hash, the Air Tight does have a rather shut-in high treble when compared, for example, with the Audio Research Classic 60, a point which bothered ST. "Sounds like a more refined Quicksilver," says 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. Nevertheless, in an appropriate system—DO thought the combination of the ATM-2 with the Ensemble Reference minimonitors was particularly synergistic—the Air Tight will give superbly musical results. (Vol. 13 No. 5)

Audio Research Classic 60: $3495
The sound of this relatively low-powered stereo design that combines tubes with FETs is a little forward in the treble, yet never fails to sound musical, thought JA. Superbly delineated soundstaging. The midrange is presented with a natural tonality, and though the low frequencies are not as tight or as extended as the Krell or Mark Levinson competition, they have a musically appropriate fullness. With the latest ARC tubes, the sound acquires even more depth and palpability. (Vol. 13 No. 9, Vol. 14 No. 9)

Jadis Defy 7: $5495
A provisional rating for this stereo tube amplifier, following ST's enthusiastic auditioning: "the sound tends to be lean, crisp, clean... like a good French symphony orchestra," quoth he, with bass that was "solid... tighter, better damped" than the VTL 225 monoblocks. (JE demurs, however.) (Vol. 14 No. 9)

Krell KSA-250: $6200
This powerhouse of a stereo amplifier is the best Krell yet, despite the fact that it's also the first Krell not to run its output stage in class-A all the way up to the 8 ohm clipping point. It combines an effortless delivery of power into difficult loads with traditional Krell clarity but an almost tubelike seamlessness from the lowest bass to the highest treble, noted LL: "a soundstage so real one can reach out and touch the performers," the Krell besting the M-L No. 20.5 in this respect. RH agreed with LL's assessment of the KSA-250's sound, mentioning its natural midrange textures, lack of grain, and the general sense of musical ease compared with the superseded KSA-200. Until he tried a pair of the awesome MD-500s, LA found the 250 to be the best amplifier with which to drive the demanding Thiel CS5 loudspeakers. (Vol. 14 Nos. 1 & 9)

Mark Levinson No. 20.5 monoblock: $13,000/pair
Class A 100W monoblock with fully regulated power supply for output stages. Until the appearance of the KSA-250 and the No. 23.5, the No. 20.5 was the finest solid-state power amplifier JA had used, particularly regarding soundstaging and the authority of low frequencies. The original No. 20 had a somewhat soft treble balance. Auditioning of the No. 20.5, which differs from its predecessor only in the AP-4 input and driver card—an upgrade costs $1000/pair—indicates that the performance of its predecessor has been improved.
upon, particularly with respect to the soft treble balance, though the amplifier's basic "forgiving" nature, once warmed up, remains. Before fully warmed up, the treble can be somewhat grainy. Offers both balanced and unbalanced inputs. Some say that two pairs of No.20.5s, operated in bridged-mono mode become the ultimate stereo amplifier! (Vol.12 No.9)

Mark Levinson No.23.5: $5900
A significant redesign of the original 23 has resulted in an altogether more musical-sounding amplifier, according to JA. Compared with the 20.5s, the 23.5 offers a more vivid, more 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. At its best with darker-sounding loudspeakers, such as the KEF R1072, with which it makes a musically synergistic match. (Vol.14 No.9)

Prodigy 150 monoblock OTL: $7000/pair
Monstrous OTL tube amp, developed from the Futterman designs once sold by NYL. Tonal balance very dependent on load impedance presented by loud-speaker. Bass a little lightweight, despite well-extended small-signal LF response, and the sound can take on treble stridency with highly capacitive loads, but the Prodigy's main strength is the depth and width of the soundstage thrown by a pair with appropriate speakers. (Vol.12 No.9)

Threshold SA/12e monoblock: $14,400/pair
"A gorgeously clean, natural high end" and "an open, lively midrange," said TJN after auditioning this expensivé behemoth of a pure Class-A amplifier. Perhaps the most authoritative low frequencies of any amplifier, but image depth not quite to the standard shown by the Krell KSA-250. (Vol.13 No.12, Vol.14 No.9)

Threshold S/550e: $6300
A more forward midrange and treble balance than the similarly priced Krell KSA-250 or Mark Levinson No.23.5, found RH, of this very powerful stereo amplifier, but with a similarly impressive reproduction of low frequencies but slightly less soundstage depth. If somewhat less subtle in sound than Threshold's SA/12s, its more vivified presentation will work better with tonally laid-back speakers like the Apogee Stage, thought TJN. (Vol.14 Nos.1 & 9)

Vacuum Tube Logic 225 DeLuxe monoblock: $4200/pair
(See Robert Harley's "Follow-Up" in this issue.)

Vacuum Tube Logic 300 Deluxe monoblock: $4900/pair
"HF magic," said JGH in his review, commenting on this high-powered tube amp's ease in the treble, an attribute not obtained by dulling the HF content of the music. This is coupled with well-defined low frequencies and a neutral midrange that mates well both with JGH's Sound-Lab electrostats and with Infinity IRS Betas. Latest version using KT90 tubes has not yet been auditioned, but see RH's "Follow-Up" on the VTL 225 monoblock in this issue. (Vol.11 No.10)

Valve Amplification Company PA90 monoblock: $4890/pair
DO is currently working on a full review but indicates that Class A will be the rating for this superbly made two-box tube monoblock. "Its holographic imaging ability in triode mode is astonishing," he reports. ST, too, was impressed by the sound of these amplifiers—"a realism that was positively breathtaking," he gushed—though he feels it only fair to point out a lack of overall dynamics. (Vol.14 No.9)

B
Boulder 500A: $3499
(See J. Gordon Holt's review in this issue. Otherwise identical Boulder 500 adds meters and other ancillaries for $4299.)

Jeff Rowland Design Group Model 1: $3100
Compact, well-made stereo amplifier that TJN described as being "full-bodied, even slightly lush, but in a completely believable, natural fashion." He continued that the Model One had a somewhat soft low end and "lacks a bit of speed and liveliness, but makes up for them with a disarmingly unforced quality... and a subtle and delicate high-frequency response." RH was also impressed by this amplifier, which TJN found to exert excellent control and dynamic range in bridged mode, if lacking a small degree of subtlety compared with one amplifier used conventionally. One negative point: some of the screw-terminal speaker connectors—two pairs per channel are provided to facilitate biwiring—on our review sample became stripped after a lot of use. (Vol.14 Nos.4 & 9)

Kebschull 35/70 monoblock: $2595/pair
West German, low-powered tube monoblock that DO preferred to the Quicksilvers, Klismo Kents, and VTL stereo 75/75 when driving both old and new Quads. Plenty of midrange detail "but not at the expense of textural liquidity," timbral accuracy, and excellent soundstaging with a "feeling of precision and solidity about image outlines and timbres." ST feels that DO correctly described the Kebschull's strengths, but points out that its low power and limited ability to drive some awkward loudspeaker loads to any respectable level will make system matching very critical. (Vol.12 Nos.6 & 10)

Krell KST-100: $2700
Class-A/B stereo amplifier that MC felt to offer a sound "of greater delicacy, air, and transparency than that traditionally associated with solid-state electronics." He also felt it had superb soundstaging and was a touch more dynamic and a shade clearer than Krell's now-discontinued KSA-80, the only significant criticisms being a mildly emphasized top half-ocave, which will mandate careful system building, and marginal channel separation when used in balanced mode. (Vol.14 No.7)

Mark Levinson No.27: $3995
Borderline Class A due to an overall less transparent, less sweet sound than the Mark Levinson No.23 and No.20.5, the 100Wpc No.27 nevertheless offers what LG felt to be typical M-L smoothness through the audible spectrum without the No.20.5's softening of the highs. In fact, he found its speed, dynamics, and vividness to resemble the No.23, concluding that it was his "first choice in its price range." (Vol.15 Nos.6 & 7)

Mark Levinson No.29: $2800
"Focus, depth, and detail. The Levinson No.29 excels in all three of these vital characteristics," said TJN, though he did note a slightly lean balance overall, without the ultimate low-frequency weight possessed by...
the more expensive Levinson amplifiers. He also felt the soundstage offered by the Jeff Rowland Model I was a shade more palpable. Nevertheless, “a compelling performer,” was his ultimate conclusion. (Vol.14 No.4)

**Muse Model One Hundred Fifty monoblock: $2280/pair**

Powerful and well-constructed MOSFET design from a pro-sound company that sounds on the upshot side of neutrality without losing the ability to present a recording’s musical values intact. “Tight, well-controlled bass and a very natural, liquid midrange,” said Robert Harley. (Vol.13 No.1)

**Music Reference RM-9: $2450**

The price quoted refers to the version outfitted with EL34 output tubes; KT88s add $300 to the price but improve the performance significantly, thought DO of this stereo Roger Modjeski design. With less of a sonic signature than the KT88-equipped Quicksilver, the RM-9 “does very little to interfere with the essence of the music,” and the adjustable gain/feedback feature means that the amplifier can, to an extent, be “tuned” for a particular loudspeaker. (Vol.12 No.12)

**Nestorovic NA-1: $6600/pair**

Driven in balanced mode, this tube monoblock came close to combining the best of solid-state performance with the best of tubes, sounding euphonic but with a tight, well-controlled bass, thought SWW in his original review. DO listened to more recent samples and felt that although they were not as detailed or as transparent as the Audio Research, VAC, and Threshold amplifiers, they had a sweet-sounding midrange and worked to perfection with Nestorovic’s own loudspeakers, the sounds of the two being complementary. Borderline Class A performance, overall. (Vol.9 No.8, Vol.14 No.9)

**Quicksilver KT88 monoblock: $1895/pair**

**Quicksilver Silver Edition KT88 monoblock: $2300/pair**

KT88 output tubes eliminate a residue of glare in the upper mids, giving more of a “see-through” quality. ST found the mono Quicksilvers to be ideal with the Quad ESL-63s. Others have found them to work beautifully in a lot of low-power situations: reports from the field suggest that the Quicksilver is a happy choice for driving Vandersteen 2Cis as well as Acoustics of various vintages. Wonderfully tube-like, superb, tonal standards-setting midrange; can drive low impedances due to an excellent output transformer; but low frequencies still rather soft and ill-defined in the classic tube amplifier tradition. Stereophile’s reviewers are divided on the Quicksilver’s merits. LA feels that, despite the Quicksilver’s overall “pleasant” sound, it’s still a “low-resolution” design. “It just doesn’t cut it in the bass,” says DO, “and the amp is soft and muted on top.” DO concluded his review by pointing out that the Quicksilver has too much of an old-fashioned sound for a Class B recommendation in these days of highly neutral amplifiers. GL, however, disagrees strongly with both LA and DO in his “Follow-Up,” feeling that the Quicksilvers should remain in Class B on musical grounds: “It doesn’t do anything to actively interfere with the music.” Extraordinary long-term reliability for a tube design, Mr. Tellig parenthetically points out, though he now feels that for not much more money, the Silver Edition monoblock is the amplifier to buy. (Vol.7 No.3, Vol.8 Nos.2 & 4, Vol.12 No.11, Vol.13 No.5; Vol.14 No.9, Silver Edition.)

**Vacuum Tube Logic Compact 160 monoblock: $3000/pair**

Whereas the older VTL Compact amplifiers (the 100 reviewed by JA in Vol.11 No.11, for example) had an upfront midrange that grabbed the listener’s attention, the 160 has a more subtle overall balance with a softer but still detailed treble. Though it runs out of juice before the “160” name would suggest, it presents a musically satisfying sound overall. Front-panel switching to enable the amp to run in triode mode adds $500 to price per pair but is essential to get the best from the KT90 tubes. CG’s auditioning and JA’s measurements reveal. (Vol.14 No.8)

**Vacuum Tube Logic Stereo 90/90 Deluxe: $1950**

A slight midrange bloom and fullness reduce the clarity of its imaging, thought TJN of this tubed stereo design, and push images forward a little too often. Nevertheless, despite a slightly soft high treble, this relatively modestly priced amplifier offers good bass extension and control and proved capable of generating an extremely musical sound, particularly with Vandersteen 2Cis. Latest version using KT90 tubes has not yet been auditioned, but see RI’s “Follow-Up” on the VTL 225 monoblock in this issue. (Vol.13 No.5)

**B (Integrated Amplifiers)**

**Ensemble B-50 Tiger: $1980**

This diminutive integrated amplifier enabled GL to get some of the most musical sound he had experienced from his old Acousstat 2s, particularly when used with Ensemble’s own cables. “A soundstage seemingly unlimited by the dimensions of my room,” he noted, commenting also on the Tiger’s “captivating ability...to maintain rhythmic and timbral spatial separation between diverse elements of any musical presentation.” JA also found the Tiger to give a fundamentally musical presentation. JE disagrees, feeling the B-50 to be more of a pussy-cat than a Tiger. Though the Tiger lacks a phono input, a Deluxe phono module with adjustable loading option is available for $490. Though this can be powered from the B-50, a Malaysian reader (“Letters,” Vol.14 No.9, p.33) suggests that a separate power supply is essential to get the best from it. (Vol.14 No.5)

**Lectron JH 30: $3595**

(See Jack English’s review in this issue.)

**Naim NAP 140 power amplifier: $1395**

**Naim NAC 62 preamplifier: $925**

Though the Naim components appear to be a separate pre- and stereo power amplifier, their idiosyncratic natures mean that they are best described as an integrated amplifier in two boxes—three if you count the Hi-Cap preamp power supply ($1245). Naim speaker cable must also be regarded as part of the package, the 140 being only marginally stable into some highly capacitive “audiophile” cables. The sound of the combination, however, is astonishingly musical, being smooth, transparent, detailed, and involving. With the Hi-Cap power supply, the $3505 Naim system offered an excellent ability to keep musical threads distinct within the overall texture, though RH did feel a lack of midband immediacy was sometimes noticeable. The 140 power amplifier works best into higher-impedance speakers. “If you want a music system you don’t have to think about, and don’t need lots of power,” [the Naim]

Stereophile, October 1991

WorldRadioHistory

125
offers a superbly musical experience,” was how RH concluded his review. (Vol.14 No.2)

C

Adcom GFA-555 II: $800 ☆
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 sweeter, though still with a forward sonic signature, while maintaining its predecessor’s superbly well-defined, authoritative 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 insensitive or low-impedance loudspeakers. (Vol.8 No.4, Vol.12 No.12, original version; Vol.13 No.10)

Adcom GFA-565 monoblock: $1700/pair
“Clean, solid, secure,” was how TJN summed up his description of the 565’s sound, and Sam Tellig loved the sound of this gutsy monoblock—high power, excellent presentation of detail, weight and authority to the lows, superb image definition. He agrees with TJN, however, that a certain flatness of image, a touch of low-treble hardness, and an ultimate lack of high-frequency transparency makes Class C an appropriately rating. Balanced inputs add $200/pair to the price, as does a pair of fans for those with very insensitive or low-impedance loudspeakers. (Vol.14 Nos.4, 6, & 7)

B&K Sonata M-200 monoblock: $1800/pair
Sam Tellig found this relatively inexpensive amplifier to drive his Spendor S-100s to perfection, despite a rather lean tonal balance in stock form. Output stage bias can be increased, the sound then warming up to give tubelike smoothness and sweetness. “A wonderfully sane product,” declared ST, stating that it should give more expensive amplifiers a hard time justifying their existence. Price is for version with unbalanced inputs; balanced version costs an additional $200/pair. (Vol.14 Nos.1, 2, & 3)

Kinergetics KRA-75: $1795
Powerful, silent-running, fan-cooled, class-A stereo design that, with the exception of a slightly dry upper midrange, has very little editorial effect on the music, in particular lacking any high-frequency glare. Doesn’t appear to be cramped by any particular loudspeaker, handling dynamics, electrostatics, and hybrids with aplomb. Restricted soundstage depth keeps this relatively modestly priced amplifier from attaining a Class B recommendation. Latest version differs from that reviewed in having “Platinum” cosmetics. (Vol.13 No.1)

Linn LK280: $1695
Representing a considerable improvement over its predecessor, the LK2, this hot-running, almost dual mono power amplifier (only the power transformer is shared between channels) is unusual in having fully regulated power supplies for the output stages. It offers an authoritative sound, with a more neutral treble than, for example, the Mk.I version of the Adcom GFA-555, but can really only be recommended for use with the LK1 preamplifier, due to its very low input impedance (3k ohms) and idiosyncratically wired XLR input connectors. An optional dedicated separate power supply the “Spark,” costs $1295 if the original power transformers are returned. (Vol.12 No.7)

Muse Model 100: $1200
This modestly priced stereo MOSFET amplifier was one of the “finds” of 1991, offering a coherent, musically satisfying presentation. CG commented on its effortless sense of dynamics, and while its bass was not in the same class as that of the Adcom ’555 II, its midrange and highs were better-balanced overall. TJN also found the sound of the Muse to his liking driving B&W 801s (see Vol.14 No.6, p.200). (Vol.14 No.4)

PS Audio 100 Delta: $1195
Actual version reviewed was the 100C, the Delta being cosmetically different. GL felt the PS 100C to be able to handle any kind of loudspeaker load with ease: “bass was full, tight, and extended... treble was pristine,” he wrote, after auditioning the amp with Spica TG-50s. ST got less satisfying results with the PS Audio driving Martin-Logan Sequel IIIs, the sound becoming rather brittle, which suggests that the 100C should be carefully auditioned with the speakers with which it is to be used. (Vol.12 Nos.9 & 12)

PSE Studio IV: $950
A lot of watts for the money from this modest-looking solid-state amp, coupled with a detailed, dynamic, neutral, yet never over-aggressive sound. “Small in size, but big in sound,” enthusiastically wrote GL in his review, commenting on the PSE’s ability to present the power of bass instruments without blurring the leading edges of their sounds. (Vol.13 No.1)

Sumo Andromeda II: $1595
As a balanced-bridge stereo amplifier, the Andromeda II requires care when used with speaker switching boxes, IRS 1B crossovers, and other ancillaries that might common the grounds of the two channels. But used conventionally, it impressed the heck out of TJN, who noted that its midrange is more laid-back than that of the big Adcom monoblocks and its bass warmer, and commented very positively on its “upper-frequency air” and its clean, transparent sound. (Vol.14 No.6)

Vacuum Tube Logic Tiny Triode monoblock: $1200/pair
It’s hard to recommend such an idiosyncratic amplifier, the Tiny Triode being unable to put out any real power with any degree of control in the bass and unable to drive conventional dynamic loudspeakers high, let alone very high, levels. Yet when it comes to midrange performance, it is perhaps one of the most palpable, musically real-sounding amplifiers CG and JA have heard. “Used Within Their Limits,” concluded CG, “they sound utterly terrific.” If you have an old pair of Electrovoice or Klipsch horn speakers around, you might try investigating what a pair of TTs could do for them. JA also tried using a pair to drive Grado HP 1 headphones, with some musical success. On the other hand, a pair of TTs is the ideal amplifier for your desktop office system, hooked up to a pair of LS3/5as and a portable CD player. (Vol.14 No.4)

C (Integrated Amplifiers)

Naim NAIT 2: $895
Somewhat expensive, almost totally lacking in features, and very low-powered (21Wpc), the diminutive NAIT 2 would appear to be poor value for money. But when you listen to it, it offers much better sound than the Class D integrated amplifiers, featuring an expansive soundstage with a smooth, natural tonal balance and
a liquid midrange. Lacks bass authority, however, low frequencies being neither extended nor tight, and the line stage is somewhat rolled-off in the highs. (A slightly tilted-up treble in the RIAA response ensures that LP reproduction is more neutrally balanced.) Best suited for sensitive minimonitors like the Celestion 3 and Monitor Audio Monitor 7. (Vol.8 No.5 original version, Vol.12 No.9, Vol.13 No.4)

D (Separates)
Adcom GFA-535: $335 ★
"Extraordinarily clean, detailed, and musical... Far more detailed than I would ever imagine a $300 amplifier could be," said Sam Tellig of the '535's sound when this budget amplifier drove his ESL-63s. While not a powerhouse, it works well with speakers which usually demand a more expensive amplifier. Only negative point is the nonstandard output connectors. Some feel that the inexpensive 535 is actually the best-sounding Adcom amplifier—"Amazingly good" at its price, says Peter Mitchell. (Vol.10 No.8)

B&K ST-140: $498 ★
The 105Wpc MOSFET '140 costs little enough to make it into Class D, but the sonic, after extensive auditioning, convince ST that it belongs in Class C. LA disagrees, feeling that it should be "high Class D," and after his auditioning, JA also disagrees. The ST-I40 features deep but not extraordinarily powerful (and mushy) low bass, and a tube-like tonality with a smooth, sweet midrange. Despite the Analogist finding the '140 to have "too much MOSFET mist," the amp's high frequencies become a little tizzy, thought JA, while GL found disc surface noise to be somewhat accentuated. Latest production features a detachable IEC AC cable and gold-plated RCA input jacks. An important caveat to our continued recommendation of the ST-I40 concerns the ability of the current version to drive real-world loudspeakers. With loudspeakers whose impedances drop much below 8 ohms, the amplifier is thermally limited from delivering much power without a significant increase in distortion, with a resulting hardness to the sound. More powerful ST-202 ($648, reviewed in Vol.10 No.8) has very similar sonic signature, according to ST, and is therefore to be recommended with a much wider range of loudspeakers than the '140.
Balanced Inputs add $100 to price of both '140 and '202. (Vol.7 No.4, Vol.10 No.7, Vol.11 No.10 mono version; Vol.12 Nos.4 & 12, Vol.13 No.1)

NAD 2100: $429
Though as a conventional stereo amplifier this inexpensive NAD has a rather lightweight balance with a shallow image, a pair used in bridged mono mode offers high power, excellent soundstage depth, and an open, spacious, detailed sound. (Vol.12 No.12, Vol.13 Nos.1, 5, & 12)

Parasound HCA-800 II: $395 ★
Less image depth than the Adcom '555 II and a touch of treble grain at high levels, but "More than a touch of high-end sound," said JA of this modestly priced 100Wpc amplifier, due to its sweet midrange presentation and good sense of dynamics. (Vol.11 No.2, Vol.12 No.2, original version; Vol.13 No.10)

D (Integrated Amplifiers)
Arcam Alpha 2: $379 ★
Inexpensive, the Alpha 2 sounds dry and bright in the treble, with a lack of soundstage dimension and "wooden" low frequencies, according to RH. Nevertheless, it represents a considerable improvement in sound quality compared with the mass-market Oriental norm, and therefore scrape a recommendation. (Vol.12 No.9)

Creek 4140 52: $595
Excellent soundstaging, with a sense of air and openness, coupled with "satisfying" bass reproduction, lead to a recommendation for this inexpensive British integrated. Top octaves a little forward, but not to the extent of the Audiolab or Arcam models. An excellent foundation for a musically valid budget system. (Vol.8 No.5 original version, Vol.12 No.9)

K
Audio Research Classic 120 and 150, Jeff Rowland Design Group Model 5, Krell MD-500, Muse 250, Creek 6060, VTL 140 Deluxe monoblock, YBA 2.

Deletions
Meitner MTR-101 monoblock, Hafler XL-280, Vacuum Tube Logic 100W Compact monoblocks not auditioned in a long time; Classé DR-9 replaced by new model; Sansui AU-X911HG too expensive for sound quality offered.

Loudspeaker Systems

Editor's Note: Class A in "Loudspeakers" is in a state of flux at present: though there are a number of contenders, I feel that further auditioning of each is necessary before the rating and the recommendation can be confirmed. I have therefore just listed every system or combination that at least one of Stereophile's reviewers feels, as a result of his experience, to approach the current state of the art in loudspeaker design. (Note that to be eligible for inclusion in Class A, the system must be full-range—which is why the Hales Signature is only included in combination with the Muse Model 18 subwoofer and the WAIT 3/Puppy with the Wilson WHOW—and capable of reaching realistic sound pressure levels.) Readers are therefore advised to turn to the original reviews for descriptions of the sound.

In addition, such has been the recent progress in loudspeaker design at a more affordable level that the lower classes in "Loudspeakers" have also had to have been significantly revised, with a new class—E, for "Entry-Level"—added beneath the old Class D. Someone asked me recently why Stereophile bothers to review inexpensive loudspeakers at all. In effect, aren't we insulting our readership by recommending they buy any of these inexpensive models? Remember: 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 (Provisional)
Apogee Diva: $9295/pair ★
Best sound is to be obtained with the $2995 DAX III dedicated electronic crossover. (Vol.11 No.8, Vol.13 No.8)

B&W Matrix 800: $15,000--$18,000/pair
(Vol.14 No.6; see also "Follow-Up" in this issue.)

Hales System Two Signature with Muse 18 subwoofer: $8100/system
(Vol.13 No.7, Vol.14 No.7; see also "Follow-Up" in this issue.)
Infinity IRS Beta: $12,000/pair
(Vol.11 No.9, Vol.12 Nos.1, 6 & 12)

Meridian D6000: $15,000/pair
Active system offers digital data inputs only and uses
Bitstream D/A conversion. (Vol.14 No.9; see also
“Follow-Up” in this issue.)

Thiel CS5: $9200/pair
(Vol.15 No.6; see also “Follow-Up” in this issue.)

Wilson Audio WATT 3/Puppy/WHOW: $21,440/
 system—$23,640/system
(Vol.14 No.6, without WHOW; see also “Follow-Up” in
this issue.)

B

Editor’s Note: I make no apologies for the wide variety
of loudspeakers listed in the next two groups. Polling
Stereophile’s reviewers resulted in a total lack of
consensus, implying that all the following speakers
will, in the right room with the right ancillaries, give
ture high-end sound. Following the protests of many
readers and, more important, pressure from JGH that
small speakers should automatically be denied recom-
 mendation because of their lack of LF extension, I have
split Class B and Class C 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 competition. (Note that all
the full-range Class B recommendations, with the exception
of the B&W 801, 1 Hales System Two, and Spender $1000, are floor-standing models.)

B—Full-range

Avalon Eclipse: $5600/pair
A warmer balance than the Hales System Two Signature
is coupled with a flat on-axis response, astonishing mid-ange transparency, beautifully delineated soundstaging,
and a relative freedom from coloration that gener-
ally allow the music to communicate most effectively.
However, this is only true when the Eclipses are driven
by good tube amplifiers, the sound with even good
solid-state amplification—Mark Levinson, Jeff Rowland
—being too bright. The Eclipses also have somewhat
limited dynamics, which can lead to an unacceptable
hardness at very high playback levels. Price refers to
a Nextel finish; a non-rainforest veneer finish adds
$1600/pair. Current production has “an inexpensive
tweeter revision”; earlier samples are upgradeable.
(Vol.14 No.1; see also “Follow-Up” in this issue.)

B&W Matrix 801 Anniversary: $5900/pair ★
(stands optional)
A complete redesign of the classical recording industry’s
standard monitor loudspeaker—aluminum-dome
tweeter, extension to 19Hz with the help of a line-level
equalizer, and B&W’s patented “Matrix” enclosure,
where the cabinet is effectively transformed into a solid
body—has resulted in a moving-cone speaker capable
of competing with the best planars. As L.L. put it, “a true
musician’s reference transducer.” Strengths include
excellent low-frequency definition and weight, a highly
detailed midrange, and unstrained dynamics. Bass-
alignment equalizer now included in purchase price,
but the best sound is to be had if it is replaced by one
of the after-market models, such as those from Ano-
dyne and Denver dealer Listen-Up (the Maughan Box).
Best used with stands: we have had good results with
the Sound Anchors and with the wooden, sand-filled
Arducis. (Also see Vol.12 No.10, p.45, and Vol.13 No.2,
p.217, for discussions of a simple crossover adjustment
that improves the sound.) Current “Anniversary” ver-
 sion has a revised tweeter and other improvements.
(Vol.10 No.9)

Hales System Two Signature: $5600/pair
A beautifully made two-way, dual-woofer design with
a resonance-free cabinet featuring a 4" baffle and a
physically separate crossover, the 181 lb System Two
Signature displaced the B&W 801 from RH’s listening
room. His characterization of the Hales’s sound: “prec-
ise, controlled, detailed, meticulous, exact, finesse.”
Though the treble is both clean and transparent, a slight
propensity for on-axis brightness can be ameliorated
by experimenting with toe-in. Compared with the 801,
the Hales offers superior dynamic detail, even though
it lacks the British loudspeaker’s low-frequency weight.
In fact, the main fault of the Hales is a lightweight,
rather over-damped bass balance which can be unfor-
giving with some ancillaries and in some rooms. With
the Mute 18 subwoofer, the Signature becomes a Class
A contender. (Vol.13 No.7; see also RH’s reviews of the
Hales System Two in Vol.14 No.4 and the Mute 18 sub-
woofer in Vol.14 No.7, as well as the “Follow-Up” in
this issue.)

Hales System Two: $3000/pair (stands necessary)
Sounding overly bright and hard before being broken-
in, the System 2 retains a slight tendency toward tizzi-
ness in the high treble, though its sound is otherwise
superbly clean with sharply defined transients and a
transparent, uncolored midrange. Some might find
the bass overly lean, however. East Coast price is $50
higher; stands cost $375/pair (without stands, the sound
becomes uninvolling due to a lack of presence-region
energy on the upper-woofer axis); stained walnut finish
adds $100/pair. (Vol.14 No.4; see also "Follow-Up” in
this issue.)

KEF R107/2: $5900/pair
The latest version of KEF’s flagship tweeter features a
new tweeter and a revised KUBE 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 has experienced in terms of definition and authority,
as was its presentation of image depth. While the treble
sounds dark, leading to a somewhat polite tonal bal-
ance (which might also be a function of the KUBE’s
solid-state electronics), the 107’s midband is neutral
and free from resonant colorations. (Vol.9 Nos.4 & 7,
Vol.10 No.2, original version; Vol.14 No.5; see also
“Follow-Up” in this issue.)

Mirage M-1: $5000/pair
Tall, dark, and handsome, bi-wired, bi-ampable, bipolar
design from Canada that resembles (though not in
sonic signature) the B&W 801 and Vandersteen 2Ci in
that its fundamental sound quality seems much less
sensitive than usual to amplifier characteristics.
The bass is extended, the extreme highs perhaps a little
wispy, but LA found the M-1 to be exceptionally well-
balanced tonally, with the rare ability to draw the lis-
tener into the music even at low levels. (Vol.12 No.6;
see also TJN’s review of the Mirage M-3 in Vol.13 No.11.)

Mirage M-3: $2500/pair
TJN found the bipolar M-3 to have a more laid-back
midrange than the larger M-1 and a more lush LF bal-

128 WorldRadioHistory
Stereophile, October 1991
ance, still with excellent bass extension. Striking, however, was the speaker’s sense of image depth and the height of that image—no Munchkin orchestras here! Excellent value for money. (Vol.13 No.11; see also “Follow-Up” in this issue.)

Nestorovic Type SAS Mk.IV: $4200/pair

A four-way dynamic loudspeaker that features a patented bass alignment wherein a driven second woofer also behaves somewhat as an auxiliary bass radiator. DO felt that the Nestorovic's midband had a velvety, non-sonorous 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 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 synergistic balance with tube amplification rather than solid-state—Nestorovic's own NA1 monoblocks gave liquid-sounding mids and a bold, sweeping soundstage, reports DO, who summed up his feelings 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 attendant harshness." (Vol.9 No.5, original version; Vol.14 No.9; see also “Follow-Up” in this issue.)

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. While the speaker's integral plinth is correctly loaded with sand, the bass is "extended, controlled, and powerful." The highs are clean and extended, while the soundstaging is excellent, the speakers disappearing. The midrange is "full, lush, musical, involving—In short, lifelike," wrote JE. JA also feels that the sound of the Response Three was a highlight of both the 1990 and 1991 SCESes. (Vol.14 No.9)

PSB Stratus Gold: $2000/pair

A large three-way design, the Stratus Gold offers a fundamentally neutral midrange balance coupled with very low levels of coloration, a lively yet unfatiguing treble, and a generous, powerful bass. The treble is less prominent when the speaker is used with the grilles on, when the sound takes on an appealing accessibility. Excellent value. (Vol.14 No.2; see also Peter Mitchell's "Industry Update" in Vol.14 No.4 and "Follow-Up" in this issue.)

Snell Type A/III Improved: $4680/pair

Ultraflat frequency response is coupled with a superb coupling of the low frequencies with the room acoustics, which leads to extended, powerful lows. Replacement of the original's Audax tweeter with a cleaner-sounding Vifa unit leads to the "Improved" being added to this large floor-standing speaker's designation and a strong recommendation from Larry Greenhill, though a lack of treble transparency and restricted image depth should be noted. Bi-amplification via the dedicated electronic crossover from DB Systems ($602) significantly improves performance. (Vol.7 No.6, Vol.9 No.3, Vol.10 No.6, Vol.13 No.3; see also "Follow-Up" in this issue.)

Snell Type C/IV: $2190/pair

Superbly flat on-axis response, a lack of resonant colorations, and a weighty but well-defined bass performance that is emotionally as well as intellectually satisfying make this large floor-standing speaker from the pen of Kevin Voecks excellent value for money. Low Class B sound, however, due to a lack of ultimate transparency and restricted image depth compared with such space-mesters as the Avalon Eclipse, KEF R1072, and Hales System Two and Signature. (Vol.14 No.4; see also “Follow-Up” in this issue.)

Spendor S100: $2500/pair (stands necessary)

Somewhat self-effacing quality compared with "audiophile" loudspeakers, thought ST, but the outstanding bass, smoothness and lack of coloration through the midrange, and treble sweetness make this beautifully constructed British three-way a borderline Class B recommendation. "No significant flaws," say both Martin Colloms and Mr. Tellig. $175/pair Chicago Speaker Stands speaker stands should be regarded as mandatory. JA is currently working on a "Follow-Up" (Vol.13 No.6; see also "Follow-Up" in this issue.)

Wilson Audio WATT 3/Puppy: $10,940/pair—$13,140/pair

A pair of WATT 3s by themselves costs between $6650 and $7550 depending on finish (the update from WATT 2 to 3 status costs $1050—$1800 depending on vintage) but are not recommended except for specialist applications such as location monitoring, their balance being too lean and lightweight for long-term satisfaction. But add a pair of Puppy woofers and you have an almost full-range system that throws a holographic soundstage, the speakers giving no clue to their physical location. The WATT/Puppy system is also refreshingly 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 excels when it comes to accurately reproducing music’s dynamic contrasts. It's easy to get an excess of energy in the tenor region, however, in the crossover region between WATT and Puppy, while the tonal response tilts up somewhat in the treble region, which is very revealing of amplification problems. This also adds a degree of harshness to the sound reminiscent of the real thing, but is a little exaggerated in absolute terms. Despite an impedance which dips to a cruel 1.75 ohms at 2kHz, the WATT/Puppies seem to work best with great tube amplification, the ARC Classic 60 proving capable of producing palpable imaging and a natural tonality. Reports from those whose ears we trust indicate that adding a Wilson W10W subwoofer to the WATT/Puppy results in a true Class A—if exceedingly expensive—full-range loudspeaker system. (Vol.14 No.6; see also "Follow-Up" in this issue.)

B—Restricted LF

Apogee Stage: $2395/pair (stands optional)

The Stage has one of the most neutral, seamless midbands around. Recorded voice is reproduced with an uncannily lifelike quality. Imaging, too, is superb—"In terms of soundstage transparency, it rivals any loudspeaker money can buy," said DO—as is the speaker’s presentation of recorded dynamics. The Stage works particularly well with Classé amplification and SYMO cable, but prospective purchasers should be prepared to experiment with room position and toe-in to get the optimum sound. Matching stands ($350/pair) are also available for those who prefer a higher listening seat. "A real honey... an eminently musical transducer."

Stereophile, October 1991
said MC. *Stereophile* agreed sufficiently with that conclusion to buy the review pair. (Vol.13 No.8, Vol.14 Nos.2 & 3; see also “Follow-Up” in this issue.)

**Celestion SL700: $3299/pair (stands included) ★**

Once considered very expensive for a small speaker, price includes excellent stands. Improves over the SL600Si 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 SL600Si, overall balance is rather on the bright side, which demands careful system matching. Auditioning of the current “Special Edition” version reveals better integration between the tweeter and woofer and an even cleaner upper bass, though the tradeoff appears to be a less involving sound overall. Though the SL700 is deficient in low bass in absolute terms, rate of roll-off in-room is slow enough that it almost qualifies for inclusion in the “full-range” Class B category. But only almost. (Vol.11 No.9; see also “Follow-Up” in this issue.)

**Ensemble PA-1: $3000/pair**

**Ensemble Reference: $4700/pair ($5000/pair with bi-wiring option) (stands necessary)**

Two almost identical-looking minimonitors from Switzerland combine an excellent soft-dome tweeter with an unusual laminated-cone woofer and a rear-facing passive radiator. Both sensitive to being overdriven 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 DO—and less upper-bass congestion than the Celestion SL600Si. The Reference betters the PA-1 in every way—at a cost. Both speakers require a considerable break-in period to reach their optimum performance. The sound of the References in the Rowland room at the 1991 WCES was outstanding, according to JA. Landmark stands cost $1400/pair. (Vol.13 No.6; see also “Follow-Up” in this issue.)

**Monitor Audio Studio 10: $3000/pair**

*(stands necessary)*

Mating M-A’s excellent 1” metal-dome tweeter with a metal/ceramic-cone woofer, the Studio 10 offers a warmer balance than the Celestion SL700, with a riper bass. An unfallingly musical sound, however, with a neutral, uncolored midband and a good sense of dynamics. Matching stands cost $850/pair. (Vol.13 No.11; see also “Follow-Up” in this issue.)

**Quad ESL-63 USA Monitor: $4500/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 optimum 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 bothers some listeners (LA) more than others (ST, LG, DO, JA). Low frequencies are tight but not very deep, while maximum volume capability is somewhat limited. (In Santa Fe, with its 7000’ altitude, this is a strict 97dB on peaks.) Later models sound less dry than early production. Can really come alive with the right amplifier, and benefits from modifications, most especially suitable stands (we’ve found Arcicis to work well). JA feels that aficionados should investigate the Celestion dual-mono subwoofers, which, being dipole, stand a good chance of integrating in-room with the dipole Quads, while JAS’s HP has achieved excellent results mating the Quads with the woofer panels, also dipole, from the Tympani IVa. (LG disagrees, having achieved an excellent match with the omnidirectional, servocontrolled Velodyne ULD-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 Larry Greenhill’s review of the matching Gradient subwoofer system in this issue.)

**Acoustat Spectra 1100: $1599/pair**

Hybrid combination of a traditional Acoustat electrostatic panel crossing over to an 8” moving-coil woofer in a sealed cabinet that adds the traditional virtues of the panel—transparency and uncolored sound—to those of the dynamic driver—dynamic range and bass power handling and extension. Treble smooth and midrange timbrally correct, but as with the Quad ESL-63, limited HF dispersion leads to a dull sound if the room is overdamped. Overall tonal balance more natural in larger rooms; in small rooms, the omnidirectional woofer can overwhelm the electrostatic panel. The integration between the two disparate units is also better for a listener sitting farther away. Less expensive Spectra 11 ($1099/pair), reviewed in Vol.13 Nos.1 & 2, similar in concept but somewhat less good overall. (Vol.14 No.8; see also “Follow-Up” in this issue.)

**Icon Parsc: $1795/pair**

Large, three-way speaker from the pen of David Fokos, once the loudspeaker designer at Conrad-Johnson/Synthesis. Excellent dynamics, the ability to throw a well-defined soundstage, a flat on-axis response, and very good low-bass extension are let down by a rather too generous upper bass and highish levels of coloration in the midband, due to a too-lively cabinet. (Current production is said to have improved internal crossbracing.) Only solid direct, price includes shipping via Federal Express. (Vol.13 No.12; see also “Follow-Up” in this issue.)

**Martin-Logan Sequel 11: $2650/pair (oak or black finish)**

The revised version of this bi-wirable electrostatic/dynamic hybrid is a paradox, as from the midrange on up it offers seamless imaging, natural tonal colors, and clean, grit-free highs, almost reaching Class B quality in these regions, yet it for a definite dynamic threshold above which the sound becomes considerably more hard and brittle. But from the lower midrange on down, to an extent very dependent on the power amplifier used and on the chosen listening axis, the sound can be anemic, leaving the highs and mids unsupported. This leads to a “threadbare” overall balance that particularly irritated Sam Tallig, though we understand that listening to the speakers from more than 15’ ameliorates this problem somewhat. As supplied, the woofer and the electrostatic panel have the same acoustic polarity, which is strange in view of the symmetrical 12dBoctave crossover slopes—DO found the sound to be significantly improved for close-seated listeners if the woofer polarity is inverted. To an even greater extent than usual, prospective Sequel purchasers should listen for themselves with their chosen ancillaries before making any decision. (Vol.11 No.12, Stereophile, October 1991)
Stereophile, October 1991

Spica Angelus: $1275/pair ☆

The first floor-standing model to come from this New Mexican manufacturer, this idiosyncratically styled speaker has much in common with the TC-50, including a superbly defined if lightweight bass register, a basically neutral if occasionally "cardboardy" midrange, and the ability to throw an astonishingly accurate soundfield. Treble transparency is a little lacking when compared with the best Class B speakers, but still one of the best loudspeakers Sam Tellig has heard. LA demurs, due to the Angelus's slight departure from midband accuracy, while Martin Colloms points out that the speaker's unusual styling results in a somewhat deeper than usual "floor dip" in the lower midrange which can lend the bass a rather disembodied character. (Vol.11 No.2, Vol.13 Nos.1 & 4)

Thiel CS1.2: $1250/pair

Lacking ultimate dynamic range, this modest-sized floor-standing speaker offers an outstandingly detailed sound with superbly precise if a little shallow soundstaging, a neutral midband, and a critical treble balance. Its smaller CS2 (although VTL monoblocks produced rather a "hissy" sound) ST reports that the Electrocompaniet AW100 sounds terrific with the 12s. Low frequencies are full, but only become too ripe when used with, say, a tube amplifier, states JA. ST disagrees, feeling that the bass was a little lightweight, which might suggest some room dependency in the low-frequency balance. A best buy at the price, nevertheless. (Vol.12 Nos.1, 6, & 11, Vol.13 No.1)

Vandersteen 2Ci: $1195/pair ☆

(stands necessary)

After 14 years of continual refinement, an excellent full-range box speaker. Balance of the 2C is a little rolled off in the highs, according to AHC, but the Ci revision has full measure up to 16kHz or so (though it lacks ultimate transparency in the high treble). Superb delineation of recorded detail, a neutral, tuned midrange (apart from a degree of character emphasis in the presence region), and low frequencies that are extended without the bass becoming too exaggerated, lead to a borderline Class B rating, but the fact that it would seem impossible to get anything less than a very musical sound from this speaker mandates a confident recommendation. TJN said it best in Vol.13 No.5: "The Vandersteen... is that rarest of audio products: a highly musical and accurate reproducer at a bargain price." ST demurs, feeling the Spica Angelus is a better buy overall, the 2Ci being too "Vandessweet." $260/pair dedicated Sound Anchor stands push the speaker's performance envelope further. The latest version features a metal-dome tweeter and necessarily revised crossover with no apparent diminution of the speaker's quality. (Vol.9 No.6, 2C; Vol.12 No.5, Vol.13 Nos.1 & 5, 2Ci)

C—Restricted LF

Acoustic Energy AE1: $1695/pair ☆

(stands necessary)

Tiny reflex box with metal-dome tweeter and unique metal-cone woofer. Redefines the art of miniature speaker design, according to JA, due to its high dynamic range capability, electrostatic-quality treble, and see-through, if somewhat forward-balanced, midrange. Now supplied ready for bi-wiring with gold-plated binding posts. Price with Alloy stands is $2245. A "Follow-Up" review of a current production sample is underway. (Vol.11 No.9)

Celestion SL6005i: $1999/pair ☆

(stands necessary)

Though lacking the bottom octave-and-a-half of bass extension, and possessing slightly depressed mid- and extreme treble ranges that make system optimization difficult, the SL6005i combines lower-midrange transparency and holographic imaging (areas where it sees off 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 biwiring and is more transparent in the treble, though a touch of midband congestion remains. Good stands, such as Celestion's own $299/pair 18" SLSis, are mandatory. (Vol.10 No.2, original version; Vol.12 No.5)

Epos ES-14: $1295/pair (stands necessary) ☆

A speaker that has long been a Tellig favorite, the ES-14 seems to be typical of small British speaker designs in that it features a metal-dome tweeter in a well-braced cabinet with a minimal crossover and the option for bi-wiring. The result is a superbly coherent sound that, according to TJN, kept drawing him into the music. Ported bass is both a little lightweight and somewhat soft, but the upper bass and midrange are very low in coloration, with excellent transparency. Matching stands are available for $250. (Vol.11 No.6, Vol.13 No.1)

JM Lab Micron: $554/pair (stands necessary)

The original version of this French mintimonitor had a truly horrendous lower treble—peaky and fatiguing—which could be laid at the feet of its Kevlar-domed focal tweeter. Current production features a new titanium inverted-dome tweeter which is significantly smoother and less colored, leading to an enthusiastic recommendation from DO. "The upper mids are sweet and texturally smooth," quoth he. Though it lacks bass extension, it gets the tenor region right, the sound of the cello being timbrally correct. Soundstage focus was also excellent. Price is for black vinyl finish, wood veneer costs $628/pair, black lacquer, $941/pair. (Vol.14 No.9; see also "Follow-Up" in this issue.)

Spica TC-50: $550/pair ☆

(stands necessary)

The coherence and imaging of the middle to upper midrange rival the Quad and LS/5as and would be considered excellent in a speaker of any price; at $550 they're a steal. Only significant drawback is the absolute need for the listener to be sitting with his or her ears on the optimum axis, the sound otherwise becoming too lean. On the optimum axis, the high frequencies roll off above 16kHz, the midband is rather forward-balanced, and the low end is designed to be very controlled down to the lower limit of about 55Hz. This latter aspect makes the TC-50 perfect for matching to a subwoofer—a pair of Kinergetics BSC-SW100s with their stands and matching amplifier are ideal. Easily damaged by amplifier overload. Latest version features a cross-brace between front and rear panels. (Vol.7 Nos.2 & 3, Vol.9 Nos.5 & 7, Vol.11 No.1, Vol.12 No.10; see also "Follow-Up" in this issue.)

D

Epos ES11: $850/pair (stands necessary)

Borderline Class C sound, feels JA, if it were not for
a rather congested lower midrange and restricted dynamics. But above that region, this sophisticated little two-way from Robin Marshall gets everything right: instrumental textures and timbres, imaging and soundstaging, a seamless blend between woofer and tweeter, and grain-free highs. Matching stands cost $200/pair. Highly recommended. (Vol.14 No.7; see also “Follow-Up” in this issue.)

**Icon Lumen: $795/pair (stands necessary)**

Despite an apparently flat on-axis response, David Foko's well-built Lumen sounds a little tilted-up, there being some sibilance present in its treble. There is also a degree of resonant coloration in the lower midrange, but its sound is otherwise delicate and very clean, with an optimally tuned, reasonably extended bass. (Vol.14 No.7; see also “Follow-Up” in this issue.)

**Magneplanar SMGa: $575/pair ★ Musical** sound, with relatively well-extended low frequencies, considering the size of the panel. Not that transparent in the midband, and high frequencies recessed, but a musical bargain nonetheless. (Vol.10 No.7)

**Mission Cyrus 782: $900/pair (stands necessary)**

A fundamentally uncolored midrange is combined with good imaging ability and the ability to present musical detail without tonal exaggeration, despite a somewhat forward balance overall. Low frequencies are taut rather than generous. (Vol.13 No.10; see also “Follow-Up” in this issue.)

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

Similar to the Fried Q4 in having a rather exaggerated bass region, the well-made PC-80 also offers excellent imaging specificity, a superbly flat tonal balance, and a clean treble, spoiled only by a slightly nasal upper midband. (Vol.14 No.1; see also RH's review of the PC-90 subwoofer in Vol.13 No.9 and “Follow-Up” in this issue.)

**PSB 40 Mk.II: $440/pair (stands necessary)**

'The vinyl finish is indicative of the low price, but the sound of this Canadian 8" two-way has not been compromised. A "big," somewhat underdamped bass is coupled with a neutral, detailed midrange and a slightly exaggerated treble balance that can sometimes be a bit unkinked to problem recordings. TJN was also impressed by the speaker's excellent presentation of space and air, something uncommon in this price region. A winner for those who won't be bothered by the loose bass. (Vol.14 No.7; see also “Follow-Up” in this issue.)

**Rogers LS7t: $999/pair (stands necessary)**

Well-finished two-way, reflex-loaded dynamic speaker with a classic "British" balance—uncolored midband, superb imaging, and a rather ripe upper bass. Good stands are mandatory, as is placement well out in the listening room. Sounds best with grille on. Tendency to hardness in the lower treble will make demands on matching electronics to be of disproportionately high quality. (Vol.12 No.12; see also “Follow-Up” in this issue.)

**Rogers LS3/5a: $799/pair (stands necessary)**

A major revision of the crossover in 1988 was meant not so much to "improve" this venerable design (first seen and heard in 1975) as to bring production back on target. Still somewhat compromised in overall dynamics, HiFi smoothness, and clarity when compared with Class B and C miniatures such as the Acoustic Energy AEI and Celestion SL600/8i and SL700, and having a distinctly tubby midbass, the 1989 version of the LS3/5a still has one of the least colored midbands around, throws a deep, beautifully defined soundstage, and has a slightly sweeter top end, with less nasality apparent than it used to have. The sound, however, is sometimes not as musically involving as it could or should be. The LS3/5a is also being manufactured by Spendor, Harbeth, and Goodmans, and differences among any current LS3/5as should be cosmetic only. (Vol.3 No.12, Vol.4 No.1, Vol.7 No.4, Vol.12 Nos.2 & 3; see also “Follow-Up” in this issue.)

**Sight SL280: $900/pair (stands necessary)**

Designed by an ex-AR engineer, the two-way SL280 was found by TJN to rival the Epos ES-H in being musically satisfying at a modest price. Good bass extension is coupled with excellent midband transparency, though the treble has a tendency to be a little bright-sounding. (Vol.13 No.10; see also “Follow-Up” in this issue.)

**Snell Type Q: $180/pair (stands necessary) ★ Small** speaker which successfully takes on the British on their own ground. An open, airy quality, excellent delineation of soundstages depth and width, low levels of midrange coloration, though treble is perhaps a little unforgiving compared with, for example, the Epos ES-14. Matching stands cost $120/pair. (Vol.11 No.6)

**Triad System 7: $1050/pair (stands necessary)**

Three-box system comprising two tiny satellites and separate woofer module. The System 7 offers low levels of midband coloration and excellent bass extension at this price level, though RH found it hard to properly integrate the woofer with the satellites, leading to a somewhat threadbare upper bass. Exaggerated on-axis treble balance means that best sound is obtained with satellites firing away from the listening position. (Vol.13 No.10; see also “Follow-Up” in this issue.)

**Cambridge SoundWorks Ambience: $360/pair (stands necessary)**

Tiny, well-finished stand- or shelf-mounted two-way speaker available only via mail-order (S&H add $10 to the quoted price). (Full customer support is provided.) Midrange rather forward in balance, accentuated by shut-in but lissip highs and a necessarily limited bass extension. The mids also lack clarity. Nevertheless, the Ambience offers a surprisingly musical sound overall, and can be recommended for second-system use or as ambience speakers in a video-surround setup. Oak cabinets are available for an additional $40/pair. (Vol.13 No.3; see also “Follow-Up” in this issue.)

**Celestion 3: $279/pair (stands necessary)**

Intended to be sited near a rear wall on a stand or shelf, which usefully reinforces its limited low-frequency output, the diminutive 3 has a rather "cardboardy" coloration in the midband but a clean, open-sounding treble unusual in this price range. (Vol.12 No.10; see also “Follow-Up” in this issue.)

**Dana Audio Model 1: $179/pair (stands necessary)**

By far the least expensive loudspeaker listed in "Recommended Components," Dana's Model 1 is only available
via mail-order. A rather warm bass and a rather lifeless, depressed treble lead to a forgiving balance offset only by a degree of resonant coloration in the low treble. "Squeezes the most music out of the least money," according to RH, however. Slight changes in the tweeter balance have been made since the review appeared; RH confirms that his recommendation still stands. (Vol.13 No.9; see also "Follow-Up" in this issue.)

**Fried Q4: $498/pair (stands necessary)**

Excellent low-frequency performance from such a small, inexpensive speaker, though some might find it overripe in this region. (Owners are encouraged to experiment with the bass tuning by removing some of the line-tunnel damping.) A smooth, laid-back, borderline Class D sound overall, with low levels of midrange coloration. West Coast price is $529/pair. (Vol.13 No.10; see also "Follow-Up" in this issue.)

**Monitor Audio Monitor 7: $449/pair (stands necessary)**
The Monitor 7 is "smoother through the treble than the Celestion 3, better focused, and better finished too," says the redoubtable Mr. Tellig. JA concurs, feeling that its midrange is also less colored, but points out that the 7s significantly more peaky treble balance will be fussier regarding matching amplifiers and CD players, and adds that he finds its reflex-loaded low frequencies to be fuzzier, less well-defined, than the sealed-box Celestions. (Vol.13 Nos.1, 2, & 3; see also "Follow-Up" in this issue.)

**Monitor Audio R300/MD: $599/pair (stands necessary)**
A forward midrange and slightly indistinct upper bass are offset by excellent imaging and a generally smooth, detailed treble. Should work well with inexpensive amplification. Borderline Class D. (Vol.12 No.4)

**Mordaunt-Short MS 3.30: $459/pair (stands necessary)**
A rather unwinding upper midrange and some veiling in the upper-bass/lower-midrange transition region are offset by good bass extension, good sense of space, good presentation of recorded detail, and a lively treble. (Vol.14 No.7; see also "Follow-Up" in this issue.)

**NHT 1.3: $480/pair (stands necessary)**
Unusual styling but a superb level of fit n' finish distinguish this small, inexpensive loudspeaker. Its midrange is neutral, its high frequencies clean and free from resonant harsh, though low frequencies lack a little weight. Sound quality overall is borderline Class D with the right ancillaries—for the NHT 1.3 excels in those areas that are most important musically," stated RH. (Vol.13 No.9; see also "Follow-Up" in this issue.)

**Snell Type K/II: $465/pair (stands necessary)**
A tight, tuneful, articulate bass, thought 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 is a trace of hardness in absolute terms that can’t altogether be ameliorated with the tweeter-level control. Nevertheless, RH enthusiastically recommends the K/II for its musically natural presentation. (Vol.14 No.1; see also "Follow-Up" in this issue.)

**Wharfedale Diamond IV: $300/pair (stands necessary)**
'A diminutive speaker that needs to be positioned close to a rear wall to get any real bass extension. Midrange is spoiled by a degree of nasality and boxiness, but the overall sound, surprisingly open and musically enjoyable, is less bright than the Celestion 3 and therefore more forgiving of the inexpensive electronics with which it is likely to be partnered. Excellent soundstaging unusual at this price level. (Vol.14 Nos.7 & 8; see also "Follow-Up" in this issue.)

**K**

ATC SCM20, KEF RI05/3, Magnepan MG3.3 and MG2.6, Meridian D600B, Monitor Audio Studio 15, Shahinian Diapason, Snell Type B, Sound Lab A-1 and A-3, Thiel CS2.2, Unity Audio Fountainhead Signature, Vandersteen 3.

**Deletions**

Synthesis Reference Systems, Ohm Walsh 5 Revised, Image Concept 200, Magneplanar Tymphani IVa, Monitor Audio MA952 Gold, Paradigm 5xe, Rauna Balder and Freja, and Thiel CS4.5 all not auditioned in too long a time; Tannoy E11, PSB Stratus. Paradigm Control Monitor, and Thiel CS2L replaced by new models, Nelson-Reed 804B not auditioned in too long a time, and Sound-Lab A.3 replaced by revised version (G11 is working on reassessments of both); Infinity Modulus with Modulus subwoofer deleted as now being too expensive for Class C; Acoustat Spectra 2200. Dahlquist DQ12, TDI Studio 1 now all too expensive for Class D.

**Subwoofers & Crossovers**

**Editor’s Note:** You will see from Dick Olsher’s mini-survey in Vol.12 No.1 that true subwoofers, capable of reproducing the bottom two bass octaves at realistically high sound levels, are 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. There is only one Class D subwoofer listed, a kit: we strongly recommend those trying to subwoofer on the cheap to instead look at the possibility of acquiring more expensive full-range loudspeakers.

**A**

**Magnum Model 18 active subwoofer:** $2500

Slot-loaded active mono subwoofer extending down to 20Hz with which RH and CG have obtained great sound (successfully integrating it with Hales Signatures and Spica Angeluses, respectively). "A complete lack of plodding slowness," said RH of the Model 18's ability to present recorded kick drum with its 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 is 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 is to be used to give a seamless match. Each "personality card" to adapt the Model 18's crossover for a specific loudspeaker costs $25, and seems to have very little editorial effect on the sound of the satellites (other than the high-pass function, of course). (Vol.14 Nos.7, 8, & 10)

**Wilson Audio Puppysubwoofer: $4290—$5790**

Dedicated stereo woofers system for the Wilson Watt's monitors. See "Loudspeakers." (Vol.14 No.6)
B

Velodyne ULD-18 subwoofer: $2595

(inc. crossover, amplifier, and servo electronics)

Larry Greenhill felt this well-finished, servo-controlled subwoofer system to offer the best bass performance he has experienced overall, extending his Quad USA Monitors' low frequencies to 20Hz even at high levels, and adding a considerable degree of dynamic contrast. (Though he did find the Gradient SW-63 to be a better match for the dipole Quads, this stereo subwoofer from Finland doesn't dig as deep in the bass.) LG and PWM would choose a Class A rating for the ULD-18; DO and others on the magazine's staff disagree, feeling the Velodyne belongs in Class B due to an overall lack of absolute definition and a propensity for adding midrange coloration (this perhaps due to the crossover electronics). It's fair to note, however, that DO derives his opinion from auditioning the Velodyne at hi-fi shows where the subwoofer would undoubtedly have been turned up too high. (Vol.12 No.10, Vol.14 No.10)

C

Acoustat SPW-1: $600

An effective dual-mono passive woofer module intended to extend the bass response of Acoustat's Spectra 2200 electrostatic loudspeaker down to 35Hz. Seamless integration with the panels is hard to achieve, however. (Vol.12 No.10)

Celestion System 6000: $2999/pair ★

(inc. crossover)

20Hz bass extension, though not at high levels, with excellent transient performance and dynamic range due to its using four 12" drive-units. Dipole radiation pattern makes system optimization a less thankless task than usual (Celestion can supply detailed setup data to System 6000 owners who send the company a diagram of their room). Though expensive, not even including the need for a separate stereo power amplifier, the System 6000 is worth auditioning with both the Quad ESL-63 and the Martin-Logan CLS to endow those systems with bass extension and low-frequency power handling (though DO and LG feel that the system's fundamentally excellent performance is compromised by the quality of the line-level controller/equalizer). Note that LG feels the System 6000 to be incapable of competing with the Velodynes in terms of being able to reproduce the power of live low frequencies. (Vol.10 No.2, Vol.12 Nos.1 & 10)

Infinity Modulus Subwoofer: $2000

(inc. crossover, amplifier, and servo electronics)

A small, handsome, well-made, well-thought-out servo-controlled design that offers considerable flexibility in matching the satellites with which it is used. JA got excellent results with the Monitor Audio Studio Tens, though he couldn't eradicate a residual hum that appeared to be due to the subwoofer controller commanding the grounds of the two channels. (Vol.13 No.11)

Velodyne ULD-15 subwoofer: $1795

(inc. crossover, amplifier, and servo electronics)

A smaller version of the Class A ULD-18, the '15 imposed more of a signature on the music, thought LG, shrinking his Quads' soundstage and somewhat diminishing their depth. (Vol.12 No.10)

AudioControl Richter Scale Series III equalizer: $349

Versatile six-band, half-octave, low-frequency equalizer and analyzer incorporating 24dB/octave crossover factory-set to 90Hz. Slightly "muffled" in sound quality when compared with the Threshold PCX, the Richter Scale nevertheless offers the woofer fan an excellent chance of achieving a successful integration between subwoofer(s) and satellites. (Vol.12 No.11)

Kinergetics BSC SW-100 subwoofer system: $990/pair

Kinergetics BSC SW-200 subwoofer interface and stereo bass amplifier: $725

Using a pair of 10" drivers per side, the Kinergetics system achieves true 20Hz extension but at the expense of a limited dynamic range. In the right circumstances, however, particularly with Spica TC-50s, it can work very well, producing a full-range sound that can be intensely musical. (Vol.12 No.11)

D

Audio Concepts Saturn subwoofer: $499/pair (kit)

Using two 12" woofers per side, the Audio Concepts Saturn achieves moderate extension and in kit form offers good value for money. The drive-units have sufficient dynamic range to make it worth experimenting with equalizing the Saturn's response to be flat to 20Hz. (Vol.12 No.1)

K

Bryston 10B electronic crossover.

Deletions

Nelson-Reed 1204/P subwoofer, Sumo Delilah stereo electronic crossover, not auditioned in too long a time; Threshold PCX electronic crossover discontinued.

Headphones & headphone accessories

A

Grado HP 1 headphones: $595

Beautifully made dynamic headphones with a smooth, transparent, well-balanced sound. The midrange to treble transition is seamless compared with the Stax Lambda Pros, though JA feels the extreme high end lacks air and the bass is a little too 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 tube unit or Grado's own battery-powered device. (JA got excellent results driving the Grados with a pair of VTL Tiny Triodes!) The otherwise identical HP 2 lacks the absolute polarity switches and costs $495; the HP 3 features a looser parts tolerance and costs $395. (Vol.14 No.5)

Stax SR-Lambda Signature: $2000 ★

A diaphragm one-third thinner (1µm) than the Lambda Pro, and a drive amplifier (SRM-TI) 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)

Stax Lambda Pro 3: $1200 ★

When used with Stax's SRM-1 Mk II dedicated class-A solid-state amplifier (Stax's passive interfaces add some hardness, veiling, and brightness), the Pro 3 features...
a totally transparent sound with, according to BS, “oodles of detail.” Unlike most ‘phones, the listener gets a true idea of the surrounding ambience 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 upper-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 and Vol.14 No.5)

B

AKG K-1000 headphones: $895
Superb resolution of detail and a sense of effortless-ness to the sound of these expensive dynamic head-phones, 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 made with the side of the head and the exact relation-ship between drive-unit and ear canal. Bass response generous, if a little underdamped. (Vol.14 Nos. 3 & 5)

Stax Gamma Professional headphones: $700
The Gamma offers a superbly clean presentation with airy, delicate high frequencies and excellent low-frequency weight when driven by the SRD-7Pro interface. 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 head-sets. (Vol.14 No.3)

Stax Gamma headphones: $400
A slightly thicker diaphragm than the Gamma Pro leads to a darker, less transparent sound overall. (Vol.14 No.3)

Stax SR-5 NB: $350 ♠
More colored in the midband and above than the Stax SR-34 or Signet models, and balanced a little on the bright side, the 5 scores when it comes to reproduction of low frequencies and overall transparency. (Vol.10 No.9)

Stax SR-34 Professional headphones: $200
A new 4µm diaphragm gives these inexpensive elec-tric headphones a liquidly 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)

Stax ED-1 diffuse-field headphone equalizer: $800
Equalizes headphone sound to compensate for the fact that headphones fire the sound straight into the listener’s ears—see Vol.14 No.5, p.161—whereas in real life the sound has to negotiate the audio ob-strate course represented by the listener’s head and outer ear. “The entire audible spectrum sounds more coherent and seamless,” quoth BS. Gary Galo disagrees, feeling that the ED-1 adds “a layer of sonic grudge to the midrange and an edge to the treble” as well as reducing the space-iousness of the Grado HP 1’s sound. JA also feels the degree of the ED-1’s EQ to be a little exaggerated, there being a degree of emphasis in the upper midrange, but adds that the ED-1 "tames the forward treble of the Stax Lamdas, giving a more relaxed, more musically nat-ural sound." Note that the ED-1 inverts polarity with the EQ switched in. (Vol.12 No.4, Vol.14 No.5)

C

Beyerdynamic DT990: $225 ♠
One of the two best dynamic headphones on the market. (The other is the Sennheiser HD540.) A less detailed sound than the electrostatic models and a slightly bass-ash, midrange-forward balance preclude a Class B rating. For $50 more, the DT990/Pro features a more neutral midband balance and more extended low frequencies, raising the performance to borderline Class B. (Vol.10 No.9; Pro version, Vol.14 No.3)

Beyerdynamic IRS-690: $400
A comfortable cordless headphone related to the '990 that offers "the most agreeably euphonic, most fatigue-free and plain enjoyable" headphone sound BS has heard. He did note some roughness with high-level passages having a lot of treble content, however. The rechargeable headset is available separately for $270. (Vol.14 No.7)

JVC HA-D990 Digital Reference headphones: $150
These circumaural and closed-backed cans lack the midrange and midbass colorations that affict so many other closed-backed headphones and produce a sound that is beautifully clear and transparent. Though brass instrumants tend toward brightness, they don't actually become hard-sounding. A mirror image of the Sony '999—full but tight bass, along with crisp detailing but without being "etched"—says BS. (Vol.14 No.8)

Sennheiser HD540 Reference headphone: $199 ♠
One of the two best dynamic headphones on the market. Slightly less neutral than the Beyer DT990, being more laid-back with a "wispy," even bright, high end. The new HS560 has a more musical balance, lacking the '540's top-octave brightness, notes PWM. (Vol.10 No.9)

Sony MDR-CD999 headphones: $250
A deliberately boosted bass, along with a darkish top end that masks nasties but doesn't remove too much detail. The sound is rich and smooth, with an immediate, natural-sounding midrange that doesn't become bland. (Vol.14 No.8)

Sony MDR-CD6: $120 ♠
A little expensive for the sound quality offered—too much midbass, sound somewhat unubstable—but Sony seems to have flattened out the fat midband and heavy low end in their latest production; if anything, the tonal balance is now a wee bit on the light side! The top end is still slightly dark, but the more neutral low end makes this error less objectionable. The MDR-CD6's light weight, compactness, comfort, excellent seal and isolation, high sensitivity, and total lack of "fiddliness" when mounted or removed, make the CD6 BS's first choice for both live recording and "Walkman" listening. (Vol.10 No.9)

D

Beyerdynamic DT320 Mk.II headphones: $95
Transparent sound, with reasonable LF extension. Some listeners may find its balance too bright, however. (Vol.12 No.4)

Koss PRO 75 headphones: $75
"Brass is honky and sometimes takes on a fine-grained rasp; and the upper midrange is occasionally thin, edgy, and lacking harmonic texture," said BS, but to his sur-
prise he found that the overall sound of these expensive cans was fun to listen to, being clean and free from listening fatigue. (Vol. 14 No. 8)

**Nakamichi SP-7 headphones: $100**
A somewhat bland balance keeps these headphones from Class C, but as BS noted, the SP-7 is one of those rare under-$100 headphones that is basically neutral and essentially honest. (Vol. 14 No. 8)

**Sony MDR-V6 headphones: $100**
A lighter bass than the MDR-CD6 and "a bit too bright, and occasionally hard, with some accentuation of tape hiss and brass harshness," noted BS, but this is offset by "the sheer clarity and liveliness of the sound." (Vol. 14 No. 8)

**Sony MDR-E484 headphones: $80**
"Ear-bud" headphones with amorphous diamond-plated diaphragms. The midrange is virtually grain-free, though a bit nasal, but the sound is otherwise transparent and clean, and above average for a Class D headphone. (Vol. 14 No. 8)

**Sony MDR-S101 Mk. II: $30**
A light balance with a lively, open sound, but free from coloration and distortion. A bargain! Mk. II version features gold-plated connectors. (Vol. 10 No. 9)

K
Sennheiser HD560.

**Deletions**
Sony MDR-282 Turbo replaced by E484 version.

**FM Tuners & Antennae**

**Editor's Note:** Larry Greenhill recommends that those interested in purchasing a good FM tuner read J. Gordon Holt's and Donald A. Scott's discussion on reviewing and measuring FM tuners in Vol. 7 No. 7, pp. 54-57. (See the advertisement elsewhere in this issue for information on ordering back issues of *Stereophile*.)

**A**

**AudioPrism indoor 8500 FM antenna: $450**
65'-tall, remote-controllable, vertical phased antenna 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 that compete with stronger stations on similar frequencies that are broadcast from other directions. (Vol. 14 No. 6)

**AudioPrism 7500 indoor FM antenna: $190**
Low-VSWR (Voltage Standing Wave Ratio), vertically polarized, omnidirectional indoor passive design that, like the Day Sequerra, will prove optimal in urban high-signal-strength areas. 89.5’ height. (Vol.12 No.5)

**Day Sequerra FM Urban indoor antenna: $285**
Low-VSWR, omnidirectional, vertically polarized, 5’-high indoor passive design optimized for metropolitan reception in areas of high signal strength. (Vol. 12 No. 7)

**Kenwood L1000-T: $1100**
"Probably the best tuner available!" says DAS, perhaps only exceeded by the about-to-be-reviewed, $4800 Day Sequerra FM Reference, which LG says has better sound and better adjacent-channel selectivity. The Kenwood also loses out to the Onkyo T-9090 II when it comes to selectivity, but is exceptionally clean-sounding, handles weak stereo stations with aplomb, and offers excellent stereo separation with strong signals. (Vol. 14 No. 6)

**Magnum Dynalab Etude: $1295**
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 glaze," said LG, though he feels that it is now borderline Class A due to the soon-to-be-reviewed 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. 8)

**Magnum Dynalab 205 FM Booster: $279**
Not a tuner, but an excellent RF amplifier to optimize selectivity and reception in areas of poor signal strength. (Vol. 10 No. 6)

**B**

**AudioPrism 6500 FM Antenna: $90**
(wood cabinet)
If you don't have the room for an external FM 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 antenna offered by some companies, thought BS. Vinyl-covered version costs $60. (Vol. 13 No. 9)

**BP FM-9700 active antenna: $40**
Excellent directional indoor antenna offers 6dB improvement over conventional T-shaped dipole antennae. (Vol. 11 No. 10)

**Luxman T-117: $600**
"One of the best-sounding tuners ever!" said DAS in his review of this extremely sensitive tuner, pointing out its very low distortion. Borderline Class A. (Vol. 11 No. 2)

**Magnum Dynalab FT-101A: $775**
An analog tuner, the FT-101A is superb from an RF standpoint, particularly in quieting and sensitivity. Selectivity is bettered only by the Onkyo, Denon TU-800, and Citation 23, but the '101A consistently sounds superior on most stations. Examination of three different samples confirmed good quality control as of February 1988. Latest version has instant-on feature, defeatable stereo blend, and new board. (Vol. 8 No. 4, Vol. 10 No. 3, Vol. 13 No. 10)

**Onix BWDI: $1095**
Minimalist design with separate power supply, but a sound "transparent to the music source," with good soundstaging. Will give excellent sound, as good as that of the Luxman T'117, with classical stations broadcasting a clean, uncompressed signal, but not as good at snapping signals from the ether. Among the best-sounding tuners. (Vol. 10 No. 8)

**Onkyo T-9090 II: $750**
This Mk.II version of an old favorite is an excellent...
sounding tuner in its Wide mode, offering very low noise and superb stereo separation, though switching to Narrow or Super-Narrow noticeably degrades audio quality. Bass response is quick and dynamic. RF performance is excellent, though not as good as the Luxman T-117 in fringe reception areas. Very similar Grand Integra T-G10 version ($485) offers automatic antenna A/B switching. (Vol.11 No.5)

Proton AT-670: $400

"Exceptionally smooth" sound on FM, with a natural tonal quality and a wide soundstage, thought DAS, especially with weaker FM stations. Lacks ultimate selectivity and AM section has poor sensitivity. Features Schott noise reduction. (Vol.13 No.7)

Quad FM4: $695

Good-quality construction, though only eight presets. Very sensitive, with flawless audio if properly aligned. Lacks high adjacent-channel selectivity, switchable IF bandwidth, and monostereo switch. LG is currently working on a "Follow-Up" review, his preliminary audition suggests Class B is an appropriate rating. (Vol.8 No.4)

Revox B-260-S: $1675

Ergonomics are initially daunting—there are sixty presets—but once set up, this beautifully constructed, very sensitive, very selective tuner was among the easiest to use. Audio quality on the Narrow IF bandwidth setting was excellent—"no harshness, no SCA birdies"—though not in the class of the Day Sequerra model, felt LG. B208 remote control costs an extra $160. (Vol.12 No.7)

Harman/Kardon Citation 23: $699

Excellent selectivity—"it can separate closely spaced stations where others fail"—but sensitivity rather on the low side. Excellent AM section, FM fine-tuning, topnotch sound. (Vol.10 No.8)

Magnum Dynalab FT-11 FM tuner: $449

Borderline Class B tuner, according to DAS in his review, that lacks transparency when compared, for example, with the more expensive FT101. This is perhaps due to its having a single, narrow IF bandwidth. Has good selectivity and a very effective high-blend circuit for receiving weak stations in acceptable stereo. (Vol.12 No.10)

Mission Cyrus: $649

"An accomplished performer on FM," DAS said of this remote-control tuner (though he was less impressed by its AM section) due to its signal-snatching dexterity. It may not offer the ultimate in FM sound quality, but it does offer acceptable quality on weak stations that other tuners would miss altogether. Borderline Class B performance, overall. (Vol.13 No.10)

Onkyo T-4700: $450

Superb "signal-snapping ability," noted DAS, which, combined with excellent adjacent-channel selectivity, leads to a "tuner that will miss few... signals delivered to its antenna jacks." Sound quality not quite up to the standard set by the other two Onkyo tuners recommended in this listing, however. (Vol.13 No.5)

Adcom GTP-400: $400

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

Arcam Alpha 2: $349

Warm tonal balance, excellent stereo separation, but only average RF performance. (Vol.12 No.7)

AudioSource TNR One: $229

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

Bogen TP-100A: $270

Very clean sound, good stereo. Small size, good looks make it a good choice where space is at a premium. Useful only for medium-strength signals. Sensitive AM. (Vol.9 No.3, see also Magnum review in Vol.12 No.10)

Hafler Iris: $450

Remote-control FM tuner that connects to the matching Iris preamplifier via a ribbon-cable link and can be controlled by the preamp remote. Having much in common circuit-wise with the DH-330, it offers audio with exceptionally low distortion and a slightly dry balance. Tuning is clumsy; however, requiring two buttons to be pushed, while DAS was also disturbed by the fact that it tunes in 50kHz intervals. RF performance is only average, with limited selectivity and poor immunity to SCA and FMX spurious. (Vol.13 No.2)

Day Sequerra FM Reference, Naim NAT-01, Meridian 204, Day Sequerra Signal Probe Outdoor Antenna.

Deletions

Day Sequerra FM Studio Monitor replaced by FM Reference (review underway); Denon TU-800, JVC FX1010TN, Marantz ST-54, and Proton 440 discontinued.

Signal Processors

Editor's Note: JA feels that to continue to recommend dynamic-range expanders, compressors, aural exciters, equalizers, ambience extractors, etc., is not in the true spirit of high fidelity, where the reproduction should be true to what the engineer and producer intended. The only processors he would recommend are those which can prove useful in rendering acceptable the playback of historical material. JGH, however, disagrees forcefully, feeling that equalizers, in particular, should be given high-end respectability for the correction of program deficiencies in the almost ubiquitous absence of tilt controls; as does BS, who states, "What this country needs is an audiophile-quality, $1000 equalizer." Peter Mitchell also disagrees, on the grounds that "the true spirit of high fidelity" could mean either "recreating a lifelike illusion of music, by whatever means necessary, or literal reproduction of what is on the disc—no matter how falsely equalized, compressed, or colored that signal may be." He goes on to say that "with the best recordings, these goals may coincide, but not as a general rule. Case in point: Apogee speakers are inaccurate reproducers, but their fat bass and rolled-off top are partly responsible for their ability to recreate the sound you hear at a concert. Without the aid of equalizers or other modifiers of tonal balance, how can the radically different-sounding Apogee Diva and Acoustic Energy AE1 both be called 'high-fidelity' reproducers? If either is regarded as plausibly accurate, the other will need radical help from an equalizer to sound OK." OK?
Accuphase G-18 graphic equalizer: $5450
Very expensive 33-band equalizer has less deleterious effects on the signal than any other such device JGH has tried. Constant-Q bandpass/eq filter design leads to minimum overlap between adjacent bands. Best used for system EQ rather than for program. (Vol.11 No.4)

Packburn 323A noise-reduction device: $2650
Quite expensive, and frankly intended for professional (archival) use, the Packburn is the best such device made. It can remove the maximum of surface noise—ticks, pops, and hiss—from shellac or vinyl discs with a minimum of signal degradation. (Vol.5 No.8)

Cary Audio Design CAD-5500 analog CD processor: $1295
Though advertised on the grounds that its "Reverse Phases Canceling" circuitry eliminates RH hash from a CD player's output signal, we could only find a gentle ultrasonic rolloff identical to that offered by a conventional low-pass filter. More important, the CAD-5500 is actually an equalizer; it rolls off the highs, adds a small degree of bass boost, and gently compresses signal dynamics. Its high output impedance will also roll off the highs with very long or capacitive interconnects. DO feels, however, that it is an essential purchase for those like him who dislike the bright, hard sound typical of CD. CG strongly disagrees with any recommendation. Note that both sets of line inputs are processed, not just the one marked "CD." Optional Penny & Giles volume control pot adds $255; version without preamp section costs $995. (Vol.13 No.11)

Cello Audio Palette:

Dolby MP Surround-Sound Decoders

Editor's Note: Although BS argued cogently against the use of a Dialog-channel center speaker in his Dolby decoder reviews, it must be pointed 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 a sound localized at the screen position.

Shure HTS-5300 Dolby surround-sound processor: $999
Full logic action and remote control. Individual trim-pot level controls are provided for all six outputs, but can only be accessed from underneath. Only processor "to preserve the width, depth, and spaciousness of the soundfield," said BS, with a clear and open sound quality and stable, crosstalk-free decoding action. (Vol.12 Nos.8 & 11)

Lexicon CP-1 processor: $1395
Uniquely, Dolby Pro-Logic decoding is performed in the digital domain, making what is basically an ambience synthesizer also an excellent buy for home video surround-sound use. Doesn't quite reach Class A for Dolby sound, a rather brash, "transistory" col-

Stereophile, October 1991
microphone with high dynamic range, extended bass response, 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 this issue and audition track 5, index 7 on the Stereophile Test CD.)

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

Extremely neutral, very quiet, all-tube, balanced 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 B&K 4006 omnidirectional microphone. (NR)

**EAR "The Mic": $4000**

Using a single 6DJ8 tube and a fist-sized output transformer, this rectangular-capsule (sourced from Milab), switchable-pattern—omni, cardioid, figure-eight—mike is somewhat shut-in in the highs and noisier than average, but has extended low frequencies and a midrange that is extremely true to the original sounds. "No trace of edge or glare," says RH. The most natural-sounding microphone JA and RH have heard. (NR, but audition track 5, index 19, and tracks 11–18 on the Stereophile Test CD.)

**Nakamichi 1000 R-DAT recorder: $11,000**

Easily the most expensive R-DAT machine around, this two-box Nakamichi lives up to its Model 1000 analog cassette predecessor in being perhaps one of the finest digital recording systems available to the amateur recordist. 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 was not up to such Class A contenders as the Theta DS Pre, being less transparent. The Nakamichi 1000 was used to master the Stereophile Test CD, though its A/D section does not now match the transport in overall quality, being exceeded by the Manley and Pygmy ADCs. (Vol.12 No.11)

**Panasonic Pro 3500 R-DAT recorder**

One of the best-sounding DAT decks on the market, according to PW/M, with MASH oversampling encoders and pretty good analog circuitry. Recent units (with a blue dot on the box) contain a switch that enables digital recording at 44.1kHz; these will copy CDs digitally, also 44.056kHz PCM-F1 tapes played through an Apogee-modified F1 or Sony PCM-601. A bargain, considering it's widely discounted to below $2500. (NR)

**AMS Soundfield Mk.IV: $5850**

Having used both Mk.II 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 20m of dedicated multi-conductor cable; 100m of cable on a reel adds $450 to price. (NR, but audition track 10 on the Stereophile Test CD.)

**Neumann U-87A: $2475**

A perennial mike favorite among recording engineers. Wide, flat response gives it a similar sound to the 414, but with more "reach" in live, stereo miking applications. Used extensively on vocals. (NR, but audition track 5, index 12 on the Stereophile Test CD.)

**Panasonic Pro 255 portable R-DAT recorder**

Very good sound, with the same MASH encoders as the Panasonic 5500. Less flexible, hence lower rating, and lacks digital inputs. Amazingly tiny for what it does—and far and away the best-sounding recorder small enough to carry in a coat pocket. Built-in mike preamp, while not the ultimate, is good enough for serious use. (NR)

**Tandberg TD20A SE Open-Reel Tape Recorder**

The best buy in an open-reel deck, this now-discontinued model offered professional-caliber performance at a relatively modest ($1695) price. Better sound than many professional decks, but ergonomics less good than the still-current Revox B77 III or PRO-99. (Vol.7 No.7)

**Telefunken 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 Stereophile Test CD.)

**C**

**AKG C414B/ULS: $1045**

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. Transformerless TL version costs $1255. (NR, but audition track 5, index 11 on the Stereophile Test CD.)

**AKG The Tube: $2295**

One of the few currently produced tube microphones. Smooth, open, and uncolored, The Tube captures detail without solid-state stridency. (NR)

**AKG C451EB/CK1: $495**

**AKG C460B/ULS/CK61: $550**

Two small-diaphragm condenser mikes with removable cardioid capsules (omnidirectional, hypercardioid, vocal, and shotgun capsules are also available). Sound is very detailed, but the C451/CK1's tonal balance leans toward the thin and bright, and it has significant off-axis peakiness, making it a less-than-optimal choice for realistic two-mike stereo. Good on drums, however. Same diaphragm as CK1 used in C34 stereo mike, which has similarly bright balance. Omnidirectional CK2 capsule is somewhat colored, but a 20Hz resonance provides an attractive emphasis for pedal fundamentals. Newer C460/CK61 said to be much improved. (NR)

**Crown SASS-P microphone system: $899**

This is a stereo pair of omni PZM microphones in a head-sized foam block that produces ORTF-like natural stereo imaging. Extended bass response, unlike most directional mikes. Weighs only 1 lb, making it very easy to hang from cables or mount on a wall stand. "One SASS-P unit, one stand, and a Panasonic Pro 255 DAT make a complete but amazingly portable recording system with very satisfying performance," reports PW/M. (NR)
Fostex M22RP/S M-S 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 M22RP/S captures the original soundfield extremely accurately. Stripped-down version, the M20RP, costs $700. (Vol.11 No.3)

JVC TDV711BK cassette deck: $620
AG reports that this three-head deck marries an excellent transport to fundamentally excellent sound quality, particularly when Dolby noise reduction is switched out of circuit. (Vol.11 No.11, "Pure Gold")

Adcom ($830)
(Vol.11 No.3)

Revox B-215-S cassette deck: $2900
Automatic bias adjustment, superb transport. According to JGH, "A superb cassette recorder, for the person who wants and is willing to pay for the best quality cassettes have to offer." AHC emphatically disagrees. The latest Nakamichis, with their automatic play-azimuth adjust, probably get a slight bit more off pre-recorded tapes. Less expensive B-215 ($2600) cosmetically different but otherwise identical in performance. (Vol.8 No.7)

Sony TC-D5M: $750
This decade-old portable will handle metal-particle tape but only offers Dolby-B noise reduction. It is probably still the best location cassette recorder available short of an R-DAT. (NR)

Sony WM-D6C Pro Walkman cassette system: $400
A pocketable stereo recording system of surprising quality and versatility. AG feels that to spend more on a cassette deck would be a waste of money. Less expensive WM-D3 ($270) half the size but keeps most of the quality. Higher wow & flutter, however. (Vol.7 No.6, Vol.10 No.6)

TEAC V-970X cassette deck: $800
Excellent dual-capstan, three-head deck with Dolby HX headroom extension and comprehensive noise reduction (dbx, Dolby-B and -C). Somewhat grainy highs keep it from Class C. More expensive R-919X ($830) features bidirectional record and playback but has less good speed stability, noted George Graves. (Vol.11 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; advises Sam Tellig in Vol.10 No.9.

K
Manley Analogue-to-Digital Converter, Pygmy ADI A/D converter.

Accessories

Adcom ACE-515 AC Enhancer: $180
Effectve AC power-line filter with RF and spike suppression, five accessory outlets (300W capability), and two heavy-duty outlets (1500W). Does not seem to limit current demands of power amplifiers. (Vol.11 No.4)

Archidee TNX turntable stand: $200
Italian open-frame turntable stand that gives a lighter tonal balance with a better-defined bass, when used to support the Linn Sondek LP12, than the Sound Organisation table. (Vol.13 No.9)

Arcici Quad ESL-63 stands: $250/pair
Latest and greatest method of getting the Quads to perform as God and Peter Walker intended. Clamps the ESL-63 in a rigid embrace, also raising it an optimal 16" off the ground. Now includes Super Spikes. (Vol.10 No.1)

Arcici Lead Balloon Turntable Stand: $325
The opposite approach to that of the Sound Organisation table, with lead used to provide sufficient internally damped mass that nothing short of an earthquake will disturb the tranquility of the groove/stylus interface. Enthusiastically recommended by DO. A matching light is available for $50. (Vol.14 No.11)

Arcici Superstructure: from $167.50
Basic price includes one shelf. Versatile, well-made, metal equipment rack system. (Vol.14 No.11)

ASC Tube Traps
Relatively inexpensive—prices range from $166 to $436 depending on size and style—but remarkably effective room-acoustics treatment. Tube Traps soak up low-to-high bass standing-wave resonances like sponges. (Vol.9 No.3)

AudioControl Industrial SA-3050A Analyzer: $995
Portable (battery-powered) and inexpensive, ¾-octave analyzer with pink-noise source and accurate calibrated microphone. Parallel port can be used with any Centronics-compatible printer to print out real-time response. (Vol.11 No.6, Vol.12 No.3)

Audio Express NoiseTrapper: $299
Available by mail order from Audio Express, this six-outlet line conditioner was felt by RH to offer an improvement over his raw AC outlets. Premium version, the NoiseTrapper Plus, costs $379. (NR, but a review of this and other power-line conditioners will appear in the November 1991 issue.)

AudioPrism CD Stoplight: $14.95
Green 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 improve the sound of CDs. That it does so, however, seems to be beyond doubt. Martin Colloms reports that a water-based poster pen, the Uniposca from Mitsubishi, has a very similar effect. Martin also notes that the CD should first be destaticized and its edges degreased before the green paint is applied. (NR, but see DO's and TJN's WCES reports in Vol.13 No.3 and Sam Tellig's and Robert Harley's feature article on CD tweaks in Vol.13 No.5)

AudioQuest DM-1000 cartridge demagnetizer: $89
(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 Sorbothane Feet
The means of isolating components from vibration. A set of four big feet costs $50, four CD feet $30. (NR)

CALSOD loudspeaker system optimization program: $65 (5¼" disk), $67.50 (3½" disk)
DO's favorite loudspeaker crossover optimization program. User enters measured drive-unit response,
impedance and sensitivity and target response; program designs appropriate crossover filter networks. (Vol. 13 No. 11)

**CD Saver**
Eliminates scratches from CDs and LaserVision discs, rendering the unplayable playable. (Vol. 10 No.8, Vol. 11 No.8, see also Vol. 13 No.9, p.11)

**Cramolin Contact Conditioner: $30**
The right stuff for cleaning up dirty and/or oxidized plugs and contacts. (Vol. 10 No.6)

**DB Systems DBP-10 Protractor: $30**
Fiddly but accurate guide for setting cartridge tangency. JA's and JGH's preferred alignment protractor. (NR)

**The Listening Room: $34.95**
Inexpensive but excellent computer program for PCs from Sitting Duck Software, PO. Box 130, Veneta, OR 97487, that allows an audiophile to move simulated loudspeakers and simulated listening seat around a simulation of his or her room (in three dimensions) in order to find the position giving optimum performance below 200Hz or so. The suggested 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 $5 inc. postage. (Vol. 13 No. 12)

**Meitner Translinks: $325/pair**
Signal transformers with a 1:1 ratio, these isolate the preamp ground from that of the power amplifier. In the context of the Meitner preamp/power amp combination, these seem to improve low-level dynamic performance. Must be driven by a source impedance of 100 ohms or less. (Vol. 11 No.6)

**Merrill Stable Table turntable stand: $1097**
Granite top adds $60 to price; an appropriate amount of lead shot will cost around $100. Exceptionally stable support but too massive for small rooms unless the means—jacks, for example—is found to support the floorboards. (Vol. 12 No 10)

**Mobile Fidelity Geo-Tape: $15**
A valuable test and shopping aid for cassette decks. (Vol. 8 No.5)

**Monster Cable Footers**
Effective Navcom isolation feet.

**Music And Sound POWER mastER AC cord: $125/6' cord, $142/8' cord, $170/10' cord**
Replacement AC power cord that AB found to make a worthwhile difference to the sound of power amplifiers. (NR)

**Nestorovic Labs Moving-Coil Cartridge Network: $300**
Passive network intended to optimally load an MC cartridge. An "Audiophile" version is available for an extra $250. (Vol.13 No.9)

**Phantom Acoustics Shadow active LF acoustic control: $1995/pair**
The first instance of active noise-control techniques being used to modify listening-room acoustics. Robert Harley reports that these tall, corner-placement cylinders do a fair job of minimizing low-frequency standing-wave problems. (Vol.12 No.12)

**RPG Diffusors & Abffusors**
The first effective method of adding diffusive surfaces to a listening room, these remarkably effective panels join Sonex foam and TubTraps in helping to tame the so-far untameable: room acoustics. RPG Diffusors Systems Inc. offers a complete room-treatment system, called the "RPG Home Concert Hall," available in almost any finish and size to enable audiophiles to get optimum performance from all types of loudspeakers. (Vol.11 No.4; see also TJN's article on listening rooms in this issue.)

**Signet SK-302 Contact Cleaner Kit: $25**
Contains abrasive plastic tools for effective inner cleaning of phono plugs and sockets in combination with Cramolin. (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. 10 No.6)

**SOTA & Goldmund record clamps**
Though these clamps have somewhat different sounds, they are the best record-clamping devices on the market. They can both improve top- and bottom-end extension and reduce resonances on any 'table (apart from the Linn LP12), including those employing vacuum clamping systems. Well worth their cost in a high-resolution system. The SOTA Series II Reflex clamp ($155) gives a somewhat richer, warmer sound and is more effective against upper-midrange and lower-treble resonances. The $150 Goldmund shapes up a flabbily lower midrange and controls the more serious lower-treble/upper-midrange problems.

**Sound Organisation Turntable Stand: $235**
The mandatory ancillary to the Linn turntable, though, as with the Archidee stand, its low height may prove bothersome in a listening room that has to be shared with cats and children. (A taller version is now available.) (NR)

**StyLast Stylus Treatment**
StyLast 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 cantilever life. (NR)

**Sumiko Fluxbuster: $180**
Excellent cartridge demagnetizer, though more expensive than new AudioQuest model. Recent availability at a discounted price suggests that it is being phased out. Be sure to remove the stylus assembly when using any of these devices to demagnetize a moving-magnet cartridge. (Vol.9 No.4, Vol.10 No.5, Vol.12 No.4)

**Sumiko Navcom Silencers: $70/four**
Robert Deutsch finds these damping feet to provide superior isolation to Mission's Isoplat. (NR)

**Sumiko Tweek Contact Cleaner: $19**
This contact enhancer for use on plugs and terminals actually does improve the cleanliness and resolution of the sound of an already excellent system. Keeps freshly made contacts fresh. (Vol.10 No.6)

**Sumiko Reference Band: $17.95/dozen**
Molded, non-adhesive band that fits around the periphery of a CD to produce much the same aural benefit as CD Stoplight. (NR, but see Sam Tellig's column in Vol.13 No.9)

**Target TT series equipment racks: $150–$300**
Finished in basic black, these useful but inexpensive racks feature rectangular steel-tube construction, with price depending on height and number of shelves. Spiked feet supplied, with top shelf resting on up-
turned, adjustable spikes to optimize it for turntable use. Target’s wall-mounting turntable shelf is possibly the best way of siting your turntable out of harm’s way.

(NR)

TDK NF-C09 Digital Noise Absorber: $14.95/pair
ST found these ferrite rings to improve the sound from CD when they were clamped over the interconnects between player and preamp. He also found that one improved the sound—less grit—when clamped over the data lead between transport and processor. In the first instance, the improvement was presumably due to RF noise being blocked that would otherwise upset the preamp, while in the second, both the reduction in RF noise and the normalizing effect on pulse rise-times due to the ring’s self-inductance would reduce datastream jitter. (Vol.14 No.1)

Tice Power Block/Titan: $1350/$1100
Superb if expensive AC conditioning system. (Vol.13 No.4)

Tiptoes ☆
The Mod Squad’s greatest invention. The least expensive way of improving the bass and midrange definition of virtually any loudspeaker.

Watkins Echo-Muffs: $149/pair ☆
Effective means of reducing amplitude above 200Hz of early reflections of loudspeaker from nearby surfaces, thus improving imaging. Whether or not the aesthetics will be domestically acceptable will be up to personal taste. (Factory-direct only.) (Vol.10 No.4)

WBT RCA plugs ☆
The best, although original steel locking collet, now replaced by brass, gave rise to neurosis. (NR, but see “Industry Update,” Vol.12 No.9)

XOPT loudspeaker crossover optimization program: $199
Similar in concept to the CALSOD program. XOPT allows the user to rapidly optimize the design of crossover filter networks. (Vol.15 No.11)

Good Speaker Stands
There are too many possibilities, but, briefly, a good stand will have 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 doesn’t mean we think them 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, Arcici Rigid Riser, Celestion SLSI, Target, Heybrook, Sanus Systems Steel and Reference, and Linn.

K
Kontakt.

Deletions
Inouye Synergistic Power Line Conditioner discontinued.

Record-Care Products

A

LAST record-preservation treatment ☆
This actually works. It significantly improves the sound of even new records and is claimed to make them last longer. (Vol.5 No.3)

Nitty Gritty Mini Pro 2 record cleaner: $725 ☆
This semiautomatic 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: $519 ☆
Instead of a vacuuming “tonearm” as on the professional Keith 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)

Nitty Gritty Hybrid 2 Record/CD cleaning machine: $629
Basically a Nitty Gritty 2.5FI with an adapter that allows CDs to be buffed clean in a non-tangential manner. (Vol.12 No.3)

Rozoi Gruv-Glide ☆
Record destaticizing agent that also leads to better sound. Apparently doesn’t leave a film or grunge-up the stylus. (Vol.9 No.8)

VPI HW-17 record cleaner: $740 ☆
Clearly an industrial-quality machine of reassuring quality, the VPI does one side at a time, semiautomatically, 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-16.5 record cleaner: $450 ☆
Manually operated version of HW-17 (above), noisier motor; less money. Adjusts automatically to thickness of record. (Vol.5 No.7 & 9, review was of earlier but substantially identical HW-16.)

Nitty Gritty Mini Model 1.0 record cleaner: $229
Audio Advisor Record Doctor: $169.95
Both of these units (the latter is manufactured for Audio Advisor by Nitty Gritty) are manual units that offer the least expensive way to effectively clean LPs, though turning the disc is hard work when the vacuum-cleaning motor is on. To alleviate this, TJN recommends a roller-bearing accessory, available for $14 including S&H from KAB Electroacoustics, PO. 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 $279. (NR)

D

Decca, Hunt-EDA, Goldring, or Statibrush record brush ☆
Properly used (held with the bristles at a low angle against the approaching grooves and slowly slid off the record), these are the most effective dry record-cleaners available. (JGH strongly disagrees, feeling that they leave the dust on the record.) No substitute for
Loudspeaker Cables & Interconnects

Editor's Note: Previous "Recommended Components" listings for speaker cables and interconnects were mainly derived from Dick Olsher's surveys in Vol.10 No.2 (March 1987) and Vol.11 No.7 (July 1988). As many, perhaps nearly all, of the models recommended have changed to a greater or lesser degree since those reviews appeared, we decided just to list 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.

Dick English supplies a cogent essay on the whole subject of cables in this issue's "Equipment Reports" section, 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 is essential to audition it in your own system. "Drinking by the label" is always a bad thing in hi-fi, but it is both unforgivable and unwise when it comes to speaker-cable purchases. In addition, in JA's opinion, the virtues offered by the most expensive cable may well only be audible in the context of a top-flight, very expensive system. What is the "best" in absolute terms is not, therefore, necessarily the best for your system.

Arnisse Balgalvis points out that mixing 'n matching interconnects and speaker cables is a well-worn route to sonic disappointment. Always use interconnects and speaker cables from the same manufacturers, is his advice. Peter Mitchell 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 pass 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.

Sam Tellig, the Audio Anarchist, and his associate Lars have been impressed by a recommendation for speaker cable from Dave Magnan, the maker of Magnan Series V interconnect: specially prepared Mogami Neglex 2477, which retails for under $1.50/foot. (A double run is required, which brings the total cost up to just under $3/foot.)

Sam writes: "Cut off about 6" of the black outer sheath, exposing the outer wires, the shield. Peel back this wire—beautiful oxygen-free copper—and twirl it together. Now cut off about 3" of the inner sheath, exposing the inner wire. Wrap some electrical tape about the bottom 3" of the outer shield. It's important to leave about 3" of the center sheath intact to help prevent the wire from shorting out when you do what I'm going to describe next.

"Do what I just said with two runs of the Mogami. Now, carefully combine the inner core of one run with the outer shield of another, making sure that the words 'Mogami Neglex' run the same way on both outer sheaths, because this stuff is highly directional. The word 'Neglex' should face the power amp; in other words, the words on the sheath should run toward the speakers. Grimp on some spade lugs and tape over any exposed wire.

"The problem with the Mogami, aside from the pain in the butt of preparing it, is that the bottom end is not so good. So here's a cable you can perhaps use if your system has too much bass: a tone control, if you will."

Interconnects

AudioQuest Lapis Hyperlitz: $400 1m/pair terminated with RCA plugs, $480 1m/pair with AQ custom XLRs & direct goldplated FPC sockets and pins

Tonaly, the latest version of Lapis (which uses RCA plugs made from FPC (Functionally Perfect Copper), with the gold-plating applied directly to the copper) seems to fall midway between the "mellow" cables—MIT, Monster—and those that are rather upfront 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. Preliminary auditioning of current-production Lapis (as of 2/91), which uses Teflon insulation and long-gain, solid-silver conductors, suggests that this is the best AudioQuest interconnect yet, apart from their even-more-expensive Diamond.

AudioQuest Diamond: $600 1m/pair, $680 1m/pair with AQ custom XLRs & direct goldplated FPC sockets and pins

Superb resolution of detail coupled with a musically natural midrange and excellent low-frequency weight.

Cardas Hexlink-5: $500 1m/pair terminated with RCA plugs or XLRs

Essentially a very neutral sound, without any tendency to hyper-detail or etching. If it deviates at all, it leans slightly to the rich (rather than the lean) side of neutral. Lucid and open, especially in the midrange, with believable body and texture to voices and instruments. Physically bulky and fairly flexible, its bulk and large connectors may cause problems with closely spaced and/or weak input jacks.

Esoteric Audio Enamel Litz interconnect: $65 (Tech 2), $35 (Superlink) 3' pair terminated with RCA plugs

Don Scott recommends this interconnect—"after it has been seasoned for about a month"—for "taking the nasties out of often gritty FM." He does mention, however, that it is not the optimum choice for overall transparency.

Expressive Technologies IC-1: $415 1m pair terminated with RCA plugs

Robert Harley is currently using samples of this interconnect with positive results, particularly with the same company's SU-1 step-up transformer. "Despite the fact that these cables are bigger around than a gar

Stereophile, October 1991
Jerrold RG-6

Don Scott fits this inexpensive generic cable 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 terminated with RCA plugs
Unshielded but astonishingly transparent.

Kimber KCI: $68 1m pair terminated with RCA plugs

Krell Cogeleo interconnect: $610 1m pair terminated with RCA plugs
$530 1m balanced pair terminated with XLR plugs
Arnis Balgalvis recommends this Krell-distributed interconnect for use with Krell electronics. In combination with Krell’s The Path speaker cable, he finds that the sound “is very transparent and balanced, with detail galore.”

Lindsay-Geyer 4-40 interconnect: $95/0.5m pair terminated with RCA plugs,
$130/1m pair, $195/2m pair
This idiosyncratic, magnetically permeable, stiff, relatively inexpensive interconnect is DO’s reference; he finds its smooth balance, treble purity, and excellent stereo soundstaging seductive in the extreme. GL is also impressed by the sound of this interconnect, though JA somewhat grumpily points out that the reasons for its good sound have nothing to do with the explanations offered in Lindsay-Geyer’s literature. (Vol.14 Nos.2, 6, & 8)

Magnan Type VI: $595 4’ pair terminated with RCA plugs
Robert Harley’s auditioning suggests that this one is a winner.

Monster Cable Sigma: $750 1m pair terminated with RCA plugs
Used by both Larry Greenhill and Arnis Balgalvis, the latter characterizes the Sigma interconnect, when used with Classe and Rowland electronics, as giving low frequencies “proper weight and extension, the overall sound very open and detailed,” with excellent timbres. The Sigma cables also “throw a soundstage of vast proportion, the results being alive and musically involving.” Arnis notes that the Sigma works superbly with a wide range of equipment.

Siltech MC4-24: $325/first meter w/RCA,s, $250/additional meter or unterminated ☆
Asounding transparency and imaging, feels JA. Distributed by SOTA.

Straight Wire Maestro: $272 1m pair terminated with RCA plugs ($31) or balanced (Bu1) with Neutrik gold XLRs; $52/additional meter
Less laid-back than AudioQuest Lapis, with superb presentation of detail. May be too bright in some systems.

TARA Labs Space & Time Pandora 8: $295 1m pair terminated with RCA plugs

van den Hul D-102 Mk.II: $125 1m pair terminated with RCA plugs
Excellent treble but less good image focus.

Loudspeaker Cables

Acrotec 6N-1030: $19/m
Distributed by Edge Marketing, this “six-nines” pure copper cable is recommended by DO as good value for money.

AudioQuest F14: 79¢/ft
Inexpensive flat-twin solid-core cable that Robert Harvel enthusiastically recommends as excellent value for money.

AudioQuest Clear Hyperlitz:
$1095 10’ pair terminated
$895 8’ pair terminated (most common length)
Very expensive but solid bass reproduction with a clear (hat), open midband and treble. Can sound rather light-weight in some systems, but almost defines the term “neutralitiy,” feels JA. Uses “6N”-pure copper bundles in a complex lay that brings every conductor to the surface to the same extent.

AudioQuest Sterling:
$1595 10’ pair terminated, $1295 8’ pair terminated

AudioQuest Dragon:
$3095 10’ pair terminated, $2495 8’ pair terminated
Two silver-conductor speaker cables that are maximally smooth and maximally transparent, according to RH and JA.

Cardas Hexlink-5: $800 10’ pair terminated
TJN’s current fave rave.

Kimber 4AG: $100/ft
A very expensive hyper-pure silver cable that resides in Larry Archibald’s and Dick Olsher’s systems and can offer a glimpse of audio heaven. Significant system sensitivity, points out DO, so be sure to check for compatibility before you buy.

Kimber Kable 8TC: $7.80/ft
A double run of 8TC greatly improves the sound, feels DO. Excellent bass.

Kimber 4TC: $4.40/ft ☆
Kimber 4PR: $1.1f/ft ☆
Least expensive cable from Kimber was found to have good bass, but a “zippy” 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.

Krell The Path: $680 10’ pair terminated
Works optimally with Krell amplification, the result being, according to AB, “more heft and a gratifying glow around the performers.”

Monster Cable Sigma: $1000 12’ pair terminated
See AB’s remarks regarding Monster’s Sigma interconnect.

Naim NAC5: $9.95/m
Inexpensive cable that Sam Tellig found to work well with the Spendor S100 loudspeaker. Worth investigating as a good-value cable, thinks JA.

Radio Shack 18-gauge solid-core hookup wire: 11¢/ft
 Ridiculously cheap way of connecting speakers, yet Sam Tellig reports that this cable is OK sonically. You have to choose for yourself whether to space or twist a pair for best sound (or even whether to double up the runs for less series impedance).
Straight Wire Maestro: $560 8’ pair with gold spade lugs or pins
$30/additional foot
The cable that LA found to work best between the Krell KSA-250 and Thiel CS5s.
TARA Labs Space & Time Phase II TFA Return: $195 10’ pair terminated
Guy Lemcoe’s preferred speaker cable.
TARA Labs Space & Time Phase II cable: $6.95/ft
Featuring twisted solid-core construction and “Australian copper,” this inexpensive cable is Dick Olsher’s workhorse speaker cable.
SYMO LS5SX cable: $28/ft with gold-plated spade connectors
Distributed by Apogee Acoustics, this relatively inexpensive cable works well with, you guessed it, Apogee. TJN’s reference for use with the Stages.

Digital data interconnects
Editor’s Note: Extensive auditioning by Robert Harley suggests that all the coaxial data cables listed below are better than conventional, Toslink-fitted, plastic fiber-optic cables, which in general don’t give as tight a bass or as focused a soundstage. “You don’t get that essential sharpness of image outlines, the sound becomes more homogenized,” quoth he.
AudioQuest Video Z: $70/1m single cable with welded RCA plugs
The tonal balance is tilted upward in the treble, while midrange textures are less velvety-smooth than some of the other data cables, with a softened soundstage focus, felt RH. DO found this relatively inexpensive cable to work well with the Bitwise D/A.
Aural Symphonics Digital Standard: $195/1m, $292.50/1.5m single cable
Neutrik RCA connectors with a sliding shield make ground before signal connection. Vivid and forward rendering, with sharp soundstage focus. Somewhat restricted image depth overall.
California Audio Labs HD Optical Cable: $200/1m, $275/2m
The best of the Toslink-equipped fiberoptic cables, feels JA.
The Mod Squad Wonderlink: $195/0.5m, $225/1m single cable
Exceptionally transparent presentation, thought JA, with excellent soundstage depth and natural midrange. Chunky gold-plated plugs are actually old-fashioned RF connectors with RCA and BNC adaptors.
Music And Sound Master LINK LP (Gray): $400/3’ pair with gold-plated Teflon dielectric RCA plugs
Less smooth treble than Space & Time cable but comparable soundstaging ability. Very transparent and detailed, with excellent dynamics. RD finds it to work well between his Philips player and Aragon D2A.
TARA Labs Space & Time Digital Reference: $195/1m terminated
Laid-back, relaxed presentation, excellent resolution of soundstage depth. Smooth treble adds to pleasing analog-like warmth. Silver-plated RCA plugs slightly undersized, making connection difficult.

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To high-end audiophiles, the Boulder 500 amplifier and its less expensive derivative, the 500AE (Audiophile Edition), would not seem to be "high-end" designs. They are designed around op-amps (felt by many to be generally poor-sounding), they have scads of negative feedback (which is perhaps why op-amps sound bad), and they have only a moderately hefty power supply. Why, then, is Stereophile publishing a review of an op-amp-based power amplifier? Read on... The op-amp (for operational amplifier) circuit module was originally intended to perform simple mathematical operations in all-tube analog computers. (Does that date it, or does it?) It combines several active devices to produce a DC-amplifying package having, in its "perfect" form, infinitely high input impedance, infinitely high gain at DC, and zero output impedance. A simplified solid-state op-amp circuit is shown in fig.1. Note that, as befits a DC amplifier, there are no capacitors in the signal path—which is always to the good in audio, because even the best caps (don't ask me what they are) degrade the sound to some extent. In addition, the op-amp's differential inputs provide an inherently balanced input, as well as allowing the device to be used inverting or non-inverting, depending on its input connection polarity and feedback connections.

Long ago—in the late '60s/early '70s—op-amps were realized as cheap, ultracompact integrated circuits, which made them very attractive for use in audio products where competitive cost was important enough to outweigh the op-amp's shortcomings. (These then consisted mainly of poor and often asymmetrical slew rate and low output current-sourcing capability.) While a typical "raw" op-amp IC circuit has an open-loop (without feedback)
gain of around 30,000 (90dB)—some have as much as 120dB (an incredible 1 million)—the open-loop frequency response is typically from DC to just 30Hz. Both characteristics are clearly inappropriate for any audio application—30Hz is half an octave below the lowest note of the double bass—but both are remediable through the use of very large amounts of inverse feedback—if you can get away with it. And "getting away with it" proved impossible with many of the more common IC op-amps—until the late Deane Jensen, best-remembered for his audio transformer designs, unveiled his JE-990 discrete op-amp circuit.

"Discrete op-amp?" That may sound like an oxymoron, like "business ethics," but it isn't. Op-amps were, of course, discrete before they evolved into ICs, and the discrete transistors of today are much faster than they were back in the '60s. Today, discrete op-amp design can offer lower noise, higher stability, higher current output (for lower distortion into low-impedance loads) at lower temperatures, higher output voltage, and a higher slew rate than IC op-amps. The Jensen JE-990 design that serves as the basis of the Boulder 500AE, for example, has a slew rate of around 17V/μs.

There are two JE-990s per channel in the Boulder 500AE, one serving as the input section, the other as the voltage driver and output section. Both drive a so-called complementary-symmetry pair of output devices, with the main difference being that the second "pair" are two banks (per channel) of power transistors.

The complementary-symmetry circuit is sometimes called complementary push-pull, but strictly speaking, push-pull operation always means two identical output devices handling the same audio signal in relative inverted polarity. The output from these devices is their difference signal, which means out-of-phase signals—the music—produce maximum output while in-phase signals—even-order distortion and common-mode noise—cancel to produce zilch. Fig.2A shows how this works (in theory).

In practice, the distortion cancellation is dependent on the devices' operating class. When these are biased for class-A operation, in which current flows through both devices all the time, the amount of even-order distortion cancellation is limited only by the electrical symmetry between the out-of-phase signal components and between the two halves of the output transformer primary. Class-B "push-pull" operation, where each half of the circuit is switched off during half of the input-signal cycle, does not meet the mirror-imaging requirement of true push-pull, and does not cancel distortion. (Neither does class-B cancel the DC magnetic fields caused by current flow through the output transformer.) Fig.2B shows a typical complementary-symmetry transistor output stage running in class-B.

How subjectively important is the cancellation of even-order harmonics by push-pull class-A operation? The strongest harmonic produced by a tube is the second: i.e, an additional tone one octave above that fed into its grid appears at the tube's output. The lower even-order harmonics add some forwardness to the sound, but this is not an unpleasant coloration unless the loudspeakers tend to be overly forward to begin with. Odd-order harmonics, as...
well as the higher even orders (6th, 8th, etc.), add a steely edge to the sound which is rarely pleasant. But unlike many bipolar transistors—which tend to generate almost as much 6th-harmonic distortion as 2nd—a tube's distortion tends to diminish with ascending order. (My ears tell me FETs are more like tubes in this respect.) So the harmonic-distortion-canceling aspects of push-pull operation are probably overrated, even though push-pull does significantly lower the amplifier's measured THD figure.3 But the fact that, despite even-order cancellations, push-pull tube amplifiers still have vastly higher measured THD than good transistor amps, may explain why they so often have a harder, brighter sound than most solid-state ones.

The differences between the relative intensities of the high-order harmonics is an inherent difference between tubes and most transistors, and is one reason why tubes almost always sound softer and sweeter at the extreme high end, while transistors sound crisper and more open at the top. It is also why I have long argued that the ever-popular THD specification is virtually meaningless as a performance criterion, and that a harmonic-by-harmonic analysis, by percentage, would do a much better job of defining how an amplifying device will actually sound.4

Because comparable solid-state amps do not use output transformers, they have far less HF phase shift than tube amps, which means they can tolerate much more negative feedback without becoming unstable. Typically, 20dB of overall loop feedback is all a tube amp can take before it starts to ring audibly; imagine this limitation imposed on an op-amp, with an open-loop gain of more than 90dB! The Boulder 500AE has about 100dB of feedback, but

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3 As a matter of fact, push-pull operation was originally conceived merely as a way of increasing power output, the reasoning being that two oppositely phased power tubes can produce twice as much voltage swing as one. The distortion reduction was only a welcome side-effect of this.

4 Their continuing reliance on simple THD is why I became convinced that the mass-market magazines, Stereophile in particular, which have always contended that measurements can define sonic quality, were not really interested in publishing measurements that would in fact do that. I'm gratified to see that Stereophile is publishing such harmonic-series breakdowns, although it would seem to make more sense to convert the decibel figures on the Y scale of our graphs into percentages, since that's how most of us are accustomed to thinking about harmonic content.
none of it is overall loop feedback; it’s all local feedback, involving only one or two stages at a time, which reduces even further the possibility of instability or TID* (Transient Intermodulation Distortion).

The product
The 500AE is solidly built, with a fold-reinforced ½” aluminum chassis and more than adequate anchoring of all heavy internal parts. (It looks as if it would travel well.) It has no handles, but at only 55 lbs, even frail old me had no trouble schlepping it around handleless. Gold-plated balanced inputs are provided. It’s possible to drive the amplifier in single-ended mode (unbalanced) by using the optional ABL adapters.

Although hardly the arc welder of a 100 lb Krell, the 500AE’s power supply isn’t exactly a featherweight. With a 6”-diameter, 3”-thick toroidal power transformer and 74,000µF of storage capacitance per channel, the amp has a claimed peak current capability of 50 amperes, and is designed to be able to deliver that current for up to a tenth of a second before supply depletion starts to set in.

Because the 500AE is capable of passing DC, it is necessary to provide some sort of protection against inadvertent DC offsets that could fry the woofers. This is done in two ways. The first line of defense is a servo circuit which zeros-out small amounts of DC offset at the input, up to a point. Beyond that point, the amplifier shuts down if DC at the output exceeds 3V (1.125W into 8 ohms) for more than 0.1s. After the source of the offset is removed, recovery is spontaneous—usually in a few seconds, although if the offset was very severe, it may take minutes for recovery. In this case, it’s best just to turn the amp(s) off, then on again. (Note that the DC-offset sensor is not in the signal path; it’s a sidechain circuit, which has no effect whatsoever on the audio signal until the triggering threshold is exceeded.)

Strapping for mono operation is a simple matter of flipping a rear-panel switch and connecting the speaker across a pair of the Hot terminals. Incidentally, there are two pairs of output connections, each pair in parallel, presumably to facilitate bi-wiring of the loudspeakers.

Test conditions
Equipment used for this review included the Madrigal Proceed PCD-2 CD player, Revox A-77 15ips 2-track tape recorder, a Sony PCM-F1SL-2000 digital recording system, Pioneer LD-S2 laserdisc player (the state of the art!), Threshold FET-10L line controller, and the Stereophile-owned pair of Sound-Lab’s A-3 full-range electrostatic loudspeakers (updated to the latest version and next in line for review). Audio interconnects were Monster M-1000s, and loudspeaker cables were AudioQuest Greens. Program material ran the gamut, although most of the CDs used were orchestral, from Delos and Sheffield.

I borrowed two 500AEs for my review, which allowed me to audition one amp in straight stereo or both in strapped mono. The fact that both amps worked flawlessly right out of the box and have continued to work for several months was my second clue that they might not be what most of us think of as “high-end” audio products. My first clue was when Boulder prez Jeff Nelson assured me that the 500AE requires no warmup prior to listening. I beg to disagree. To me, the amplifier sounds veiled, edgy, and flat on turn-on. It starts to show promise after 30 minutes, but is still nothing to do cartwheels over. Half an hour later, it starts to sound like a new car. All that, things improve more slowly, but continue to improve for another five hours or so. “No warmup needed,” eh?

The supplied specs rate the amp’s current drain at 1200W, but this is misleading; it only draws that much at full power output. At idle, power consumption is only 250W, which means it could be left on all the time without

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* TID is due to the active devices being unable to slew the voltages they are asked to handle sufficiently fast to keep up with the demands of the signal. Slew rate, expressed in V/µs, is the speed with which the output voltage of an active device is able to change and is a critical factor in the behavior of a negative feedback circuit; if slewing can’t keep up with the changes in input level, the feedback signal will not be able to properly attenuate the input signal, which will then increase to the point of amplifying device overload. The resulting TID causes a particularly obnoxious variety of husky crud in the sound. Since the overload is triggered only by very steep pulses, the TID products are well beyond the upper limit of audibility to start with, but the severe nonlinearities in the overloaded device generate IM difference components which splash the distortion down well into the audio range. TID is most noticeable when reproducing analog discs with a moving-coil cartridge, because the typical MC’s HF range—so well beyond 30kHz—is greater than that of any other available signal source. Even though most LPs have little signal content above 15kHz, surface ticks and pops, as well as any groove mistracking, generate HF impulses ranging out to the upper limit of the cartridge, and it is these which put the most stringent demands on the slew rate of a negative-feedback amplifier. If the amp is TID-susceptible, LP ticks and pops will be noticeably exaggerated, and will sound like sharp-edged clicks when they should sound more like raindrops on a sidewalk.
putting too much of a crimp in your electric bill, and that’s what I recommend doing.

As I explained at tedious length in a rabble-rousing “As We See It” several years ago (Vol. 11 No.10, October 1988), there is really no way of knowing for sure what a loudspeaker or an amplifier sounds like, because you cannot listen to one without the other. David Hafler used to contend that the ideal amplifier should not “sound like” anything, and I concur, but the truth is that even a “perfect” amplifier will sound like the loudspeakers it is driving. If the speakers too are perfect—even more unlikely—then the resulting sound should be just like that of the signal source, which depends on the degree of perfection of everything else in the recording and reproducing chain. As you can see, this line of reasoning will get us nowhere.

So, like most of Stereophile’s reviewers, I tend to take certain things for granted—such as the unquestionable perfection of the signal my preamp and its signal sources are feeding to the power amp. True, it’s not a very solid assumption, but it’s all any reviewer has, or can have, to go on. I do take great pains to use associated equipment that seems, according to my judgment, to be more nearly perfect than most, but I freely acknowledge that the best I can do when reviewing most products is to make guesses about what they sound like, based on what I hear. The guesses are educated ones, and probably more valid than the judgments of those who have had less listening experience than I and have auditioned fewer products in their search for perfection, but they are guesses nonetheless.

But unlike most of Stereophile’s reviewers, I do not trust program sources that I know little or nothing about. First and foremost, I trust my own recordings, because I know more about them than any others. I know how they were mixed, what the mikes sounded like, what the original sources sounded like, and what the shortcomings of the recording equipment were. (I modestly confess to having a very good aural memory.) This does not mean I believe they are the “best” recordings available to me, just that I know what their assets and their liabilities are. Second, I trust some of Sheffield Labs’ recordings, because I have brain-picked Doug Sax about how they ought to sound. Third, I tend to trust Delos’s recordings, because their recording engineer, John Eargle, has been very upfront about how he works, and because his later tapes sound much like what I would be aiming for if I was still doing live recording. But I do not trust any other program sources. Period.

Perhaps I should also add at this point that I do not subscribe to the popular view that “good” is the sole criterion for evaluating reproduced sound. Sure, “good” is important, because live acoustical music sounds good, but it isn’t enough. To me, the reproduction must also bear more than a passing resemblance to the sound of the original, but more about that later.

As far as loudspeakers are concerned, I have put my faith during the past several years in products made by Sound-Lab, not because the Mormon owner and corporate head doesn’t smoke, drink, or use harsh language, but because S-Ls loudspeakers have consistently sounded more realistic to me (with sources in which I trust) than anyone else’s I’ve found to date.

The sound

Boulder makes two similar 150Wpc stereo amplifiers, the 500 and the 500AE. The 500, reviewed by DO in 1986 (Vol. 9 No. 5), has balanced inputs, input level controls, and front-panel LED displays for output level and protection-circuitry status. The 500AE that I tested lacks the input controls and the LED displays, but is otherwise identical to the 500. In fact, Jeff Nelson tells me they are functionally identical too; neither amplifier has been “upgraded” since they were first released.

Now, this does not sound like the high-end spirit. “High-end” implies an unending search for perfection—the continuing refinement of a product over time, to make it more and more nearly perfect. Jeff does not work that way. As a designer, he is more of a meter-man than a listener. He designs on paper and by computer, rather than by listening, and admits he does not have as good an ear as some of the golden ears in the recording profession who listen every day. So how can a product designed this way possibly be of interest to a Stereophile reader? Because the sound of the 500AE suggests that he may be onto something, that’s why.

With my A-3s, a single Boulder 500AE—warmed up for five days—sounded as neutral as any amplifier I have ever listened to. By “neutral,” what I mean is that recordings I know about sounded the way they ought to. They were neither closer than they should be nor
more laid-back, they were correct both spectrally and timbrally (balance-wise and overtone-wise), and they gave the A-3s the deepest and most detailed low end I have ever heard from a full-range electrostatic loudspeaker. This is supposedly what high fidelity is all about—accuracy über alles—but it may not be what many audiophiles are really looking for in an amplifier.

The 500AE is not a "gorgeous-sounding" amp. It is not rich or warm or sweet or liquid or airy or mellifluous or crisp or spacious; it is just not there. It does not make reproduced music sound beautiful or magical, it just makes it sound as much like the real thing as anything I have ever driven the A-3s with. I'm talking here about the things I hear in live music that I rarely hear reproduced properly: the intense spikes in the sound of massed violin fortissimos, without steeliness; the power and the pitch delineation of double basses; the luminous roundness and flautent vulgarity of large brass instruments.

There are several kinds of recordings I use for judging LF balance and extension. My own, of course, although relatively little of what I recorded ever went below 41.2Hz, which is the frequency of a 4-string double bass's open E string and the lowest frequency you will normally hear with any power from a symphony orchestra. (A contrabassoon extends to 32Hz, but most of the energy is overtones and reed sounds. An oversized bass drum may be tuned as low as 35Hz.) On the other hand, I have some nice tapes of large pipe organs in large churches, and I hear deeper and more authoritative bass from these than I thought the A-3s were capable of.

Then there are more recent recordings of huge pipe organs, like Jean Guillou's celebrated Pictures at an Exhibition transcription (Dorian DOR-90117), in which 40Hz is only the right-foot end of the pedal scale, and there are many orchestral recordings where the hall itself seems to give rise to very deep subharmonics which are normally not audible but, when they are, produce a subtle but definitely perceptible increase in the feeling of realism from the sound. I hear these things happening with the 500AE and the Sound-Labs.

Other bass material, from CDs, analog open-reel and PCM tapes, and laserdiscs, had noticeably greater detail and impact than I have ever heard from any large-screen electrostatic speaker, and it was this plus the exquisite high end that has kept me on a listening binge ever since I got the Boulder, dragging out one after another of my old (and newer) favorite recordings just to savor the sound.

But has the Boulder 500AE surmounted the major problems with op-amp circuitry? It sure sounds as if it has. At no time did I or any of my bat-eared friends hear anything that sounded like TID, even from material that should have caused textbook examples of it. In fact, high-end quality turned out to be one of the 500AE's strongest points. There is no way you can conceive of how good op-amp circuitry can sound until you hear this! It is silky-smooth when the music calls for it, and spiky-sharp when it calls for that too, as when the violin section is digging in hard or someone at the back of the orchestra is whomping woodblocks or gently stroking a triangle.

There's nothing reticent about the 500AE's top. It has none of the sweetness or softness of a good tube amplifier, but there's loads of air at the top, which just seems to keep going out to well beyond the loudspeakers' (or listener's, if you're my age) upper limit. What continues to amaze me, as well as other people who have heard it, is the quality of that high end. Few amplifiers I have heard are able to give acoustic music its proper edginess and detail without crossing the line into steely hardness. The 500AE manages to do it. One result is that non-audiophile women, whose unforgiving sensitivity to HF crud makes them very intolerant of high listening levels from many "high-end" amplifiers, can enjoy listening to these at volume levels they would never normally endure without running for cover.

The 500AE's midrange detailing is nothing short of remarkable. It does not have that etched, sharply outlined quality I have heard from some of the best tube amplifiers, like the VTL 300, which can give the almost spooky impression that every instrument is outlined by its own lateral and front-to-back space. But the 500AE does everything else just a shade better than the VTL 300s.

Extreme highs sound more realistic, albeit

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6 Logistical problems meant that we were unable to get the Boulder 500AE to Santa Fe in time to accompany this review with our usual set of measurements. These will follow in due course.

7 While my elderly ears are still good out to about 12kHz, they're missing enough up there that I use surrogate listeners to tell me what's going on above that.
not as sweetly soft, lower middles are a bit more gutsy, and there is none of the VTL 300's slight hardness with the A-3s. And the low end is much deeper and better controlled.

How about soundstaging? I mention this last because, while I believe I am as attuned to this important aspect of reproduced sound as anyone, I do not consider it to be nearly as high a priority as do some of my associates. But it is in the area of soundstaging where I have some reservations about the 500AE, although not many.

It is the 500AE's soundstaging which improves the most with extended warmup. After some days of inactivity, the 500AE sounds very flat when first turned on, and even after several hours' warmup, it does not produce as definite or as deep a soundstage as some other amplifiers I've heard, notably the aforementioned VTL 300s and the Manley 350s. But is that necessarily bad? Could it be that the Boulder reproduces the performing space accurately while some others exaggerate it? After all, bass energy is an asset in any system, but it's possible for there to be too much of it. Why, then, can there not be too much apparent depth and spaciousness?

I believe it is foolhardy to try to judge depth from most commercial recordings, because there is really no way of telling how much there should be. Yes, we may be able to guess the width and depth of the stage if in fact the recording was made on a stage, but statistically, very few have been. Even when recording in legendarily superb spaces like Boston Symphony Hall, many engineers eschew stage placement altogether and range the musicians out on the floor of the hall, which offers the possibility (sometimes accepted) of giving the orchestra more dimensional depth than it would normally have on-stage. This, plus the flattening effect of spot mikes, means you can expect the commercial product to have anything from too much to too little depth.

The situation is further muddied by amplifiers or loudspeakers that tend to back things off, leaving the reviewer little choice but to pretend there is no such thing as a "correct" rendering of depth, and just wing it by assuming that the more apparent depth, the better. (A mistake, in my judgment.)

In other words, while I won't say there are no commercial orchestral recordings that portray depth honestly, I will say that they are very few and far between, and that it's hard to tell which they are. To my knowledge, the only ones which are consistently more or less truthful are Telarc's early RCA stereos, and the Mercury Living Presence recordings. Every other commercial recording I know of has been polluted, at least to some extent, by "creative" fudgings such as false instrumental placements, the use of many spot microphones, or both. Even "purist" engineers like Reference Recordings' Keith Johnson and Delos's John Eargle are not constrained by purist idealism from augmenting their basic mike pair with additional ones. They always have what seem like persuasive reasons for doing so, but the result is always recordings which sound different from the "raw" sound of an orchestra.

This is why I feel most comfortable using my own recordings for judging soundstaging. But not all of them. Because I didn't even think about soundstaging when I was making recordings 20 years ago, I never paid all that much attention to it on those recordings or in the venues where they were made. So my recollection of exactly what those recording spaces sounded like is less than reliable. Later recordings made in Santa Fe, when I had learned (largely in self defense) to become more aware of soundstaging, sound remarkably like the halls where they were recorded when heard through the Boulders and Sound-Labs: The warmly spacious, moderately live acoustics of the Lensic Theater, the drier but rather echoey space of Sweeney Center Auditorium, and the intimate, thin, and swimmingly reverberant sound of the Loretto Chapel are all clearly audible with the 500AE and the Sound-Labs.

I can also clearly hear through them the spatial problems that Doug Sax encountered during Sheffieeld's Moscow Sessions, where the side walls of the performing hall were barely wider than the orchestra, as well as the subtle center-stage flattening that John Eargle's woodwind spotmikes cause in many (mostly earlier) Delos Recordings. In other words, even though this amp does not produce as much depth or spaciousness as some, I have reason to believe it reproduces those things quite accurately.

Thus far, my comments have related to a single 500AE in stereo mode. What's to be gained by using a pair of them, each strapped for monoblock operation? Whether it's the push-

Stereophile, October 1991

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8 I confess, there are times when I don't listen for three or four days in a row.
pull operation (which I doubt) or a lot of other things—including, in particular, the power and current-capability increase (which I believe)—there is a definite across-the-board sonic improvement. Most aspects of the sound are only slightly better, but they add up to a significant gain in quality.

The most noticeable improvement is in the low end. With one amp in stereo mode, the low end is only excellent: tight, detailed, and very deep. With two strapped 500AEs, the low end is little short of extraordinary, at least on my pair of Sound-Labs. Forget rich, warm, full, and so on. With this combination, the bass is not something you demonstrate to wide-eyed, slack-jawed guests who marvel at how much the room vibrates; it's just there, the way it ought to be. When there are no bass instruments playing, the sound is almost lean. When there are, the low-end weight is exactly right and the bass detail is, if not awesome, at least good enough that people unfamiliar with the system will occasionally slide up in their seats and say "Whatthellhewasbat?"

For some reason or other, it seems that 40Hz is the effective low-end limit of 90% of the big loudspeakers on the market today. Some go deeper, but most do not do it well, and few do it with authority. This, I believe, is why audiophiles who do a lot of listening to what is reputedly very good equipment seem astonished when they hear stuff that sounds substantially deeper coming out of the updated Sound-Labs. With the 500AEs, the A-3's apparent low-end range is a good half-octave lower than it was with my previous reference standard, the VTL 300. The main difference is that, since there is no slight additional weight at 40Hz (as there was with the VTL), the range below that becomes more evident. With the strapped Boulders, the new Sound-Lab's low end (with the wing panels) measures flat down to a hair above 30, which sounds deeper than you can imagine. (Some visitors have guessed that the speakers were reproducing an honest 20Hz. They weren't.)

To give you an idea of the kind of bass detail I'm talking about, the last section of Walton's Crown Imperial March (Previn/RPO, Telarc CD-80125) has several closely spaced bass-drum beats, with a sustained bass line behind them which I had always assumed was from bowed double basses. With the 500AEs, I noticed for the first time that it didn't sound quite like double basses, but then it didn't sound quite like a pipe organ (my second guess) either. Curious, I phoned Jack Renner: it wasn't double basses or a pipe organ, but an Allen electronic organ. The ability to reproduce that kind of LF subtlety would not have surprised me from a good transmission line or a big horn woofer system, but it was the first time I had heard it from a full-range electrostatic speaker.

Strapping the 500AE does involve a liability, though. Because it doubles the amplifier's gain, very low-level hum that might have been inaudible in stereo mode may become quite audible, particularly if you're using a high-sensitivity loudspeaker. (This happened to me. The hum was not from the amplifier, but from the power supply of my surround decoder, which was too close to the preamp.) The gain doubling makes sense from one point of view, because it does not require any more output voltage from the preamp to get four times the power as in stereo mode. But it will probably make the 500AE unsuitable for use with any horn loudspeaker unless its inputs are padded down.

But is it "high-end"?

While listening to these for months, I've been doing a lot of thinking about the high-end tweaking mystique. Sure, it's fine when you're working with your own system, and is in fact necessary to get it working at its best. But tweaking an amplifier by ear? I dunno...

What loudspeaker system should an amplifier designer use to tell him whether his amp has a sucked-out midrange or a tipped-up high end or a slightly thin low end? Ideally, he should use several—a "representative sampling"—but this rarely happens. Most use only one speaker system for listening, so it had better be "accurate." Of course, few speakers are, and there's very little industry agreement as to which they are. But the main problem, as I see it, is that any amplifier designer who tweaks his product by ear is unwittingly doing exactly the same thing that got CBS Records and RCA and Angel in trouble during their horror years of 1960 to 1980. In trying to make a recording, or a power amplifier, sound "better" through one pair of "reference" loudspeakers, you run a real risk of making it sound less good (or accurate, or whatever) on speakers that don't sound like that reference. I won't pursue the point further here, but it has gotten me thinking. Maybe an "As I See It" will be forthcoming.
Conclusion

As you may have gathered by now, I like this amplifier a lot—not so much for its sound as for its seeming lack of it. At almost $3500, the 500AE isn't cheap, but it's a lot cheaper than a number of other amplifiers I can think of that have definite sonic signatures which, while much favored by many audiophiles, could also be construed as being colorations of various kinds. Some that come to mind: the Rowlands, which tend to sound rather laid-back; many of the Krells, which hew toward a dark sound; and the Audio Research tubed units, which tend to have some forwardness and brightness. All of these amps, of course, can sound gorgeous if the loudspeakers happen to complement their sound, but if the speakers are fairly neutral (which is what we're all supposed to be seeking, is not it?), it's more than likely that the Boulder 500AE will make acoustically produced music sound more realistic than any of these can.

I realize that relatively few rock-oriented readers will understand my insistence that a system's first requirement be that it be able to reproduce the sound of acoustical instruments. The others will no doubt wonder what the hell I hear in this amplifier that turns me on. I am also well aware that Boulder The Brand does not have the cachet among high-enders enjoyed by such names as Krell, Mark Levinson, and Audio Research. And indeed, the Boulder does not have the disarming sweetness and liquidity of those amplifiers, sounding occasionally almost a bit coarse by comparison. But so does real musical sound. After having lived with the 500AEs for several months now, and attending symphony concerts locally from time to time, I contend that what I hear reproduced from the 500AE has more of the ring of sonic truth than my recollections of those other amplifiers.

Real instruments can sound beautiful—almost magical—but they also often make lots of vulgar noises: clicks, scrapes, squawks, and buzzes, particularly when played loudly. Many audiophiles prefer their musical sound a little more tidy than that, so I won't declare the 500AE to be the best amplifier you can buy, although I will say that if I owned one, I would not be compulsively driven to audition alternatives. I won't even urge every high-endophile to run right out and listen to the 500AE, because this is not really a high-endeler's amplifier at all.

The 500AE's appeal is going to be to the "serious" music lover, whose frequent exposure to live acoustical music gives him a reference point that stems more from reality than from an idealized wet dream of what music should sound like if the world was more wonderful than real. I'm not even sure the sonic excellence of the 500AE happened by design (pun intended) or by happenstance, because Boulder prez and chief designer Jeff Nelson does not meet Bob Harley's definition of a "high-end" designer (Vol.14 No.7). Jeff seems to be pretty much a meter man, as evidenced by his skepticism about the benefits of warmup and the fact that he has never proselytized to me about the brand of interconnect he uses. But however it happened, he did something right, and the result is an amplifier that I have been happier living with, for a longer time, than any other I have ever used.

Would I recommend the 500AE? Well, yes and no. If all you're looking for is "magical" sound from whatever non-acoustical fare you enjoy, I would advise listening to the 500AE, but I would strongly urge you not to buy one without auditioning it first in the privacy of your own home. But if you listen to live acoustical music often enough to know how unglamorously raw it can sound at times, and are fairly confident that your speakers are capable of reproducing a measure of sonic truth, then the 500AE could well be the ideal amplifier for you.

Highly recommended!

9 No one should buy any audio product without auditioning it first, but I know a lot of our readers do. What can I say?
10 The only other amplifier I can recall that had the Boulder's ability to tell it like it is was the now-discontinued Threshold SA-1, which (interestingly) was designed the same way as the Boulder: by brilliant engineering, rather than by surl tweak.

Stereophile, October 1991
Vacuum-tube/solid-state hybrid line-level amplifier. Inputs: five plus "Direct" input, 50k ohms input impedance. Outputs: 4 pairs, one unbalanced on RCA jacks, two balanced on XLR connectors, 250 ohms output impedance (unbalanced), 500 ohms output impedance (balanced), one tape output (unbalanced). Maximum input voltage: 20V. Gain: 18dB (unbalanced main output), 24dB (balanced output), 0dB (tape output). Tube complement: One Chinese-made 6DJ8 dual triode. Frequency response: 1Hz−100kHz ±0.5dB. Distortion: <0.1% at 2V RMS output (typically <0.005% in midband). Rated outputs: 2V RMS from 1Hz−100kHz into 60k ohms load. Maximum output voltage: 10V RMS unbalanced, 20V RMS balanced. Noise: 20μV RMS residual IHF-weighted noise at main output with gain control minimum (100dB below 2V RMS output). Power consumption: 60W maximum. Dimensions: 19” W by 5.25” H by 10.25” D, not including handles and rear panel jacks. Weight: 13 lbs net, 21 lbs shipping. Price: $2495. Approximate number of dealers: 55. Manufacturer: Audio Research Corporation, 6801 Shingle Creek Parkway, Minneapolis, MN 55430. Tel: (612) 566-7570. Fax: (612) 566-3402.

It's a sign of the times when a company like Audio Research sells more line-stage amplifiers than traditional preamps with integral phono stages. This turning point was passed about six months ago when the downward sales curve of phono-equipped preamps met the upward sales curve of line-stage amplifiers. Many audiophiles entering the market have no LPs, fueling the growth of phono-stage-less preamps.

Audio Research addressed this trend with the popular LS1 line-stage amplifier and now its successor, the LS2. The newer unit is a complete redesign of the LS1, and includes balanced outputs—a growing trend in high-end audio.

The LS2's designers wanted to create a unit that competed sonically with the best preamps, yet was reasonably priced. To achieve this goal Audio Research made the LS2 a minimalist design, eschewing such features found on their more expensive units as a balance control, left/right/mono/reverse switching, and multiple tape monitors. The LS2's emphasis is on sonic performance, not features.

ARC will have introduced the PH1, a $1495 standalone phono preamp, by the time you read this. This modular approach will be the mainstay of ARC's design and marketing philosophy: don't make CD users pay for a phono stage, yet make one available for those of us who couldn't bear to even think of foregoing LPs for an exclusively digital musical diet.

But can any active preamp be as good as a passive level control that inserts nothing in the signal path but a resistor? Some readers may be aware of my enthusiasm for passive attenuators, particularly the Electronic Visionary Systems Stepped and Ultimate Attenuators. In my comparisons between a passive control and active line-stages, the passive units were unsurpassed in transparency, detail, and freedom from the active stage's coloration. They just seemed to
let more music through and bring me a step closer to the performance.

I have, however, had some feedback from other users that in some systems passive controls aren't always superior. Although I pointed out in my review of the EVS units (Vol.13 No.7) that passives aren't always the answer, I've always found them sonically superior to an active preamp in my system. This review of an ambitious line amplifier will give me a chance to discover if I've been missing anything by using a passive attenuator. In theory, it's difficult to see how adding active devices, capacitors, resistors, wire, printed circuit board traces, and jacks can be an improvement over the passive method of connecting a resistor to ground. This last statement is predicated, however, on an ideal system: low source impedance, high input impedance/low input capacitance power amplifier, and low cable capacitance.

I'm itching to give the LS2 a workout.

Technical description

The LS2's appearance is unmistakably Audio Research: aluminum front panel with black handles, a row of long-handed toggle switches, and the characteristic oval knobs. The unit's minimalist design is reflected in the spartan front panel: just two knobs and four switches provide all the LS2's control functions. The two knobs are mounted symmetrically on either side of the front panel, adjusting gain and selecting between the LS2's five line-level inputs, respectively. The first two switches need no explanation: power on/off and output muting. The second pair, however, are unusual on a preamplifier. The switch marked Defeat/Record sends the signal to the tape-out jacks only when in the Record position. The Direct/Normal toggle switch selects either the input connected to the rear-panel "Direct" jacks or engages the five-position input selector. This feature allows one source to bypass the input selector switch for greater sonic purity, while providing the flexibility of multiple inputs.

The rear panel hosts six pairs of gold-plated RCA input jacks (corresponding to the five-position input selector knob and direct input toggle switch), two pairs of identical RCA output jacks (main out and tape out), and two pairs of balanced outputs on XLR connectors. A captive AC cord and line fuse complete the rear panel.

The LS2's insides are just as characteristically Audio Research. The elaborate power supply, simple signal path, wide pcb traces, and high-quality parts are typical of Audio Research products.

Two transformers, three discrete regulation stages, and one IC regulation stage comprise the power supply. Critical audio circuits are supplied by the discrete stages; the unit's only IC regulator is used strictly for control circuits. The supply produces ±15V for most of the solid-state circuitry and ±274V for the LS2's single vacuum tube. The regulation is the most extensive in any single-chassis ARC product. The LS2 also incorporates Audio Research's proprietary Decoupled Electrolytic Capacitor (DEC) circuit, which reportedly enables critical bypass caps to operate more effectively. This technique is also used in ARC's excellent DAC1 D/A converter.

A 6DJ8 is the LS2's heart; most voltage gain is performed by this dual-triode tube. Looking at the schematic, it's clear that the tube, shared between left and right channels, is the star of the show: the dozen active devices per channel surrounding the 6DJ8 are merely supporting players. The signal path is remarkable simple—an input buffer drives the triode's grid, and the tube sees only a single FET, coupling capacitor, and resistor before the RCA output jack. All devices operate in class-A. The circuit is unusual, however, in the feedback loop's complexity. An audio op-amp with a pair of MOS-FET buffers and four other active devices are employed in the feedback loop.

The output is connected directly to the RCA jack, pin 2 of the XLR connector, and the input of a phase-inversion circuit. After the signal has been phase-inverted it's returned to the XLR, appearing on pin 3. This is in accordance with the IEC standard pin assignment. I was surprised by the phase-inversion circuit's complexity: it uses seven active devices (JFETs and IGFETS), five caps, and 13 resistors. The inverter stage, which also operates in class-A, shares the tube circuit's 274V supply for better sonic performance. Note that this circuitry is in the signal path of only one polarity of the balanced signal.

Build quality is excellent, with good attention to detail and a minimum of internal wiring. The input selector, for example, has a long shaft that activates the actual switch mounted at the rear panel. This technique eliminates running signal wires or pcb traces to the front.

Stereophile, October 1991
panel. All resistors are metal-film types, and capacitors are primarily Wima polypropylene types, Rel caps, or polystyrene WonderCaps. The volume control is a four-ganged Alps pot, with the stereo signal run in parallel for better sonic performance. The 41-position pot is an improvement over other Audio Research products that use 31-position pots. Despite its feel, the level control is a continuous adjustment, not a stepped control.

The LS2 has one operational quirk I should point out. When recording with a three-head tape deck, the deck's outputs must drive the "Direct" input if off-the-tape monitoring is desired. If the deck's outputs drive the tape input, it is not possible to select the tape input and the source one wants to record simultaneously. I suspect, however, that most users will want to use the direct input's superior sonics for their digital source, not a tape deck.

Music
I used the LS2 for all my listening for a few weeks, and did extensive side-by-side comparisons with an Audio Research SP11 Mk.II and the passive EVS Stepped Attenuator. I also performed a revealing test: I drove a power amplifier directly with the outputs of a D/A converter —nothing in the signal path—and compared the LS2 to this ideal condition. Incidentally, all the impressions were made using the LS2's "Direct" input; the difference between the direct and normal inputs was marginal, I felt.

The playback system included VTL 225W monoblocks driving Hales System Two Signatures with a Muse Model 18 subwoofer through bi-wired AudioQuest Dragon/Clear cable. The LS2 also saw action with the Jeff Rowland Design Group Model 1 amplifier driving the Signatures without the subwoofer, connected by 8' runs of AudioQuest Sterling/Midnight cable. The analog source was a Well-Tempered Turntable and Arm, fitted with an AudioQuest AQ7000 cartridge. An Audio Research SP11 Mk.II provided RIAA equalization and gain, with the signal taken from the tape outputs. Digital front ends included Wadia WT-3200 and Theta Data transports, a Wadia 2000, Theta DSPro Prime, and ARC DAC1 D/A converters.

The Jeff Rowland Model 1 was used for the direct comparisons; its balanced and unbalanced inputs, standby mode, and ease of use made it ideal. I ended up with nearly the whole system sitting on the floor to make switching, matching levels, and other logistics easier. The floor was covered with components—a Wadia 2000, DAC1, balanced and unbalanced cables, SP11, LS2, and the Stepped Attenuator: a wife's nightmare. Good thing I have a dedicated room with a door that closes.

My first impressions after connecting the LS2 were that it was remarkably transparent and uncoldored. In addition, I noted greater dynamic contrast and more bass than I'd been accustomed to with the passive Stepped Attenuator. Adding an active line-stage is usually accompanied by a decrease in resolution, loss of transparency, and a common sonic signature imposed on the music. Not so with the LS2: it seemed to have none of the shortcomings that have turned me toward passive preamps. I found myself greatly enjoying the time spent with the LS2. The additional bass and dynamics gave the music a more physical and powerful character than I'd been used to.

Although such listening is the best indicator of a component's long-term musical quality, direct comparisons at precisely matched levels are essential to discovering the component's sonic characteristics. The first comparison was with the Stereophile-owned SP11 Mk.II that I've used for about a year! As with all the comparisons described, levels were matched to within 0.11dB (the difference between 160mV and 162mV input to the power amplifier when playing the ~20dB 1kHz tone on the Stereophile Test CD).

As good as the SP11 Mk.II is, it was no match for the LS2. On its own it's an excellent preamplifier, but next to the LS2 its shortcomings were plainly evident. The SP11's line-stage had a somewhat thick, murky bass and lower mid-range by comparison. Solo piano, always a revealing source of subtle colorations, tended to be congested in the lower registers. The Steinway D on Intermezzo (Stereophile STP003-2), for example, had a ponderous, heavy character. Through the LS2, however, left-hand lines were crisp, clean, detailed, and uncoldored.

Similarly, bass guitar through the LS2 was tight and punchy in contrast to the SP11's somewhat fat, bloated bass. Kick-drum tended to be better distinguished from the bass, adding to the LS2's better sense of clarity and resolution

Some readers have queried whether Stereophile's use of certain components for long-term reference means that their manufacturers have given them to the magazine. Though we do have some components on long-term loan, in most such instances we have bought the review samples.

—JA

Stereophile, October 1991
in the lower registers.

The LS2 also excelled in presenting a three-dimensional soundstage. It was more laid-back and relaxed than the SP11, with a greater sense of seeing into the soundstage's depths. Detail toward the soundstage rear was better resolved by the LS2's more transparent rendering. Overall, it was hard to go back to the SP11 after hearing the same music through the LS2. And that's saying a lot: the SP11 is one of the more transparent preamplifiers I've auditioned.

A more challenging test of a preamplifier's transparency and neutrality is a comparison with a passive level control. This is where active preamps seem to take away the edge of palpalability that grabs the listener.

Comparing the LS2 to the EVS Stepped Attenuator, I was surprised just how close the LS2 came to the passive unit in transparency and getting out of the way of the music. There was no feeling of inserting a translucent veil between the music and listener when comparing the LS2 with a passive attenuator. This is a remarkable feat for an active preamplifier—no other preamplifier I've subjected to this test has approached the LS2's performance.

The LS2 didn't sound exactly like the passive attenuator; it had much more bass, dynamics, and rhythmic drive. The LS2 was so much punchier that I was convinced I'd errored in matching levels. Hooking up the voltmeter revealed that the levels were within a tenth of a dB—negligible. It sounded more like 3dB. The LS2 brought a new sense of life to the music, with greater dynamic contrast, more "slam," and a heightened sense of "feeling" the music's power and drive. The Steinway in the previously mentioned recording took on a much more satisfying feeling of weight and body—essential elements of this music. I found myself enjoying the more visceral feeling of music through the LS2, especially music in which the kick drum and bass guitar work together to drive the rhythm and create the music's energy. In these aspects, I preferred the LS2 to the EVS Stepped Attenuator.

The LS2 wasn't perfect, however. It added a very slight grit to mid and high frequencies. I wouldn't characterize it as a coarseness, but a fine layer of grain that made instrumental and vocal textures just a little less pure. The LS2 also made the soundstage very slightly less transparent. Detail that was clear and suspended in space at the soundstage rear tended to be some-what obscured through the LS2. These characteristics were apparent on recordings with great textural purity—The English Lute Song (Dorian DOR-90109), for example. The vocal had a little less sweetness and palpability through the LS2 in comparison to the passive unit, and there was less sense of the performers enveloped in the acoustic. On this recording—which has no bass and very little dynamic range—I preferred the passive attenuator.

I bring up these points not to criticize the LS2, but to put its performance in perspective. The differences cited were marginal; I must reiterate that no other preamplifier I've auditioned has even approached the purity, transparency, and neutrality of the LS2. In fact, I was surprised at just how close the LS2 came to the passive attenuator in those areas where passives excel.

There was one more comparison to make. I connected the output of a DAC1 directly to the inputs of the Jeff Rowland Model 1, listened, then inserted the LS2 in the signal path with its gain set to unity. The DAC1's low output level (1.74V when decoding a full-scale signal) made for perfect listening levels with many discs. Again, I was taken aback by how little the LS2 imposed itself on the music. No, there wasn't the same degree of musicality as having nothing in the signal path, but the LS2 was very nearly invisible.

Finally, I found the balanced outputs to be slightly better than the unbalanced outputs. There was a somewhat increased sense of soundstage depth and resolution of hall ambience. Comparing the LS2's balanced outputs to the unbalanced outputs, however, meant introducing the variable of the power amplifier's balanced and unbalanced input circuitry. Any sonic impressions are thus a combination of the LS2's outputs and the power amplifier's inputs.

**Measurements**

There were no surprises in the LS2's bench performance—it was generally excellent. Note that the following measurements were taken from the balanced outputs unless otherwise noted.

Frequency response (fig.1) was flat, and the bandwidth was very wide, reaching the ~3dB down point at 200kHz (right channel). I was a little concerned that the right channel was nearly half a dB lower than the left with the vol-
ume control at just over 3/4 of the way up. This isn’t a large difference, but I would have preferred to have seen perfect tracking, especially since the LS2 has no balance control. To see if this channel imbalance was consistent at any volume, I looked at how well the volume control tracked at various positions. The worst case was 3/4 of the way up (unfortunately the most used range), where the right channel was 0.68dB lower than the left. At the gain control’s 3/4-up position, the channel imbalance was much lower at 0.12dB, but increased again to 0.32dB at the 3 o’clock position. Although not perfect, this performance is acceptable. Unity gain occurred was just below the control’s straight-up position.

The LS2’s voltage gain was 23.8dB with the volume control turned all the way up from the balanced outputs and 17.9dB from the unbalanced outputs—typical for line amplifiers. Maximum output voltage, defined as 1% THD, was a very high 24.2VRMS (balanced) and 12.1VRMS (unbalanced) for the right channel. The left channel’s gain was slightly lower, measuring 23.4dB (balanced) and 17.5dB (unbalanced). Unless compensated for, a balanced output will provide a 6dB greater output level (double the voltage) than a single-ended output. Output impedance was 706 ohms and 235 ohms across the band and consistent between channels, from the balanced and unbalanced outputs respectively. This moderately low output impedance, coupled with the ability to swing large voltages, indicate that the LS2 will have no trouble driving any power amplifier through long or capacitive cables.

Input overload was greater than 13VRMS, the System One’s maximum generator level. This is well above any source’s output voltage, making the LS2 essentially immune to input overload. The measured input impedance ranged between 44k ohms at 20kHz and 53k ohms at 1kHz (50k ohms specified). The LS2 is polarity—correct—non-inverting—from either the balanced or unbalanced outputs. No DC was measured at the balanced or unbalanced outputs.

Unweighted S/N ratio measured at the balanced outputs was 69.3dB (left channel) and 68.4dB (right). Unbalanced S/N ratio was slightly better at 70.8dB (right) and 69.8dB (left), presumably because of the unbalanced circuit’s simpler signal path. Incidentally, a triode vacuum tube—especially the 6DJ8—generally has lower noise levels than other types.

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Fig.1 Audio Research LS2, balanced mode, frequency response at 1V (0.5dB/vertical div., right channel channel)

Fig.2 Audio Research LS2, unbalanced mode, THD+Noise vs frequency

Fig.3 Audio Research LS2, unbalanced mode, crosstalk (10dB/div.)

Fig.2 plots THD+noise as a function of frequency from the unbalanced outputs. Distortion levels were low across the band, measuring a constant 0.03% (left) and 0.025% (right) from the unbalanced outputs. The figures were somewhat higher when measured at the balanced outputs: 0.06% (left) and 0.045% (right). Since this measurement is a combination of THD+noise, I suspect that the plots are predominantly the noise component (a swept filter removes the test signal and the system plots everything left over). This is excellent performance.

Interchannel crosstalk is shown in fig.3 for the unbalanced outputs. The R-L plot was
slightly better than the L–R by about 5dB. The signal from the balanced outputs followed an identical curve, but were consistently about 5dB worse. The decreasing channel separation with frequency at 6dB/octave is indicative of capacitive coupling between channels. Still, the very worst case of 60dB at 20kHz—the balanced L–R measurement—is excellent. Cross-talk performance better than this is of questionable sonic value.²

Overall, the LS2’s bench performance was excellent.

Conclusion
The Audio Research LS2 has changed my mind about active preamplifiers. My previous comparisons between many preamplifiers’ line stages and a passive attenuator convinced me that no active stage could approach the transparency and purity that passives offer. The LS2, however, comes far closer to the reference EVS Stepped Attenuator than I thought possible. In addition to being astonishingly transparent and neutral, the LS2 improved the presentation by restoring the dynamics and low-frequency drive that might not always be heard through a passive attenuator. Music took on a much more visceral feel as bass was reproduced with power, depth, and punch.

What really impressed me about the LS2, however, was how little it intruded on the music. There was almost no common sonic signature superimposed on the presentation—the failing of lesser preamps. Instead, the LS2 got out of the way and let the music’s subtle tonal shadings, detail, and character express themselves. This is the highest goal of any audio component, and the highest praise I can give the LS2.

While the LS2 isn’t perfectly transparent—it added a slight layer of grain and marginally reduced the sense of palpability—it is far and away the most neutral preamplifier I’ve auditioned. It was unquestionably superior to the SP11 Mk.II, and came astonishingly close to the ultimate reference of transparency, no preamplifier at all. Also in its favor, the LS2 is well-made and functional. I would, however, like to have seen a balance control—especially at the LS2’s price.

I can’t recommend the Audio Research LS2 more highly. It is not only the most neutral and transparent preamplifier I’ve auditioned, it is more neutral and transparent than I thought any preamplifier could be. What more can one say?

² Phono cartridges, which produce the most impressive sense of soundstage width, have about 35dB channel separation at 1kHz and much less at higher frequencies.

LECTRON JH 30 INTEGRATED AMPLIFIER

Jack English

Hybrid, class-A/B, cascode transistor input, push-pull tube output, stereo integrated amplifier with a nonmagnetic chassis. Rated power: 30Wpc continuous average power into 4 ohms (11.8dBW). Amplifier dimensions: 15” (380mm) W by 6.7” (170mm) H by 13” (330mm) D. Weight: 39.6 lbs (18kg). Price: $3595. Approximate number of dealers: 6. Manufacturer: Lectron, 1 Boulevard Ney, 75018 Paris, France. Importer: Audio Advancements, P.O. Box 100, Lincoln Park, NJ 07035. Tel: (201) 633-1151. Fax: (201) 633-0172.

For many years, I have been searching out and listening to various pieces of stereo equipment. My unwavering goal has always been the procurement of those pieces of equipment that somehow capture some of the magic of live music. For me, live music (of virtually any type, amplified or unamplified) is invariably thrilling. Recorded music, even through a cheap portable radio, has always been enjoyable, but rarely thrilling. On very rare occasions, I have listened to some form of recorded music and experienced that thrill of the real thing. Unfortunatley, these experiences have been very few and far between.

Apparently, many audiophiles and audio reviewers are able to experience a greater satisfaction than I when they hear minor improvements, no matter how small. For me, the euphoric moments of experiencing the thrill of real music have been memorably rare. The improvements in performance over other things I am accustomed to must be substantial to even begin to provide me with these wonderful glimpses of the real thing. Pieces of equipment...
that accomplished this over the years included the Acoustic Research AR-3 speaker, the Dahlquist DQ-10, Larry Smith's original Pro Reference preamplifier, the BBC's LS3/5a, the Infinity 4.5, the Koetsu Black, and the Audible Illusions IIB. The Lectron JH 30 integrated amplifier now has to be added to this very short list.

As an equipment reviewer, I have access to some of the most wonderful pieces of gear imaginable. It is reasonable to expect that I would look forward to reviewing cutting-edge gear (I do). It is equally logical to assume that it would be very hard for me to get excited about reviewing any integrated amplifier, much less one rated at a mere 30W and lacking a phono stage. To loosely paraphrase Johnny Carson, "Wrong, megawatt breath!" It's easy to get enthusiastic about reviewing any Lectron product by just seeing it. They are lovingly put together, and it shows.

The JH 30 is functionally attractive. Its eight EL-34 output tubes glow brightly in front of the polished-chrome case covering three transformers—two output and one supply. This modest little 30-watter weighs in at just a shade under 40 lbs! On the front panel are separate stepped attenuators for the left and right channels (to facilitate channel balancing), as well as a single volume control. The latter is not stepped, allowing very precise setting of volume level. (This is becoming a pet peeve of mine: many stepped volume controls lack sufficiently small increments to select the desired volume.) There's also a selector switch on the front panel for four separate inputs (CD, tuner, video, aux). Finally, a switch for recording (much like that found on the Convergent Audio Technology SL-1) has three positions: disconnect, record, monitor.

At the rear of the unit are the four high-level inputs as well as tape inputs and outputs. Speaker cables are connected via five-way binding posts to 4 or 8 ohm taps (the former rated at 30W, the latter at 26W). The odd jack on the rear of the unit is used to power the optional phono stage (Lectron MC-30) through an umbilical cord. The aluminum chassis contains a printed circuit board, the circuitry itself consisting of a solid-state cascode input coupled with tube output. Of course, nothing is perfect. In this case, the white lettering on the front and back panels is difficult to read because of inadequate contrast with the grey background, especially in low light. There is no tube cage, although one may be made available as an option. This is a significant point, as the tubes are located just above the front control panel.

At this point (if you're still with me), you've probably begun to write this little jewel off—no phono stage, "only" 30W, hybrid, integrated design, etc. In addition, it isn't dual-mono, operates in class-A/B, and is a pentode config-

Lectron JH 30 integrated amplifier
uration. These points might convince you to overlook the diminutive JH 30. Please don't be so hasty (my conclusion at the end of this review will keep the wonderful news about this product away from the most hasty readers, as you'll see later). Now it's time for the really good news! This marvelous little amplifier is an absolute stunner, capable of raising goosebumps on all but the dead! It is one of but a handful of products that can definitely convey much of the magic of a live musical performance.

Of course, certain constraints absolutely must be taken into account. Since the amp is indeed "only" a 30-watter, it must be used with efficient speakers of specified 88dB/W/m or greater sensitivity. For example, the amp is a wonderful match with the Vandersteen 2Ci, assuming the listening room is not too large. It's a match made in sonic heaven with the ProAc Response Twos, if you can live without the very bottom octave. Second, it will perform much better with very low-capacitance speaker cables such as the TARA Labs TFA Return or Audio Research cables. Third, very low impedance speaker loads should be avoided. Typical loads of a nominal 4 or 8 ohms match very well. Fourth, no 30W amp will be able to supply the needed power to fill a large listening room. Fifth, in most applications, the little Lectron will simply be unable to play very loudly. Last but not least is the cost, which is expensive by any standard. It would seem that these conditions will cause many of you to overlook this little gem of an amplifier but, once again, please read on.

John Rutan (Audio Connection, Verona, NJ) was kind enough to provide me with my first real listening exposure to the Lectron amplifier, driven by a Melos CD player via the no-longer-available Peterson interconnects, and driving TARA Labs speaker wire and a pair of Vandersteen 2Cis. It was a marvelous experience. I couldn't wait to get a Lectron home. As soon as I did, I faced quite a dilemma. The JH 30 is an integrated amplifier without a phono stage. Since I was very eager to listen to the amp and far less eager to take my entire system apart, I quickly set up an auxiliary system using an old Magnavox CDB-473, Audio Research interconnects and speaker wire, and the Quad USA Monitors. The result was a knockout! Hmm... I quickly replaced the 473 with my Micromega CD-fl CD transport and a Theta DS Pro Basic. Marvelous! Out went the Pro Basic, to be replaced by the Theta DS Pro Generation II. Still better! But I'm getting ahead of myself.

One of the many things that consistently separates live from recorded music isn't the music itself at all—it's all the other sounds that take place during recording: the performers' breathing, people moving about, doors opening and closing, sounds reverberating in the hall, and pages of music being turned. Recording engineers take many of these sounds out of recordings purposefully but can never remove all of them. The Lectron let me hear those little, lifelike sounds that remain. It constantly gave me cues that there were indeed real people making music the way real people do: by breathing, moving, reading, and occasionally making some other unwanted sound. These buried snippets of real life were quietly and gloriously revealed. For example, with the Lectron, I could hear Leinsdorf and the LA Philharmonic (The Firebird Suite, Sheffield Lab CD-24)—not just the music, but the sounds of the people making the music. The key to recorded music sounding live is not the ability to recognize that the tympani were located in the rear-left corner of the stage approximately 15' from the front of the stage and 10' from the (wooden) rear wall. The key is being aware that a real human being was playing. As a result of its state-of-the-art ability to reveal inner detail, on many wonderful occasions the Lectron let me hear just that.

It's always instructive to test one's assumptions. I had the opportunity to do exactly this not very long ago with a group of audiophiles. Guy Hickey runs a computer bulletin board called The Audiophile Network (TAN).1 The board is located in southern California. As a member of TAN, I offered to host an east coast meeting to help members get to know one another. In one large room of my house (approximately 4500 cubic feet—for comparative purposes, a 9' by 12' room with 8' ceilings contains 864 cubic feet of volume) I set up a system consisting of a Magnavox CDB-473 or Adcom 575 CD player, TARA Pandora interconnects, TARA TFA Return speaker cable, ProAc Response Twos (minimonitor-sized speakers with high-80s sensitivity), and the Lectron. Taking into account every caveat I offered above,

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1 The Audiophile Network, 14155 Kittridge Street, Van Nuys, CA 91405. Tel: (818) 782-1676 (voice), (818) 780-6260 (Fax), (818) 988-0452 (computer, 300, 1200, or 2400 baud, 8 Data Bits, 1 Stop Bit, No Parity). A year's subscription costs $21—JA
this setup simply shouldn't work well in this room.

It worked splendidly! This is one of the secrets that I won't share in the fake “Conclusions” section—the little Lectron simply does things it shouldn't be able to do: in this case, have adequate power to fill a very large listening room to very acceptable volume levels with a reasonably efficient speaker.

Having successfully mated the Lectron with the Quads and ProAcS, I opted to test still another of the caveats listed above: the Thiel CS5 speakers. The monstrous Thiel is a very low-impedance load (nominally 2 ohms); the Lectron shouldn't be able to handle it at all. (With my Audio Research Classic 150 monoblocks driving the Thiels, the overall performance improved markedly using the 2 ohm taps.) By now I'm sure you've already guessed the punchline: with the Thiels the Lectrons once again formed a magical combination (albeit in my normal listening room—approximately 2800 cubic feet). No, the Lectron didn't have the effortless power of the superlative ARC monoblocks, but it was able to offer the big boys a very credible challenge. We'll also keep this little secret to ourselves: the Lectron can indeed drive low-impedance loads (at least down to 2 ohms), although impedances even lower than that should be avoided.

I've warned you that the Lectron should not work with low-sensitivity speakers, should not be able to drive low-impedance loads, and lacks the power necessary to fill a large room. However, I've also told you that it was, in fact, able to do many of these things to a far greater extent than should have been expected. I simply have been astounded by the capabilities of this marvelous little integrated amplifier. It must be remembered that all of these tests were done using high-level inputs (remember, the JH 30 does not have a phono stage). In my conclusion, I will list all of the appropriate caveats but won't share my actual experiences with the amp. Those who simply read the “Conclusion” and accept the caveats at face value will move on to another review. This will help minimize the demand for this little wonder, making it easier for the rest of us to find it.

Of course, all of the above would be for naught if the Lectron wasn't also a good sonic performer. But it isn't a good sonic performer—it's a captivating sonic performer! Returning to my earlier example of The Firebird Suite with the LA Philharmonic, the JH 30 revealed layer upon layer of buried inner detail from the source material. Equally important, it gave me a listening experience that closely paralleled my first exposure to the original Koetsu Black cartridge. Everything I listened to was rich, lush, full, and musical, as well as being liquid, fluid, and grain-free with CDs as my source material! It was as if all of the missing spaces between the bits of digital information had been filled in and covered with a silky-smooth glaze. The music had a natural warmth and mellowness, while simultaneously revealing Stravinsky's unusual string techniques.

I had been spending a great deal of time listening to Below The Waste, by Art of Noise (China/Polydor 839 404-2—they seem to have dropped the “The” from their name), on my Sony Discman. I decided to give their usual sonic montage of pleasant music, weird ideas, and a cacophony of strange sounds a whirl in the main system with the Lectron. The result was startling. There was so much more to be heard on this recording that it seemed entirely new. The most notable differences were in the smorgasbord of textures, shadings, and subtleties of the music. The Lectron didn't reveal new sounds per se, but rather presented a richer, fuller set of textures to all of the sounds I already knew were there. Equally amazing was the very believable soundstage presentation from this multi-tracked, sampled, and patched-together collage: excellent width, remarkable depth, and precise placement within soundstage that never existed in reality (as we know it). And all of this from only the first cut—“Dan Dare.”

The musical richness continued and was especially pleasing on “Yebo,” with Mahlatini and The Mahotella Queens. The Lectron's ability to reveal inner detail yielded many musical wonders that never reached my ears with the Discman. The driving midbass was remarkably open, powerful, full, rich, tight, and clean (remember, this is a 30W tube integrated amplifier). To add further delight, dynamic contrasts of the most subtle through enrapuring crescendos were recreated with the realism we've grown to expect from monster-watt tube amps. This particular combination of stunning detail resolution coupled with rich, full harmonics made Chris Isaak's voice even more enticing on any of the marvelous tracks from Heart-Shaped World (Reprise 9 25837-2). The sensa-
tion was once again one of listening to a person sing, not just hearing the sound of a voice.

Generally I'm not a fan of country music. But with the Lectron I even spent some time listening to a number of recordings that had been lying around unopened for quite some time. One was *Circle II*, a 20-song collection by the Nitty Gritty Dirt Band and scores of friends including Johnny and Rosanne Cash, John Hiatt, Bruce Hornsby, Emmylou Harris, Chet Atkins, Roger McGuinn, and Chris Hillman, John Denver, Roy Acuff, and a host of others as well (Universal UVC 12500, DDD, reviewed in Vol. 12 No. 9). It was fun. The Lectron helped me hear a bunch of people really enjoying themselves making music. The sound was realistically open though not spacious—just as it should be, given the original recording space. Since it sounded so lifelike, it was much more enjoyable. The Lectron opened a door for me into a musical form that I normally overlook by making the performance so much more lifelike than I've normally experienced, especially with CDs.

Critics? Sure I had some. The highest trebles might have been a bit soft, and the deepest bass attenuated (although I heard no reduction in level on any of the 88-note piano test from the Prosonus Studio Reference Disc CD, SRD, track 60). Heavy-metal groups or powerful recordings of full orchestras playing sonic spectaculars will lack adequate impact with the JH 30. The Lectron was more comfortable with "simpler" music such as a string quartet. And the price, for many, will be an insurmountable barrier. But what magic, what realism. Damn the criticisms. This is a truly outstanding piece of audio equipment rivaling anything I have ever heard. Yes, there are limitations based on the lack of a phono stage, the low output power, the impedance constraints, and price. The solutions are simple: Take out a loan. Sell the equipment you have now and buy other equipment that works with the Lectron. You won't be disappointed.

This is actually the last paragraph of my review. Some things just shouldn't be shared with everyone. In this case, "everyone" refers to all of those audiophiles who begin reading a review at the end with the section labeled "Conclusion." I've written a special little conclusion that will keep them uninterested in the JH 30—let's just keep it as our little secret. This is simply a stunningly musical product that will work wonders for you if you can use it within your system or build a system around it (and it is certainly good enough to merit this consideration) and work within the constraints described here. By all means, I urge, beg, and implore you to audition this marvelous hybrid integrated amplifier. For all of us, I want to thank Jean Hiraga of Lectron for designing/building it, and Hart Huschens of Audio Advancements for bringing it into the US. Well done!

**Conclusion**

As many of you have turned to this conclusion as the place to start reading this review, I'll sum everything up concisely to save you time. The Lectron JH 30 is a 30W hybrid (solid-state and tubed), integrated amplifier without a phono stage. If you have a large listening room or you have very inefficient speakers or your speakers have very low impedance or you listen to music at extremely loud levels or you are a bass freak or you prefer to listen to sonic spectaculars or you wouldn't consider owning an integrated amplifier or you wouldn't buy something with tubes or you wouldn't buy an amplifier made in France, then there's no need for you to go back and read this review—go on to the next "Conclusion"! If you feel the only tube amps worth listening to must be dual-mono, operate in class-A, and be triodes, you, too, should go on to the next "Conclusion." The Lectron JH 30 isn't the one for you.

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2 Monsieur Hiraga was one of the pioneers in the mid to late 70s in persuading the world that cables mattered, that passive components mattered, and that tubes and class-A working were still a viable approach to musical sound (though his insistence that massive horn-loaded loudspeakers are the best route to good sound is debatable). If you can read French, it's well worth exploring his writings in two anthologies published in 1985 by the magazine he (used to) co-edit, *L'Audiophile: Sélection de L'Audiophile* Vols. 1 (*L'Electronic*) & 2 (*Les Transducteurs*). Both are published by Editions Fréquences, at the address given in the specifications at the head of this review.

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Stereophile, October 1991

WorldRadioHistory

165
SNELL E/III LOUDSPEAKER

Larry Greenhill

Three-driver dynamic loudspeaker. Driver complement: one port-tuned 8" woofer, one 1" treated textile-dome tweeter, one 0.75" soft-dome, rear-firing tweeter. Frequency response: 39Hz–20kHz, ±1.75dB anechoic (response specified on-axis or up to 15° off the horizontal axis). Crossover frequency: 2.7kHz, 24dB/octave slope. Nominal impedance: 6 ohms. Sensitivity: 91dB at 1W (2.83V) at 1m, anechoic (sensitivity higher in a normal environment). Power requirements: suitable for use with amplifiers rated from 20Wpc to 100Wpc. Finishes available: matched-grain, hand-sanded and -oiled pairs in oak, dark oak, walnut, or black veneers, or black-finished veneer. Dimensions: 13" W by 35" H by 11" D. Shipping weight: 50 lbs each. Price: $990/pair. Stands: $120/pair, available in black veneer. Approximate number of dealers: 125. Manufacturer: Snell Acoustics, 143 Essex Street, Haverhill, MA 01832. Tel: (508) 373-6114. Fax: (508) 373-6172.

One question posed by JA at the July 1991 Stereophile Writers' Conference had to do with the ease of reviewing: Is it harder to write a bad review of an expensive product than a good review? I find it hardest to write a good review of an inexpensive product. If I admire a less expensive loudspeaker, for example, it may become a recommended component, and can displace a more expensive speaker (that received mixed comments) from our twice-yearly rankings. This can be a big responsibility; even a conditional rave of a low-cost product means that JA may assign another Stereophile reviewer to do an immediate follow-up report. The Snell Type E/III loudspeaker may be a good case in point.

TJN, who had been breaking the speaker in for me, warned me what was coming when he sent along this product's three modest-sized cartons. "I really like this loudspeaker," he said. His tone of voice suggested that the Type E/III is not at all a hobbled or downsized cousin of the Snell Type C/IV that was reviewed positively by Bob Harley (Vol.14 No.4). Later, Kevin Voecks, Snell's chief designer, informed me that Snell sells more Type E/IIIs than any other speaker in their line. Customers and dealers were voting with increasing orders and sales.

The late Peter Snell designed the first Type E as a speaker for the people, to bring some of the sonics of the Type A to the market for a price under $1000. The Type E/III appeared in early 1990 about the same time as the Type C/III (the Type C is now in its fourth version). The speaker's low price and TJN's enthusiasm suggested I might like the speaker on two counts: low price and good sound. As you see, this reports finds the Snell Type E/III meets Peter Snell's criterion all too well.

Technical description

The Snell E/III is a medium-sized, ported,
nominal floor-standing system employing an 8" woofer and a 1" textile-dome tweeter. An additional rear-firing 0.75"-dome tweeter is mounted on the enclosure back. The E/III closely resembles the "slim, streamlined, elegant appearance" of the company's more expensive C/IV, but lacks that three-way system's separate midrange driver and its unique diffraction-reducing baffle mounting and grille-cloth arrangement. My review samples were finished in a dark oak veneer. Also supplied were black, boxlike stands, slightly smaller in area than the E/III's dimensions, that raise the E/IIIs 10" off the floor. Kevin Voecks finds that the stands reduce midrange colorations due to floor reflections.

The cabinet is made of ½" high-density particleboard, the front baffle of 1"-thick particleboard. A number of internal braces are used to make the enclosure more rigid. Low-frequency signals are vented from a 3"-diameter port in the lower rear of the cabinet. As reported for the Snell C/IV, the fit and finish of the Snell Type E/III supplied for review were excellent. The cabinets were matched closely, for their veneers were taken from different depths of the same piece of wood.

The input terminals sit in a cutout well about halfway up the cabinet rear. As with the C/IV, the E/III features two pairs of five-way binding posts for bi-wire operations. Bi-amplification is possible with the E/IIIs by using two stereo amplifiers, one per channel ("vertical" bi-amping). The terminal plate also has a front-tweeter level control. Instructions from Kevin Voecks suggested that this control should be set in the 9–10 o'clock position for the flattest frequency response (all other Snell models are flattest at 12 o'clock). The slightly recessed input terminals did not interfere with speaker-cable connections, including both Monster Cable and Levinson HFC-10 types.

The Type E/III's Vifa tweeter is the same as the HF unit found in the top-of-the-line Snell Type A/III Improved. This tweeter is the major innovation in the latest Type A, and accounts for its much-improved treble response over previous Type A designs (see review in Vol.13 No.3). The 8" woofer is mounted halfway up the front baffle and has a cast basket frame. It was chosen for its flat response both on- and off-axis, and has a particularly low-distortion, controlled response in its upper range. The rear-firing, ½" dome tweeter is similar to the unit in the Type C/IV, but has greater power handling.

The Type E/III's crossover reflects the work done by Kevin Voecks using Canada's National Research Council speaker test facilities in Ottawa. As detailed by Bob Harley in the introduction of the Snell Type C/IV review (Vol.14 No.4), many NRC-influenced speaker designs feature "steep crossover slopes, wide dispersion, [and] smooth off-axis response." The Type E/III, at half the Type C's price, shares many of its design characteristics. The E/III's 24dB/octave crossover and 2.7kHz crossover frequency can be found in the Type C's tweeter/ midrange section. The higher-order filter allows the Type E/III to have fewer driver interactions, higher power handling, improved frequency and off-axis response, and lower distortion.

Why mount a tweeter on the back of the speaker enclosure? The front tweeter becomes more directional at higher frequencies, and contributes less to the reverberant sound field, or total energy in the room. As the tweeter becomes more directional, its dispersion narrows, giving a "flashlight" effect (producing music only directly in front of the driver). The back-mounted ½" tweeter begins to play when musical information includes frequencies higher than 6kHz, gradually increasing in volume with frequency using a first-order slope. At those frequencies, the rear tweeter contributes to the reverberant soundfield and maintains the total radiated energy from the entire speaker. This maintains, as Harley noted, the speaker's "sense of air and spaciousness" while the front tweeter's dispersion narrows.

The Type E/III's crossover employs high-quality non-polarized electrolytic capacitors, Mylar capacitors, and air-core inductors. The crossover design was created with a computer program after each driver had been measured in the very cabinet used in production. Once designed, the actual manufacturing process involves tuning each speaker's frequency response, with grilles in place, to within 0.5dB of a standard, called the "reference master." This tolerance is far better than the ±4–5dB quoted by the vendors supplying the drivers. Each speaker is trimmed by a "specialist," who spends most of his time at the Snell plant just matching loudspeakers to the reference master. This is done by overwinding inductors, and then pulling turns off, one at a time, starting with smaller capacitor values, and adding trim-
mers; and finally, adjusting variable resistors. The tweeter-level control is also calibrated against the reference master. These final speaker adjustments require 20 minutes’ labor for each Type E/III produced.

Bob Harley’s C/IV review emphasized the company’s cost-priority design criterion. Expenses and materials are limited to components or labor expenditures that produce audible differences. With the Type E/III, the cost reflects the speaker’s high-quality woofers and tweeter, and the time spent in calibration. The stands, which help the unit’s midrange, are available à la carte. Other niceties, such as expensive caps, fancy internal wiring, or very thick cabinet walls, are not included. As a result, Voecks was able to keep the price of a pair of Type E/IIIIs and stands below $1200.

Listening
The Type E/IIIIs were used as my primary loudspeaker for a month. Later, they were compared to the Quad USA Monitors/SW-63 system and to Snell A/III Improved loudspeakers. Amplifiers included a Mark Levinson No.27 (USA Monitors used this amplifier exclusively) and a Krell KSA-250. In addition, I used a very inexpensive Lafayette Criterion SR 10A receiver, just to test Kevin Voecks’s suggestion that the Snell Type E/IIIIs could also perform with lesser electronics. The Quads and the Snell A/III’s midrange/tweeter section were driven by the Levinson No.27 via 15‘ runs of Monster Cable. Because the two systems were bi-amplified, the Quad/Gradient subwoofer and the A/III’s woofer section were driven by the Krell KSA-250 via HF10C Levinson speaker cables. The Quad system used its own Gradient crossover unit, using balanced interconnects; the Type A/III Improved speakers used a Snell-manufactured outboard electronic crossover with single-ended connectors. Vinyl discs were played on a Linn LP-12 turntable with a Magneplan tonearm and a Yamaha M-1000 moving-coil cartridge; CDs were played on a Krell MD-1 CD turntable connected by standard interconnects to a Krell SBP-32X D/A converter. Other sources included the Day-Sequerra FM Reference, Onkyo TU-9090 II, Revox B-260S, and Magnum Dynalab Etude tuners. Preamplification was provided by a Levinson No.26 preamp with an internal moving-coil head amp and by a Krell KBL preamp. Analog interconnects included AudioQuest LiveWire Topaz interconnect cables and Krell Cogelco balanced leads.

My listening room provides less-than-ideal room-mode distribution. Measuring 13’ W by 27’ L, it has a semi-cathedral ceiling 12’ high at its peak. The room’s outer wall, in cross-section, is half an arch, reaching over to meet the other side wall, which is a straight line. The entire room, with a large 10’ by 8’ opening to the kitchen, the stairs, and upper hallway, represents over 4200 ft². Its room characteristics are live rather than damped. This was felt to be a good test for the Type E/III, which is represented as an efficient loudspeaker, being 2.5dB more sensitive than the C/IV for the same input voltage.

Anne Kelley, Snell Acoustics’ Executive Administrator, provided me with a copy of the Room Analysis Computer Program, CARA, and LEO. These programs analyze room resonance mode distribution and suggest optimal speaker/listener locations for each dimension of the listening room. Following LEO’s suggestions for “better” locations (“best” was not convenient!), the E/IIIIs were positioned about 32“ from the rear wall (middle of woofer to wall) and 36” from each side wall. The speakers were toed-in slightly and were 6’ apart. The seated position was 8’ away from a center line between the speakers, the seat placing my ears about 34” off the floor (about the level of the E/III’s tweeters). All listening was done with the grille cloths in place. In addition, I adjusted the tweeter-level controls to 9:30, as Kevin Voecks had suggested.

The Snell E/IIIIs made a definite impression right away, and a good one. Despite their size, the E/IIIIs came alive in my listening room, with a big soundstage presentation, a slightly forward quality, and no harshness or roughness. The speaker conveyed the warmth inherently present in music, while being open, fast, and showing considerable deep-bass extension. This warmth added a slight richness to the sound that I found very pleasing, particularly on well-recorded piano music. Chopin’s Nocturne, Op.62 No.1, as played by Vladimir Horowitz (Last Recording, Sony SK 45818, DDD), came alive with an unusual richness and beauty that was captivating, almost hypnotic. The piano had the correct power and weight, good dynamic contrasts, and an overall excitement that had been missing before. Some, but not all, of Horowitz’s majestic playing could be sensed with the inexpensive Lafayette receiver.
Even with this upper-bass warmth, the midrange of the E/IIIs was tonally neutral. As with the larger Type A, the E/III's midrange did not intrude. Upper instrumental timbres were true, and did not differ whether heard on the Quads, Type A, or Type E/IIIs. There was a natural, if somewhat remote, quality to the midrange.

The treble range was smooth, seeming to roll off gradually and unobtrusively. The Type E/IIIs passed the walk-around, stand-up, sit-down pink noise test for evenness of coverage described by Keele in his Audio review of the B&W 801 Matrix Series Two loudspeakers (Audio, Vol. 74 No. 11, p. 112). My pink-noise source was the Stereophile Test CD, track 4. There was a treble "familial resemblance" shared by Types A and E, despite the fourfold difference in price. This was not surprising, considering that the two speakers use the same tweeter. Yet the E/III's upper-bass emphasis made the treble less prominent than heard over the Type A. The rear tweeter gave the Type E/IIIs a sense of air, although its top extension and sense of openness was not the equal of the dipole Quad electrostat.

Most of the Snell speakers I've owned or auditioned—three versions of Type A, an all-too-short two-day session with the Type B's, the Type C/IV, and now the Type E—have had superior dynamic range. Whether played at high or low volume levels, the Type E/IIIs transmitted the full impact of percussion, bass drum, or electronic synthesizer, with no sense of strain or compression. This was revealed by the electronic synthesizer transients on Telarc's Time Warp CD (CD-80106), particularly on Don Dorsey's "Ascent." The power of Stravinsky's orchestral colors, woodwind timbres, and dynamics were revealed on the Lorin Maazel recording of Le Sacre du printemps, particularly the opening of "L'Adoration de la terre" (Telarc CD-80054). My listening notes on this recording suggest that the dynamic range only enhances the sonics, as I wrote, "Here is great instrumental definition, wonderful woodwind timbre, that is not lost at either high volumes or low... This speaker has no right being this good!"

The Type E/III's bass response was stunning. I had to remind myself over and over that I was listening to a ported, two-way, $1100 speaker system with stands. There was complete control, no overhang, and no peakiness in the mid- and low-bass musical spectrum. Yes, the Type E's pitch definition was bettered by the $3000 Quad SW-63 subwoofers, but not by much. But at their best, the SW-63s could only go down to 40Hz; the Type E/III had no difficulty playing 30Hz organ notes with power and clarity. Keith Johnson's new Reference Recording, the Dallas Wind Symphony's Fiesta! (RR-38CD), provided a wonderful opportunity for the Type E/IIIs to show their abilities to convey the warmth, weight, and power of a woodwind orchestra. In particular, H. Owen Reed's Prelude and Aztec Dance, with its opening soft chimes suddenly interrupted by bass drum, hits like a stun gun. The explosive percussion notes have a cliff-wall transient attack, and the Type E/IIIs gave me no preliminary clue of their power and impact. In contrast, the Gradient SW-63s just bottomed out at similar volume levels.

I'm very fond of organ music; the Type E/IIIs did not disappoint. Jean Guillou's organ transcription of Mussorgsky's Pictures at an Exhibition (Dorian DOR-90117) was reproduced with excellent deep-pitch definition, while delivering two of my favorite subwoofer effects—room "lock" and "shudder"—on "Gnomus" (track 2). Track 15, the thunderous "Great Gate of Kiev," played with impressive dynamics, showing no intermodulation of the high notes by the all-out use of bass pedal. Richard Strauss's Also Sprach Zarathustra, as recorded for Kubrick's 2001: A Space Odyssey (on Telarc's Time Warp, CD-80106), reveals the Type E/III's ability to reproduce the organ's 32Hz C-major fundamental in my listening room with superb pitch definition, air, and power.

But there were limitations to the E/III's 8" ported woofer, as the laws of physics for such small systems would suggest. The E's ability to convey the power and pitch of the very lowest, subterranean bass—such as the harmonics of the 25Hz bass-drum whack in David Wilson's "Liberty Fanfare" on the Wilson Audio Sounds of War and Peace—was easily bettered by a dedicated subwoofer such as the ULD-18. The big Velodyne shook the room, made the earth move, while the Type E/III produced a deep, somewhat muddy note, with about 25% of the ULD's power.

Of course, the Type E/III's tonal balance, great dynamic range, deep-bass response without overhang, and relatively uncolored treble and midrange response all depend upon use of the optional stands. The $120/pair square wooden stands are musts, and a small price for

Stereophile, October 1991
tapping the potential of these fine two-way speakers.

**Don't trade in the Divas just yet**

Well, so far this report is a boldfaced rave. The reader and other manufacturers may wonder what I use to sweeten my coffee. This review's considerable enthusiasm is the prelude to suggesting that the Snell Type E/III, even at its $1100-with-stands price, should join the ranks of more expensive high-end gear. After all, the Type E/III does meet JA's criteria for membership, recently applied to the *el cheapo* ($850/pair) Epos ES11 speakers (Vol.14 No.6). Both speakers convey "the musical values inherent in recordings with the minimum editorial influence." The little Snells communicate music's warmth and body, with a powerful bass response, great dynamic range, and a good rendition of midrange and treble timbres. In my listening room, the Type E/IIIs reproduced 95% of the musical information conveyed over the more expensive Type As and Quad systems. What could possibly be missing?

Over extended listening sessions, I became aware that the E/IIIs may have a slight frequency-response emphasis in the 80–200Hz range. I am not offended by this coloration, but some may be. After all, the E/III's 8" woofer has to handle all signals below 3kHz. Listening to station announcers with the Day Sequerra FM Reference, the E/III's upper-bass emphasis was not enough to markedly deepen male voices or make them tubby or nasal. The added warmth made the overall upper-bass sound closer to the slight warmth I heard over the newest Snells, the Type Bs, auditioned briefly in *Stereophile's* Santa Fe listening room during the 1991 Writers' Conference. Both the Quad USA Monitors and the Type As were free of this effect; I missed this warmth when switching to those more expensive systems.

Despite the Type E/III's other strengths, it just cannot image as well as the Quads, and lacks the transparency of a Type A/III Improved or the Quads. The Type E/IIIs can't disappear, or paint the holographic musical image that more expensive loudspeakers can. Their sonic soundstage can't be easily defined, despite a number of attempts to adjust the enclosure's toe-in angles. Instruments did not seem distinctly separated, and their positions relative to one another can't be easily determined. The Type E/IIIs produced only a limited sense of soundstage depth.

Switching between Type E/IIIs and Quad USA Monitors was the most revealing. Although the Type E/IIIs did not commit major errors in the mids and highs, their errors of omission made the more expensive electrostats the overall winner in this region. Sure, the Type E/IIIs have great focus, snap, and transient speed playing the "L'Daddy" cut on *James Newton Howard and Friends* (Sheffield Lab 35); switching to the Quad USA Monitor revealed the depth and reverberation ("wetness") inherent in the recording. At almost four times the price, the Quad USA Monitors are just more transparent, open, detailed, and fast.

**Conclusions & perspective**

The Snell Type E/III is a "find," a real value: high-end sound for under $1200, stands included. Their bass response alone competes with more than one loudspeaker that has been nominated for Class A ratings in our "Recommended Components" feature. Some, but not all, of the strengths of this speaker can be heard with inexpensive electronics. The Type E's high efficiency means that it can be included in many budget systems, where more money can be spent on the loudspeaker and less on power amplification. If low-powered, substandard amplifiers like the ca-1970 Lafayette Criterion can make the Type E/IIIs play, then powerful, high-end, solid-state amplifiers really make them sing. The ease of setup and upper-bass warmth, coupled with a clear midrange and smooth, if unobtrusive highs make the Snell Type E/IIIs one of my favorite loudspeakers.

The speaker's weaknesses—its midbass emphasis, its tendency to provide a diffuse image and a shallow, weakly defined soundstage—reminded me that design tradeoffs are necessary to produce a relatively inexpensive speaker. These shortcomings will be problems for some listeners. They may prefer the other low-budget, high-end "find," the Epos ES11, whose ability to image and produce a well-defined soundstage was shown in TJN's extensive listening tests in July. Yet the Epos may not match the Type E/III's dynamic range and bass extension [and has a somewhat colored lower midrange region—JA]. With these limitations, the Type E/IIIs will probably end up at the very top of our newly revised, Class C "Recommended Components" ranking, but below the Type A/III Improved. For those who favor a full mid-
bass response, great dynamic range, and deep bass, careful auditioning of these speakers is in order. Like me, these listeners may find that the Type E/IIIs have a richness and soul found in few audio products. No wonder Kevin Voecks describes this two-way system as a *Vox Populi*; it truly offers the wonder and excitement of recorded music at a modest price.

**JA adds a coupla measurements**

Before TJN sent the E/IIIs off to Larry for auditioning, I ran them through a subset of my basically standardized set of tests. Fig.1 shows the speaker's impedance and electrical phase. (The twin curves in the treble show the tweeter-level control set to its minimum and maximum positions.) Dropping to 4 ohms or below only in the upper bass (and the high treble when the level control is set to its maximum position), the E/III is reasonably easy for an amplifier to drive. Even relatively inexpensive electronics—vitae LG's antique Lafayette receiver—should have no problems driving the speakers to reasonable levels. The woofer tuning is revealed by the peak at 51Hz and that of the port by the trough centered on 33Hz, both figures suggesting good bass extension, as noted by LG in his auditioning.

In the frequency domain, the righthand side of fig.2 shows the speaker's anechoic response measured on the tweeter axis at a distance of 44° with the tweeter control at 9 o'clock and the grille on. (The B&K microphone's own departure from flat response has been subtracted mathematically.) Very smooth through the important midrange, there is a slight lack of energy just above the crossover region, above which the top octave of the treble stands a little proud on this axis. Averaging the speaker's anechoic response across a 30° horizontal angle on the same axis reveals very little change (fig.3), suggesting that the speaker has excellent dispersion. This is confirmed by fig.4, which shows just the differences in response as the listener moves first 7.5°, then 15° off the frontal axis. These curves suggest that the E/III offers the flattest treble response when

![Fig.3 Snell E/III, anechoic response on tweeter axis at 45° averaged across 30° horizontal window](image)

![Fig.4 Snell E/III, horizontal response family at 45°, normalized to the tweeter-axis response, from front to back: difference in response 15° off tweeter axis; 7.5° off tweeter axis; reference response](image)

![Fig.5 Snell E/III, impulse response on tweeter axis at 45° (5ms time window, 30kHz bandwidth)](image)
Fig. 6 Snell E/III, cumulative spectral-decay plot

listened to a little off-axis; ie, either not toed-in all the way to the listener position, or toed-in to cross the speakers' axes just in front of the listener. Either way, you get a basically neutral tonal balance at an affordable price.

To the left of fig. 2 are shown the individual responses of the woofer and the port measured in the nearfield (ie, with the microphone capsule almost touching the dustcap in the former case, and positioned about ¼” in front of the port center in the other). The level matching of these curves with the anechoic response to their right can only be approximate, but the confirm that this Snell does have excellent bass performance, the relatively large enclosure allowing the woofer to effectively reproduce instruments down to 50Hz, a few notes above the bottom of the double-bass's fundamental region, the pot supplementing that output down to 30Hz or so. This is about the most extended bass I have seen in a modestly priced loudspeaker that also offers a musically neutral midrange.

Turning to the time domain, fig. 5 shows the speaker's impulse response on the tweeter axis, which implies a highish-order crossover. This was confirmed by looking at the individual responses of the two drive-units, which indicate 24dB/octave acoustic slopes. Mathematically processing this impulse to show how the frequency response changes as the sound decays gives the “waterfall” plot in fig. 6 (ignore the black ridge at 15,750Hz, which is due to the computer's monitor frequency). Some hash can be seen in the treble, as can some complicated midrange behavior, but both are at least 12dB down from the initial sound level. The complex ridge at 3kHz and the small residual at 5kHz are probably due to woofer breakup modes, but both are well down in level. Overall, the Snell E is relatively free from coloration-inducing resonant behavior.

To sum up these measurements, they indicate a tonally neutral, low-coloration design with excellent bass performance at its price. I am not surprised LG was so enthusiastic in his recommendation.

—John Atkinson

**GENESIS IM-5200 LOUDSPEAKER & SERVO 10 SUBWOOFER**

Thomas J. Norton


172 WorldRadioHistory Stereophile, October 1991
Servo 10: servo-controlled, self-powered subwoofer with 10” drive-unit. Power output: 150W. Acoustic distortion (near-field): <5% THD at 5% p-p displacement, 35Hz (<0.2% typical under music conditions). Dimensions: 16.5” H by 17” diameter. Price: $895.

Both: Approximate number of dealers: 50. Manufacturer: Genesis Technologies, Inc., 953 So. Frontage Road West, Vail, CO 81657. Tel: (303) 476-3012. Fax: (303) 476-3518.

Arnie Nudell, co-founder and former president of Infinity Systems, Inc., decided in 1989 that he’d had enough of the smog and congestion in Los Angeles. He left Infinity, trading the fun and sand of Southern California for the fun and snow of the Rocky Mountains, and retired to Vail, CO—leaving behind the high-end audio rat-race.

Or so it seemed. Perhaps it was the thin, clean, inspirational mountain air (though there is no shortage of those who are of the opinion that we suffer more from hypoxia than inspiration in our own little high-altitude redoubt here in Santa Fe). Or maybe it had to do with the head-clearing activity of zipping down the slopes at 50mph, dodging tourists and other former Californians (another popular Santa Fe pastime, I should add). In any event, dreams of starting a new loudspeaker company apparently popped into Arnie’s head somewhere along the line. There must be something about designing audio gear in general—and loudspeakers in particular—that gets under the skin. While I can name a few loudspeaker designers who abandoned their trade early on, most who enjoy a reasonable degree of success stay with it. Ask Henry Kloss. Or Roy Allison. Or Bud Fried.

One fellow Californian that Arnie Nudell did manage to bump into was Paul McGowan, co-founder of PS Audio. Paul also decided that a change of scenery was a good idea—as well as proving that the urge to create new, innovative audio products was not restricted to loudspeaker designers. And although PS Audio was located in a considerably more bucolic part of the state than was Infinity, Paul nevertheless pulled up stakes to join Arnie in Vail, commencing a design process which would lead to a new line of loudspeakers from an entirely new company: Genesis Technologies, Inc. ¹

Genesis is not an entirely new name in loudspeakers, but the Nudell/McGowan Genesis is a completely different animal from now-defunct Genesis Physics of Portsmouth, NH. The new Genesis bought the rights to use the

1 \text{I’ve long since determined that there really is no such place—as have others when they dubbed Los Angeles a group of communities in search of a city. Infinity Systems, Inc. is in Chatsworth, one of those communities.}

2 \text{It’s our understanding that Paul McGowan still consults for PS Audio.}
name, but not the responsibility for the old company's products. Fortunately (for the new Genesis, at any rate), Genesis Physics was a very small company which never really achieved a wide distribution, so Genesis Technologies is not likely to be inundated with repair inquiries. Don't look to Vail to fix that broken tweeter in your old Genesis Physics loudspeaker.

We chose to review the smallest of the Genesis full-range loudspeakers, the IM-5200, both individually and in conjunction with their smaller subwoofer, the Servo 10. Genesis furnished a pair of the latter, so we were able to try both a single and a dual subwoofer configuration.

**Description**

The first thing that strikes you about the Genesis IM-5200 (IM stands for Imaging Module) is its unique, cylindrical shape. The enclosure construction itself also tends to the unique. Genesis calls it a tri-laminated design. The central core of the cabinet is wood fiber, in itself a rather dead, low-resonance material. Inside this is a layer of a sound-dampening material which Genesis says was originally developed to suppress vibration in jet aircraft. The outer layer of the cabinet wall is a black, high-pressure laminate. These three layers provide for a rigid and fairly light structure. (The weight given in the specifications must be for shipping weight—the system itself does not appear to be anywhere near 40 pounds.) Only the top, bottom, and front baffle of the enclosure are flat surfaces, minimizing parallel walls and any resulting internal resonances. The cylindrical enclosure provides another benefit as well: the cabinet slopes gently away from the drivers, minimizing diffraction. To the same end, the front baffle is also covered in soft foam.

The cones of all Genesis woofers, the 5" version in the IM-5200 included, are made of injection-molded polypropylene bonded to a layer of Kevlar. This combines, according to Genesis, the self-damping properties of polypropylene with the rigidity and high tensile strength of Kevlar. The latter, another material originally developed for aerospace applications, also has good damping properties and low mass.

The IM-5200's tweeter, inspected casually from a distance, looks like a metal dome. It is not. It is a planar driver consisting of a 0.0005" thick membrane with a spiral voice-coil attached to it, suspended in a strong magnetic field. Genesis refers to it as a ribbon tweeter, although technically it would appear to be closer to a planar or leaf tweeter. A ribbon tweeter's diaphragm, suspended between the poles of a powerful magnet or magnets, is usually a thin, narrow, "line"-type radiator clamped only at its ends, and is, generally, a very low impedance device requiring a transformer to match it to the rest of the system. A leaf tweeter, in contrast, generally consists of a diaphragm clamped on all sides, is usually (because of the unavoidable architecture of the design) suspended somewhere outside the poles of the magnets in a weaker part of the magnetic field, and does not typically require a transformer. In any event, the Genesis tweeter is decidedly original in shape if not in operating principle. Unlike most leaf tweeters, which are commonly rectangular, Genesis's round design provides for uniform horizontal and vertical dispersion.

The IM-5200's crossover has been designed using computer modeling, with fine-tuning done by ear. The capacitor used in the tweeter circuit as a high-pass filter was custom-designed in cooperation with RelCap, Inc. The crossover also incorporates circuitry said to cancel speaker/enclosure resonances.

On the rear of the cabinet are located the single pair of input terminals (the system is not configured to permit bi-wiring), a tweeter level control, and a fuse which actually acts as a "switch" for bass extension. With the fuse in place, the low end is said to be extended slightly, though at the cost of a lower minimum impedance (2.5 ohms vs a specified 4.0 ohms in the fuse-out position). The input terminals, though of good quality, are single binding posts which, like every such single post in my experience, eventually start to rotate in the act of tightening, making extra care necessary to avoid possible damage to the internal contacts.

Genesis also provides matching stands for the IM-5200. These incorporate a steel top-plate, a sand-filled steel column, and an Italian Granite base. The top-plate tilts back slightly to provide for the proper listening axis for a seated listener; spikes are provided.

The actual assembly of the Genesis loudspeaker takes place not in Colorado but in Canada, at the facilities of Audio Products International, the parent company of such well-known Canadian loudspeaker brands as Mirage.
and Energy. The overall finish of the Genesis loudspeakers, with their gloss-black laminate sides and laquered tops and bottoms, is first-rate. People tend to react strongly to the Genesis styling, and while not everyone liked the look, it certainly could not be dismissed as yet another me-too box.

The Servo 10 subwoofer's own built-in 150W amplifier drives a 10" woofer using the same polypropylene/Kevlar material as the IM-5200's woofer for its cone. While designed to be used with Genesis's own Imaging Modules—and reviewed that way—a number of user-accessible controls make it a serious candidate for compatibility with many other full-range loudspeakers.

The subwoofer's servo system utilizes a cone-mounted accelerometer to monitor the cone's motion, feeding back this signal to the input of the amplifier to generate a correction signal. The effect of the servo can be dramatically demonstrated by tapping the cone with a finger with the internal amplifier off, then doing the same with the amplifier on. The hollow plunk resulting from tapping the cone in the "off" mode is replaced by a less than resounding pluck—essentially the sound of one's finger tapping the cone with no resonance or overhang. What the servo is trying—very successfully—to do here, of course, is eliminate any movement of the cone. Tapping the cone externally is a random input not present at the loudspeaker terminals; since the servo senses no input signal from the amplifier, it naturally insists that there be no output from the woofer. While it can't quite anticipate the initial impact of your finger striking the cone—not at the present state of the art, anyway—it still does an effective job at suppressing any subsequent random cone motion and resonances.

The servo amplifier and crossover fasten to the rear of the woofer enclosure and are attached to the woofer via a single umbilical cable. A number of hookup options are available. Before I describe them, I should mention that the Genesis sub-satellite systems are configured to drive the satellites, even the small IM-5200s, full-range; there is no network provided to roll off the low end of the satellites when used with a subwoofer. Genesis argues that there is no such thing as a perfectly transparent crossover—or certainly none which can be built for a reasonable price. The best low-cost solution would be a passive crossover—simple capacitors at the input of the satellite amplifiers—but many will argue that even that arrangement might compromise the sound. You might not agree, but you can't deny that the appropriate values of capacitors in such a passive, low-level crossover will vary depending on the input impedance of the chosen amplifier, making it difficult for Genesis to recommend values and guarantee proper setup for every customer. Technically adroit Genesis owners might well want to experiment here. For the purposes of this review, the system was set up as recommended by Genesis—sans high-pass filters for the satellites.

When I tell you now that one of the subwoofer controls is a "high-pass" control, you'll realize that it is a high-pass for the woofer, not the satellites. But I'm getting ahead of myself. The Genesis subwoofers provide inputs for each channel. When a single subwoofer is employed, both left and right subwoofer inputs are used, tapped from each respective channel and combined by the subwoofer's built-in circuitry (designed to prevent any possible resulting crosstalk in the main channels). If two Servo 10s are to be used, each channel is hooked up to its appropriate subwoofer input and the other channel's input on that Servo 10 is ignored. In addition, the user has a choice of employing either high-level or low-level inputs to the subwoofer amplifiers. The low-level inputs take their signal directly from the preamplifier, necessitating a separate interconnect from the latter, or a "Y" connector at the input of the amplifier to tap the signal to feed to the woofer. The high-level inputs may be driven from the output of an amplifier; in this case the signal may be tapped either from the output of the satellite amplifier or the input to the loudspeaker, whichever is physically more convenient. The inputs you choose to employ—high or low—will depend on the configuration of your system, the relative convenience of the various hookups, and your personal preferences. (If you do experiment with using some sort of external crossover to the satellite amplifiers, contrary to Genesis's advice, you cannot then, of course, use the outputs of these amplifiers to drive the high-level inputs of the subwoofers.)

Once you have the system set up—an operation well described in the owner's manual—the process of system adjustment begins. There
are four controls on the Servo 10’s amplifier: Level, High-Pass, Low-Pass, and Phase. Level is self-explanatory. Low-Pass may be adjusted to any frequency between 40Hz and 160Hz, with a 12dB/octave slope above the chosen point, facilitating matchup to a wide variety of satellites having differing low-end extensions. The High-Pass control rolls off the bottom end of the woofer below 32, 40, or 50Hz at 18dB/octave. While I can think of no compelling reason why anyone would want to throw away low-frequency capability they’ve paid for, various problems in the room or program material may call for a reduced bottom end. And, finally, the Phase control provides a means of compensating, to a degree, for the physical distance between the woofer and the satellites.

**Listening**

Paul McGowan and Arnie Nudell drove down from Vail to Santa Fe to deliver the IM-5200s and Servo 10s in person. After a process of tweaking and moving, moving and tweaking which took considerably less time than you might expect, the system was set up in the magazine’s listening room—see the article elsewhere in this issue—to their satisfaction and the time had come for some real listening. The system at that point consisted of a Wadia WT-3200 transport connected via AT&T fiber-optic link to an Audio Research DAC1 D/A converter (with the latest UltraAnalog 20-bit processor), an Oracle Delphi Mk.IV turntable, Graham arm, Dynavector XX-IL cartridge, the Rowland Consonance preamplifier, and a pair of Audio Research Classic 120 monoblock power amplifiers. Interconnects were AudioQuest Lapis, loudspeaker cables were Cardas Hexlink. The subwoofer (only a single Servo 10 was used for the early auditions) was driven via its high-level inputs by tapping the signal from the inputs to the IM-5200s.

Manufacturers who visit to help set up their equipment in Santa Fe aren’t always lucky enough to achieve immediate success, but the setup of the Genesis system went so smoothly that we had practically the entire afternoon to do nothing but take turns playing selections (Arnie and Paul had brought along a choice collection of recordings) and having a fine time doing what this whole exercise is supposed to be about—listening to music for the fun of it. We only made one equipment change early on during the session—replacing the Rowland Consonance with the First Sound Passive Pre-amplifier I. This proved to be a bit sweeter and more liquid at the top end than the Rowland, at least in this system.

The loudspeakers did nothing to get in the way of our enjoyment of the music. Soundstaging was wide and deep. The midrange was open and uncolored, the overall sound airy and transparent. Bass, though deep and solid, did have an occasional tendency to overload or clip; I made a mental note to investigate this later. The high end was crisp, detailed, and widely dispersed, though it beamed a bit on-axis. Genesis recommends setup with the IM-5200s aimed straight ahead rather than toed-in, and that’s how they were set up in the listening room.

The afternoon’s listening was a pleasure—much more enjoyable than tracking down aberrations and trying to fix them. The next day, since the Genesis system would have to be temporarily moved aside to finish up some other reviews, I made thorough notes on the listening setup so as to be able to duplicate it later on. But before unhooking everything, I resolved to spend a full day listening to the setup which had impressed me so much the day before with Arnie Nudell and Paul McGowan present.

I continued to be very favorably impressed. The top end on *The World of the Harp* (Delos DCD 3005) was gorgeous—as delicate and detailed (but without exaggeration) as I have ever heard it. The soundstaging on *The All Star Percussion Ensemble* (MMG MCD 1007) presented an excellent balance of precise imaging and depth; the sound also held together without confusion as the sonic textures became complex. The same was true on *The Pugh-Taylor Project* (DMP CD-448), a totally off-the-wall collection of jazz-flavored instrumentals which defies easy description. But it was here that I became more conscious of three qualities which detracted somewhat from the over-

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3 The cable used for this link was AudioQuest Clear. This may or may not have been overkill; the characteristics required to drive the high-level inputs of the Servo 10 are very different from those needed to drive a loudspeaker directly. The latter requires a significant current capability, the former virtually none.

4 Later measurement of the frequency response of the overall system measured at the loudspeaker input terminals indicated a small dip at the top: -0.5dB at 10kHz, -0.7dB at 12kHz, -1.0dB at 15kHz, and -1.5dB at 20kHz. With the Rowland in the system, the readings were -0.2dB at 10kHz, -0.3dB at 12kHz, -0.3dB at 15kHz, and -0.5dB at 20kHz.
all positive picture. First, there was a certain lack of body in the "power" region of the upper bass through the lower midrange, rendering a certain lack of 'gutsiness' to the sound. Second, those open, airy highs could turn a bit analytical, though never to the point of irritation—bad program material excepted. And last, that woofer overload occurred again here, and on a number of other occasions. It sounded like clipping, not cone bottoming, and was most often heard on loud, sharp bass transients. It didn't happen often, but when it did—at high but not shattering volume levels—it was unmistakable.

None of these problems seriously detracted from my enjoyment of the sounds coming from the Genesis loudspeakers in this early listening session. And while I wondered if Genesis's larger Imaging Modules would provide a bit more power and drive through that lower mid/upper bass region (the one aspect of the sound, subwoofer power handling possibly excepted, about which my reservations were above the level of trivial nit-picking), I would not wish to trade the IM-5200's inner clarity through this region to obtain it.

Flash forward about three weeks. Now time became available for more extended listening tests of the Genesis IM-5200 and Servo 10. This would take place in three phases: IM-5200 and Servo 10s in combination using the high-level inputs to the Servo 10s, then the IM-5200 alone, and finally a follow-up listen to the combination using the low-level inputs.

I made three changes initially to the system setup on this second go-round. First, I used two Servo 10s—I wanted to see if the overloading I had noted in the single subwoofer could be cured by spreading the load out among two. Second, the Audio Research DAC1 was not available (ARC suspected a possible contaminated wash of the circuit boards during assembly and had requested it back for an inspection and clean-up), so a variety of other players were pressed into service, with the Jung-Childress mod of the Philips CD-80 seeing the heaviest use. And third, AudioQuest Sterling was used for the satellite hookup, AudioQuest Midnight for the high-level woofer connection.

The sound continued to impress, with the same reservations as before. Turning the tweeter-level control back to about 10 o'clock produced a desirable sweetening of the top end, as did substituting the original Cardas Hexdink speaker cable for the just-opened length of Sterling. Inserting the bass-extension fuse (it had been left in the unextended position during the early auditions)—a very subtle sonic change—and increasing the woofer low-pass control to around 100Hz helped improve the overall balance slightly, but did not completely fill out the upper bass/lower midrange region. I eventually went back to the original 80Hz setting (and, later, when using the low-level input, even a bit lower) because it provided a more open, uncongested sound.

The IM-5200s were designed not just for use with subwoofers, but also to stand alone. So I disconnected the subwoofers, the system otherwise remaining as above. I was a bit undecided as to whether or not to leave the bass-extension fuse in place—the sonic difference with and without it remained elusive—but eventually stuck with the fuse-in position.

The spectral balance of the IM-5200s by themselves, without the Servo 10s, remained very much the same as before in the absence of very low frequencies in the program material. Radka Toneff's voice on Fairy Tales (Odin CD-03) was tightly focused between the loudspeakers, slightly laid-back, very open, and lacking in any boxy colorations. The slightly wispy, sibilant top end heard here was at least partially the fault of the recording, but did not detract from an overall good presentation, JA, passing through the listening room while I was listening to this selection, noted a tangible image from well off-axis.

The imaging held up with On the Banks of Helicon (Dorian DOR-90139), if a shade less focused across the full width of the soundstage than the better loudspeakers I've heard that are at their best when toed-in toward the listener. And although both of these recordings came over on the lean side of neutral, Leo Kottke's That's What (Private Music 2068-2-P), a recording which tends to sound a shade overblown in the upper bass through most loudspeakers, "locked in" with the IM-5200s to produce a convincing overall balance.

Next I decided it was time to experiment with different amplification to drive the Genesis. What I wanted to try was an amplifier that might be a bit on the warm side, with a sweet, unetched top octave—preferably one that was not too expensive. The promised amp was right there, on a shelf in a storeroom adjoining the listening room waiting to be sent to one of...
our reviewers: the new production version of the old Dynaco Stereo 70. At just under $1000, it met the price criterion. True, its 35Wpc was below the minimum 60W recommended by Genesis, but hey, this is a tube amplifier—graceful clipping, right?

I was in for a few surprises with this amplifier driving the Genesis satellites. In overall frequency balance it was everything I had expected. The top end was noticeably sweetened, the overall sound somewhat more forward, and a bit of warmth was added, which was welcomed. The midband seemed less alive than it had with the Classic 120s—no real surprise there—but the real surprise was just how good, overall, the Dynaco sounded. At the top and bottom of the range I actually preferred it to the Classic 120s in this system, and the midrange veiling was a lot less obvious than the difference in cost might lead you to expect. And the Dynaco's imaging and depth through the IM-5200s was definitely competitive with its pricier competition.

As long as you didn't push it too hard, the Stereo 70/Genesis combination sans subwoofer remained clean and unruffled. I was particularly surprised at how well it handled the bass-drum whacks leading off *Fiesta!* (Reference Recordings RR-3B8CD). The IM-5200s by themselves don't have a particularly powerful or deep bottom end, but do provide a believable, ungarbled bass foundation without breaking up or turning muddy or boomy.

I'm always a bit concerned when a passive preamp is used to drive fairly long interconnects into a tube amplifier. Much as I "liked" the combination of the First Sound and the Stereo 70 with the Genesis loudspeakers, I decided to try out another product waiting its turn in the review cycle: the Superphon SP-100, a buffered, zero-gain line stage. With this in the circuit, the sound was a trace crispier and cooler, but decent warmth remained. The fingering details of Michael Newman's guitar on *Guitar Pleasures* (Sheffield SLS-504) were more distinct than before, but not exaggerated. This combination was, if a bit less lush, then arguably more accurate than that of the First Sound/Dynaco. Some of the lightness which by now appeared to me to be characteristic of the IM-5200s returned; the First Sound/Dynaco had rather significantly reduced it. My choice here, however, would be the Superphon/Dynaco, which presented a more airy, open sound with the Genesis. Subtle audience sounds on the Kathleen Battle/Jessye Norman *Spirituals in Concert* (DG 429 790-2) were more detailed; the harp was more open and airy, the overall sound more tightly focused.

The only problem with using the Dynaco with either the First Sound or the Superphon was available gain. There simply wasn't enough. The Dynaco's input sensitivity seemed moderately low, and with zero gain available at the control stage, you must have more gain than normal available from the program source to drive the whole shebang to stand-up-and-salute levels.

As a possible compromise, I hooked up the IM-5200s to a combination of the First Sound with Forte's new Model 5 power amplifier (100Wpc). If this was still a bit less rich-sounding than the same control center with the Dynaco, and had a bit less depth, it had the advantage of somewhat higher available gain. I liked the result, and chose the combination for my final test of the Genesis IM-5200 before returning to the setup with the subwoofers—comparing the small Genesis full-range with the Epos ES11.

Simply put, I preferred the Genesis in this match-up. It didn't outpoint the Epos in all respects; the latter was warmer, more full-bodied. Solo voices had a better foundation on the Epos—a better balance of chest and head tone. The same was true of many instruments. The ES11 also bettered the Genesis in at least one respect I haven't mentioned until now: the Genesis's tendency to display, when pushed, a slight glare in the upper midrange. The Epos also displayed a bit of this quality, though to a somewhat lesser degree than the Genesis. Beyond this, I found myself more drawn to the Genesis. It had an airier, more open sound at the top, and it actually handled sibilants a shade better than the ES11, which surprised me. Through the midrange (and leaving aside for the moment the better-formed spectral weight of the Epos in the lower end of this region) the ES11 had a more "covered" quality, with more obvious boxy colorations. And though the Epos clearly went deeper than the IM-5200 at the bottom, and its added weight throughout the bass and lower midrange made it sound somewhat more large-scaled than the Genesis, the latter was the clear winner when it came to cleanly handling the deepest bass without breakup or overloading. Strong bass-drum transients would make the Epos go to pieces.
at levels which would not fluster the Genesis in the least.

Though it performed quite respectfully on most music a capella, the Genesis was clearly designed with a subwoofer in mind; once you've heard the extra extension offered by the Servo 10s, it's hard to do without it. My final auditions mated the IM-5200s to a pair of Servo 10s using the latter's low-level inputs.

Once the satellites and subwoofers were set up and connected, I decided to try a different method of adjusting the overall system balance. I didn't adjust the subwoofers by ear; it's tedious and time-consuming with four different controls on each subwoofer, especially as I intended to try different amplifiers driving the satellites, each having different input sensitivities. Using the \( \frac{1}{2} \)-octave warble tones from the Stereophile Test CD\(^5\) and a Radio Shack sound pressure level meter set to C-weighting (giving the most extended bass readings), it was a simple matter to sit with the meter at the listening position, switch between bands of the test CD as needed using the player's remote control, and adjust the various controls on the subwoofers as needed until the overall response was as flat as possible through the bass region.

Attempting to get a perfectly flat response will be an exercise in frustration for any real-world loudspeakers, but the controls on the Genesis satellites/subwoofer system give the user a flexibility in getting a relatively linear response which is simply not possible in the average room with a typical, unequalized, full-range loudspeaker. With a pair of Servo 10s in the system, I was able to obtain a response at the listening position of \( \pm 3.0 \)dB from 25Hz to 200Hz. And if you ignore a bump of about \( +3.0 \)dB from the mean of that response at 40Hz, then the response over this region was better than \( \pm 2 \)dB. This goes a long way toward explaining the open, clear quality of the Genesis system and its lack of mud, muck, or boominess in my listening room. Bear in mind that these are measurements made with less than state-of-the-art test equipment. While more sophisticated equipment was at hand, I chose this method because it is, I believe, within the financial reach of anyone contemplating a system such as the Genesis.

In performing this setup, I found that the setting of the phase control was rather critical in obtaining the best response. Even movements of 10° about the optimum setting could cause significant swings in the overall response.

The above response was obtained with the Rowland Consonance preamp and Forté Model 5 amplifier driving the IM-5200s. The low-pass control on the subwoofer was set to 40Hz. Dropping the low-pass to 32Hz on the Servo 10, the overall deviation deteriorated slightly to \( \pm 4.5 \)dB, with much of that caused by a more severe peak at 40Hz. But much of my listening was done with this setting. It didn't muddle the mid- or upper bass, but allowed a stronger extension to 25Hz. There were some variations in the woofer/room response with different associated equipment, but they were not dramatic.

In these final listening sessions, two amplifiers were used to drive the satellites: the Forté Model 5 and the Dynaco Stereo 70. For front ends, I chose to use the First Sound passive preamp to mate with the Forté (remembering the fine performance of the combination in the IM-5200 solo tests) and the Rowland Consonance preamp with the Dynaco (since the latter can use more gain than a passive or unity-gain preamp can provide).

With program material not significantly exercising the subwoofers, the results with these amplifiers were much the same as I had previously observed. The First Sound/Forté provided focus and detail, with a finely tuned soundstage and an open, spacious sound. The sensation of a somewhat light sound remained; it was more apparent on large-scaled, dynamic material than on small groups, though vocals generally lacked that palpable, fully rounded quality. The latter didn't trouble me a great deal, but I would have welcomed a slightly more full-blooded quality at times.

There's no denying that a fully formed sonic weight through the power region of the upper bass/low midrange contributes significantly to the realism of large-scale material. This is perhaps the most difficult trade-off to make in the real world of loudspeaker design; I'd rather the compromise be on the side of lightness here if the alternative is a flat, obscured sound—qualities which the Genesis manages to avoid entirely. Substituting the Consonance/Dynaco in the driving chain sweetened the high end, brought the sound a bit more forward, improved the sense of depth, softened the focus

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\(^5\) The warble tones on this disc actually oscillate at a rate closer to 15Hz than the approximately 51Hz suggested in the text—which makes them no less useful for the purpose.

Stereophile, October 1991
slightly, and added a little warmth. The added warmth was welcome, but overall I marginally preferred the inner clarity of the Forté.

The low end of the Genesis combination, with either amplifier driving the IM-5200s, could be astonishing. It still had an unfortunate tendency to overload—a tendency I noted with either one or two woofers connected. But the program material on which it would do so was unpredictable. The collapse of the Beast on “Gates of Dáfos” from Dáfos (Reference Recordings RR-12CD) was deep, solid, and produced no misbehavior from either the subwoofers or the (full-range driven, remember) satellites. But “Psychopomp” (band 5 on the same recording) produced a slight breakup in the subwoofers and a buzz in the right-channel IM-5200 (one of the few times one of the IM-5200s showed any sign of strain). The synthesized bass on the soundtrack from The Abyss (Varese Sarabande VSD-5235) had a massive weight and clearly demonstrated the bottom extension of the Servo 10s—with no strain evident. The same for another soundtrack with a superb bottom end, Glory (Virgin 2-9132). I heard organ pedal notes on the latter over the Genesis subwoofers which I had not previously experienced. But the overload reappeared on the opening bass drum stroke from Fiesta!. It was, incidentally, possible to significantly reduce the overload by changing the high-pass control on the subwoofers from 32Hz to 40Hz (or even 50Hz), but at some sacrifice in overall extension and impact.

Measurements

The IM-5200’s A-weighted sensitivity measured 86dB/W/m, which is about as expected for such a small enclosure. Its impedance (fig.1) indicates a minimum value of about 3 ohms without the bass-extension fuse in place (upper solid curve), 2.5 ohms with it (lower solid curve). Above 2kHz, the top solid curve shows the high-frequency control set on maximum, the lower trace on minimum. The rapid rise in the magnitude curve below 65Hz indicates the presence of a large series capacitor to block the subsonic frequencies and prevent low-frequency overloading of the small woofer.

Fig.2 shows the frequency response averaged across a 30° window, spliced to the nearfield woofer response. It’s generally smooth, the slight downward trend from 200–300Hz to its low-end cutoff—about 3dB—perhaps relating to the leanness noted in this region. Some minor roughness is seen in the top end of the woofer’s response—around 1kHz and again just below the 3.7kHz crossover frequency—but the general trend is quite linear. The few minor blips in the response in the mid-treble just below 10kHz might better relate to the slightly crisp treble quality than the gentle rise between about 12 and 18kHz—the latter well above the point where it will bother any male much over 30. The double curve below 100Hz shows the response in the extended position (upper curve) and non-extended position. The “extended” position simply gives the low-frequency response a slightly higher Q resulting in 1–2dB more output in the 55–85Hz region. The sonic result, as I’ve noted, is audible but definitely subtle. Due to the series capacitor in the woofer feed, the ultimate rolloff is 18dB/octave rather than the usual sealed-box 12dB/octave.

Fig.3 shows the normalized lateral response family of the IM-5200. The top curve is the normalized on-axis response, the three curves below it are (from top to bottom, respectively)
7.5°, 15°, and 30° horizontally off-axis. The dispersion of the Genesis tweeter is excellent.

The curves shown in fig.3 might generate some confusion as to what we mean by the term normalized. What we've done here is subtract the on-axis response from all of the curves, to leave only the differences in response due to the off-axis rolloff, thus more clearly depicting the latter. This results in a plotted on-axis curve which appears to be perfectly flat. In other words, these curves show the off-axis response which would exist if the on-axis response were perfectly flat, which of course it isn't. But it allows you to see the changes in the off-axis response without having them obscured by the on-axis response deviations. For comparison, fig.4 shows the actual, non-normalized responses—from top to bottom, on-axis, 15° off-axis, and 30° off-axis. The curves in fig.3 and 4 clearly indicate why the

Fig.3 Genesis IM-5200, horizontal response family at 45°, normalized to the tweeter-axis response, from back to front: reference response; difference in response 7.5° off tweeter axis; 15° off-axis; 30° off-axis.

Fig.4 Genesis IM-5200, horizontal response family at 45°, from back to front: actual tweeter-axis response; anechoic response 15° off tweeter axis; 30° off-axis.

Fig.5 Genesis IM-5200, vertical response family at 45°, normalized to the tweeter-axis response, from back to front: difference in response 7.5° above cabinet top; difference level with cabinet top; reference response on tweeter axis; difference in response on woofer axis.

Fig.6 Genesis IM-5200, impulse response on listening axis at 45° (5ms time window, 30kHz bandwidth)

Fig.7 Genesis IM-5200, cumulative spectral-decay plot
IM-5200 is at its best aimed straight ahead and heard from somewhat off-axis.

The vertical response family of the IM-5200 is shown in fig.5. Again, note that it is normalized to the response on the tweeter axis, which thus appears to be flat. From bottom to top, the responses are on the woofer axis, on the tweeter axis, at the top of the cabinet, and 7° above the top of the cabinet. This loudspeaker should be listened to on a vertical axis between the woofer and the tweeter, sitting the IM-5200 on a stand with either the appropriate height or with a tilt-back stand (the latter being the mode recommended by Genesis with their dedicated stand). It should be obvious from the top curve that listening to the IM-5200s while standing up is guaranteed to produce an inaccurate impression of their capabilities, the response developing severe irregularities in the crossover region.

The impulse response of the IM-5200s (fig.6) shows a very clean result, with the tweeter apparently connected in inverse phase with the woofer. The planar tweeter of the Genesis exhibits less ringing than is common with today's widely used metal-dome tweeters (though the ringing of the latter is generally above the audible range).

The waterfall response of fig.7 shows a smooth curve with little HF hash. The primary resonance modes seem to be at about 2.8kHz (cursor) and just below 1kHz. These both correspond to the slight roughness noted in fig.2 in these regions, and one (or both) of them may be responsible for the slight glare noted in the subjective comments.

Note that the frequency-response curves shown in all the curves presented here were taken with the tweeter-level control at the 10 o'clock position—which was the position used during most of the listening tests.

Fig.8 shows a near-field response demonstrating the action of the high-pass control on the Servo 10 subwoofer with the low-pass control set to 160Hz (maximum). From left to right, the curves show high-pass settings of 32, 40, and 50Hz. In fig.9, the high-pass control was set to 32Hz and the low-pass varied between 60Hz (left curve) and 160Hz (right curve). In the process of making these measurements, we noted a strange, intermittent pumping of the Servo 10's output with the high-pass set on 32Hz (which averaged out in the measurements). It didn't appear to relate to any audible anomaly on program material, unless it in some way related to the tendency of the Servo 10 to be prone to overload.

In an effort to find out just what was happening with the various preamplifier/power amplifier combinations used in the auditions, I elected to measure the full frequency responses of several of the combinations, from the output of the Audio Precision test set to the input of the loudspeaker terminals, using the identical cabling employed in the listening tests. Fig.10 shows the response of the First Sound/Dynaco Stereo 70 combination. The smooth curve indicates the response of this matchup into a 4 ohm load, the more erratic curve shows the response into the IM-5200s. (But please note the amplitude scale.) While the changes in the amplifier's response due to the loudspeaker load are not as dramatic as they look—for the most part, they're less than 0.5dB—the overall response into the Genesis does help explain the audible result. The reason for the softer high end is clear, the high-frequency droop being due to the intrinsic response of the Dynaco rather than the interaction of its output impedance with that of the speaker. (The measured output impedance of the Dynaco ranges from 0.42 ohms from the low bass to the midband to 0.33 ohms at 20kHz, which will account for the modification of the speaker's response in the midrange and below. While the bump at 100Hz is still below the 0dB line, its rise over the slightly suppressed areas around it may at least partially explain the warm sound.

Substituting the Superphon SP-100 for the First Sound resulted in a curve of essentially the same shape but with about 0.2dB more output above 4kHz (not shown).

Fig.11 is a curve of the First Sound/Forté 5 combination driving the Genesis. It's considerably more linear than the First Sound/Dynaco. Substitution of the Superphon in this case reduced the high-end rolloff a bit (about 0.25dB more output at 20kHz), but the response was otherwise unchanged.

The fact that an amplifier's response may be slightly affected by the loudspeaker load is not a new concept; JGHI commented on it in these pages nearly 30 years ago, and it was the subject of a recent article by E. Brad Meyer in Stereo

6 Note that all of the frequency-response plots shown here incorporate compensation for the known response of our measurement microphone except for the waterfall plot. The latter will therefore show a bit more HF rise than the other plots.
**Review:** Still, in the case of the Dynaco, the inherent response of the amplifier was certainly at least as significant as the deviations caused by its interactions with the loudspeaker. But the Dynaco is basically a 30-year-old design (despite updates to the latest version), and I would not attempt to generalize from these results.

**Conclusions**

The IM-5200’s tendency to sound somewhat lean and a bit analytical (qualities which may be significantly mitigated by careful choice of associated equipment) distance it a bit from the best (and invariably more expensive) minimo-monitors. But these qualities did not detract, for me, from the Genesis’s detailed top end, tightly focused imaging, overall spaciousness, convincing sense of depth, and lack of boxy colorations. And though it really had no low-bass power or extension to speak of without the Servo 10, its bottom end, subjectively, provided a reasonable foundation for most program material.

The game becomes a bit more difficult to call with the Servo 10 subwoofers. Certainly at its best it is one very impressive system, with a deep, well-defined, sometimes awesome bottom end, and controls which give it a unique ability to be matched to a specific environment. But with either one or two subwoofers, the bass did overload more often than I’m used to hearing from other systems with similar ambitions and prices. (By similar prices, I mean the total price for the satellites and subwoofer together.) Therefore the question of one vs two subwoofers becomes rather moot. My tentative conclusion here is that two Servo 10s bettered a single one in my room, but not by a dramatic margin, and two seemed just as prone to overload as one. I advise anyone contemplating a Genesis Sat/Sub system to audition it carefully with the sort of bass-rich program material you prefer, at levels you plan to use, to see if the overloading might be a problem for you.

That said, it’s only fair to point out that the Servo 10 is, after all, a self-powered woofer selling for $900. It does go down to at least 32Hz (actually, it seems to go lower in my listening room) on most program material without any overdrawing. At the 40 and 50Hz settings of the subwoofer’s high-pass control, settings at which it will go at least as deep as the competition, the
overload problem is essentially nil—within reasonable output demands, of course. Looked at in this fashion, the Servo 10 is certainly competitive with, if not more than competitive with, any other woofer I know of in its price range, and is certainly worth looking into as long as you recognize and accept its limitations.

We have not tested Genesis's larger Servo 12, but I'd certainly be inclined to give it a try if you find that the Servo 10 occasionally overloads in your auditioning as it did in ours, and you don’t want to compromise its low-end extension by using a higher high-pass setting (or readjusting the high-pass control for problem recordings). In any event, my gut feeling is that the first step up from the Servo 10 would be the Servo 12, rather than a pair of 10s. It all depends on whether the virtues of stereo subwoofers are more desirable to you than the extra 10Hz or so of extension—and potentially greater output capability—available with the 12. I do know that those of our reviewers who have lived extensively with good mono subwoofers are not complaining. Of course, there’s always that pair of Servo 12s...

GRADIENT SW-63 SUBWOOFER

Larry Greenhill

Add-on stereo subwoofer for the Quad ESL-63 full-range electrostatic speaker system. Power capacity: 250W at 8 ohms. Nominal impedance: selectable, nominal 16 ohms or 4 ohms. Two 12" woofers per enclosure. Amplifier requirements: 50–250W at 8 ohms. Sensitivity: 86dB SPL for 2.83V rms at 1m. Acoustic output –3dB point: 28Hz. To be used with SW-63 active crossover unit. Dimensions: 18.75" H by 26" W by 11" D. Weight: 41 lbs. Active crossover unit: Input impedance: 22k ohms. Output impedance: 1k ohm (for amplifier used to drive ESL-63s); 1 to 5k ohms, depending on SW level control setting (for amplifier used to drive subwoofer). THD: less than 0.03%. S/N ratio: better than 105dB, A-weighted, referred to 500mV. Separation: 65dB at 15kHz. Crossover frequency: 110Hz, second-order low-pass acoustical slope. Price: $3000/pair. Serial numbers: none (first samples), 64A and 64B (second samples). Approximate number of dealers: 20. Manufacturer: Gradient, Ltd., Suxsitehänkku 2, SF-04420 Järvenpää, Finland. Tel: 358-0-291-7875. US distributor: Quad USA, 111 South Drive, Barrington, IL 60010. Tel: (708) 526-1646. Fax: (708) 526-1669.

Having lived with two generations of Quad electrostatic loudspeakers, I sometimes feel I belong to an exclusive club. The original Quad Electrostatic speaker had a sheer, see-through clarity that I learned to crave. With this beauty came the queasy fear of arcing the unprotected early units. A soft blue flame (visible in the dark even with the metal screens on) appeared when one used too powerful an amplifier. More than a 27V swing at the output (as with most of today's solid-state amplifiers) meant that a sudden transient (with its voltage peak) had punched a hole in the speaker’s Mylar sheet driver.1 The next model, the ESL-63, solved this problem with a triac clamping protection circuit. By 1989, this protection circuit had evolved to a new level, allowing the most current Quad electrostatic, the $4500/pair USA Monitor, to play considerably louder. This speaker features a stiffer steel frame, a more acoustically transparent metal protection grille, and a reduced plate gap for higher sensitivity. These improvements account for the Monitor's exceptionally smooth midrange response, its three-dimensional imaging, and absence of distortion, grit, grain, and listener fatigue.2

Although the newer Quad is physically and electrically sturdier, it still features a number of the limitations inherent to its electrostatic design. The dynamic range is still rather limited, compared with a number of other high-quality speakers in its price range, while the bass, described by many as tight and fast, does not go very deep. In fact, Stereophile gives the USA Monitor a “B” rating in this issue’s “Recommended Components” listing, its inability to play very loud or generate deep bass precluding the ultimate accolade of Class A.

1 Quad now manufactures a new add-on triac protection circuit for the original Quad Electrostatic.

2 Reviewed in Vol.12 Nos.2 & 6. Earlier versions of the ESL-63 were reviewed in Stereophile Vol.6 Nos.4 & 5, Vol.7 Nos.2 & 7, Vol.8 No.3, and Vol.10 No.1. Back issues are available from P.O. Box 564, Mount Morris, IL 60154; Tel: (800) 238-2626. The price is $5 each, except for the Vol.7 & 8 issues, which cost $10. S&H for 1-5 magazines adds $2.

—JA

Stereophile, October 1991
Quad maintained up until the spring of 1990 that the USA Monitors were full-range speakers. I didn’t agree. My fascination with pipe organ music meant that add-on dynamic woofers and subwoofers were necessities. Soon after my first ESL-63s arrived, I installed a single Velodyne ULD-18 between the two panels, which themselves were elevated on Arcici stands. In my listening room, the ULD-18 servo-electronic, closed-box, single subwoofer system gave the USA Monitors deep bass extension and allowed them to play louder (Vol.12 No.10) without producing midbass and midrange distortion that would color the rest of the audio spectrum.

Not all my fellow writers went along with this choice for a Quad “bass extension fix.” For two annual Stereophile summer Writers’ Conferences in Santa Fe, DO, PM, JA, and I conducted a polite debate about whether the Velodyne was the optimal add-on subwoofer. DO found the Velodyne 18 lacked definition, particularly if the owner set its level control too high. The Velodyne enclosure is very large, and it becomes difficult to place two of them optimally if one wishes to develop a stereo bass output. LA and JA seemed to favor a dipole woofer system, like the Celestion 6000 (Vol.10 No.2, Vol.12 Nos.1 & 10), because its dispersion better matched the Quad’s dipole radiation pattern.

Quad then introduced its own subwoofer system at the 1990 Summer Consumer Electronics Show with a design that resembled the Celestion’s dipole system. GL reported that the subwoofer/USA Monitor combination produced “awesome sense of dynamics, acoustic space, and energy” with “an overall ‘rightness’ to it.” The units were manufactured by Gradient Limited of Järvenpää, Finland, and were not available for the consumer until early 1991. Price was set at $3000 (plus the cost for an additional stereo amplifier) for the two subwoofers and active crossover unit, making them competitive with the Celestion 6000 ($2999/pair plus cost of a stereo amplifier), but pricier than the single Velodyne ULD-18 ($2595) or the Muse Model 18 ($2500) that had so impressed RH in July.

Quad had chosen a dipole woofer system. As always, this makes for a set of tradeoffs. Even before the large cartons arrived at the house, I imagined that the Quad/Gradient system would be fast, making the match of drivers, not the range of bass response, the highest priority. This was not likely to be a subterranean shaker. Or was it? I readied my best organ CDs to flex the Q/G’s below-40Hz response.

**Description**

Gradient’s SW-63 system consists of an outboard electronic crossover and two oval enclosures that serve as stands for the electrostatic USA Monitors. An additional stereo amplifier (not included) is required for the two SW-63 units.

Each SW-63 contains two 12”, long-throw woofers, and is acoustically open, back and front, to give a dipole radiation pattern. The two enclosures give a stereo presentation for the bass information. Top and bottom of the enclosure are finished in walnut veneer. Four speaker terminals, each with a metal jumper, are positioned in the center of the enclosure’s
rear face. The SW-63 presents a 16 ohm load if the speaker leads are connected to the outer two posts and the center two areshorted. Shorting the top pair together and the bottom pair together gives the SW-63a 4 ohm configuration. All listening tests done for this review were carried out using the 16 ohm position.

The Gradient external electronic crossover comes in single-ended and balanced configurations. The single-ended unit was used for this review; the balanced unit arrived too late to be included in the listening sessions. Current models have a level control for the SW-63 output, a switch for mono or stereo, and a three-position “mid-range adjustment” for the USA Monitors(No attenuation, 0.5dB, or 1.0dB attenuation at 2kHz). The rear panel has standard crossover RCA jacks for input from the preamplifier, and outputs to the two stereo amplifiers (for USA Monitors and for SW-63s). An Archer 12VDC output plug-in power supply (supplied but also separately available at Radio Shack) serves to power the initial version of the crossover (see later).

The subwoofers are 18.75” high, which raises the USA Monitors higher than earlier Quad "Stand and Deliver" supports (about 12”), my custom-built mahogany stands (about 6”), or Arcici Stands (about 16”). The instructions suggest that the USA Monitors are optimally matched for the SW-63 enclosures, for their plastic feet allow an optimal separation between the bottom of the electrostatics and the top of the subwoofer.

Why keep the monitors off the floor? The late Richard Heyser (Audio, June 1985, pp.116-120) was the first reviewer to advocate getting Quads off the floor to avoid floor-bounce interference. He heard a fuzz on "upper-register transients" that sounded like distortion. Yet the ESL-63s had very low distortion. Using his sophisticated FFT and energy/time curve analysis of the 3m listening condition, he discovered that sound reflected from the floor interferes with the Quad’s direct-sound radiation pattern; he removed this distortion (a combination of amplitude modulation and phase modulation) by raising the speaker 24” (60cm) off the floor.4 The SW-63 bases raise the Quads by the closest amount to the elevation Heyser used to minimize the floor-bounce effect.

Setup
Quad changed its US affiliate in early 1991. Tovil Distributors of Chantilly, VA had been the US importer for many years. Tovil’s Ed Gardner was instrumental in setting up the first SCES demonstration of the SW-63s GL heard, and loaned those units for this review. Quad USA’s president Brian Tucker, of Barrington, IL, took over in early 1991, and began delivery of the SW-63 in January 1991. Both Ed and Brian supplied information for this review.

The SW-63 arrived at my house with much of the “total Quad system” heard at the 1990 SCES, including the 606 and 306 Quad amplifiers, a Quad 66 demo preamp, the company’s CD player, and the FM-4 stereo tuner. The amplifiers and FM-4 tuner were used for this review, but most of the listening took place with a Krell MD-1 CD turntable, a Krell SBP 32X Digital Audio Converter, and a Mark Levinson No.26 preamplifier run in balanced-input configuration (from the Krell SBP-32X) using Madrigal HPC interconnect cable. Later, a single Krell KBL preamplifier was also used. Various power amplifiers were used for the Quad USA Monitors, with most of the critical reviewing done using Mark Levinson No.27 and Threshold Stasis 3 amplifiers. A Krell KSA-250 power amplifier was used on the SW-63 units. Krell Cogelco Yellow and Madrigal HPC interconnects were used for balanced sources, including a Davidson-Roth (Day Sequeerra) Reference FM tuner.

The SW-63 manual suggests that the two stereo amplifiers required for this bi-amplified system be chosen carefully. Two identical amplifiers are ideal. If this is impossible, the two amplifiers should handle the phase of the audio signal in an identical fashion. (Some amplifiers invert polarity.) I first used the two Quad amplifiers, but when Quad changed its US importer, I was instructed to return the electronic gear. I switched to the Madrigal No.27 and the Krell KSA-250, both non-inverting. Phase was checked with the Ortofon Test record and with Stereophile’s Test CD. (Yes, Ralph the Christmas Dog’s bark was centered between the speakers.) The optimal sonic in my listening room were ob-

4 Richard Heyser was a pioneer in studies of speaker time-energy curves. He invented much of the circuitry that now exists in the Techno TEF Plus Time Delay Spectrometry (TDS) Analyzer, a popular device used by Audio reviewers. The TEF Plus performs many of the functions now handled by JA’s MLSSA PC computer software system to generate the cumulative spectral display (“waterfall”) plots. Heyser openly dis-liked the ESL-63: “in my opinion, their sound does not live up to their high pedigree.” The floor bounce produced an “upper midrange harshness and buzz.” During Heyser’s review, the ESL-63’s protection circuits further frustrated him by shutting the speaker down during high peak SPL musical passages. The USA Monitors used for this review have much newer protection circuits and did not shut down.

Stereophile, October 1991
tained by using the No.27 on the USA Monitors and the KSA-250 for the SW-63s. Although the KSA-250 sounds wonderful on the USA Monitors, I resisted the temptation to use this outstanding amplifier for the upper registers. The KSA-250 can swing more than twice the voltage allowed by the Quad's protection circuit, and I wanted to be able to sleep at night without dreaming about blue arcing.

Initially, a ground-loop gremlin overpowered the music with a steady 60Hz hum. This was a result of having a component system set up on two different floors!

Let me explain. The full Quad/SW-63 system consists of two USA Monitor electrostatic panels (each with its own AC line), two subwoofer enclosures, an electronic crossover, two stereo amplifiers, a preamplifier, FM tuner, DAC, and CD turntable. All these separate components enhanced the possibility of slight voltage differences appearing at each chassis, particularly since the “front end” of the system was powered by outlets in the listening room, while the amplifiers and crossovers plugged into outlets in my basement.

When my listening room had been renovated, I moved all the amplifiers and crossovers down to the basement. The contractor-carpenter had created roll-out shelves, using the Madrigal No.27 as a measure of the largest amplifier that had to be accommodated. He did not design the shelves to fit a monoblock amplifier chassis or a full-sized KSA-250 (at least 21” deep). Moved to the basement, the amplifiers now have ample space on my workbench, and I can change speaker cables and interconnects easily. They also have optimal ventilation and are plugged into new AC outlets with a 200A service. Even with all these advantages, the dual-stereo amp SW-63 system had a 60-cycle hum. Eventually, floating both amplifiers with cheaters solved the problem.

Clean, dynamic, but not deep
The first listen revealed the differences between the SW-63s and standard subwoofers. The Quad/SW-63 system functions optimally in the first octave below the crossover point. Thus, signals in the 65–110Hz range, or the standard woofer domain, are the main signal range of this dipole woofer system. Following tracks 24–31 on the Stereophile Test CD (100Hz to 20Hz in eight separate tracks), the Quad system began to fall off audibly in my room at track 26, or 63Hz. The Velodyne ULD-18 continued to produce strong, solid bass output to track 31 (20Hz), rattling objects across the room and moving lots of air; at least one more octave down. Without a doubt, the ULD-18 remains the king of the subterranean bass regions, “locking into” my listening room more tightly, delivering a much more powerful impact on the deep bass transients below 40Hz.

Crossover points differ, with the Quad choosing 100Hz and the Velodyne 85Hz. Although both crossovers sport second-order slopes for their high-pass sections, the Quad/Gradient system worked the electrostatics harder during bass-heavy passages. This was evident whenever I played organ music or track 27 (50Hz) of the Stereophile Test CD: the Quad’s electrostatic screens flapped vigorously, but were damped when run with the Velodyne crossover.

On the other hand, the crossover in the Quad system was least intrusive, and did less to obscure the music’s inner detail than did the Velodyne’s. The Gradient/Quad outboard crossover was more open, airy, unrestrained, and quick. This crossover provided a smooth transition from the midrange into the upper bass.

So I again faced the well-known tradeoff: subwoofer speed and clarity vs depth and power. How did it work out on actual music? Quite well for the Quad system, actually. The system’s volume and dynamic range were indeed improved. The system easily handled the big orchestral crescendo that comes after Harry Connick, Jr. finishes singing “Don’t Get Around Much Anymore” (When Harry Met Sally. . ., Columbia CK 45319). This Quad system really conveys Connick’s snap and pizzazz.

The full Quad system created the correct sense of acoustic space. There was an added depth, but the image size was appropriate to the music played, which created precise soundstaging. Connick was close-miked, yet his voice and piano were not “inflated,” having the correct sonic dimensions. José Carreras’s voice on Ariel Ramirez’s Misa Criolla (Philips 420 955-2) was also a naturally realistic size.

The USA Monitor blossoms when relieved of the burden of reproducing musical signals below 100Hz. The SW-63’s manual suggests that dynamic range increases by 10dB; on most music in my system, I heard 3dB increases.

Stereophile, October 1991

\[5\] The Krell KSA-250 doesn’t object to the Quad USA Monitor triax’s shenanigans. It just keeps on playing into the dropping impedance of the protection circuit.
Adding the SW-63 system increased the Quad's sense of palpable presence and focus. Again, on "Don't Get Around Much Anymore," Connick's vocal subtleties, the Sinatra-like phrasing, the balance of soft piano and orchestra that suddenly plays fortissimo, all came through with no sign of brightness or tizziness. The sound was open, effortless, and detailed.

The full Quad system produced a proper balance, timbre, and concert-hall space during the "L'Adoration de la terre" section of Igor Stravinsky's Le Sacre du printemps (Maazel/Cleveland Orchestra, Telarc CD-80054). It didn't flinch at the bass-drum crescendo in the first movement. The climactic percussion measures of tympani and bass drum had very credible dynamics. Most systems compress this passage, but not the Quad USA Monitor/SW-63: it was hair-raising!

Organ music benefited from the Gradient speaker's speed, correctness of timbre, and its excellent match with the Quad's midrange. The upper bass's inner detail and clarity were most involving, inviting extensive listening. The "Promenade" segment of Mussorgsky's Pictures at an Exhibition (Dorian DOR-90117), arranged and played by Jean Guillou on the Kleuker-Seinneyer organ, revealed the instrument's most pleasing, effortless, and airy aspects, but didn't shake the room as had the 18" Velodyne unit. The Gradient transmitted a very defined initial attack of percussive bass. This was clearly heard on the Sacre mentioned above, and served to create a spine-tingling power in the synthesizer bass featured in John Carpenter's unnerving soundtrack from They Live (Enigma 7 73367-2), particularly on "The Siege of Justiceville."

In my listening room, the SW-63 system rolled off naturally in the very deepest bass region. The SW-63 couldn't provide the "seat of the pants" wallop described by TJN (Vol.14 No.3, p.119) heard with the 18" Velodynes in Dafos (Reference Recordings, side 2, band 3) as the huge drum falls over on stage. Nor would the SW-63 system deliver the ULD-18's gut-punching bass-drum note as heard on David Wilson's "Liberty Fanfare" (Winds of War and Peace). Shuddering pedal work on the deepest organ notes required the big Velodyne's tightly controlled woofer with its very, very low distortion under 40Hz.

In fact, I had to be careful with such extreme bass excursions, for the Quad/Gradient crossover allowed bass-drum overtones to overdrive the electrostatic screens. As noted earlier, the crossover does not entirely prevent the USA Monitors from flapping at high-volume bass signal levels. I ended up retaining my earlier Quad habits, cautiously lowering the KBL preamp's gain control when playing fortissimo passages. I was able to avoid both the crackle of arcing and the silence of the Quad ESL's inputs being shorted by the triac.

**Rashomon and the audio reviewer**

One month after I submitted my SW-63 review, Brian Tucker of Quad USA called me and protested. The prepublication copy of the review he had been sent so that Quad could prepare a "Manufacturer's Comment" response was inaccurate, he said. Both he and Tovil's Ed Gardner, former US importer for Quad, stated that the SW-63 system I had reviewed was a prototype, loaned to me for audition only. It did not represent, either electrically or sonically, the SW-63s that had been available in stores since the beginning of 1991.

I was caught in a tough situation. Quad USA's reply seemed to disqualify my findings, which praised the SW-63's mid- and upper-bass responses and its crossover's clean high-pass section, but criticized the deep-bass performance. Customers buying SW-63s would get a very different system, or so Brian Tucker claimed.

What had been the genesis of this review? In July 1990 I had called Ed Gardner after hearing from Arnie Balgalvis that Quad had premiered a fabulous new subwoofer at the 1990 Chicago Summer Consumer Electronic Show (SCES). Ed arranged to have the very same units shipped to me for audition, even though the SW-63s were not in stores at the time. They arrived in my listening room in late September 1990. I was immediately impressed with the SW-63s, and told Ed that I would embark on a review as soon as this system was available at Quad dealers. TJN, our technical editor and arbiter of product reviewability, agreed, and we both waited for the news before transforming this "audition" into a review.

As a Stereophile writer, I had felt uneasy auditioning these early SW-63s. Why? Early product models do not always represent what readers find in their local hi-fi salons by the time the review appears. Product, in its introductory phases, can change for the better over...
a short time. After all, I auditioned these subwoofers for eight months before TJN and I were certain that this product was available to customers. In addition to such inevitable delays, early products can be subject to “shell game” tactics if a reviewer makes his report prematurely. No complaints are heard if the report is a rave; if it is mixed or negative, however, manufacturers often attempt to “disqualify” the comments because they “never intended” the “non-production prototype” to be sold.

So why did I take a chance and audition the early SW-63s? Early samples are tempting for audio journalists because they’re hot. I was tempted even more because an official Quad subwoofer had been long awaited by Quad fans like me. If Peter Walker, the very fussy genius who designed the Quad Electrostatic speakers, had approved the Gradient subwoofer add-on, then it was most important to review them.

I felt myself locked in a Rasbomon-like maze. Had I mistakenly assumed that Quad USA had approved a review, while, in reality, they thought that my listening was “off the record”? I began to replay the events of the past eight months. I thought a review was in the works, only waiting the product’s availability. I had repeatedly asked both Ed and Brian about the SW-63’s status. I was told at those times that the pair I had would be sonically identical to in-store product. Quad USA made no attempt to update the early audition samples by sending actual production samples.

Over the next seven months, Tovil, Quad, and I acted as if we were in a review process. All phone conversations were positive, and I kept getting little updates to my SW-63s, including the new balanced crossover (shipped to me in June 1991). Ed Gardner faxed me data from anechoic test reports, and a new manual in February 1991. This was followed by at least two phone conversations with Brian Tucker (the new importer at Quad USA) in May 1991. During one of these spring calls I was assured that the SW-63s were finally at the Quad dealers. I told TJN, and the review was under way. In fact, I recall Brian asking me which month the SW-63’s review would appear in the magazine so he could better time his advertising. This question also appeared in a letter from Brian dated 6/17/91, which ended with, “When is the review of the SW-63 scheduled?”

But Brian Tucker had a different recollection. He told me that Ed Gardner had no idea I intended to review those early SW-63s. They recall discussing only one formal review, their FM-4 tuner, which was indeed under way.

**JA & TJN to the rescue**

Fortunately, our editor had covered such situations in a formal March 1991 letter to all reviewers. JA had written that “any sample submitted will be regarded as suitable for review” unless it is obviously faulty, in which case *Stereophile* would give the manufacturer “the benefit of the doubt.” If, upon reading the edited preprint of the review, the manufacturer declares the sample faulty, he will be requested “to Fed-Ex a second sample for immediate re-listen. The reviewer’s experience of the second sample would be published as a postscript to the original review, in the same issue,” states JA’s letter.6

Quad USA was therefore given the benefit of the doubt—after all, the American importing companies had changed hands during the review period. I asked for new SW-63s and Brian rushed me the absolute newest versions.

**New, Newer, Newest**

The second batch of SW-63s arrived on July 22nd, 1991, just four days before I was to leave for Santa Fe for *Stereophile*’s 1991 Writers’ Conference. I lost no time unpacking these units and setting them up.

The July 1991 Quad/Gradient SW-63s were very different from my pair. The original subwoofers came beaten-up, nondescript cartons full of styrofoam peanuts. These new babies were well packed in rubber contoured inserts, and the new cartons had “SW-63” printed on the outside. The manual was now typeset Rather than xeroxed. Each subwoofer enclosure had a serial number (64A and 64B), which had been missing from the early units. Each of the new balanced electronic crossovers (two new balanced Gradient crossovers were shipped in July; see explanation below) came

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6 The magazine’s strict policy is that every product sample sent to a *Stereophile* writer is to be considered a full review sample. The magazine’s writers are not available to manufacturers for private auditing of a product, but all unpaid writing assignments amounting to unpaid consultancy and an unforgivable conflict of interest. The reason for the review of any second sample to appear as an addendum to the original report rather than as a replacement is both to discourage the “shell game” and to reinforce the idea that everything that happens during the preparation of a *Stereophile* review happens “on the record.” Thus readers can be assured that, with this magazine at least, there are no private arrangements, no coup “off the record” deals, between writer and manufacturer.——JA

*Stereophile*, October 1991
with a slip of paper stating, "This balanced crossover is suitable for Gradient SW-63 subwoofers of serial number 22 or higher." This suggests, and Brian confirmed, that a basic change had been introduced in the crossover and confirmed that Quad had modified the SW-63s. The new crossovers, both single-ended and balanced, were metal-cased (the ca-1990 model had a wooden case) with different controls, offering a midrange adjustment switch not present on the original. The outboard crossover's early Radio Shack/Archer 12V AC adapter has been upgraded to a Condor 25W, 800mA, 15V unit supplied by the dealer (included in the purchase price), not the manufacturer.

The SW-63 enclosures had undergone a change as well. The grille cloth is now black, not brown,7 and the top of each enclosure is configured into a well for the USA Monitor. A 3" sheet-metal flange runs around the top of each SW-63, tall enough to conceal the base of the USA Monitor. After the Monitor is lowered into this receptacle, a black wooden panel cover is screwed down (two large Allen screws are used; the appropriate Allen key is supplied) over the area just in back of the vertical screen, locking the USA Monitor on top of the SW-63; appropriate cutouts allow for the Monitor's AC mains and speaker connections. Monster Cable is used to make internal connections between the subwoofer drivers and the top of the SW-63's back panel. The mechanical coupling between the panel and the SW-63 bass enclosure creates a close physical bond,8 giving the resulting system a seamless visual appearance. The two units are also positioned exactly for an optimal acoustic match, eliminating setup problems found with other subwoofers and their satellites. Spikes are supplied to lock the assembled USA Monitor/SW-63 to the floor. These various changes give the SW-63 system a real finished look.

But how did it sound?

Listening:
The True SW-63 System
Associated components and listening positions had not changed since the original SW-63 review had been written. The speakers and their subwoofers, attached below, were set up in my large (27' L by 13' W by 12' H) listening room. My room is quite live, so the Quads had no trouble achieving good sound levels driven by the 100Wpc Mark Levinson No.27. They were positioned at the short end of the room, 32" from the back wall, 30" from the side walls (measuring from the outer edge of the speaker), and separated by 69". Each unit was toed-in and pointed at my chair. I listened at two positions, one 8' and one 18' away, perpendicular and centered on an imaginary line connecting the two speakers. The closer position gave better rendition of the highs, but did not yield the best stereo image, as Snell's Listening Environment Optimizer (LEO) had suggested. The more distant position favored reproduction of the deepest bass notes, depth of field, and imaging. The reflected sound from the back of the dipoles gave an additional sense of depth. I missed sitting in the nearfield. I divided my listening equally between the two positions.

It was necessary to locate all the tiny shorting pins for the rear-panel XLR sockets so the KSA-250 (chrome pins) and the Mark Levinson No.27 (gold-plated pins, no less) amplifiers could be run in single-ended input configuration. Brian Tucker supplied extra balanced interconnect cables to connect the balanced outboard crossover to the two amplifiers, all wired with the inverting lead shorted to ground. I noticed no hum (as I had with the original crossover) for either balanced or single-ended crossover configurations. All crossovers were set up in stereo mode, with the midrange filter switched out. The optimal setting of the subwoofer level control was between one and two o'clock; any higher setting introduced unwanted bass bloat with no increase in low-frequency sound pressure levels.

The amplifiers were set as before, with the Levinson No.27 driving the USA Monitors and the Krell KSA-250 driving the 16 ohm inputs of the SW-63s. Brian Tucker had suggested that the USA Monitor's "flapping" sound reported in the original review was due to loose Mylar

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7 Brown 'socks' are available for those Quad ESL-63 and USA Monitor owners whose grille cloths are brown.
8 The SW-63's top fittings are dimensioned for the present USA Monitor, which is supplied with plastic feet. This allows for 83mm between the bottom of the plastic feet to the top of the ESL's rear panel, which fits right under the SW-63's panel cover.
dustcovers, not to the electrostatic panels themselves. He suggested that I pull down the sock-like grille cloths on the electrostatic speakers, remove the Quad's metal screens, and carefully direct the hot-air stream of a standard hair dryer over the Mylar dustcovers inside. Before doing that, I simply played the system: no flapping could be heard with the newest generation of SW-63 crossovers.

The new crossovers sounded both different from the original unit and very different from one another. I connected the standard single-ended Gradient crossover using RCA-terminated AudioQuest LiveWire Topaz interconnect cables for input from the KBL preamp and from crossover to the inputs of the two amplifiers. This crossover's high-pass section was very clean, driving the Quad USA Monitor electrostatic panels with only the slightest hint of a closed-in or compressed quality. The crossover's gentle second-order slopes do not prevent the SW-63 woofers from playing in the lower midrange region, thus theoretically coloring the signal from the USA Monitors—this may explain the slight closed-in quality. The Quad USA Monitors had greatly increased dynamic range, playing much louder than when heard with the original SW-63 system even with the Velodyne ULD-18.

Bass response was ultra-quick, well-defined in pitch and timbre, and completely matched to the upper-range Quad panels. On some recordings, the Quad/Gradient subwoofers seemed more controlled than the Velodyne ULD-18, but, of course, the SW-63s, as before, did not go down as low in the bass. Playing bass-drum whacks from David Wilson's "Liberty Fanfare" on the Winds of War and Piece LP, or the Dallas Wind Symphony's Fiesta! (Reference Recordings RR-38CD) caused the woofers to bottom out, but I detected no flapping of the USA Monitor's dustcovers. But within the 40–100Hz range I had never heard a Quad system sound so clean, well-defined, and fast.

Unfortunately, things were not perfect with the first balanced crossover unit tested. The left channel seemed to have been wired in reverse, with the high-pass signal sent to the subwoofer and the deep bass to the Quad electrostatic panels. A quick call to Brian Tucker summoned a second, properly functioning balanced crossover unit within a day. It would be wise to have your dealer check to see that the crossover functions as intended before completing any home installation.

Once my system worked, I realized that the new Gradient crossover using balanced connectors was my favorite, appearing to yield more deep-bass extension than the single-ended crossover. The Stereophile Test CD confirmed that bass extension was now solid down to 40Hz, maintaining good control without bass bloat or mud. Organ recordings, including the "Gnomus" segment of the Guillou/Dorian Pictures CD, played with considerable authority, pitch definition, and deep-bass resonances. The bass drum on Reference Recordings' Fiesta! CD had weight, power, impact, and pitch definition. Lower notes, such as the sustained organ pedal on the altered version of Richard Strauss's Also Sprach Zarathustra, heard on Telarc's Time Warp CD (Telarc CD-80106), could not be heard clearly. This was surprising, because the 32Hz C-major organ fundamental was reproduced more powerfully in my listening room by the 8" ported woofers in two Snell E/IIIs (a remarkable small speaker in its own right!). This simply illustrates the tradeoff made to keep the SW-63's drivers fast and matched to the Quad panels.

The balanced-interconnect SW-63 system functions as an excellent woofer, and meets Bob Harley's three criteria (Vol.14 No.7, p.105) for a satisfactory subwoofer:9 the Quad/Gradient crossover does not contaminate the upper-range speakers with any "veiling, glare, or hash"; the Gradient woofers show excellent pitch definition, within the limits of their range, without showing bass bloat, and the system integrates the woofers and main speakers with no sense of two different speakers playing.

A well-matched woofer
Each reader will have to make his or her own judgment concerning the "misunderstanding" over the "prototype vs product" confusion that occurred during the review of the SW-63s. Certainly the newer SW-63s differed from the early 1990 SCES model, and this review would not be complete without coverage of the product now available in stores.

The 1991 Quad Gradient SW-63 subwoofer system does represent an improvement over 9 Plans have been made to audition the Quad USA Monitors with the Mace Model 18 subwoofer ($2500 with crossover and internal amplifier) with the appropriate "Personality Card" for these electrostatics. Watch for a follow-up report.

Stereophile, October 1991
the original SW-63s presented at the 1990 SCES. Using the balanced electronic crossover with its new power supply, the current SW-63 subwoofers went deeper, played louder, and were free of the annoying dustcover flapping heard in the early versions.

I learn something with each review. This lesson was in tradeoffs. No, the SW-63 system does not crack the foundation or rattle my gizzard. But it does allow the full-range USA Monitor to play somewhat louder and still retain their speed and snap. In my listening room, the dipole woofers sonically matched the character of the USA Monitor’s electrostatic screens, with all their speed, low distortion, clarity, and wonderful imaging. Just as with the early SW-63s, the 1991 Quad/Gradient open-dipole subwoofer system delivers good sound in the 40–100Hz region, but does not produce real subwoofer bass. It’s as if the SW-63s were tuned to deliver a fast, airy bass, rather than the weighty, solid impact heard with the ULD-18.

Can the SW-63 subwoofer deliver both quality and quantity, as Dick Olsher demanded in his comprehensive subwoofer survey in Vol.12 No.1? No, and its design tradeoffs will probably keep it from the top of my subwoofer “Recommended Components” list. But the SW-63 system is a better woofer for the Quads than the Velodyne, outpacing the big 18” woofer in clarity and speed in the uppermost bass rather than the subwoofer region where the ULD-18 delivers its power. The big Velodyne allows for a greater extension of dynamic range, for it puts out more power while setting the high-pass slope to prevent undue excursions of the satellite’s planar driver.

The combined Quad system is costly, running around $7000, only slightly less than the $8200 cost of Stereophile’s top-rated system including a subwoofer, the Hales System Two Signatures/Muse Model 18 combo (Vol.14 No.6). This total system cost puts the Quad/Gradient in direct competition with a number of other excellent speaker systems reviewed in these pages, including such combined systems as the Velodyne ULD-18 subwoofer/USA Monitor or the Hales/Muse Model 18 subwoofer combination. The $6750 Quad/ULD-18 Velodyne system, with the optional Velodyne passive crossover, is almost as clean in the upper range, but goes much deeper in bass; in my listening room, the low-pass 40Hz–100Hz musical detailing, pitch definition, and control are equivalent in the ULD-18 and SW-63 subsystems, but only if one sets the big Velodyne at a low level (about 8:30 on the level control).

The SW-63 system’s price also means that it will compete with integral full-range speakers, such as the Snell Type A/III Improved, the Sound-Lab A3, the B&W 801 Matrix II Signature Series, and the Avalon Eclipse. The new Quad system is more transparent and creates more soundstage depth than a pair of Snell Type A/III Improved speakers, but it cannot match the Snell’s deep-bass extension or dynamic range. Prospective purchasers should audition all these fine systems before buying.

What are the advantages, then, of the Quad/Gradient “woofer solution” for the USA Monitors? The SW-63 enclosures place the USA Monitor’s electrostatic elements in an optimal position vis-à-vis the subwoofers (for best synchronization of dynamic and electrostatic drivers), and at the correct elevation above the floor. The SW-63’s cabinetry blends well with the USA Monitor’s, both acoustically and visually. Bi-amplification gives the SW-63 hybrid system greater dynamic range than the stand-alone USA Monitors.

Sonically, the Quad/Gradient combination offers all the clarity and lack of coloration in the midrange I’ve always loved in the ESL-63s and USA Monitors, while adding upper- and midbass extension. It images as well as, and is as transparent, open, and fast as any loudspeaker I’ve auditioned in my listening room. Even though the Quad electrostatics are helped by the latest SW-63s, Quad should continue to improve these woofers to produce deeper bass. Until then, the Gradient SW-63 system is one of the better woofer enhancements for the Quad electrostatic panels.

10 Recent listening comparisons of the ULD-18 with the Quad/Gradient system have revealed the Velodyne’s electronic high-pass crossover to be colored, causing some compression and alterations of the main speaker’s signal. This has been confirmed by another Stereophile writer, Jack English. Velodyne offers its customers an inexpensive switchbox that allows one to switch the ULD-18 subwoofer and crossover in and out of the system. This box, inserted between the preamp and Velodyne’s crossover, contains passive components for the high-pass section. Connectors at the box’s rear allow direct connections with the full-range speaker’s amplifier, keeping Velodyne’s mildly colored electronics out of the main speaker’s signal path. Other connectors convey the full-range signal to Velodyne’s crossover, which only feeds its internal amplifier and the ULD-18 subwoofer. What’s lost? The full-range speaker’s high-pass filter has only a first-order, 6dB/octave slope, which means it must play part of the deep-bass signal. Even so, the resulting combination makes the Velodyne ULD-18 system much cleaner, and makes it quite competitive (but not necessarily better) with the other top subwoofer system add-ons.
GOOD, BETTER, BEST

Guy Lemcoe maximizes the performance of the ET 2 tonearm


"What's in the box, Guy?" asked Nicholas Potter, Santa Fe's sole purveyor of used records and CDs.

"CDs," I replied.

"Always glad to see 'em, especially the classical ones. Cleaning out the closet?" he queried.

"In a sense, yes. They don't sound so good anymore."

"Why?"

"Because I've made some improvements to my system—tweaked my ET tonearm," I replied.

"That's the one with the air bearing, isn't it? The one you hook up to an aquarium pump?"

"Well, sort of. I replaced the pump with a high-pressure model, installed a new manifold in the arm, and added a damping trough and a dial indicator to it."

"Sounds like car repair. Did you put a Grado cartridge on, like you suggested I do with my setup?" he asked.

"Not quite. I'm happy with my Monster," I replied.

"By the way, Guy, my Grado sure sounds good."

"I thought you'd enjoy it."

"So, you don't like CDs anymore?"

"That's not the question. It's just that my LPs sound better now than they ever have," I replied.

"Why?"

"Read my upcoming article in Stereophile. By the way, got any new used LPs...?"

Bruce Thigpen's ET 2 tonearm is an engineering and design triumph offering outstanding performance at a modest cost. It is well known for its flexibility and adjustability, and graces many music-lovers' turntables. Upgrades (all retrofittable) have been offered from time to time, including rewiring of the arm tube and spindle with van den Hul silver. More recently, attention has been paid to the air bearing itself. The stock pump delivered about 2½psi at the arm. What would happen if this pressure was increased? Might not the bearing itself become more rigid? In addition, could a reasonably priced surge tank, or "buffer," be sold to ensure a non-pulsing air supply?

In response to these questions and apparent consumer demand, Herb Wolfe of Airtech Audio introduced to the high-end market the German-made, medical-grade WISA high-pressure pump and the Airtech surge tank/air reservoir. The pump is a high-pressure type with low flow. (The Takatsuki pump supplied with the ET 2 is a low-pressure, high-flow type.) Used with the Airtech tank, the Wisa pump delivers roughly five times (12psi) the air pressure at the arm. But the original ET 2 manifold was designed for air-flow rates and pressures different from those supplied by the Wisa. Will the benefits of increased air pressure be fully realized by just substituting pumps?

Well, yes and no. Yes, there will be a sonic benefit, but no, it will not be optimal. Even so, when I first installed the Wisa pump and Airtech tank in my system (the arm is mounted on a VPI HW19 brought up to the latest spec—it's a Mk.3.5, I guess), I noticed, in addition to a striking attenuation of background noise, a significant improvement in low- and midbass pitch definition. What before had sounded vague now took on unmistakable identity. For example, the kettledrum strokes toward the end of "Irish Boy" from the soundtrack album Cat (Vertigo 822 769-1) were resolved with more clarity, "weight," and speed than I had heard before. The placement of those drums

Stereophile, October 1991
on the stage was tangible, as was the canopy of air surrounding them. In fact, I could easily visualize the felt end of the stick as it struck the taut skin of the drumhead. This was indeed impressive performance; I spent hours playing album after album, discovering nuances of sound unheard up to that point.

Tighter, more extended and pitch-defined bass is not the only sonic improvement to be gained from changing pumps and adding the surge tank. Transients were rendered more dynamically, with less "smearing" than before. The initial attacks of such struck percussive instruments as drums, cymbals, and triangles were sharper and more clearly defined. More "snares" could be heard on snare drums. For example, Joe Morello's drumming (especially his delicate brushwork) on "Swanee River," from the Dave Brubeck Quartet's Gone With The Wind (Columbia CS 8156), was reproduced with stunning realism. (No apologies need be made for this 1959 recording!) Similarly, the leading edges of bowed strings had more "bite," sounded more resonant, and vibrated with more vitality than before.

I was particularly moved by the nuances of Gidon Kremer's bowing technique as captured in his stirring performances of Bach's Sonatas & Partitas for Solo Violin (Philips 6769 053).1 Due to an overall increase in transient speed, low-level resolution, and much better low-frequency response, coupled with a noticeable decrease in transient smearing and a general lowering of the noise floor, ambient information was conveyed with often startling effect. Hall sound became more pronounced on recordings which captured it, and sounds reflecting off side and rear walls were clearly heard. The canopy of air surrounding a symphony orchestra was picked up, as well as the envelope of air around individual instruments within that orchestra. Likewise, on popular music, the ambiances of different recording studios were discerned with almost photographic accuracy. And remember, all this with an apparent mismatch between pump and manifold!

Leave it to Bruce Thigpen to design a new high-pressure manifold which would complement the Wisa pump. Externally, the new manifold looks just like the old one. However, the new manifold is machined to closer tolerances, is 0.0007" smaller in inside diameter, and has smaller capillaries. The theoretical result of this re-machining is to achieve a higher air pressure at the bearing for a given amount of air flow. The result heard at the ears is an even better, more refined sound. The improvement, though not as great as that heard with the upgrade to the Wisa pump and surge tank, is still significant and worth the money. With replacement of the manifold, you can rest assured that the optimum interface between pump and arm has been achieved.

I found the Wisa pump slightly noisier than the stock ET pump, so greater care should be taken to isolate it from the listener. I placed mine in a closet in my listening room (where the stock pump had also been located), sitting on an old AudioQuest Sorbothane platter mat I had laying around. Pump and mat rested on a piece of particleboard on the floor. With this arrangement, nary a mechanical sound was heard. The only noise heard when the closet door was open was a soft, high-pitched whir. The surge tank was in the corner of the closet, out of the way. (It is not unobtrusive!) Since the Wisa pump doesn't have an on/off switch, it is advisable to plug it into an AC source with an in-line power switch. (I have a switch on the side of my VPI which controls a receptacle on the back into which the power cord from the pump is inserted.)

Installation of the high-pressure manifold is straightforward and should cause no problems. It may take some persistence to remove the original manifold, but keep applying steady pressure and the seal should break. Note: be sure to grease the gaskets on the new manifold before inserting it into the sleeve. Failure to do this will cause the manifold to "freeze" inside the sleeve, making subsequent removal for cleaning extremely difficult. Also, be sure to align the manifold according to the arrow and dots marked on top.

One of the features of the ET 2 arm is the relative ease with which one can change cartridges. The entire arm tube is easily removable with the cartridge in place and properly aligned. Installing another arm tube (with a different cartridge installed) takes about a minute. The arm tube itself is internally damped
with foam. The spindle to which the arm tube is attached, however, is not damped, a condition which has been addressed with the introduction of the fluid dynamic damping trough.

When installing the damping trough, read the instructions over carefully. Make absolutely certain you have the trough positioned properly before pressing it up against the manifold housing. Once pressed firmly into place, it'll be harder than hell to get off! Don't get heavy-handed with the syringe either, or you'll squeeze more silicone than needed into the trough. Remember, it'll take some time for the fluid to settle evenly into the trough. It's much easier to add small quantities of the fluid than remove any excess. The paddle only needs to "kiss" the silicone for it to do the job.

Several advantageous functions of the damping trough are explained in the manual which comes with the kit. Perhaps most important is the discussion of low-frequency phase shift as a product of the resonant frequency of the tonearm/cartridge combination. Bruce Thigpen claims this "tonearm performance parameter" has not been discussed before. He also claims an "almost perfect low frequency phase response" for the ET 2 arm with the damping trough installed. Those inclined to view this hobby as a technical challenge might enjoy pursuing this hypothesis. I believe I understand the gist of what is being said and will leave it at that.

More obvious is the discussion of wow and flutter, and FM distortion, and the relation of both to disc-surface irregularities. Bruce believes wow and flutter derive from tonearm geometry, phono cartridge compliance with elastomeric damping, and surface irregularities in the LP. He does not believe this anomaly to be a function of the turntable. He presents several strong arguments, all of which made sense to me. If, as Bruce contends, surface irregularities (which result from the molding process used in making records) are the primary cause of rumble or random low-frequency noise resulting in tonearm/cartridge oscillation (of which wow and flutter and FM distortion are the end products), controlling these irregularities via the damping trough will alleviate the resonances induced by them and help eliminate the problem. In support of his thesis, Bruce claims up to a 50% reduction in (conventionally measured) wow and flutter, and includes a graph to illustrate his point.

I don't have the technical background to dispute these claims, but I do have a pair of ears that I trust. What I heard pouring out of the speakers after installing the damping trough sounded more like music to me than anything I had heard up to that point. There was an immediate sense of ease to the presentation which at once relaxed me and drew me deeper into the music. Solo piano recordings in particular took on a heightened sense of credibility. Gone was the slightest hint of pitch instability. The clarity of the piano notes (on good recordings) was stunning. My Keith Jarrett albums have never sounded better! Especially revelatory was the sound on Still Live (ECM 1360/61), recorded on stage at Philharmonic Hall in Munich. Jarrett's piano positively sparkles throughout the set, and the interplay between him, Peacock, and DeJohnette was brought forth with more urgency and dynamic contrast than I've heard before. Additionally, the sound of the applause from the obviously stunned audience sounded like individual hands clapping instead of rain falling on a tin roof.

I'm overwhelmed by the improvements wrought by these upgrades to the ET 2 tonearm; I urge every ET 2 owner to make these changes as soon as possible. Without them, you haven't heard the level of performance this arm is capable of. With them, the arm catapults itself into the next higher class of "Recommended Components." I've not heard many of the Class A champions, but I find it difficult to believe anything could sound significantly better. By the way, spend the few bucks to get the dial indicator and mount. Not only does it look sexy (in an industrial sort of way); it enables you to repeatedly hit predetermined VTA settings with extreme accuracy. Unfortunately, it will not determine those settings for you! It will, however, make the effort less daunting.

2 The influence of the arm/cartridge's LF resonance on measured speed instability was explored in a seminal 1978 paper by B&K's Poul Ladegaard.

JA

3 I haven't often seen Dick Olsher swoon in the presence of recorded music, but I think I caught a glimpse of him succumbing to the voices of the Persuasions the other day in my listening room.
FOLLOW UP

VTL 225W Deluxe monoblock power amplifiers

When I reviewed the VTL 225W Deluxe Monoblocks in January 1990, I concluded that they were the most musically satisfying amplifiers I had ever heard. Despite the intervening years and products, the 225s still do it for me. They have an unparalleled midrange liquidity, harmonic rightness, and a detailed yet unfatiguing presentation. After reviewing other amplifiers—many superb in their own rights—it is always a joy to return to the special qualities that make the 225s so musically compelling.

With the continued supply of the high-quality EL34 output tubes used in the 225 monoblocks in question, VTL’s David Manley sought a replacement tube for the 225 and other VTL products. In a joint venture with the Yugoslavian EI tube factory, an entirely new vacuum tube—the KT90—was designed for audio applications. The KT90 has replaced the EL34 in all current-production VTL products.

The question begs: How do the KT90’s 225s compare to the venerable EL34’s version? I’ve had both amplifiers on hand for a few months, alternating between them for weeks at a time and doing some side-by-side comparisons at matched levels. For this “Follow-Up” I used my usual reference loudspeakers system—Hales System Two Signatures—but without its usual companion, the Muse Model 18 active subwoofer. (Removing the subwoofer and running the amplifiers full-bandwidth gives a better indication of the two amplifiers’ relative bass performance.) The analog front end was a Well-Tempered Turntable and Arm, fitted with an AudioQuest AQ7000 cartridge and stepped up with an Expressive Technologies SU-1 transformer. The digital front end varied over the months, at one time or another including the Theta DSP Basic, Theta DSP Prime, Audio Research DAC1, Meridian 203, and Audio Alchemy DDE converters driven by Esoteric P-2, Wadia 3200, or Theta Data transports. Preamps have been the Audio Research SP-11 Mk.II, ARC LS2, or the passive EVS Stepped Attenuator. Speaker cable was bi-wired runs of AudioQuest Dragon/Clear, and interconnects were AudioQuest Lapis and Diamond.

In addition to auditioning the amplifiers in my listening room, I did comparisons at someone’s house through a pair of Magneplanar MG2.6/Rs. My first impression, shared by the Magneplanar owner, was that the KT90 version was superior to the EL34’s 225s. The KT90s had greater clarity, increased resolution of detail, and a more dynamic, driving low end. In many ways the KT90s sounded more solid-state: a little brighter in the top octave, a more up-front perspective, and greater soundstage focus. While the KT90’s 225s had less soundstage depth than the EL34s, the focus and resolution of individual outlines was clearly superior with the KT90s. There was, however, a slight loss of the midrange ease and liquidity that characterize the EL34’s 225s. The KT90s tended to be more analytical, the EL34s more romantic. Despite the tradeoffs, we both preferred the KT90 version driving the Maggies.

Just for fun, I replaced my host’s Cardas interconnects and TARA Labs Space and Time speaker cable with AudioQuest Lapis interconnect and AudioQuest Sterling cable (both use silver conductors). We were shocked: The difference between cables was greater than the difference between the amplifiers. With the AudioQuest cables, the soundstage depth increased dramatically. Suddenly there were layers and layers of music we hadn’t heard before. Textures became more liquid, and the overall presentation took a huge leap forward in musicality. The vocal on Johnny Frigo’s My Blue Heaven (Chesky JDI) became round and liquid, with the backing instruments now separate and behind the singer rather than being a two-dimensional wall between the loudspeakers. In addition, previously unheard detail became apparent as the soundstage became more transparent and three-dimensional. I don’t know if it was due to replacing the interconnects or the speaker cable, since we switched both at the same time, but the Magneplanar owner knew immediately he would have to pop for the Lapis and Sterling. It was the most dramatic difference between cables I’d ever heard.

But back to the VTLs. Driving the Haleses, the KT90’s superiority was less clear-cut. The
KT90's characteristics that we preferred on the Magneplanars—greater contrast, closer perspective, and slightly brighter top octave—were less welcome on the Signatures. The Haleses' more detailed and forward character (in relation to the Magneplanars') seemed better suited to the softer-sounding EL34s. The ease, smoothness, and liquidity of the EL34s made for a more musical presentation with the Signatures. The EL34s have a unique quality that I wouldn't use to describe the KT90s: lush. There's something magical about the EL34's 225s in the mids that is unmatched by any other amplifier I've auditioned. Brass instruments—the sax and flugelhorn on my own jazz recording, for example—had a particularly round, liquid quality with the EL34s. They had a more natural, burnished brass timbre rather than a polished chrome rendering.

The KT90's 225s, however, had many qualities that made them superior through either loudspeaker: bass control, LF extension, and more effortless dynamics. Both amplifiers have excellent bass for tubes, but the KT90's 225s were clearly a notch better. Bass drum had more punch and authority, and bass guitar had more body and rhythmic drive. These characteristics gave the KT90s a more physical involvement with the music. The KT90s' bass control and extension made them sound more like solid-state amps in the lowermost octaves. "Robust" describes the KT90's 225; "soft and gentle" is a more appropriate description of the EL34s.

Incidentally, the KT90s seem to draw more power than the EL34s. The inrush of current at turn-on sounds louder with the KT90s, and the sound of the tubes cooling is more apparent when the amplifier is turned off. I also experienced a failure of one of the KT90's 225s at the end of the listening evaluations: an output tube smoked, and the amplifier wouldn't work after that even with the tube replaced.

Measurements with EL34s: I'll begin the measurements with the EL34's 225, and save any comparisons with the KT90 version for the KT90 measurements section.

The EL34's 225's output impedance was just under an ohm across the band, measuring 0.97 ohms at 20Hz, 0.89 ohms at 1kHz, and 0.79 ohms at 20kHz. This is a moderate value for a tube amplifier, but high in relation to most solid-state amplifiers. For comparison, the VTL Compact 160s reviewed in August had a very high output impedance of about 1.5 ohms at 1kHz in triode mode and 2.2 ohms in pentode mode. The 225's high output impedance (relative to solid-state amplifiers) suggests that its tonal character will change in response to the way the loudspeaker's impedance varies with frequency. (See JA's review of the Avalon Eclipse in the January 1991 issue for a discussion of this effect.)

Input impedance was very high at 129k ohms—power amplifiers typically have 50k ohms to 75k ohms input impedance. Input sensitivity—the input voltage required to drive the amplifier to clipping (3% THD)—was a low 1.17V. The high input impedance, coupled with a high input sensitivity, suggests that the 225s will work well with passive level controls. Voltage gain was 30.5dB, about 3dB higher than typical power amplifiers. The 225 does not invert polarity, and the unweighted S/N ratio, referenced to 1W into 8 ohms, was a respectable 68dB.

Like the Compact 160s, the 225s had fairly high distortion—especially into low impedances. Consequently, 3% THD was chosen as the clipping point rather than the more typical 1% figure. The 225's distortion could exceed 1% THD before the knee in the distortion curve that indicates the output waveform is actually clipped. This can be seen in the family of THD+noise vs power output curves of fig.1. The lower curve is the amp driving 8 ohms, the middle curve is into 4 ohms, and the upper curve is the 225's distortion when driving a 2 ohm load. This is generally good performance for a tubed amplifier: the distortion, less than 1% through most of its power range into 8 and 4 ohms, increases nearly linearly with output before clipping.

Maximum power output—defined as the 3% THD point—was 191W into 8 ohms (22.8dBW), 270W into 4 ohms (21.3dBW), and 45W into 2 ohms (17.9dBW). The decreasing output into lower loads indicates that the amplifier is current-limited—typical for a tubed amplifier. The AC line voltage was 112–113V during the clipping tests; the maximum power output may be higher with an AC line held rigidly to 120V.

The THD+noise vs frequency curves are shown in fig.2. They represent, from bottom to top, 1W output into 8 ohms, 2W output into 4 ohms, and 4W output into 2 ohms. These

Stereophile, October 1991
power outputs represent a constant 2.83V across the load. The distortion levels are fairly low for a tubed amplifier, but when driving 2 ohms at high frequencies, the distortion becomes significant—1% at 20kHz—although the harmonic products will be beyond the audible range. Overall, however, the 225 is well-behaved; when driving 8 ohms, the distortion was less than 0.04% up to 10kHz. Even the 4 ohm curve stayed in the 0.06% range until the lower treble.

Looking at an amplifier’s distortion products with the fundamental removed is interesting. The lower trace in fig.3 shows the 225’s distortion products when reproducing a 1kHz sine-wave at a power output of 2W into 4 ohms (the upper trace is the test signal). The distortion is primarily innocuous third-harmonic, overlaid with noise and some higher products. (Count the number of cycles in the distortion product waveforms.)

Fig.1 VTL 225, EL34 version, distortion vs output power into 8 ohms (bottom), 4 ohms (middle), and 2 ohms (top)

Fig.2 VTL 225, EL34 version, THD+Noise vs frequency at 1W into 8 ohms, 2W into 4 ohms, and 4W into 2 ohms

Fig.3 VTL 225, EL34 version, 1kHz waveform at 2W into 4 ohms (top), distortion and noise waveform with fundamental notched out (bottom)

Fig.4 VTL 225, EL34 version, frequency response at 1W into 8 ohms (top) and 2W into 4 ohms (bottom) (0.5dB/vertical div.)

Fig.5 VTL 225, EL34 version, 10kHz squarewave at 0.5W into 8 ohms

Fig.6 VTL 225, EL34 version, spectrum of 50Hz waveform, 10Hz–1kHz, at 72W into 4 ohms

Fig.7 VTL 225, EL34 version, HF intermodulation spectrum, 300Hz–30kHz, 19+20kHz at 35V p-p into 4 ohms (linear frequency scale)
during one cycle of the fundamental above it.)

Frequency response, for the record, is shown in fig.4 and yields no surprises. The lower curve is at 2W into 4 ohms, the upper curve at 1W into 8 ohms. There is a very slightly greater HF tilt to the 4 ohm curve: the treble tends to rise in the top octave, while the bass dips slightly below 70Hz. This difference is negligible—0.3dB variation between 20Hz and 20kHz.

Looking at the 225’s low-level reproduction of a 10kHz squarewave in fig.5, we can see a significant amount of overshoot on the squarewave’s leading and trailing edges, as well as some damped ringing at an ultrasonic frequency.

Fig.6 is a spectrum analysis of the 225’s output when reproducing a 50Hz sinewave at 72W into 4 ohms. The 50Hz fundamental can be seen at the left vertical cursor, with the attendant harmonic products at 100Hz, 150Hz, and...
so on. The predominant harmonic product is at 150Hz— the third harmonic—at -42.3dB with respect to the fundamental, just under 1%, confirming the analysis in fig. 3. Note the absence of upper-order distortion components—the EL34’d 225 produces primarily innocuous lower-order distortion products.

Finally, the intermodulation spectrum produced when the 225 was asked to reproduce a combination of 19kHz and 20kHz at 48V p-p into 8 ohms (37W RMS) is shown in fig. 7. The 1kHz intermodulation product (20kHz – 19kHz) is moderately well suppressed, being nearly 57dB below the test signal, just above 0.1%. The 18kHz and 21kHz components are also reasonably low for a tubed amplifier.

**Measurements with KT90s:** Looking next at the 225’s behavior with the KT90 output tubes (a different amplifier sample), there were a few differences compared to the EL34 version. I’ll note these differences when they are significant.

Output impedance with the KT90s was virtually identical, measuring 0.95 ohms at 20Hz and 1kHz, decreasing to 0.87 ohms at 20kHz. Input impedance, though still fairly high, was much lower than the EL34’d 225’s input impedance of 129k ohms at 74.5k ohms. Input sensitivity was 1.63V, about half a volt more being required than the EL34 version to be driven to clipping. Since the two amplifiers have nearly the same power output, this means the KT90’s gain is lower, requiring a higher input voltage to drive it to clipping. This was indeed the case, the voltage gain into an 8 ohm load measuring 27.4dB—a full 3dB lower than the EL34 version. 27dB of voltage gain is typical of most power amplifiers.

The KT90’d 225 is polarity-correct (non-inverting), and unweighted S/N ratio was an excellent 74.7dB referenced to 1W into 8 ohms, more than 6dB higher than the EL34’d 225.

Fig. 8 plots the KT90’d 225’s distortion vs power output into 8 ohms (lower curve), 4 ohms (middle curve), and 2 ohms. Again, 3% THD was chosen as the clipping point due to the amplifier’s high intrinsic distortion below clipping when driving low impedances. Maximum output power was nearly identical to the EL34 version, clipping at 185W into 8 ohms (22.7dBW), 234W into 4 ohms (20.7dBW), and 251W into 2 ohms (18dBW). THD+noise vs frequency is shown in fig. 9. The curves represent, from bottom to top, 1W into 8 ohms, 2W into 4 ohms, and 4W into 2 ohms. The KT90’s distortion levels are about the same as the EL34’s through the midband, but have a greater rise in the high frequencies. At 10kHz, the KT90’s distortion was about double that of the EL34-equipped 225 into any impedance.

The KT90’s distortion products when reproducing a 1kHz sinewave at 2W into 4 ohms are shown in the lower trace of fig. 10. The distortion is primarily second-harmonic, in contrast to the nearly pure third-harmonic product produced by the EL34’d 225. Both types of distortion are relatively benign, however, since they both occur naturally in music.

Fig. 11 shows a low-level 10kHz squarewave. The overshoot is more damped, looking substantially better than the EL34’s squarewave (fig. 5). Frequency responses at 1W into 8 ohms and 2W into 4 ohms, shown in fig. 12, have fairly steep rolloffs above 20kHz compared with the EL34s, which had a rising curve above 20kHz.

Looking at fig. 13, a spectral analysis of the 225’s harmonic distortion products when reproducing a 50Hz sinewave at 72W into 4 ohms, we can see a fairly high level of distortion. Comparing fig. 13 with fig. 6 (the EL34’s distortion spectrum), the KT90 can be seen to have about the same level of third-harmonic as the EL34, but also a much higher level of second-harmonic distortion at 100Hz. In addition, the KT90 has many more clearly identifiable upper-order harmonics than the EL34. The fourth harmonic is higher in level and the fifth is about the same, but the KT90 has more upper-order harmonic products, seen as spikes rising from the FFT analysis noise floor.

Similarly, the KT90’s intermodulation products when reproducing a mix of 19kHz and 20kHz at 44V p-p (31W RMS) were higher than the EL34’s (fig. 14). The 1kHz component is a full 7dB better suppressed in the EL34’d 225, the KT90’s version’s lying 47dB down (about 0.5%) and the 18kHz and 21kHz products are about 6dB lower with the EL34-equipped amplifier.

Overall, these measurements are typical of tube amplifiers: moderately high output impedance, current-limited into low impedances, and fairly high distortion levels. While the distortion was higher than solid-state amplifiers, the products were mostly benign low-order harmonics. The measurements indicate that an
audition with one's loudspeakers is recommended—a conclusion reinforced by my listening impressions over the very different Magnepan 2.6 and Hales System Two Signature loudspeakers.

The EL34 version had generally lower levels of harmonic and intermodulation distortion than the KT90. This is, however, no indication of how the two amplifiers reproduce music—both performed well in the listening room.

**Conclusion:** Which amplifier one prefers is largely a matter of personal taste and associated components, especially loudspeakers. If you have the EL34'd 225s and your system needs a little more sparkle and punch, the upgrade to the KT90 is worth the expense. If your system leans toward the analytical, keep your EL34s.

For those of you contemplating buying 225s for the first time, the KT90'd 225s are superb amplifiers and are highly recommended. They have earned a continued Class A recommendation in *Stereophile's* "Recommended Components."

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**Muse Model 18 subwoofer**

Those of you who read my review of the VTL Compact 160 amplifiers in the August issue already know how bad-ass I think the Muse Model 18 subwoofer is, and certainly RH's review of the Model 18 in July covered all the technical details and sonic strengths of this remarkable product. Muse's Kevin Halverson sent me an 18 in black so I could not only report on how well the Muse mates with speakers other than RH's reference Hales Signature Twos, but have a shipping box big enough to live in once I broke my lease by annoying nearby Robert Mueller Airport with Prof. Johnson's Astounding Sound Show.

Unlike any other subwoofer I've ever seen, the 18 has a control marked Delay that electrically "moves" the subwoofer back and forth a total of 7" to ensure proper phase integration with your main speakers. Kevin Sez that all you have to do to properly set the delay control is invert the polarity of one of your amps/speakers and, driving that channel only, feed the system a tone centered at the 18's crossover frequency; adjust the delay control for the greatest null at this frequency, and you're home free. Muse has a setup of relay-controlled phase inverters that requires two people to set up the 18, but I came up with another method.

I have an old Harman/Kardon cassette deck, one of those '70s rigs with microphone inputs as well as line-level inputs. I set a Sennheiser MD-421 mike at head level on my couch and snaked its cable over to the H/K deck, which sat upon the Muse. After switching the speaker cable of the righthand Spica to invert the polarity and shutting the left monoblock off, I fed the system a 75Hz tone (courtesy of a Potomac AG-51 signal generator) and adjusted the delay knob until the VU meter on the H/K showed the lowest signal in record/pause mode. I tried another mike, an omnidirectional EV-635A, and got the same null point. Simple, EZ, and convenient if you happen to have a signal generator and a laughably old cassette deck lying around!

Of course, when I first set up the Muse, I just bad to put it through its paces; out came all the audiophilic organ records Tom Norton sent me for my re-education in the Arts, and of course I played the first track of Pink Floyd's *Dark Side of the Moon* over and over again to hear those thundering heartbeats shake the house. MAN, does this baby woof! CA retailer Dave Green once told me, "Half the world's trying to find God; the other half's trying to find bass"; well, I've never gone looking for either, but after living with the Muse for two months, I'm hooked. But to me, the LF extension isn't the coolest thing about the Model 18; with the exception of *Dark Side of the Moon*, I don't think I have a single record or CD that goes down that low. That's why the LF response of the Angelus, while admittedly not very deep, has always been perfectly adequate when listening at reasonable levels; but what if I want to listen to my music at unreasonable levels? What if I want to put on the Red Hot Chili Peppers' *Uplift Mofo Party Plan* and jam along on my Strat with my 4-10 Bassman cranked to twelve? What if I want to slap Iggy & The Stooges' *Raw Power* on and run around the house like the Tasmanian Devil? WHAT IF I JUST WANNA GET LOOOOOOOOOUUUUUUDDDDDDDDDDDD????!!

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1. Muse measures every speaker they make a personality card for in order to determine the optimum crossover point. RH's Hales are crossed over at 52Hz, my Angeluses at 75Hz. I'd be very interested to hear the Model 18 mated with some of the better minimonitors like the Celestion SL700s; I bet that'd be a giant-killer.
2. A CD player and a Test CD can serve as an admirable substitute, of course.
3. I found God years ago in New York's Carnegie Deli while caring a hot pastrami sandwich the size of my head.
Admit it; even though you're a card-carrying member of the ACLU (Audiophiles for Careful Listening U-betcha) and you're always mindful of disturbing your family with all those Italian words like "fortissimo," don't you secretly pray for those priceless moments when you have the whole house to yourself so you can crank up the Zep and do windmill power chords on a tennis racket? And isn't that the most fun you ever have with your hi-fi? It sure is with me; hearing the back walls on a Chesky is cool man cool, but give me balls-to-the-wall jamming with The Who's Live At Leeds and I'm two steps from the Promised Land.

Unfortunately, the Spicas don't rock'n'roll. That's not to say that all audiophile speakers don't; Guy Lemcoe's Mirage M-3s seriously rock'n'roll! But those wimpy-ass French drivers in the Angelus weren't designed to kick butt, just work extremely well at reasonable levels, which they do brilliantly; I love the sound of the Angelus, and a year later it remains one of my favorite speakers at any price. But the good people at Spica don't want to KNOW from Corey Greenberg of Austin TX, the guy who keeps sending them all those blown woofers and tweeters and asking for those free replacements they were so foolish to offer such a speaker-sadist via their five-year warranty.

Well, John Bau needn't curse me anymore; the Muse Model 18 has given the Spicas dynamic capability they never dreamed of. Relieved of sub-75Hz excursion, the 8" Audax woofers can play much louder and cleaner than before. I used to get an uneasy feeling every time I turned the volume past a certain point on my preamp; it wasn't just a few times I'd hear a POP, then either real dull-sounding speakers or what sounded like a couple of clock radios; Delbert McClinton's Live In Austin was my biggest woofer-killer, while Little Richard had the distinction of blowing the most tweeters. Well, no more. Since I hooked up the Model 18, I've been running my system louder than ever, and I haven't blown a single driver yet (knock on wood—klonk klonk).

Like RH, I was real leery about running the entire audio signal through the active crossover inside the Muse; I'm very aware of the sonic degradation of most active crossovers, and, like RH, was fully prepared to forego the bass and dynamic improvements of the Model 18 if the crossover screwed with the high-pass audio fed to the main speakers. Unlike RH, I didn't hear any improvements in the image focus or soundstage width; this is most certainly due to our choice in preamps. RH's preferred ARC SP-II is much happier driving the class-A buffered Muse crossover than it is his VTL 225 amplifiers, as the Muse presents nearly a purely resistive load which increases system bandwidth beyond that of the straight SP-II/VTL combo. My buffered preamp, with its PMI BUF-03AJ buffers on the outputs, has no such discrimination; it's quite happy driving any load I've thrown at it. Like Bob, I did hear a slight hardness to the overall sound with the Muse in the system, but it was very slight, and infinitesimal when compared to the sound of most line stages I've heard. I found the very small amount of hardness to be well worth the added bass extension* and dynamic leapfrogging the Model 18 brought to the table.

In all, I find the Muse Model 18 to be an amazing piece of gear; I've certainly become addicted to it, and it's been a tremendous help in judging the low bass of all the equipment that's come through these parts since I hooked it up. The incredible extension, cleanliness, and huge dynamic improvements the Model 18 makes to your speakers and your main amplifier are, to my ears, unprecedented in not only this price range, but any. Before I bought my Angeluses, my former main speakers were Spica TC-50s, so you know where my priorities were; I was more than willing to forego deep bass for the pleasures of 3-D midrange. But that era of weak-bass live and let live is OVER! Everything Bob said about the Muse Model 18 is true; this Muse subwoofer is a truly great product. Forget that old warhorse "highly recommended"; the Muse Model 18 is KICK ASS!

—Corey Greenberg

Wadia 2000 Digital Decoding Computer

In my "Follow-Up" report on the Wadia Digitalmaster 2000 in the June issue, I reported on the latest version of this sophisticated processor's sonic and technical attributes. I found the 2000's musical presentation extraordinary—

4 After using the subwoofer for several weeks, I noticed a buzzing that emanated from the subwoofer cabinet. "%$@&!" I thought, "now I'll have to open this Woofasaurus Rex up and chase down the noise." But bracing the external heatsinks with my hand reduced the buzzing, and retightening the hexbolts that held the amplifier to the rear panel totally eliminated it. I suspect that prolonged woofing slowly loosees these screws; owners of the Model 18 should therefore check them from time to time for tightness.
unequivocally Class A performance in Stereophile's "Recommended Components." My measurements, however, revealed some odd behavior: the low-level linearity was very poor—among the worst I'd ever measured—and the unit decoded a −90dB, 1kHz signal at −100dB and generated a spurious 2kHz signal nearly equal in amplitude to the test signal. The 2000's deviation from linearity is shown in fig.1. The "curve" should ideally be a straight line—no error. Fig.2 is a spectrum analysis of the 2000's output when decoding a −90.31dB, 1kHz sine-wave, showing the spurious 2kHz component.

The combination of poor low-level linearity and the creation of a new signal exactly double the frequency of the test signal led me to conclude that both problems were caused by non-linearity and non-monotonicity in the 2000's DA converters. The 2000 uses four DACs per channel, with a single MSB trimmer for all four chips. I discussed the measurements with JA and two other people, one an expert in DAC design, the other an expert in D/A converter measurements. All agreed with my fundamental conclusion: DAC non-linearity was the cause of the poor measurements. See pp.214–215 of the June issue for a full technical discussion of the 2000's behavior.

Wadia Digital, however, disputed my findings. They contended that the DACs were perfectly aligned and that the unusual measurements were a result of one particular instruction in the ROM (Read-Only Memory) chips. Eight ROMs inside the 2000 contain the list of instructions that tell the 2000's four DSP (Digital Signal Processing) chips how to process the audio signal. The ROMs are the 2000's brain, the DSPs the muscles.

Consequently, Wadia sent me a new set of ROMs to replace the stock ROMs and indicated that these would produce better measurements. In addition, Wadia showed me a printout of both ROMs' instructions. The only difference was one line of code: one ROM set had the instruction "Dither and truncate," while the other ROM set was instructed to "Dither and round off." Other than that one line, the two sets of software were identical.

I replaced the stock ROMs with the custom chips and repeated the measurements; the results are shown in figs.3 and 4. The linearity is much better (fig.3) and the 2kHz spurious component is nearly gone from the spectral analysis (fig.4). Clearly, the anomalous mea-

![Fig.1 Standard Wadia 2000, departure from linearity, left channel (2dB/div.)](image1)

![Fig.3 Non-standard Wadia 2000, departure from linearity, left channel (2dB/div.)](image3)

![Fig.2 Standard Wadia 2000, dithered 1kHz tone at −90.31dB with noise and spuriae (1/3-octave analysis)](image2)

![Fig.4 Non-standard Wadia 2000, dithered 1kHz tone at −90.31dB with noise and spuriae (1/3-octave analysis)](image4)
measurements were not the result of DAC misalign-
ment as I concluded. Wadia knows that the ROMs shipped with the 2000 will produce the non-linearity and spurious component seen in figs.1 and 2, but felt that they are sonically superior to the software that produces the “good” measurements of figs.3 and 4.

This is a quandary. The fact remains that the superbly musical Wadia 2000, as shipped, actually reproduces a 1kHz, -90dB sinewave as a -100dB, 1kHz signal and a -100dB, 2kHz signal. Can this condition actually sound better than a correct reproduction of low-level signals? If so, it raises fundamental questions about digital audio reproduction and the relevance of these measurements. The idea that this distortion of the signal can be preferable to no such distortion is antithetically opposed to my fundamental beliefs about audio systems. Measurements are not the final word in audio equipment quality and cannot replace a good set of ears, but there is something disturbing about the fact that Wadia chooses to ship the unit with the performance seen in figs.1 and 2 when they can ship it with the performance seen in figs.3 and 4.

What really matters, however, is how the two sets of software compare sonically. I auditioned them at matched levels, allowing a warmup after switching chip sets. The playback system was the Wadia WT-3200 transport driving the 2000 through the glass-fiber interface, which fed a Jeff Rowland Design Group Model 1 amplifier through EVS balanced Ultimate Attenuators. Loudspeakers were Hales System Two Signatures, connected with bi-wired runs of AudioQuest Sterling/Midnight cable.

After spending some time with the stock chip set listening to music and some test signals (the Fade to Noise with Dither on the CBS Test Disc and the bonger tones on the Chesky Test CD), I switched chips. I expected a marginal difference at most—how different could they sound?

The difference was staggering—a word I don’t use lightly. In fact, the 2000 went from being an exceptional DA converter with the stock chips to sounding like a $150 mass-market CD player with the replacement ROMs. The treble became bright, hard, strident, and generally unpleasant. Soundstage depth collapsed, with none of the layering and resolution of hall ambience that characterize the stock 2000. The entire presentation became flat, glaring, and unmusical. Detail was exaggerated; it was like looking at the Mona Lisa in Day-Glo colors.

On Intermezzo (Sterephile STPH003-2), for example, the piano took on a hardness I’ve never heard from this recording. Through any other converter, the treble is anything but strident. With the replacement ROMs, there was an artificial sterility to the instrument that contrasted sharply with the lush, gorgeous rendering provided by the stock ROMs.

With The English Lute Song (Dorian DOR-90109), the lute became similarly offensive, sounding as if it had been close-miked with a peaky condenser microphone. Julianne Baird’s voice was overlaid with a husky, spitty sibilance that was entirely unnatural. The room shrank to a fraction of its former size, the performers no longer enveloped in the acoustic.

A jazz recording became thin and hard, lacking any sense of low-frequency weight or rhythm.

I could continue, but I’ll spare all of us. In short, the chip set Wadia ships with the 2000 was infinitely [!—Ed.] superior musically and sonically to the chip set that produced better measurements. Interestingly, I heard very little difference with the test tones. The Fade to Noise was virtually identical, but the Chesky bonger was overlaid with more fuzz with the replacement ROMs—exactly the opposite one would expect from looking at the measurements. The noise-floor modulation, however, decreased with the replacement ROMs; there was less pumping of the background noise by the bonger tone.

It is ironic and inescapable that someone who designed or evaluated DA converters strictly by measurement would have judged the replacement ROMs’ performance as “better”—another case where measurements are no substitute for critical listening. An unquestioning faith in these measurements coupled with a dismissal of personal listening impressions would not only fail to lead a person toward “goodness,” but would spin him around and send him blindly in the opposite direction. This episode reinforces a tenet I hold very strongly: Audio equipment quality is irreducible to an arbitrary set of numbers.

But why should the condition that produces poorer measurements sound so much better?

1 I was very impressed by this little 60W amplifier (reviewed by TJN in April).
Are we measuring the wrong things? What measurements would reveal the sonic differences between the two sets of software?

Perhaps Wadia can shed some light on this quandary in a "Manufacturer's Comment."

—Robert Harley

**JA on Loudspeakers**

It was the Saturday of the 1991 *Stereophile* Writers' Conference. The gathered scribes were talking about the circular logic of how you can't assess the worth of a component except by listening to recordings through it—except that you first have to listen to those recordings through the component to find out how good they were. "The entire recording process is a bent tool," said Corey Greenberg, and unless you know exactly how "bent" any recording is, how can it be used to assess the effect of a loudspeaker, say?

As any engineer will tell you, the "objective" world of measurement is not necessarily any better: you can neither be entirely sure that your test instruments are not themselves changing the performance of the component you are measuring, nor that they are not behaving as bent tools, particularly in the hands of the less-experienced operator. "Given half a chance, your test instruments will lie to you!" was the first piece of advice my electronics lecturer gave me when I started university. (I find it interesting that many of those "objectivists" who are most dogmatic about their faith in "science" do not themselves have any scientific education or background. One relatively high-profile "objectivist" loudspeaker reviewer, for example, seems to pride himself on his lack of any formal technical education.1)

When I decided to incorporate measurements into *Stereophile's* loudspeaker reviews, we purchased a high-quality microphone that we were sure was relatively flat in its on-axis response, a B&K 4006. Though this omnidirectional microphone with a 1/2"-diameter capsule is mainly intended for recording work, we chose it because it could give dual service: we wanted to use it both for measuring and for recording. Fig.1 shows the calibration response supplied with the microphone: a slight lack of energy can be seen in the lower treble, as well as a slight peak in the top audio octave. The maximum departure from a flat response is only about 0.75dB in either direction below 20kHz—each small division in fig.1 is 0.5dB—so I felt confident in being able to use this mike for my measurements with the DRA Labs MLSSA system. However, it quickly became obvious that the mike's response was not as flat as claimed; though we had no way of knowing exactly what it was, the top-octave rise was audibly somewhat higher than shown in fig.1. (Its sound can be heard on track 5 of the *Stereophile* Test CD, index 7.) Though we've been careful to make allowance for this discrepancy in our analyses of loudspeaker measurements, it has been present in all of *Stereophile's* published loudspeaker curves.

I then bumped into Paul Barton of PSB Loudspeakers at the June '91 SCES, who said he could have our microphone compared in an anechoic chamber with a calibrated reference B&K 4133 microphone flat to ±0.15dB. "Would I be interested?" he asked. "You betcha!" I replied, and arranged for Robert Harley to pay a visit to Paul up in the wilds of Canada. A reference loudspeaker was measured in the anechoic chamber first with the laboratory's mike and preamplifier, then with our microphone and EAR preamplifier. Subtracting the first loudspeaker response from the second gives the relative response of the *Stereophile* mike. This

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1 His second piece of advice was that a soldered joint couldn't be assumed to be sound unless it held together when you swung it around your head by the lead, something that holds just as true now as it did then.

2 "I have no academic training in physics, electronics, or acoustics." David Moran in *Speaker Builder*, Four'91, p.52.
is shown from 30Hz to 20kHz in fig.2: while the general shape is the same as fig.1, the error is significantly larger, the top-octave rise reaching a maximum of +2.2dB at 14kHz and the low-treble trough dropping to −1.5dB at 4kHz. It was a relatively simple procedure to translate this error response into a computer data file that could be used to adjust the frequency-response data files produced by the MLSSA system. Stereophile’s measured loudspeaker curves will therefore now be almost as accurate as if we had used the ultra-expensive B&K reference microphone. (I also extended the correction data to include the frequencies from 20kHz to 30kHz from the curve in fig.1, but there will be inherently a larger error in this region than below 20kHz; I don’t feel this to be particularly important, as my main reason to show responses above 20kHz is to examine the ultrasonic behavior of tweeters, where absolute level accuracy is not as important as it is in the audio band.)

The first corrected response curves appeared in our September 1991 issue, but as I keep all the original data on every product we’ve measured in an archive file, it seemed a good idea to compensate all previous published curves for the microphone’s departure from flat and combine the results in a “Follow-Up” review to accompany this month’s “Recommended Components” feature. So, without further ado, here are the corrected anechoic frequency responses for nearly all the loudspeakers we have reviewed between Vol.12 No.10 (October 1989) and the present day, with a couple of extras, giving a total of 75 different samples representing 69 models.

Nearly 70 speaker models in two years, all measured in a consistent manner (with few exceptions, the curves shown are the responses of the speakers averaged across a 30° window on the listening axis)—that’s a heck of a lot. More, in fact, than published in any other US audio magazine during the same period. I started thinking about how to present all these curves so that some useful relationships between them could be thrown up, therefore.

Ultimately, I decided to present them in descending order of “flatness.” Then, however, there remained the problem of how to assess “flatness.” To do it visually would probably be good enough—the human eye is excellent at picking out patterns—but I would need something a little more—how can I best express it?—“objective,” so that designers and manufacturers wouldn’t be able to complain that I had been too arbitrary in my assessment of their babies’ performance.

What I did, therefore, was to calculate the standard deviation of each speaker’s response data over the two decades from the bottom of the lower midrange, 170Hz, to the approximate high-frequency limit of human hearing, 17kHz. (The standard deviation is a statistical measure, being the root-mean-square of the deviations of the data points from their average value.) This way, the effect of the ubiquitous but inaudible resonant peak of metal-dome tweeters would be dismissed, as would the unpredictable behavior of loudspeakers in their upper-bass regions.

One complication remained, however, which was that like any FFT-based measuring system, MLSSA produces response data files that have a fundamentally linear frequency scale; i.e., the data points are spaced apart by an equal number of Hertz. Human hearing, however, is logarithmic when it comes to perception of frequency: though there are 10 times as many frequencies between 10kHz and 20kHz as there are between 1kHz and 2kHz and 10 times as many frequencies between 1kHz and 2kHz as there are between 100Hz and 200Hz, the subjective difference is the same with all three pairs of frequencies, the pitch difference being in each case one octave. If I just used the standard deviation of the data, departures from flat response above 10kHz (a region where human hearing is relatively insensitive) would dominate the result, leading to a ranking that wouldn’t correlate very well with reality. Accordingly, therefore, I rewrote my statistics program to apply a simple scaling factor to compensate for this fact.

I have arbitrarily grouped the speaker curves into five classes of flatness. Fig.3 shows those speakers whose weighted deviations are below 2dB; fig.4 features speakers with a weighted deviation ranging from 2dB to 2.5dB; fig.5 those ranging between 2.5dB and 3dB; fig.6 those from 3.0–3.7dB; while fig.7 brings up the

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3 Though I’m only responsible for writing a fraction of the loudspeaker reviews that appear in Stereophile, I do perform nearly all the measurements that accompany those reviews.

4 The fact that this survey turned into a major project meant that I did not have sufficient time to finish my amplifier reviews that were originally scheduled to appear in this issue. Fear not, gentle readers, they will appear in the November issue.

5 Ha! —RL

Stereophile, October 1991

206 WorldRadioHistory
back markers possessing a deviation above 3.7dB. The speakers are also listed in the Table, along with their price at the time they were reviewed, who reviewed them, what issue their review appeared in *Stereophile*, whether they need stands or not, and whether they appeared in "Recommended Components" and in what class.

I know what you’re about say: if I’ve gone to all this trouble, doesn’t this imply that *Stereophile* feels flatness of frequency response to be the primary deciding factor in determining a speaker’s quality? The short answer to that question is an emphatic "No!"

The long answer is that while it’s important for a speaker to be flat on-axis—or assessed across a 30° window, as I prefer to do—such flatness of response is only one of several factors that contribute to overall perceived quality. Among the more important parameters are: low-frequency definition and extension; whether the overall response tilts up or down; the overall smoothness of the response trend through the midrange and treble; the absence or presence of strong resonances in the midrange and low treble; the evenness of high-frequency dispersion in both horizontal and lateral planes; the stability and precision of lateral stereo imaging at different frequencies; the degree to which the speaker can preserve and reproduce the depth information encoded within recordings; the lack or presence of signal compression at high playback levels; the presence of distortion in the bass (common but subjectively innocuous); and distortion in the midrange (rare but subjectively a no-no). I have therefore attached a commentary to many of the curves so that you’re not led into error.

In addition, if this “Follow-Up” stimulates your buying juices, you must read the original reviews, which is where the full description of what each speaker does right and wrong is to be found. If you’re not prepared to do that, then I forbid you to read further.

**Fig.3:** The speakers in this group are all superbly flat; in fact, the frequency-weighted standard deviation of the top nine models is lower than that of our B&K microphone. The champion when it comes to midrange and treble flatness is the little JBL XPL-90. Despite this superb behavior, it was downrated on auditioning for three main reasons: its bass was underdamped and ill-defined; it was very beamy in its top octave, meaning that its room sound lacked “air”; and the slight rises in the upper midrange were due to resonances that lent its on-axis sound somewhat of a peaky nature. The almost-as-flat Meridian D6000 is so far unique in using digital signal processing (DSP) to implement both its crossover filters and a degree of equalization. Though a "Follow-Up" review is planned, I've included Sam Tellig's darling, the Spendor S100, which can be seen to be superbly flat. The Snell C/IV was downrated on auditioning due to a soundstage presentation that lacked depth, while the Avalon Eclipse sounded...
brighter than its on-axis response would suggest, perhaps due to its wide dispersion in the lower treble rendering the room reverberant field too energetic in this region. Its dynamic range was also somewhat limited for such an expensive speaker.

Though Wharfedale's diminutive Diamond IV does well on the standard deviation of its departure from perfect, its main error, the broad peak at the top of the woofer range, is very audible as an added nasality to the sound. This is also the case with Dick Olsher's Black Dahlia DIY design. Dick himself liked the JM Lab Micron with the inverted titanium-dome tweeter a lot, presumably because its response, though rough, is evenly balanced. The Genesis IM-5200 reviewed by TJN in this issue is commendably smooth but offers a slight rising trend from the bottom of the midrange to the top of the treble, which doubtless contributed his description of its sound as "crisp."

**Fig.4**: The members of this second group have nearly all been recommended by Stereophile, their slightly greater departures from flat compared with the first group being compensated for by virtues elsewhere. As with the Diamond and Black Dahlia above, though the revised TARA Labs Timekeeper 0.5 is flat overall, its one departure is so gross that the listener cannot escape it. Likewise, while the inexpensive B&W may have had a basically flat response over much of its range, it failed to impress Stereophile's listening panel due to high levels of resonant coloration and a somewhat peaky treble, the latter noticeable on its response curve and rendered more audible than might be expected in absolute terms by a lack of energy immediately below. By contrast, the Nestorovic's peaky treble seems to be compensated for by a generally exaggerated but well-defined bass region.

The Infinity Modulus response shown was taken without its subwoofer; the response can be seen to roll out very early in the upper bass, leading to a very lightweight balance. Otherwise flat, it was downgraded subjectively due to a lack of presence to its sound, which may be connected with the slight suckout at crossover. The revised Dahlquist DQ12 did a lot better than the earlier version in fig.7, due to its better-balanced treble, but many audiophiles will find its exaggerated bass too rich. The Triad System Seven satellites are basically flat but roll out a little too early in the lower midrange to form a good match with the subwoofer.

**Fig.5**: Again, most of the speakers in this group have been recommended by Stereophile, such exceptions as the MB Quart 490 and AR Spirit being due to a somewhat over-lumpy balance. (The AR needs boundary reinforcement to bring its lower mids and bass in line with the rest of its response.) In general, however, these models show either more unevenness to their midrange/treble balance, slightly sloping balances, or exaggerated levels at the edges of the band, compared with the speakers in the first two groups.

Though more expensive than the almost identical Ensemble PA1 (fig.4), our Ensemble Reference sample measured as being somewhat less smooth, perhaps due to the fact that the PA1 had been thoroughly broken in while

![Fig.4 Loudspeakers with frequency-weighted standard deviation (170Hz-17kHz) 2.0-2.5dB (5dB/vertical division)](image_url)
the Reference was measured out of the box. The TDL Reference Standard shows a smooth response trend through the mids and highs, but failed to get a recommendation due to its exaggerated and colored bass region.

Unlike most speakers, the response shown for the B&W Matrix 800 that so impressed Lewis Lipnick last June is not averaged across a 30° window but was taken on the midrange axis, which proved to be where the sound was most neutral. We are expecting a set of these 240-lb behemoths to arrive in Santa Fe, where I can do some more thorough measurements than were possible in LL’s small listening room. (In general, the closer the walls, the less accurate MLSSA measurements will be in the midrange.)

The Meridian D600 is downgraded by the standard deviation criterion due to its downward-tilted response trend, but actually sounded extremely uncolored. The absence of this digital-input speaker from “Recommended Components” is purely because we have not auditioned the latest version, which uses Bitstream oversampling and D/A conversion rather
than the older Philips 16-bit, 4x-oversampling chip set.

**Fig.6:** This is a mixed bunch, with some models highly recommended—the Wilson WATT 3, Rogers LS3/5a, Thiel CS5—and others that appear comparably flat either recommended only as budget models or not at all. This reinforces what I said earlier: Flatness of frequency response is not the only relevant parameter when it comes to judging speaker quality, and you must read the original reviews to see how shortfalls in any one area can be balanced by strengths elsewhere. There is one measurement anomaly in this group, the Thiel CS5. This has been downgraded by my flatness criterion because of its energy mismatch below and above 2kHz. I'm reasonably sure that this is an artifact of my measurement technique, it being impossible to position the measuring microphone far enough from the speaker to capture a true picture of its midrange balance. This is due both to the speaker's multiplicity of drive-units, each covering just a small nominal passband, and to the fact that the crossover uses first-order, 6dB/octave slopes, meaning that the overlap between the drivers is maximal.

Note that the Snell K/II's response was taken with the tweeter-level control set to give the flattest response on the tweeter axis; the curve published in the magazine had the HF control at its maximum setting. Note also that the Acoustat Spectra 1100 curve is the response midway up the electrostatic panel rather than that averaged across a 30° window, due to the speaker's very limited dispersion in the top two octaves.

**Fig.7:** This final group is to a large extent the rogues' gallery when it comes to frequency response. It is a rare speaker as unflat as the majority of these that gains anything but a very qualified recommendation from Stereophile's reviewers unless it is extremely inexpensive. The major exception is the Apogee Stage, which ends up here due to its sloping response across the band resulting in a high standard deviation. As DO's review pointed out, however, the smoothness of its response trend leads to a very natural, seamless midrange quality which can easily become addictive. Note also the Celestion 3000, which has a seamlessly flat midband typical of speakers in the higher groups. It ends up in this group, however, because of its early HF rolloff, which is accentuated by a peaky mid-treble. But in general, if you design a loudspeaker with these kinds of frequency-response aberrations, the worst thing you can do is submit it to Stereophile for review. (To be fair to Polk and Cambridge SoundWorks, we went out and bought our review samples.)

**Overall Conclusions:** I think it's apparent from the data that while flatness of midrange and treble response is a good thing to have in a loudspeaker, it doesn't in itself mean that the

![Graph](image_url)
### Table: Flatness of Loudspeaker Listening-axis Response
(Averaged across a 30° horizontal angle)

<table>
<thead>
<tr>
<th>Loudspeaker model</th>
<th>When review appeared</th>
<th>Reviewer</th>
<th>F-weighted deviation</th>
<th>Price per pair</th>
<th>Recommended in Stereophile?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spica TC-50</td>
<td>XII-10-161</td>
<td>JA</td>
<td>3.01dB**</td>
<td>$550*</td>
<td>C</td>
</tr>
<tr>
<td>Mordaunt-Short MS 330</td>
<td>XIV-7-111</td>
<td>TJN,RH</td>
<td>3.02dB**</td>
<td>$459*</td>
<td>E</td>
</tr>
<tr>
<td>Mirage M-3</td>
<td>XIII-11-131</td>
<td>TJN</td>
<td>3.03dB**</td>
<td>$2500</td>
<td>B</td>
</tr>
<tr>
<td>B&amp;W Matrix 800</td>
<td>XIV-6-151</td>
<td>LL</td>
<td>3.07dB**</td>
<td>$15,000</td>
<td>A</td>
</tr>
<tr>
<td>Celestion 3</td>
<td>XII-10-161</td>
<td>JA</td>
<td>3.09dB**</td>
<td>$280*</td>
<td>E</td>
</tr>
<tr>
<td>Meridian D600</td>
<td>XII-11-136</td>
<td>JA</td>
<td>3.10dB**</td>
<td>$5400</td>
<td>B</td>
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</tbody>
</table>

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<tbody>
<tr>
<td>TARA Timekeeper 0.5 Mkl</td>
<td>XIII-9-142</td>
<td>DO</td>
<td>3.10dB*</td>
<td>$1495*</td>
<td>E</td>
</tr>
<tr>
<td>Fried 04J</td>
<td>XIII-10-170</td>
<td>RH</td>
<td>3.13dB*</td>
<td>$498*</td>
<td>E</td>
</tr>
<tr>
<td>Rogers LS3/5a (1978)</td>
<td>XII-2-115</td>
<td>JA</td>
<td>3.16dB*</td>
<td>$798*</td>
<td>D</td>
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<tr>
<td>TARA Timekeeper 0.5 Mkl</td>
<td>XII-6-171</td>
<td>JA</td>
<td>3.25dB*</td>
<td>$800*</td>
<td>E</td>
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<tr>
<td>Vieta K7</td>
<td>XII-1-214</td>
<td>RH,TJN</td>
<td>3.30dB*</td>
<td>$465*</td>
<td>E</td>
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<tr>
<td>Accoustic Spectra 11</td>
<td>XIV-6-155</td>
<td>GL</td>
<td>3.33dB**</td>
<td>$1599</td>
<td>C</td>
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<tr>
<td>Wilson Watt 3</td>
<td>XIII-6-171</td>
<td>JA</td>
<td>3.34dB*</td>
<td>$6650*</td>
<td>B</td>
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<tr>
<td>TDL Studio One</td>
<td>XIII-2-134</td>
<td>JA</td>
<td>3.37dB*</td>
<td>$1145*</td>
<td>D</td>
</tr>
<tr>
<td>Tanno F11</td>
<td>XIII-9-149</td>
<td>RH</td>
<td>3.44dB*</td>
<td>$389*</td>
<td>E</td>
</tr>
<tr>
<td>Waveform</td>
<td>XII-11-122</td>
<td>LA,TJN</td>
<td>3.56dB*</td>
<td>$9800</td>
<td>B</td>
</tr>
<tr>
<td>SOTA Panorama (sample 2)</td>
<td>XIII-2-186</td>
<td>T J N</td>
<td>3.67dB*</td>
<td>$1595*</td>
<td>A</td>
</tr>
<tr>
<td>Thiel CSS</td>
<td>XIII-6-111</td>
<td>JA,LA</td>
<td>3.69dB**</td>
<td>$9200</td>
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<tr>
<td>MD Quart 490 MCS</td>
<td>XIV-7-111</td>
<td>T J N,J A</td>
<td>2.53dB*</td>
<td>$439*</td>
<td>B</td>
</tr>
<tr>
<td>Ensemble PA Reference</td>
<td>XIII-6-127</td>
<td>DO</td>
<td>2.55dB*</td>
<td>$470*</td>
<td>B</td>
</tr>
<tr>
<td>PSB 40 MX.II</td>
<td>XIV-7-111</td>
<td>T J N</td>
<td>2.56dB*</td>
<td>$440*</td>
<td>D</td>
</tr>
<tr>
<td>TDL Reference Standard</td>
<td>XII-12-109</td>
<td>RH</td>
<td>2.59dB*</td>
<td>$6955</td>
<td>B</td>
</tr>
<tr>
<td>Paradigm Control Monitor</td>
<td>XII-12-114</td>
<td>JA</td>
<td>2.83dB*</td>
<td>$680*</td>
<td>E</td>
</tr>
<tr>
<td>Snell EIIII</td>
<td>XIV-10</td>
<td>LG</td>
<td>2.75dB*</td>
<td>$990*</td>
<td>B</td>
</tr>
<tr>
<td>Hales System 2</td>
<td>XIV-4-200</td>
<td>RH</td>
<td>2.77dB*</td>
<td>$3000*</td>
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<tr>
<td>PSB Stratus Gold</td>
<td>XIV-2-146</td>
<td>TJN</td>
<td>2.78dB*</td>
<td>$2000</td>
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<tr>
<td>NHT 1.3</td>
<td>XIII-14-92</td>
<td>RH</td>
<td>2.83dB*</td>
<td>$480*</td>
<td>E</td>
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<tr>
<td>AR Spirit 152</td>
<td>XIV-7-111</td>
<td>T J N,GL</td>
<td>2.84dB*</td>
<td>$1000*</td>
<td>D</td>
</tr>
<tr>
<td>Celestion SL700</td>
<td>XI-9-99</td>
<td>JA</td>
<td>2.97dB*</td>
<td>$3290</td>
<td>B</td>
</tr>
</tbody>
</table>

* Suitable stands required but not included in price.
••• Listening axis response, not averaged across 30° lateral window.

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**WorldRadioHistory**

**Stereophile, October 1991**

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211
speaker will sound good, or lead to an automatic recommendation by *Stereophile*. There also appears to be no correspondence between flatness of on-axis response and price. On the other hand, once the response flatness deviates above a certain level—a frequency-weighted standard deviation of approximately 3.5dB, for example—it's unlikely that the speaker will either sound good or be recommended. Exceptions are: a) if the speaker is very cheap or its errors are in a relatively innocuous part of the frequency spectrum (Monitor Audio 7, Cambridge SoundWorks Ambiance, Dana Model 1, for example); or b) if the standard deviation is high because of an overall smoothly tilted response (Apogee Stage and Meridian D600, where the tilt is downward; Rogers LS3/5a and Wilson WATT 3, where the response tilts upward); or c) if the speaker is otherwise superb in almost every respect. (There's also the Thiel CS5, whose poor showing is due more to its first-order crossover and multi-unit design mandating measurement conditions that I was unable to achieve.)

It's also apparent that a speaker with a basically smooth, flat response but a single area of unevenness—due perhaps to a strong woofer-cone breakup mode or a cabinet resonance—will be downgraded accordingly (Wharfedale Diamond IV, Dick Olsher Black Dahlia, TARA Labs Timekeeper, which all sound nasal as a result). The same holds true for crossover or drive-unit integration problems (Triad System Seven, Waveform, the original Dahlquist DQ12, the original Focal Aria, Mk.I JM Lab Micron, Acoustic Energy AE2, Amrita AMRIT-Minimonitor). Similarly, if a speaker has a flat response but limited high-frequency dispersion, its appeal will be limited due to the room reverberant field tending to sound too lifeless (JBL XPL-90 and '160, Acoustat Spectra 1100 and 11, Celestion 3000, Polk RTA 11l).

And no matter how flat the midband, a somewhat loose, underdamped low-frequency region (JBL XPL-90, Phase Tech PC-80) is an almost unforgivable fault for many listeners, except when balanced by a degree of HF emphasis or a tilted-up treble (Rogers LS3/5a and LS7t, JM Lab Micron 2, PSB 40 Mk.II and Stratus Gold, Nestorovic 5AS, Celestion SL700, Monitor Audio Studio 10, Snell K/II and E/III, Ensemble PA1 and Reference, sample 2 of the Dahlquist DQ12). Conversely, the worst thing a speaker designer can do with a speaker that has an overdamped, lightweight bass alignment is to give his brainchild a tilted-up treble balance (AR Spirit 152, Vieta Pro-5, SOTA Panorama, MB Quart 490, WATT 3 without the Puppy). The lack of across-the-band balance is musically disturbing, and the emphasized treble exaggerates problems elsewhere in the system.

Interestingly, if a speaker is rolled-off at both extremes, it seems to sound more acceptable than might be expected from its flatness quotient as calculated here. The Spica TC-50 and Cambridge SoundWorks Ambiance both benefit from this fact, the former actually getting a recommendation totally out of proportion to its price. Although not measured during this time period, the Celestion SL600Si which I reviewed in Vol.12 No.5 also falls into this category. If this somewhat midrange-forward balance is not smooth, however, the ear seems to detect the unevenness as a cupped-hands coloration—again, the Acoustic Energy AE2 and Amrita AMRIT-Minimonitor both suffered in this respect. And the opposite response trend, a lack of energy in the upper midrange (Infinity Modulus to a small degree, Polk RTA 11l to a gross degree), can lead to a musically uninvolving presentation.

The best loudspeakers, in my opinion, combine a flat on-axis midrange and treble with an absence of resonant colorations, a well-controlled high-frequency dispersion, excellent imaging precision, an optimally tuned bass, and also play loud and clean without obtrusive compression. But you'll have to read the reviews to find out which they are. (And now that I've laid out for all you designers out there exactly how a speaker should be designed to get a good review in *Stereophile*, I expect the entire 1992 crop to conform to this specification!)

—John Atkinson

**Jack English on Cables**

Prior to joining the *Stereophile* staff, I was fortunate to develop what I believe was one of the most extensive subjective evaluations of interconnect cables that has been undertaken. I and two others worked on it for well over 1½ years at the now defunct *Sounds Like...* magazine. We learned a great deal, and John Atkinson has been kind enough to let me share some of my experiences with you to coincide with the semiannual listing of “Recommended Com-
ponents.

1) Interconnect cables do sound different. Using your ears, this conclusion is readily verifiable. No matter what some people would like all of us to believe, cables are not all the same.

2) There is no one best cable. If there were, we'd all own it and the other cable manufacturers would all be doing something else. Our collective experiences have shown that different cables are best in different situations.

3) Some interconnects work well in a wide variety of systems. While some cables are outstanding in specific situations, a handful perform well in many very different systems. These cables will be easy to identify because they show up often in good-sounding systems (and will be frequently mentioned by Stereophile writers as the cables they use in their own systems).

4) Some interconnects perform particularly well in specific situations or with specific equipment. The livelihoods of manufacturers of other types of equipment depend on how well their equipment sounds. Like the rest of us, they all listen to various cables. If they recommend a specific cable, it no doubt will work well with their equipment.

5) Although I have not attempted to systematically verify this, it's likely that the same manufacturer's cables (interconnects and speaker wire) can be synergistic when used throughout a system. It's logical to assume that any given manufacturer is, at a minimum, exercising consistent judgment in the construction of his/her wire products.

6) The relationship between price and cable performance is often mysterious. Don't assume that the higher-priced cable will always be the better performer. This just isn't always the case. There are some wonderful audio cables available at relatively reasonable prices (eg, products from Straight Wire, AudioQuest, and Kimber).

7) Be careful in buying any interconnect cable. While there are many sincere and well-intentioned cable manufacturers and distributors, there are also widespread instances of off-the-shelf bulk wire simply being renamed and repackaged at exorbitant prices. Trust your ears, reviewers, and dealers before making a big investment in cables.

8) An interconnect cable is a piece of equipment and it can audibly impact the performance of a system in the same ways as any other component.

9) Sonic performance (this is true of any component) is multidimensional. While one cable may have better bass and superior resolution of detail, a second may offer greater dynamics and a more realistic soundstage. Which is better? While it is easy to react holistically to the sound of a component, there are many different things going on simultaneously. It is unlikely that they will all be better or worse than what we had been listening to. It is equally unlikely that all of the characteristics will even be different.

10) Keep in mind that objective differences are not the same thing as personal values. How something sounds is not the same thing as what you think of that sound. For example, a cable may or may not have good treble extension. This is an objective assessment. Whether this matters to you or not is your personal valuation of or reaction to that objective performance. Make sure you differentiate the two in reading reviews and reaching your own conclusions. Most important, be honest with yourself and your personal biases.

11) There is no substitute for hearing a specific interconnect in your own system. This may be the most important thing I have learned about cables. You must hear a cable in your system to know how it will perform in your system.

12) Cables are changing more rapidly than any other component (with the possible exception of digital). By the time a cable is reviewed, it might be obsolete. This is one of the many reasons it is so difficult to review cables.

13) How a cable performs in one system is no guarantee that it will sound the same in a different system. Go back and read statement 5.

14) Shorter is better. One of the most widely agreed-upon conclusions concerning cable is that the shorter the length, the better the result. If at all possible, you should set up your system with the shortest runs of cable you can get away with (see Dick Olsher's comments, Vol. 10 No. 2).

15) This is a related non-conclusion. I have no opinion on the relative merits of short interconnects vs short speaker cables. I refer you to statement 14—shorter is better. I use this rule for both interconnects and speaker wire. I keep both as short as possible (1m interconnects, 8' runs of speaker wire).

16) Purposefully designed or selected cables from a manufacturer may be the best cables for that manufacturer's equipment (see statement 4). It is logical to assume that a manufacturer

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who offers cables (eg, ARC, Krell) has selected cables that match well with his own equipment.

17) Cables shouldn't be "mixed and matched." This is a conclusion first offered by Tony Cordesman (Vol.8 No.2). I am in general agreement with this conclusion and try to follow it (using Magnan Type Vi throughout, including phono leads). However, I do find that the digital link is sufficiently unique to have different requirements. I do use a different digital cable (Kimber KCAG or van den Hul Di02 Mk. III).

18) Terminations are generally a moot point. While there is a growing groundswell of frustration with RCA plugs, they remain the primary game in town. For the time being, we have no choice. As other connectors gain in popularity, we may be able to make connector choices just as we can now make wire choices.

19) The decision to use a balanced or unbalanced wiring setup is separate from the choice of interconnect. Most manufacturers offer balanced cables or can make them for you.

20) Cables do indeed break in. Like many other audio components, the sonic signatures of many cables change as they break in.

21) In addition to a required break-in period, some cables seem to audibly settle in when used. Even though they may not be new, it's best to use a cable for some time in your system before you assess what it does and doesn't do.

22) Many cables are directional. In most cases, this is a function of the physical construction of the cable (its grounding). In others, the manufacturer, for whatever reason, will specify the desired direction. Follow the manufacturer's guidelines. Go ahead, try it the other way as well; it won't cost you anything.

23) Even if cables don't have a specific directionality, try to consistently orient them (input to input) in the same way. I'm not trying to break new ground here, and can't say that this makes any audible differences in the way a given cable will perform. However, I've been told by more than one cable manufacturer that this makes a difference. Since it won't cost you anything, why not follow their advice?

24) If a cable has a ground connection, use it. It's unlikely that this will hurt the performance of your system in any way. You can, obviously, try it both ways (connected and disconnected). This is another tweak that will cost you nothing.

25) Treatments remain controversial. I use both red and blue Cramolin on my contacts and have been doing so for nearly 15 years. Use any treatment judiciously.

26) Cleanliness is very important. While treatments may be controversial, there is no argument that the cleaner a connection, the better. Periodically clean each and every contact point in your system. They will oxidize. This is another no-cost tweak. Do it!

27) If your cable comes with some form of locking plug, use it carefully and correctly. You will get a better contact and better sound.

28) Always handle your interconnects (and every other piece of your equipment) with tender, loving care. When it comes to cables, this means never pull them out by yanking on the wire itself. Grasp the interconnects by the plugs, twist them from side to side to loosen the contact, and carefully remove them. Remember, if it's a locking plug, loosen it first.

29) As we've seen with the new generation of products used to string up or route cables through, how the cables are positioned or dressed can be important. Try to keep cables away from one another, away from power cords, away from speaker wire, and away from other components (especially transformers).

—Jack English

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Edward Elgar was 51 before his First Symphony reached the concert platform. Its first performance was given on December 3, 1908 by the Hallé Orchestra in Manchester, England, conducted by Hans Richter (to whom the score was dedicated). It received an enthusiastic reception and was no less rapturously welcomed in London a week later. Richter opened rehearsals there with the words, “Gentlemen, let us now rehearse the greatest symphony of modern times, written by the greatest modern composer.” This was no mean praise from a man who had given first performances of Brahms, Bruckner, and Wagner.

A little over a year later, the Symphony had received 100 performances: by Walter Damrosch in New York, Siloti in St. Petersburg, and equally well-received performances in cities as far apart as Vienna, Boston, Rome, Berlin, Budapest, Leipzig, and Sydney.

Elgar’s reputation as a composer of fine orchestral music had already been established in London with Richter’s premiere of the Enigma Variations in 1899, and it was at the time of...
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their composition in the previous year that Elgar had decided he would like to write a symphony portraying the life of General Gordon of Khartoum. However, it was not until a 1907 winter holiday in Rome that he seriously set to work on it, by which time all thoughts of extra-musical stimulus had been forgotten. Elgar explained to Walford Davies: "there is no programme beyond a wide experience of human life with a great charity (love) and a massive hope in the future."

So, almost as if from nowhere, the first great English symphony was born, putting British music back on the European cultural map for the first time since Purcell's death. Elgar's preparation for this moment had been a long one. His flair for writing rousing, patriotic tunes was already apparent, his skill as an orchestrator had been nurtured through his work with amateur orchestras and bands, and a thorough knowledge of the English choral tradition was in his blood. Yet the "typically English" quality of his music was basically communicated via a Germanic tonal language and structural discipline, albeit tempered here by a radical choice of keys.

A number of telling, early recordings of the First Symphony are no longer extant in the catalog. Elgar's own, made in 1930 with the LSO, was fast at only 46 minutes (HMV D1944-9); this was issued on LP in 1970 by World Records (SH 139), coupled with The Kingdom. The brusque and hasty manner of this reading is most closely matched by Sir Geo Solti's, originally set down in 1972 and still available on a recently remastered CD (London 421 387-2, coupled with Cockaigne).

Sir Henry Wood, who had been impatiently awaiting the work's completion as early as 1901, eventually came to record it in 1931, about the time the young Adrian Boult became Musical Director and, subsequently, Principal Conductor of the BBC Symphony Orchestra.

Boult too was to become an ardent advocate of Elgar's music. He had first met the composer in 1904, was present at the premiere of the Violin Concerto with Fritz Kreisler as soloist, and first heard the Second Symphony in 1916. Four years later, Elgar was helping Boult to prepare his own first performance of the work and, as a consequence of hearing the concert, declared his music "safe" in Boult's hands; a number of recordings of the work were to follow.

Sir Adrian's first recording of the First Symphony was released in 1950. It also represented his first recording with the LPO—he had just become its Principal Conductor after being forced to resign his post with the BBC SO at the age of 60 because he had reached the Corporation's official retirement age! The recording was made on tape for 78s, and it is amazing that Boult was able to maintain so well the momentum and excitement, and the broad sweeping view of each movement (which remained the watchword of his subsequent performances) when each take lasted only around four minutes. The recording was then transferred to LP in 1953 (HMV ALP 1052) and later became available in a four-record boxed set of the Orchestral Works (HMV RLS7716 mono) in 1983.

In 1968, Boult recorded the work again with the LPO (Lyrita SRC539), and this was reissued, recoupled with his beautiful account of Vaughan Williams's Tallis Fantasia in 1979 (Lyrita REAI1). It's amazing how little Boult's view of the work changed over the years, especially when those earlier readings are compared with his only recording presently available, that made in 1977, again with the LPO, and recently reissued as a limited-edition, mid-priced, 3-CD boxed set, coupled with Cockaigne, the Enigma Variations, the Pomp and Circumstance Marches, Serenade for Strings, the Chansons de Matin and de Nuit, and Symphony 2 (Angel CDMC-63099). This must still be considered one of the main contenders.

Another conductor closely associated with Elgar was Sir John Barbirolli. He played in the cello section of the LSO under the composer at the Queen's Hall during rehearsals for the Cello Concerto's first performance; he was soloist in the same work some two years later under the baton of Sir Dan Godfrey, and again worked as an orchestral cellist under Elgar at a Three Choirs Festival performance of The Dream of Gerontius. His break into conducting came in 1927, as a replacement for the indisposed Thomas Beecham, with a performance of Elgar's Second Symphony.

It may seem surprising that a man of Latin blood should have had such a great affinity with Elgar's music, but he too was brought up in Edwardian London, a period which that music so readily epitomized. Barbirolli considered Elgar to be "one of the greatest craftsmen," and thus, following the composer's death in 1934, did everything within his power to promote this music of "noble tunes, [and] wonder-
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ful contours." Barbirolli recorded the First Symphony in 1956 with his own orchestra, the Hallé, which had, nearly 50 years before, given the work's premiere. This was an exciting account, if poorly recorded (GSGC 2010), but its brief reappearance in 1989 on Nixa/PRT (NXCD6002, coupled with Introduction and Allegro), showed some sonic improvement. His neater, if less intimately involving 1963 performance with the Philharmonia (SD540) has been twice reissued on LP; most recently appearing in 1986 on EMI Eminence at mid-price (EMX 41 2084-1).

Less distinguished recordings, including those by Gibson and Barenboim, have also passed through the catalog, but it's a shame that James Loughran's beautiful account, recorded in 1981, again with the Hallé (ASV ALHB201), has not yet been reissued.

So to the nine recordings currently available: surprisingly, considering the fact that Elgar has never really traveled as well as Vaughan Williams and Walton, five are by non-British conductors. The oldest, by Sir Georg Solti and the LPO, was made some 20 years ago and was then considered to be quite a pioneering gesture. It has worn extremely well, its digitally remastered sprucing for London/Decca's British Collection giving it a dapper, immediate sound quality to match the urgency of its statement. Solti pushes the stately "Nobilmente" theme through like a schoolmaster roasting a laggardly child, but, within the sum total of his no-nonsense attitude toward the first movement, this is probably the only way he could have introduced the work.

Yehudi Menuhin, in a new, spacious recording with the RPO for Virgin (VC 7 90773-2), adopts a very similar tumultuous approach, made all the more exciting by his instinctive timing of Elgar's problematic tempo changes, and his intuitive grasp of its mercurial ebb and flow of phrases. Menuhin's vitality—he was 73 when this recording was made—is quite amazing, his vision of the work still youthful in the weight of its emotions. The only caveat to be proffered is his rather literal interpretation of Elgar's accents in the "Nobilmente" theme, which creates a somewhat lumpy, uneasy statement.

Literal, metrically four-square, and lacking true insight into Elgar's idiom is the only way to describe Haitink's reading with the Philharmonia (Angel CDC-47673). It is beautifully played but simply fails to produce even the slightest frisson.

The Symphony's two American exponents have much more idea. Nevertheless, Previn with the RPO (Philips 416 612-2) shows an uncharacteristic restraint in the opening movement that fails to sustain tension. Leonard Slatkin's resounding successes in England with Elgar's Kingdom, Enigma Variations, and Symphony 2 had me anxious to try his Symphony 1. However, despite an almost perverse hope to the contrary, I couldn't warm to his view of this work (RCA 60380-2-RC, coupled with In the South). His highly original, resounding view of the first movement leaves me uneasy. The playing is beautiful, weighty, smooth, and totally committed, but the prevailing mood of sadness seems a little misguided.

Boul, surely, has it just right. True, his performance is very "English," maybe even dated in its nobility and grandeur, but Elgar was reflecting his own personality through his writing and that was influenced by the air of lofty imperialism, superficial splendor, and insecure peace and prosperity that characterized Edwardian England. Sir Adrian understood that balance of emotions; he allowed elasticity of phrase but would not permit sentimental wallowing. He built on its strength and gravity while using the pacing bass lines to move the music on with a real sense of purpose.

Sir Charles Mackerras, conducting the LSO in the newest of the recordings available (Argo 430 835-2, coupled with Cockaigne), takes these indicators too literally, plodding through the outer movements' stormy sentiments and sounding far too matter-of-fact and uninspired in the yearning Adagio. Vernon Handley, in a mid-price ADD transfer from 1979 (CD-CFP 9018), explores a no-man's land somewhere between Slatkin and Mackerras; on the one hand he is meditative and transcendent, while on the other he prefers to stand back when the emotional heat rises. As a consequence he sounds undecided and uncommitted.

This could never be said of Bryden Thomson (Chandos CHAN 8451, ABRD-1161). He interprets the work as if it tells of a tempestuous love affair, turning its sentiments with the skill of a true craftsman and finding an emotional intensity in the Adagio that one more normally associates with Mahler. The LPO plays marvelously for him, so disappointment over the recording registers with double impact. Chandos certainly achieves exemplary depth and spread.
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Alvin Gold, Hi-Fi Choice, Jun 1988
across the soundstage, but in 1985 they still favored that rather thick, cavernous acoustic that has spoiled many fine performances for them. This is a pity, for this account might ultimately have had my vote were it not for the recording—which would have even the most forgiving squirming with discomfort (LP format could be better and might be worth a try, if you can find it).

The second-movement Scherzo needs dexterity and fine control at one and the same time to bring off the scampering semiquavers to best effect. What Slatkin gains in neatness he loses in ferocity. Solti and Menuhin go flat out, while Boult achieves a lightweight vigor that seems almost effortless. Boult's Trio, too, has the whirling quality of a hurdy-gurdy that no one else manages to find. The movement moves, attacca, into the wonderful Adagio. It hardly seems possible that its first 24 notes are identical to those of the Scherzo, so totally transformed in both rhythm and mood has the theme become. Here Slatkin reads the temperature of the emotional barometer with a childlike simplicity, Previn appears to allow you to listen in on some personal intimacy, while Solti typically, but quite winningly, wears his heart on his sleeve. Boult still pushes the music along, but it never sounds rushed, and the dignity is extremely touching. Thomson's 15 minutes of relentless tugging at the heartstrings is almost too much to bear.

And so to the Finale, which brings the work full circle by stating the "Nobilimento" theme at its opening and in a grandiose outpouring at its close. This is a difficult movement to bring off if it is to sum up this huge, cyclical work to satisfaction. Haitink and Mackerras are certainly true to form here, but totally uninvolving. Slatkin, Boult, and Thomson see it through to perfection, while Handley eventually comes into his own when it's almost too late! Previn again allows tension to drop and boredom to creep in, while Solti and Menuhin are almost too businesslike in their haste to wind the work up.

It will come as no surprise, then, to know that my vote must go to the 1977 Boult. The transfer is a little grainy but the splendor of his performance still shines through. Despite the delights and new insights that other readings can give us, Boult's acknowledged leadership in this field does, after all, have a valid foundation—he shared the ability to express through music the spirit of an age. His, above all, still sounds the authentic voice of Elgar.
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"So how come you're not famous?"

Allen St. John talks to Richard Thompson—singer, songwriter, guitarist
I could begin this introduction by calling Richard Thompson the most underrated artist in popular music today, except it would be the 7413th time that phrase has appeared in print. The truth is that Thompson seems to like life outside the commercial mainstream. At the tender age of 17, he was a founding member of Fairport Convention, prime movers of the late '60s Great British Folk Rock Experiment. They didn't sell as many records as, say, Jefferson Airplane, but their albums sold up a lot better now. After Fairport broke up, Thompson and wife Linda spent most of the '70s releasing a series of beautifully crafted albums featuring her lovely voice and his dark and poignant lyrics and stunning acoustic and electric guitar work. The records generally received rave reviews and went straight to cutout bins without passing GO (and have been subsequently re-released by Hannibal/Carbage). In 1982, the searing Shoot Out the Lights attracted enough attention to support an American tour, which ended with the breakup of Richard and Linda's marriage and musical partnership. Through the '80s, Thompson bounced from Hannibal to PolyGram to Capitol, recording a string of fine solo albums that garnered less than spectacular sales and a whole lot of ink.

But Thompson's track record doesn't scare the A&R people at Capitol Records. They seem convinced that, with the right kind of promotional push, Thompson's new album, Rumor and Sigh, can do for him what Nick of Time did for Bonnie Raitt last summer. I caught up with Thompson at the bar of his New York City hotel, at the tail end of a three-day media blitz. With Perrier on the table and the Muzak® blaring overhead, he applied his wry good humor to subjects like fame, sex education, CD sound, and why The Silence of the Lambs is an uplifting film.

Allen St. John: I dragged one of my friends kicking and screaming to one of your shows, and when I told her I was doing the interview, she said I had to ask you this question: So how come you're not famous?
Richard Thompson: [pause] There might be three possibilities. The first possibility, because I don't want to be. It's not an ambition of mine to be famous. Second possibility: People don't really like what I do. Some people might like it. It might not be to mainstream taste. You have to be mainstream taste to be famous, don't you? The third possibility: both of the above.

ASJ: If every critic who ever raved about one of your albums told two friends and they told two friends...
RT: That's about 600 people. [pause] What do critics know? [laughs]
ASJ: That's a good question.
RT: Critics usually have an intellectual insight into music. That's why they got the job... and they tend to like people like me or Elvis Costello or John Hiatt, because there's an intellectual dimension to the music that they can write about. It helps them to justify what they do, which is fine. I like to be written about by critics. I like it when they like me. I don't like it when they don't like me, but it's not the end of the world. Either way, I don't live and breathe according to whether a record is critically acclaimed or not. Otherwise I would have had a lifetime of disappointment. People make music for other reasons.

ASJ: Rolling Stone named Shoot Out the Lights one of the top 10 albums of the '80s, yet it sold 150,000 copies...
RT: [rolls his eyes] Not that many.
ASJ: Not that many?
RT: I think it's done a hundred.
ASJ: In short, a lot less than Thriller.
RT: It's great to be on a list like that. I don't know that it deserves to sell any more. I don't think it's a great record.

ASJ: You don't? In the press packet, all the reviews say things like, "This is his best record since Shoot Out the Lights."
RT: It's a cliche. When people write about musicians, clichés develop. "Best record since Shoot Out the Lights" is almost a cliche. Dare I say that writers read what other writers write and then say the same thing? I think a lot of writers read the press kit and just write the same thing.

ASJ: What's your favorite song on the new album?
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RT: I like 'em all. I like to treat all my children equally.

ASJ: The guys in the first couple of songs—"Read About Love" and "Feel So Good"—would be the double date from hell with the women from "Bone Through Her Nose" and "Valerie," which open Daring Adventures. Was that a coincidence?

RT: Yes. It hadn't occurred to me until you mentioned it. I suppose you could read it that way. ["Read About Love"] is rather a sad song about lack of sex education in Britain in the 1950s.

ASJ: Or maybe America in the 1990s.

RT: No. It's easier to find out about girls in the 1990s. There are more avenues that would lead you to the right knowledge. In the 1950s in Britain it was sort of repressed. You couldn't talk about sex with your parents. You still can't talk about sex with your parents. There wasn't a way to get an inkling of the female anatomy, unless you asked an older kid—you're ten and he's eleven, or you're eight and he's nine—"What are girls like?" And he'll tell you something that's completely anatomically wrong. "Oh really, fantastic?" You'll believe it for years, and you're obviously devastated when you find it's not true. There's a lot of misinformation. I think it's much easier now. My kids have a much easier time.

ASJ: My favorite song on the album is "1952 Vincent." It seems like kind of a risky song. If it just went a little wrong it could end up as "Leader of the Pack."

RT: I think it's safer from being "Leader of the Pack." To me it's a very different world. It seems so British. Innocent in a sense, in a British naïve way.

ASJ: When you step back from it there's something kind of funny and innocent about it. But when you're performing it, there's a lot of emotional power and there's a much bigger story in these couple of verses.

RT: Hopefully in a song you can suggest a bigger picture. In a song you can tell a story with fairly broad strokes. And you really have to suggest the rest. You haven't got the time. You haven't got 15 verses. You could, I suppose, indulge yourself in that way.

["Vincent"] is very much in an older form, really. It's not unlike an outlaw ballad from the 17th century. The objects and circumstances are changed very slightly. It's not an attempt to make a contemporary ballad. I'm interested in the response. People do seem to like it when I play it live, and I do think people like a story with a beginning, middle, and end.

A lot of songs I write don't have a beginning or an end, they just have a middle. Not everything is explained. A lot of songs I write don't have a beginning or an end, they just have a middle. Not everything is explained.

ASJ: Do you worry about the Randy Newman problem, with people not realizing what's Richard and what's the character?

RT: It's easy to do that if you're the composer and the singer. The words that come out of your mouth, people will assume are true about you and your life and your opinions. [pause] In a sense, though, it's a sign that you've succeeded. If Randy Newman sings "Short People" and people are disgusted and say "How dare you?" he's convinced them. Now at the end of the song the curtain goes up and the lights go up and it's the end of that piece of theater. And people should realize that about Randy Newman or any other songwriter, that he's something separate from the person he is in the songs.

ASJ: One of the songs on the album that's way out there and takes people back is "Psycho Street." If you've seen the Australian soap "Neighbors," it's hilarious.

RT: People like it or don't like it. You couldn't quite like it. It's rather a strange song. It wasn't going to go on the record, actually. It kind of snuck on at the last minute. We recorded 14 songs and we were only going to put 10 on. There wasn't anything we wanted to leave off except "Psycho Street." And then it became more interesting as we put drums and bass in it. I started to enjoy it again. I thought, if we
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stick it right there on the end, it’ll be for the persevering. If they get past six tracks, they’re doing pretty well; then they deserve “Psycho Street.”

ASJ: With CD you’ve got 74 minutes and many feel compelled to fill almost all of that up. The editing process that goes into a single album has gone out the window.

RT: It’s a great opportunity and it’s also a dilemma. A few people have started to do long records. Prefab Sprout did a long one, Elvis Costello’s new one is pretty long. It’s going to be harder to make a great album that’s consistent all the way through if it’s an hour long. I get the feeling that’s going to be the shape of the future, because if a few people start doing it, people are going to start feeling short-changed with a 40-minute CD. They’re going to want more value for the money.

You’re left with the problem that an hour of music is quite a lot to listen to at one go, as opposed to one side of an album. What we were going to do on this record but didn’t for some reason was to actually split it into chunks—to have like almost chapter headings, and break it into three or four blocks of songs that group together. If you’ve got an hour of classical music, it’s in lumps, it’s in movements or something. You don’t do that in pop music because it’s pretentious.

ASJ: The tracks at the end of an album don’t get the attention they deserve.

RT: I’d recommend shuffle play myself. I’ve got the [CD] turntable one which I really like. You can stick on five things and you can get some fascinating segues.

ASJ: That leads into “Don’t Sit on My Jimmy Shands,” which speaks to audiophiles everywhere. People are snarling up mint copies of Casino Royale for $300 and go home to play it on their $14,000 turntable and through $20,000 worth of tube equipment.

RT: I have to say that a really good high-fidelity long-playing record from the late ’50s, early ’60s is going to sound better than any CD you’re likely to find in your life. Sounds great. Through good equipment, Whooooa!

ASJ: Like a Linn?
RT: Oh yeah, if you can afford one of those, great.

ASJ: But that’s cheap these days. Your new album isn’t available in the US on vinyl at all.

RT: I think that’s a good idea. As pressing plants are closed, the quality of vinyl has dropped disastrously. It’s hideous, the stuff on vinyl is so bad now.

ASJ: Now that we’re on the subject of recording, are you comfortable in the studio?

RT: I like it. I’ve never thought it’s a place to spend months and be too persnickety about. I like to work fast and get out. But I enjoy it when I’m in there. I don’t like redoing stuff a million times or being very, very particular about what something sounds like or a performance.

ASJ: How long did you spend on the last album?

RT: A couple of days. No, a little more than that. About a month, I suppose.

ASJ: Was that particularly quick for you?

RT: It’s the slowest work I’ve ever done.

ASJ: So your earlier things were in and out? Was that a matter of budget?

RT: Usually budget. Budget and preference. Shoot Out the Lights cost about $12,000. I Want to See the Bright Lights Tonight cost £2500. Sounds like it too.

ASJ: Some of my audiophile friends say that your best-sounding album is Strict Tempo, which cost about $1000, give or take.

RT: Yeah, about a thousand dollars. They do? I can hear really bad stuff on that myself. There’s good stuff and bad stuff. I used two studios and one studio was quite good and one studio was really horrible. It’s all really cheap—8-track Tascam. Horrible echo. [laughs] Tell your audiophile friends they’re crazy.

ASJ: You’ve been working with Mitchell Froom for the past three records. What have you learned from him?

RT: Oh, a lot about working in a studio—about all aspects of being in the studio. I learned a few things about arranging from Mitchell; things about sound.
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What you get out of an audio component depends on what you put into it.
ASJ: What kind of input are you looking for from a producer?
RT: [pause] You have to trust a producer, first of all. You have to trust their opinion. Assuming you trust a producer, you want to bounce songs off him, to get some feedback on songs you’ve maybe never played for anyone else before. You want to know what they think, because you trust their judgment. Song selection.

In the studio I need somebody who has an overview, because I’m out in the studio playing and singing and I really can’t know everything that’s going on. I don’t know the quality of the music as it goes down, really. It’s good to have someone who is able to know how good it is at the time. It’s easy to know the next day how good something was. Just say, “Oh yeah, that was good. That was bad. We’ll just go back in and do it again.” Then you’ve wasted a day. If it’s someone who has the ability to say, “That was the best one. It hasn’t got any better, that’s the one to keep. Erase the rest.” [laughs] You need someone with an overview, who’s on top of it. Or I do anyway. Some artists can produce themselves. Some artists can do their own engineering. Some producers can engineer, some engineers can produce, some engineers can be musicians. There’s three basic roles and you have to cover them somehow.

ASJ: On the new album, your singing is especially strong.
RT: It’s gotten better. It’s funny—you can walk into some studios and you can’t sing in them. Some studios you can. Some studios you sing flat, some you sing sharp. Weird thing. It’s all how you hear yourself. I was very happy with the studios this time. We used Sunset Sound Factory and Ocean Way in Los Angeles, and RAK in London. All good studios.

Some studios you sing flat, some you sing sharp.
Weird thing. It’s all how you hear yourself.

ASJ: Do you try to do as much as you can live?
RT: Yeah. Absolutely. We do most everything live. Backing vocals we can’t do live. Some of the more esoteric musicians are usually in the wrong country at the wrong time. Sometimes we have to do that later. But most stuff, what we’re going for is as live as possible. On the records there are four or five tracks that are really as they went down. Just as it was, like monitor mixes.

ASJ: On the acoustic songs, do you say when you write it, “This is going to be an acoustic song,” or do you play around with it a couple of different ways?
RT: We certainly try things to some extent. On a song like “Vincent,” I think we tried it using a rhythm section, and that didn’t work. We just had a fiddle. That didn’t work. Just a mandolin, just a penny whistle. That didn’t work. Nothing actually worked. That’s funny. It’s the kind of song that you’d think you could add things to. I think it’s certainly possible to try different directions with songs and see how they fit. Other times you might have a very clear view of what’s needed. A song like “God Loves a Drunk” was only ever an acoustic song. I think there’s a little bit of concertina, as well.

ASJ: Your guitar playing seems more economical this time. I don’t get the impression of “Here comes the big solo.”
RT: I think it’s the way the songs turned out. It’s the kind of songs where there wasn’t the scope or desire to have instrumental masturbation at the end. It’s song by song. I think “Mother Knows Best” is the only one where we went nuts at the end and kept going till the tape ran out. You hear the tape running off the heads at the end of the song.

ASJ: Did you get that stuff out of your system with the French/Frib/Kaiser/Thompson album [Invisible Means]?
RT: No, I never get it out of my system. It’s still in my system.

ASJ: You’re very modest about your guitar playing.
RT: I know how many guitar players there are in the world and how accomplished a lot of guitar players are. I’m really not in that league. What I tell myself is that I’m an accompanist. That’s a good way of saving face, I think. I like to play in songs, I like to play around vocals, I like to put a solo in a song that kind of continues the narrative or furthers the narrative to the next verse or something. I’m not really an instrumentalist in that sense. Or that’s a good way out of the question, i’dn’t it?

ASJ: Back to “Mother Knows Best.” That’s the only real political song on the record, but you had a lot on the last album.
RT: On the last record, Amnesia, there were some songs I’d been trying to finish for a long
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time, and suddenly I got a few finished so they happened to be on the same record. It’s more a case of that. As far as “Mother Knows Best,” I’m one of many British songwriters who find perverse inspiration in our beloved leader—ex-leader, Mrs. T. It’s a measure of just how much she really upsets people.

I’m one of many British songwriters who find perverse inspiration in our beloved ex-leader, Mrs. T.

**ASJ:** Which leads to Hard Cash. How did that come about?
**RT:** It was a four-part BBC TV series about the minimum wage in Britain, which they were trying to abolish. Which *she* was planning to abolish. These songs were written as incidental music for the series and a separate album project. The series got pulled by the BBC; they wouldn’t show it because it was too anti-government, too left-wing or something.

**ASJ:** They didn’t show it at all?
**RT:** Nothing was shown. It got completely swallowed. But the album came out. The BBC is supposed to be impartial, and it was very naughty of them. We were very upset. There’s another channel in Britain planning to reshoot it. The same idea. I hope they used the same music or we’ll have to do it again. [laughs]

**ASJ:** You’ve done a lot of studio stuff with a lot of people with even smaller cult followings than yours: T-Bone Burnett, Loudon Wainwright III, and Willie Nile, who was raving about you on the radio the other night.
**RT:** I rave about him frequently.

**ASJ:** How do you book up on these projects?
**RT:** It’s usually friends. People phone up and say, “Can you come down?” I say yes. They say “Here’s the date.” I go in and do it.

**ASJ:** Willie Nile said you didn’t ask for the check for his last album.
**RT:** I don’t mind being paid, it’s fun to be paid, but it’s not the point. You do it for fun.

**ASJ:** Now it’s your turn to plug as you would be plugged. Who should our readers go out and hear today?
**RT:** I don’t know. [long pause] Can’t think of anybody. Willie Nile. We already mentioned him, that’s a good record. I like Living Colour, but everybody’s heard of them. The Pixies. Crowded House. I don’t know anybody new and obscure and wonderful.

**ASJ:** Do you like touring?
**RT:** Yeah, I do. It’s fun. Rock and Roll lifestyle, you know. Sex, drugs, booze—great.

**ASJ:** Glamorous places like Hoboken, New Jersey?
**RT:** Fabulous. Scranton—I love it.

**ASJ:** How is doing the solo acoustic shows different from playing with the band?
**RT:** Getting paid. That’s important. Staying in better hotels. Generally we play smaller places, which is nice. You can do more intimate shows, you can be looser and change songs on a
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238 WorldRadioHistory Stereophile, October 1991
You can draw people into you, which is very nice. It's quieter. You can create a certain stillness. You can draw people into a song, therefore you can put lyrics across better. The great thing about playing with a band is that if people don't like you, you just turn it up even louder.

**ASJ:** Every time I've seen you live, more people call out for "End of the Rainbow" than just about anything. Is that New York and Hoboken, or do you get that everywhere?

**RT:** Only in Hoboken. Desperate, desperate people in Hoboken, New Jersey. It's a dark song, but surely the truth lies in its opposite. It's a dark song meaning the light and hope of the world. The Silence of the Lambs isn't a depressing film. You come out of the film reaffirming the good things about human nature. Not that human beings are monsters, necessarily. For me it affirmed the positive side of humanity. Get out of that one. [laughs, pauses] I look at this song and I say, this is a really depressing song. I don't want to sing it. I didn't sing it for ten years. And then people ask for it and I sing it a few times, and I thought, this is a good song. Now, why is it a good song? Why

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Mortimer H. Frank reviews 15 new discs of Haydn Symphonies (p.255), and Richard Lehnert recommends Wynton Marsalis's Soul Gestures in Southern Blue trilogy (p.271) and the Allman Brothers' best studio album ever (p.275).

Classical

BARTÓK: Concerto for Orchestra
LUTOSŁAWSKI: Concerto for Orchestra
Christoph von Dohnányi, Cleveland Orchestra
London 425 694-2 (CD only). John Pellowe (Bartók), Colin Moorfoot (Lutoslawski), engs.; Paul Myers, prod.
DDD. TT: 65:34

This is one of those rare recordings in which conductor, players, and engineers, working at the peak of their form, collaborate on music of significance and power to produce results that are transcendent in nearly every respect. Dohnányi's interpretations stand with the finest I have heard. The orchestral musicianship is impeccable in technique and nearly so in expressivity. And the sound is superb in transparency of texture, depth of soundstage, naturalness of timbre, and breadth of dynamic range. This recording strengthens my conviction that the engineer plays a vital part in the interpretation of a composition as presented on disc. Details of orchestration that I have never heard before are laid bare here, unquestionably the doing of both conductor and engineer.

Dohnányi's view of the Bartók embraces all its contrasting moods. Dynamics are exploited to the fullest, and tempo variations are handled with exquisite taste and craftsmanship. Phrasing is very expressive, if not on a level achieved by Reiner/CSO (RCA CD). In fact, Reiner's is the only performance I know of that clearly surpasses Dohnányi's in its power and in its comprehension of contrast between dark and light. Dohnányi also gives us two glimpses of pure magic that, moment for moment, even Reiner doesn't match. They are in the subtle accelerando following the main theme of the first movement and in the deliberately molded transition to the burlesque of the Shostakovich theme in the fourth. The latter, especially, is a moment of genius. The only thing that fails to ring true in this performance is the chorale in the second movement, which I feel lacks the tonal richness and stately motion it demands.

The Lutoslawski concerto is almost equally as impressive. There is a fine sense of the composition's piquant rhythms throughout, except in the opening passacaglia of the final movement, in which the wonderfully spasmodic, loping rhythm is, regrettably, almost totally absent. Otherwise, this reading strikes a nearly ideal balance between the bright outlook taken by Paul Kletzki with the Suisse Romande orchestra (London LP) and the dark pessimism expressed by Witold Rowicki and the Warsaw National Philharmonic Symphony Orchestra (Philips LP).

Engineers Pellowe and Moorfoot each achieve outstanding direct-sound/hall-ambience ratios in which strings are presented with both body and clarity, and trumpets shout with robust, natural brilliance. Cellos and basses are full-bodied but without dulling bloat, and the dynamic
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range is simply thrilling.

For some reason, these two closely related works have not appeared together on many CDs. The combination is illuminating, bracing, and very appropriate. It would take quite some doing to produce a pairing of these concerti that combines the brilliance of both performance and sound quality achieved here.

—Robert Hesson

BERLIOZ: Mélodies
Les nuits d'été (6 songs); Le jeune pâtre breton; La captive; Le chasseur danois; zaïde; La belle voyageuse; Aubade; La mort d'Opérette

Diane Montague, Catherine Robin, mezzo-soprano; Brigitte Fournier, soprano; Howard Crook, tenor; Gilles Cachemallé, baritone; Lyon Opera Orchestra, John Eliot Gardiner

Erato 2292-45517-2 (CD only). Yolana Skura, eng./prod.; Jean-Pierre Broxmann, artistic dir. DDD. TT: 64:48

Carrying a Musifrance imprint to signify a joint Erato/Radio-France venture, this compendium of all Berlioz's solo orchestral songs breaks the usual mold by offering, in each case, voices truly appropriate to words, gender, mood, and music. Thus the six songs of the *Nuîts d'été* cycle depart from their customary lone mezzo-soprano to encompass ten/mez/bar/mez/ten/mez, with the other seven songs here served in those same vocal proportions—plus one for soprano.

Colin Davis followed a similar pattern as part of his Philips Berlioz Cycle, but the songs there are grouped with other items and split across two CDs, so this John Eliot Gardiner package is something quite special. It is also unique in offering a) *The Death of Ophelia*, employing a mezzo set against the orchestral backing conceived for the work's choral version, and b) in providing a first-ever recording of *Aubade*, a spirited song for tenor accompanied by horns and cornets.

Unfortunately, although otherwise helpful, the booklet only provides words for the first of the latter's seven verses, and halves (as listed) the time taken by Diane Montague's beautifully sung *Lovely Wanderer*. While dealing with minor criticisms, Gardiner's fastidiously balanced and nicely pointed accompaniments were let down momentarily for me by the near-inaudible string harmonics which represent a passing ghostly presence during *In the Cemetery*. Also, while the small scale of this music calls for chamber intimacy rather than Brucknerian vastness, I did find the recorded ambience rather unflattering, dry. Centrally placed, the voices could do with a touch more reverberant warmth to cushion the fortissimos—especially as vocal dynamics seem startlingly true to life.

But this all conveys far too negative an impression of what is, after all, a treasure-laden issue. In February I reviewed a Dorian recording which overlaps this CD to the extent of ten songs, but employs piano accompaniments. That collection was interesting if not entirely successful, but here there can be no hesitation, for we have Berlioz's exquisite orchestration and his ideal voice recommendations, in a program encompassing everything of this ilk except the songs in *Lelio*—and the *Céphala et Herminie* cantatas. Gardiner's five singers rise to the occasion splendidly. Howard Crook's plaintively desolate *Cemetery* and the sweet reverie of Catherine Robin's *Captive* I found particularly touching, but others will pick their own gems, and nothing here is less than very fine. Anyone who has come to know *Les nuîts d'été* via the customary single-voice versions and/or has ever been intrigued by any other Berlioz songs really ought to acquire this CD.

—John Crabbe

CAGE: Singing Through
Joan La Barbara, vocals, percussion; William Winant, closed piano, percussion; Leonard Stein, piano; Scott Evans, suspended cymbal

New Albion NA 035 (CD only). Tom Lazarus, eng.; Joan La Barbara, Tom Lazarus, Foster Reed, prods. DDD. TT: 55:43

It would probably be safe to say that more people have read about John Cage's music than have listened to it. That may or may not be the fault of the music, but I think it is a sign of caution when any work of art seems to call for a creed. Cage might reply that his work requires no justification, that we only need to be open to new ways of hearing and of knowing, and that even an attempt to understand violates the purity of the music's existence. But Cage has also said, in *Silence*, that "Music is edifying, for from time to time it sets the soul in operation." Of course, from time to time it doesn't, and that's the problem I find with most of the music in this otherwise superbly performed and recorded collection.

Joan La Barbara has chosen a program of Cage's work spanning the years 1942–85 for *Singing Through*. Much of it is sung *a capella*, though some includes piano and other percussion accompaniment. Ranging widely through styles as diverse as "mouth-sounds," vocalise, and chanting, these works are as fanciful and unorthodox as we've come to expect from the now septuagenarian bad boy of American music. Many, such as "Eight Whiskus," have almost a monastic, modal quality that offers a certain Spartan allure. On the whole, however, as much as these pieces may set some souls in operation, they do not speak to me.

The one work I find most edifying is *Sonneckus*, a series of nine Cage compositions interrupted, so to speak, by Satie cabaret songs. The
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The psalm Miserere mei, Deus contains the plea we must suppose Gesualdo to have made, the plea central to the Christian faith: "Have mercy upon me, O Lord." It is the plea of the human and imperfect who ask for mercy because they dare not demand justice. And what of Gesualdo? In his strange and tortured chromaticism was he truly begging for "a word from his Maker"? I do not share his faith, and so cannot know, but his music is moving in a way unlike any other composer of his day; it is at once personal and universal. "For I know mine iniquity, and my sin is always before me." Perhaps.

I hesitate to make dogmatic statements about performance practice four centuries ago, so I will only say that the Hilliard's style is almost uniquely right; if this is not how the composer heard the music, it is at least faithful to his intentions. The voice we hear is Gesualdo's, the unearthly dissonances falling like syllables in a recondite but nonetheless comprehensible language.

We have been offered an explanation of Gesualdo—Hildesheimer's conceit that the Prince's music arose out of the torment of the soul—but what is there to explain Arvo Pärt, this reclusive Estonian-born composer who has gone and given us a masterpiece? To my knowledge he has murdered no one; there is nothing in his brief biography that hints at a source for the musical cry of passion that is his setting of Miserere mei, Deus, the same verses Gesualdo set 400 years before. He has been compared to Schütz, a comparison that does neither justice; he has been called a minimalist, which is absurd, except in as much as he understands the value of "a single note, played beautifully." What Pärt has in fact accomplished with his Miserere is a synthesis of the musical language of 900 years, and the creation of a vivid and powerful new mode of expression that will (if there is any justice at all) help rejuvenate the tired field of "classical" composition.

Miserere begins with simple figures based on parallel organum, figures that Perotin (and Gesualdo) would have recognized and understood. Delicate woodwind passages alternate with choral sections, austere and perfect. Suddenly, before the fourth verse ("Quoniam iniquitatem meum"), a series of hammering tympani strokes usher in a tremendous belligerence of sound: orchestra, organ pedal, and percussion, with the chorus hurling out fragments of speech from all about, almost incoherent like the wild sound of mourning. Then, as the sound of bells dies out ("Tibi soli peccavit"), we hear the sound of bass voice and organ pedal alone, as though announcing an armistice. The effect is one of the most striking I have ever heard. So it con-

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continues with choral harmonies and glorious passages for winds and strings. (My notes read, in part, “Between v.13 and 14 gorgeous writing—just bloody gorgeous.”) After my first Párt review (Vol.12 No.2), a reader sent a furious epistle to castigate me for my unfound words on minimalism. “New Music,” he implied, was wasted on “goose-stepping fascists” (his words) like me who could only appreciate Strauss. (I assume he meant Richard— the Waltz King was, I believe, banned under the Nazis!) The Music of the Future, he went on, would “eschew conflict.” Garbage. Conflict and resolution are at the center of Párt’s musical ethos. If, like me, you detest minimalism and want music that passes the goosebump test, you must hear this. Miserere is the most profoundly affecting work I have heard in a very long time; I wanted to write a poem, not a review.

Párt’s disc also contains two other works: Festina Lente, a canon for strings that ought to be in every orchestra’s repertoire; it is beautiful and expressive and reminded me a bit of RVW (the Tallis Fantasia). There is also Sarab Was Ninety Years Old from the days when Párt employed minimalism in its purest form. It goes “Bong, Bong, dink, dink” a lot, and if it is what Arvo Párt needed to work through to get to Miserere, I forgive him entirely.1 Sound is the usual from ECM: manipulation, but with class—the Gesualdo actually sounds like a purist recording, and may have been. Párt is one composer whose works truly need a high-fidelity system to work in the listening room; I’d love to hear Miserere through the WAMMs.

If you listen to one work by one contemporary composer this year, let it be this one. It is, by God, the genuine article. —Les Berkleynet

HAYDN: See special section, p. 255.

KODÁLY: Dances of Galanta, Háry János Suite, Variations on a Hungarian Folksong (The Peacock)
Neeme Jarvi, Chicago Symphony
Chandos CHAN 8877 (CD only). Mitchell G. Heller, eng.; Jeffrey Gin, editor. DDD. TT: 66:31
KODÁLY: Dances of Galanta, Háry János Suite, Variations on a Hungarian Folksong (The Peacock)
Georg Solti, London Philharmonic
London 425 969-2 (mono CD only). Kenneth Wilkinson, eng.; John Culshaw (Galantia), Peter Andry (Háry), James Walker (Variations), prods. ADD. TT: 58:43

First there was Kodály the Concert, then there was Kodály the Broadcast. Now Chandos brings you, in flaming digital stereo—Kodály: The CD! And by a fascinating coincidence (?), Decca/London brings us the same program in some of the earliest recordings by Georg Solti with the London Philharmonic back in the early ’50s. In fact, it’s a little surprising that none of these pieces had been recorded by Solti/CSO, as they were staples of his repertoire when he made his CSO debut at Ravinia in 1956, performing Háry János, as well as Peacock Variations.

Sterophile readers may recall that I’ve been slightly underwhelmed by many of the Chandos recordings I’ve listened to, and with regard to their CSO recordings, I have a fairly reliable frame of reference concerning the sound of this orchestra as it has evolved over the years, its representation by a variety of record companies, as well as its concert broadcasts produced by WFMT.

I happened to be in Chicago last February, and attended the first of four subscription performances from which this recording was made. I was in Chicago again last July when WFMT broadcast the concert, and recorded the broadcast on my Sony Walkman Pro from the high-end system of a Chicago friend.

As the live concert had unfolded before my very ears, I began to doubt that much of it would make it either to the broadcast or the CD. In addition to the three Kodály works, virtuoso pieces being performed for the first time in many years by the CSO, there was Saint-Saëns’s Piano Concerto 5 (“The Egyptian”) with Loren Hollander as soloist. Though not slated for the recording, it was an added responsibility, and not exactly standard repertoire either. The CSO, like most major US orchestras, is under considerable pressure to maximize its performance time before the public, and minimize its non-public rehearsal time. The CSO’s high standards under pressure mitigate against public debacle, but are no guarantee against a cautious approach on opening night, especially with a recording at stake for which there will be no patch-up sessions. It’s the industrialization of the arts.

It became apparent in listening to the broadcast, and to the Chandos version, that Järvi/CSO managed to liberate their finer musical instincts in the remaining performances. Järvi, who has impressed me as being highly talented, professionally adept, and knowledgeable, can also be a bit of a bull in a china shop, albeit a mostly endearing one. It would seem that Järvi and the CSO bring out the best in each other. He can be as earthy and spontaneous as he likes, and they make certain that the big, powerful climaxes are never forced. In the quiet

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moments, they give him a range of nuance and control beyond what he has received from other orchestras with which he has recorded.

How nice it would be if Chandos would give us the straight goods that come out of these recordings instead of drowning them in heaping tablespoonsful of artificial flavoring. I refer to the post-production reverb which has effectively removed each of the Järvi/CSO recordings from serious consideration as sound images of the CSO in top form. This Kodály program appears to have somewhat less hamburger helper than previous recordings in the series, but with Järvi’s fondness for the prolonged rhetorical silences which Kodály wrote into these pieces, the sham is revealed all the more.

It’s worth drawing brief comparisons with at least two recent recordings from other labels by the CSO at Orchestra Hall: RCA’s live recording of Brahms’s Symphony 1 under Günter Wand, and Verdi Choruses under Solti on Decca/London. RCA’s Brahms recording, produced jointly by WFMT/CSO staff with RCA people, presents an authentic, ungimmicked image until the very last note, which seems “treated” somehow, perhaps in order to eliminate applause without a sudden fade to black. A patent falsification, ironic since they’re selling it as a live product. Verdi Choruses seems the least gimmicked of all, though it lacks the nth degree of realism achieved by DG in the Bernstein/CSO Shostakovich.

In this context it’s all the more revealing to go as far back as 1952, ’54, and ’55, when the Solti/LPO Kodály works were recorded, during a period when Decca/London occupied the high ground among audiophiles and music lovers. Even in mono, or perhaps due to mono’s inherent limitations, one can truly appreciate the care and subtlety with which Kenneth Wilkinson milked the orchestra for clarity, depth, and texture. As for the performances, they’re none of the refined bleached flour we’ve become accustomed to today. The 1950s LPO was no match for any number of 1990s orchestras, and the young Solti was the rough-cut hotshot of his day, but this Kodály program is full of piss and paprika as hardly any recent performances have been. The youthful Solti, a recent war refugee, had powerful emotions to communicate to his listeners. A comic work such as Háry János may not seem the platform for this type of expression, but Peacock Variations certainly is, and so is Galanta Dances, composed as much to preserve and commemorate a vanished nationalistic oral tradition as to entertain concert audiences.

A back-to-back listen to Kodály by Solti/LPO and by Järvi/CSO may tell us more than we want to be told about how far we’ve come in terms of art, culture, and technology in the past 40 years.

—Richard Schneider

MAHLER: Symphony 1
Guiseppe Sinopoli, Philharmonia Orchestra
DG 429 228-2 (CD only). Klaus Hiemans, eng.; Wolfgang Stengel, prod. DDD. TT: 57:08

Sinopoli’s performance of the Mahler First, as it carefully follows the composer’s indications of broad, incrementally accelerating tempo through the first movement’s unfolding, could be commended for integrity and self-control. But it could also be thought of as self-conscious and indolent. The conductor’s linkages toward the later symphonies might be praised for illumination of eternal things which remain merely implicit in other readings. Then again, it may just be that Sinopoli is missing the point.

The performance dissects and x-rays the young composer’s work, drawing inner voices into angular relief, sometimes seeking more substance than this young symphonic skeleton can bear. It is a loving and thoughtful dissection, to be sure. Sinopoli shows his conviction when he detaches the bass-clarinet counterpoint of the first-movement exposition, making it almost as audible as the song-melody of the violins. I’ve never heard it played this way before: he darkens the timbre and changes the sense of the music into something starker, more “modern.” But by this process is lost any trace of the impulsive rhapsodizing of a lovesick young man—which was of course the composer’s inspiration for the work, and which is so much in evidence in Andrew Litton’s Virgin Classics recording.

To the good, Sinopoli’s portentousness makes for an intense and inevitable third-movement funeral march, opening with a beautifully executed contrabass solo. An important counterbalance of mood is, however, lost in the central part of this movement, where Sinopoli finds little of the folksy burlesque brought by Litton and Bernstein.

The last movement, which can sustain Sinopoli’s kind of interpreting, comes alive in his hands. From the energetic opening, through achingly romantic interludes which recall the Mahler 5 Adagietto, to the explosive emergence from hush which closes the performance, the conductor makes his case convincingly.

Overall, this First is anything but anonymous in the manner of today’s usual run of Mahler product. It may be termed revisionism to Litton’s fundamentalism, and will prove, for many, a welcome anodyne to the callow Litton. I find the latter preferable, and even when hankering for a more weighty interpretation, will continue to reach for Walter, Bernstein/DG, and even Horenstein, each of which adds to the

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weightiness a dollop of grace or charm which Sinopoli's performance lacks.

Sound is good, in line with the gradual improvement of DG digitals these last few years. There is a spaciousness, and especially breadth, to please the most soundstage-happy audiophile.

—Kevin Conklin

PÅRT: See Gesualdo.

SCHUBERT: See special section, p. 261.

TCHAIKOVSKY: Piano Concerto 1
RACHMANINOFF: Piano Concerto 2
Alexei Sultanov, piano; Maxim Shostakovich, London Symphony Orchestra
Teldec 2292-46281-2 (CD only). Michael Brammann, eng.; James Mallinson, prod. DDD. TT: 68:48

TCHAIKOVSKY: Piano Concerto 1
RACHMANINOFF: Paganini Rhapsody
Horacio Gutiérrez, piano; David Zinman, Baltimore Symphony Orchestra
Telarc CD-80193 (CD only). Jack Renner, eng.; Robert Woods, prod. DDD. TT: 57:01

TCHAIKOVSKY: Piano Concertos 1 & 3
Vladimir Feltsman, piano; Mitislav Rostropovich, National Symphony Orchestra
Sony Classical SK 45756 (CD only). Bud Graham, eng.; Steven Epstein, prod. DDD. TT: 50:56

The latest Tchaikovsky First offerings produce two almost equal winners and one performance that can be rated commendable but is not, in my view, a top choice. The latter is the latest Vladimir Feltsman recording, which takes the better part of the Concerto's first movement to catch fire. Although the pianistics are expert (the end of the first-movement cadenza and the piece's conclusion) and the orchestral contribution is nowhere less than sympathetic, elemental excitement overall is often missing. This partly may be the result of a lack of forward momentum and spontaneity, causing the piece to sound episodic. The Third Concerto discmate has some of the same feeling of deliberation but in general is more enjoyable. Sonics are adequate with a good sense of depth but are less than ideal in matters of color, tonal variety, and transparence.

The scintillating playing of Alexei Sultanov, winner of the most recent Cliburn Competition in 1989, is, in contrast, far more arresting and even personal, a style echoed by conductor Maxim Shostakovich, who obviously interacts well with his energetic soloist. If Sultanov hasn't yet developed his tonal palette to include subtle tonal gradations at top volume, his sensitive soft touch, as in the beautifully rendered slow movement, is a decided plus. The Rachmaninoff Second Concerto, romantically conceived and virtuosic, has an equal amount of drive and personality. The attractive soundstage is vivid and transparent, with good orchestral detail, though at times I found the piano, per se, slightly hard-edged, a fault probably of the instrument itself.

The Gutiérrez/Zinman Tchaikovsky features both high-level excitement and cleanliness of performance details, attributes that apply equally to the splendid Rachmaninoff Paganini Rhapsody. In truth, I would prefer not having to choose between their Tchaikovsky and that of Sultanov/Shostakovich, both versions being as notable for the expressivity of their slow movements as for the dazzling firework displays in the outer movements. The Rachmaninoff performance deserves to be ranked with that of Mikhail Pletnev on Virgin Classics, which so impressed me recently. Telarc's demonstration-level sonics, detailed and colorful, have stunning transparence, though I found the very bottom just slightly muddy and had the impression that the layout of the orchestra favored the left side more than the right (the imaging test on Chesky's Jazz Sampler and Audiophile Test CD, JD37, proved to me that my equipment was in proper working order).

—Igor Kipnis

TCHAIKOVSKY: Symphony 4, Francesca da Rimini
Leonard Bernstein, NYPO

It's another Tchaik 4, but how can it be just another Tchaik 4 when it's Leonard Bernstein's valedictory Tchaik 4, taped live during concerts at Avery Fisher in November 1989?

Bernstein detractors are coming out of the woodwork. One such acquaintance of mine, a published critic, just loves to bash Bernstein. Those tempi (not tempos—tempi), those rubati (yeah, yeah), those shrieking dynamics, the self-indulgence, who cares about the composer! It's just Lennie who counts. The person I have in mind reveres the blessed memory of Toscanini, a conductor whose intensity in the service of accuracy to the composer's written score became his personal style.

We know Lennie was self-indulgent and given to going off the deep end. Give him a self-indulgent, deep-end composer, and get out of the way. But toward the end of his life, I really believe that Bernstein had acquired as much mastery of structure and orchestral discipline as had been the provinces of Szell, Reiner, and even Toscanini. And he was able to combine it with the type of fervent passions associated with Koussevitzky, the conductor who had exerted the most powerful influences upon him as a youngster.

Tchaik 4 is a minefield for the self-indulgent. The very idea of the piece lay in the guilt-cluttered closet of Tchaikovsky's tortured mind. Ostensibly "about" fate, and the composer's inconsolable loneliness in a crowd, the symphony taunts its interpreters to do the very
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thing which Hamlet cautioned his players not to do: "to tear a passion to tatters." Moreover, the work contains stupendous technical challenges, many of which are often swept under the carpet, and less sophisticated listeners (not to mention less sophisticated performers) are none the wiser, so swept away are they by the ardent mortification of Tchaikovsky’s being.

Take a conductor who has dealt with social taboos of his own, who can look at a repertoire warhorse and figure out how to clarify every detail so that it sounds new even to jaded pros who hate to admit that Tchaik 4 was their favorite when they were in tenth grade. Place that conductor before an orchestra with which he is “family,” and bring in a production team which has learned how to make it “sound” on CD, and you have a Tchaikovsky 4 unlike any other. Even those who already own one or several recordings of this work must hear this one to decide for themselves whether it truly stands out in a crowd.

Just a few details: the opening “fate” motif, slightly broadened at the end, is perfectly matched in its recall in the Finale. The interwoven, interlocking rhythmic figures in the first-movement climax, rarely comprehended, are perfectly executed, to terrifying effect. The tempo of the first-movement coda, always a problem, is deftly solved by a no-nonsense accelerando from tempo, with a decided broadening of the closing statement. Joseph Robinson’s oboe playing in the second movement ranks with his most expressive recordings. Bernstein’s rubato in the solo woodwind passages at the end of this movement make these passages sound like quasi-recitatives, and will undoubtedly stir some controversy. The lightness and perfect transparency of the NYPO brass in the scherzo “marching band” episode will come as a surprise to those who think they can only play loud. The syncopations and rhythmic displacements in the Finale coda (notoriously difficult cymbal afterbeats which usually end up on the downbeats) are perfectly rendered as they rarely have been, live or on recording. And it’s amazing what happens when you combine real accuracy with real passion and, admittedly, some self-indulgence.

The accompanying work, Francesca da Rimini, based on an episode from Dante’s Inferno, is literally concerned with the consequences of sexual taboo-breaking, a subject with which both composer and conductor could surely identify. And as with the Symphony 4, Bernstein has succeeded in indulging himself, and revealing hitherto submerged details in Tchaikovsky’s score.

The production provides an idealized Avery Fisher sound. There may be some sleight-of-hand, but it works. Need I say—highly recommended.

—Richard Schneider

HAYDN: Symphonies 21–24, 28–31, 34
Christopher Hogwood, Academy of Ancient Music
L’Oiseau-Lyre 430 082-2 (3 CDs only). Simon Eadon, eng.; Peter Wadland, prod. DDD. TT: 3:19:30

HAYDN: Symphonies 41, 48, 65
Trevor Pinnock, The English Concert
DG Archiv 429 399-2 (CD only). Hans-Peter Schweigmann, eng.; Dr. Gerd Ploebisch, prod. DDD. TT: 58:26

HAYDN: Symphonies 73, 74, 75
Roy Goodman, The Hanover Band
Hyperion CDA 66520 (CD only). Tony Faulkner, eng.; Martin Compton, prod. DDD. TT: 69:54

HAYDN: Symphonies 82–84
Sigiswald Kuijken, Orchestra of the Age of Enlightenment
Virgin Classics VC 7 90793-2 (CD only). DDD. TT: 78:12

HAYDN: Symphonies 85–87
Sigiswald Kuijken, Orchestra of the Age of Enlightenment
Virgin Classics VC 7 90844-2 (CD only). Tim Handley, eng.; Nicholas Parker, prod. DDD. TT: 78:31

HAYDN: Symphonies 90 & 91
Sigiswald Kuijken, La Petite Bande
Virgin Classics VC 7 91141-2 (CD only). Adrian Verstijnen, eng.; Nicholas Parker, prod. DDD. TT: 58:05

HAYDN: Symphonies 86 & 88
Frans Brüggen, Orchestra of the 18th Century
Philips 426 169-2 (CD only). Dick van Schuppen, Eva Blankspoor, engs.; Gerd Berg, prod. DDD. TT: 48:56

HAYDN: Symphonies 78 & 102
Orpheus Chamber Orchestra
DG 429 218-2 (CD only). Stephen Schellmann, eng.; Wolf-Ericson, prod. DDD. TT: 45:47

HAYDN: Symphonies 83, 87
Jane Glover, London Mozart Players
ASV CD DCA 677 (CD only). Brian B. Culverhouse, eng., prod. DDD. TT: 67:01

HAYDN: Symphonies 98 & 99
Nikolaus Harnoncourt, Royal Concertgebouw Orchestra
Amsterdam Teldec 2292-46331-2 (CD only). Michael Bramm, eng.; Helmut Mühle, prod. DDD. TT: 56:12

HAYDN: Symphonies 1, 2, 4, 5, 10
Adam Fischer, Austro-Hungarian Haydn Orchestra
Nimbus NI 5265 (CD only). DDD. TT: 75:40

HAYDN: Symphonies 6–8
Adam Fischer, Austro-Hungarian Haydn Orchestra
Nimbus NI 5240 (CD only). DDD. TT: 70:01

HAYDN: Symphonies 99 & 104
Adam Fischer, Austro-Hungarian Haydn Orchestra
Nimbus NI 5230 (CD only). DDD. TT: 56:50

Here is a cross-section not only of nearly every stage of Haydn’s development as a symphonist, but also of almost every possible modern interpretive approach to the repertory. Typical of such recent trends are several period-instrument performances. Hogwood’s (tagged Vol. 4 in what seems destined to become a cycle of the roughly 100 symphonies) typify his recordings of the composer’s later scores. Tempos are brisk, execution is precise, and orchestral sonority slightly astringent, with piquant color provided by winds and brass. But while Hogwood’s late Haydn sounds glib and unsubtle,
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the fewer demands of this emotionally and dramatically more restricted music seem to suit his style better. One is reminded, for example, that even in these small-scaled works Haydn was a master orchestrator (listen to the bite of the horns in 31). And in each score Hogwood draws crisp playing from his ensemble and clear distinction between an allegro, allegro di molto, and presto. Equally significant, he is sensitive to the music's inherent wit, his treatment of the finale of 23 and of the hilarious (bare-harmony) Trio in the Minuet of 29 being prime cases in point. And motivic profile is always sharply etched, as in the finale of 24, which anticipates the last movement of Mozart's "Jupiter" Symphony.

Two shortcomings, however, may limit this set's appeal: the relative dullness of some of the music and the heightening of that dullness by Hogwood's rigid observance of every last repeat, with gratuitous repeats added in the reprise of each minut. But for those interested in this repertory or in Haydn's incipient greatness, this set is well worth having. The sound is close, very well defined, but just a trifle edgy.

Far more interesting are Symphonies 41, 48, and 65 directed by Pinnock. Here is festive music, imaginatively scored, and projected vibrantly with virtuosic playing. In 48—with Pinnock following modern scholarship and using horns in place of the now-believed-to-be-spurious trumpets—the rich, piercing sonority of those horns produces a regal heroic grandeur that belies the relatively small ensemble (having only one double-bass). String tone (as in Hogwood's recordings) is not so nasal as that in other period-instrument recordings, and raw energy, rich color, and steady but never rigid rhythms lend the performances an overall stylishness that should prove infectious and that is complemented by close, finely detailed sound. A disc well worth acquiring.

The Hanover Band's accounts of 73, 74, and 75 are a pleasant surprise, the finest performances I have heard under Goodman's direction. The playing has a precision not always typical of this group, the sound is free of the excessive resonance that has marred many of its previous recordings, and Goodman's approach with his very small ensemble is colorful, animated, and free of eccentricity. The Haydn of these scores is but a small step removed from the composer of the "London" symphonies, motifs becoming more imaginative, their development at once grander yet terser, and their overall dramatic impact consequently greater than in the earlier works. The only major reservation here is Goodman's use of a ludicrously tinkling harpsichord, harmonically redundant yet given so much prominence it is virtually equated with the rest of the orchestra. Neither Hogwood nor Pinnock permit the instrument to be so dominant. Still, for anyone wanting these three symphonies, this release may prove attractive. Goodman observes all repeats including those of developments and recapitations.

The two CDs featuring the six "Paris" symphonies (82—87) led by Kuijken are in many ways attractive, mainly because of their clarity, freedom from mannerisms, and generally well-chosen tempos. But the orchestra is too small for these large-scaled works, far smaller than the roughly 80-piece ensemble, with eight double-basses, for which Haydn composed them. Thus the finale of 82, for example, lacks the heft and wit that should spring from the reiterated bass motif that has generated the work's nickname, "The Bear." And as in Goodman's performances, a harpsichord is often too audible, far more so than it could ever be even in a relatively small hall. Irritating, too, is the inclusion of repeats of developments and recapitations. Although these grand works—every bit as profound and imaginative as Haydn's "London" symphonies—can sustain such repetition better than his earlier ones, such all-inclusiveness becomes excessive, at least on a recording where rehearsing is always possible. And for all of the merits in these performances, they lack the tension, wit, and character of the old Bernstein versions, whose absence from the catalog is a disgrace that CBS/Sony should immediately rectify.

Kuijken's accounts of 90 and 91 fare better. For one thing, they employ a fortepiano rather than a harpsichord, thus making the continuo, if still harmonically redundant, far less obtrusive. Both symphonies are less well-known than they should be, and are performed with welcome verve, color, and motivic unity, with the music's inherent humor aptly italicized, the false climax of the finale of 90, for instance, being managed with consummate point. As a period-instrument account, Kuijken's reading is preferable to the slightly mannered, two-year-old Brüggen version. Neither, however, has the control, tautness, and flair of the old Blum account, which I hope Vanguard will soon reissue. As in the "Paris" symphonies, Kuijken observes all repeats. The sound in each of these three CDs is exemplary: close, bright, but never harsh.

Brüggen's new recordings of 86 and 88 mark an improvement over his accounts of 90 and 93. A few occasional mannerisms remain, the most apparent being awkward gradations of dynamics in the opening movements of both scores. And the string tone may prove too nasal for some tastes. But as period-instrument readings, these are preferred editions, Brüggen being
particularly successful in conveying the dramatic transformations that lie at the core of sonata style and the humor that pervades these works. Grace-notes chirp in 86 (as they do not with Kuijken), and the shy, stuttering motif with which the finale of that work begins becomes a proud, affirmative peroration at its close. Then, too, the rude outbursts in the slow movement of 88 have a stark boldness made all the more compelling by the eerie tone of the vibrato-free strings. Brüggen (wisely) omits a harpsichord and observes exposition repeats only. The in-concert recording is immediate and transparent, its relative lack of depth perfectly apt for this repertory.

Of all the CDs discussed here, that featuring 78 and 102 is the least satisfying. The Orpheus Chamber Orchestra, to be sure, plays as it always has of late—superbly; given the lack of a conductor, one might even say miraculously. Attacks are precise, balances amazingly well-judged, and intonation is true. But in repertory such as this, the absence of direction from the podium is all too evident in a prevailing rhythmic rigidity, especially in 102—as fine a symphony as Haydn ever wrote, and one requiring more weight and suppleness. Indeed, the minuet is downright square in its metronomic steadiness. Furthermore, the kind of varied tone a conductor might elicit is absent here, strings in particular having a colorless neutrality that deprives both performances of expressivity. For those seeking a broad but powerful 102, Tate's version should prove preferable, though not quite so virtuosic and animated as the splendid Davis account, which Philips should reissue before too long. The only other recording of 78 currently listed in Schwan Opus is a Jones version less well recorded and lacking the fire of this Orpheus account, which, if not without flaws, does at least suggest the music's stark, fiery intensity. All exposition repeats are observed.

That a small ensemble can match the best work of a larger orchestra in this repertory is suggested by Jane Glover's performances of 83, 84, and 88. Like Kuijken's 83, Glover's lacks a bit of needed tension, but it is far more pointedly nuanced, especially in its subtle dynamic shading in the slow movement. Still, those familiar with the Bernstein version, long overdue for reissue, will find it preferable. In 84 and 85, however, Glover holds her own with anybody. Despite her small ensemble, the close perspective suggests weight and grandeur, with modern timbres and the absence of a harpsichord reinforcing this suggestion. Most striking is Glover's ear for color and balance, the prominent horns in 84 and the clarification of all the strands in the Trio of 88 being particularly impressive in this regard. Glover invests both works with vigor, bringing out all of their dramatic contrasts and, where apt, a graceful lightness. Most significantly, perhaps, her performances illustrate the difference between observing the spirit and the letter of "authenticity." Her clarification of the grace-notes in 84, for example, suggests more of the music's tart humor than Kuijken conveys. Given the fine-grained engineering, this stands as one of today's finest Haydn CDs.

As is true of almost everything Harnoncourt has done, his performances of 98 and 99 have elements that immediately shock: tempos adjusted with an almost Mengelbergian freedom; phrasing eccentrically shaped, with unusual legatos and staccatos; and unusual voicing that gives striking prominence to piercing trumpets. Admittedly, there is nothing here as weird as the timpani cadenza Harnoncourt imposed on the beginning of Haydn's 103 (which sounds like something that wandered in from Purcell's Fairy Queen), but both of these readings tend to make one unduly aware of a conductor imposing his views on the music. All the same, these recordings are not easily dismissed. The Concertgebouw Orchestra plays magnificently, its strings tonally pure, its phrasing unanimous and lovingly shaped. Given the prevailing vitality of both readings, each remains as good as any, at least until Philips wakes up and reissues the magnificent Davis accounts. Harnoncourt observes all exposition repeats.

Listeners preferring a more orthodox 99 may find Fisher's (coupled with 104) preferable. Since his earliest Haydn recordings, his ad hoc orchestra has become more disciplined and cohesive, and Fisher himself seems to have become more sensitive to balance and shape. These accounts of two of Haydn's greatest works are lively, colorful, and touchingly tender. Both slow movements are gorgeously sustained without sentimentality; minuets are vibrant yet graceful, and outer movements pointedly animated. In 99, however, things are occasionally marred by clipped phrasing that borders on affectation and produces an unwanted jauntiness. And fine as this 104 is, Davis's version (superbly remastered on Philips CD) is more alluring tonally and executed with greater virtuosity and precision. In both works Fisher observes all exposition repeats.

In the two discs devoted to earlier symphonies, Fisher acquires himself quite well, demonstrating (with a small ensemble) that color and intimacy can be as persuasively projected with modern instruments. Tempos are lively, nothing is affected, and textures are sharply defined. And in 6, 7, and 8 Fisher (like Hogwood) uses a harpsichord sparingly so that it never becomes
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obtrusive. For those seeking these works, both CDs are recommended.

A final note: Competition for many of these recordings will intensify when Dorati's traversal of the Haydn symphonies makes its long-awaited CD appearance. Doubtless uneven, it still comprises a major achievement that cannot be ignored.

—Mortimer H. Frank

Hyperion's Schubert Edition

SCHUBERT: Songs, Volume 3
Ann Murray, mezzo-soprano; Graham Johnson, piano
Hyperion CDJ33003. TT: 72:20
SCHUBERT: Songs, Volume 4
Philip Langridge, tenor; Graham Johnson, piano
Hyperion CDJ33004. TT: 69:02
SCHUBERT: Songs, Volume 5
Elizabeth Connell, soprano; Graham Johnson, piano
Hyperion CDJ33005. TT: 61:38
SCHUBERT: Songs, Volume 7
Elly Ameling, soprano; Graham Johnson, piano
Hyperion CDJ33007. TT: 70:56
SCHUBERT: Songs, Volume 9
Arlene Auger, soprano; Graham Johnson, piano
Hyperion CDJ33009. TT: 73:54

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Here are five more volumes in Hyperion's ambitious outing to record all of Schubert's songs. As noted before, each of the 35-or-so discs will be sung by one singer, and will have a theme of sorts: The first two, featuring Janet Baker and Stephen Varcoe, involved the poems of Goethe and Schiller and the theme of water, respectively. I reviewed them in these pages (Vol. 12 Nos. 3 & 9) and recommended them without reservation. These five are a bit trickier. Vol. 3's unifying trait is that all the texts were written by friends of Schubert's—pretty slim for a theme, if you ask me (this is becoming somewhat of an issue with this undertaking in general). Ann Murray is a fine mezzo relatively well-known for her Rossini and Mozart, and she here proves herself an able Schubertian as well. There's a fine, burnished quality to the voice, and her control of dynamics is masterly and adds color when needed.

Murray brings a superb sense of mystery to the gruesome "Der Zwerg," in which a queen and her dwarf are at sea, and the dwarf strangles the queen, claiming she is "to blame for this suffering." He then dunks her body and plans to sink the boat. Murray catches both voices here—the queen's desperation and the dwarf's madness—and narrates as if she's telling a puzzling, spooky, campfire story as well, which is just what this is. The "I'm-not-so-crazy-about-Vienna" song, "Rückweg," is an oddity, and Graham Johnson correctly notes that it's a forerunner of some German cabaret songs we've all heard. (He also tells us that during recording sessions, Ann Murray sang this song à la Marlene Dietrich; too bad it wasn't included.) In "Liedesend," a narrative about a king and his minstrel, when Murray sings about the minstrel's harp, the piano part becomes as decorative as the harp itself would be. Once again, we get caught up in Murray's story-telling.

There are no poor performances on this disc of 14 songs, but there is a problem: Whether by design or happenstance, all the songs are down-tempo; this leads to a certain sameness, tiring the listener after a half-dozen or so. This is a mistake. Of course, we can program our CD players, but the fault remains with the selection. Otherwise, a fascinating collection.

Philip Langridge is the soloist in Vol. 4; the raison d'être is, again, that Schubert's pals wrote the texts. We get in trouble fast. The first song, "Der Liedler," a whopping 15 minutes long, is a rotten, unsalvageable—even by Schubert—piece of gothic-style poetry by Josef Kenner about a minstrel rescuing a lady from a werewolf by hurling his harp at the werewolf's neck! Happily, the other poems are not as poorly conceived, and the eight by Theodor Körner are lovely and wistful. "Das war ich" is a beauty in which the singer imagines a perfect rescue fantasy at the close of which he and his beloved are united; "Sehnsucht der Liebe" ("Love's Yearning") genuinely disturbs, the way only troubling night thoughts can. The final song, "Epistel," is a funny poem written by one friend to another, the latter of whom has gone off to be a taxman. The form is an Italian recitative and aria, and Langridge is secure and entertaining, even up to the song's high Cs.

I'd previously only heard Langridge in Britten and early music; it's a pleasant surprise to hear that he understands more Romantic literature as well. The voice seems brighter here than the one he uses for, say, Britten's Captain Vere (Billy Budd), and it's used with charm and intelligence; he colors his words tellingly. This disc is a hot item; you'll hear things which will surprise and please you. And after a while, even "Der Liedler" begins to entertain, in a dumb sort of way.

Vol. 5 features soprano Elizabeth Connell, recently having transferred up from mezzo-soprano. This is hale and hearty singing, with more than a hint of metal in the voice. The songs are all about "God via nature," and Connell and Johnson make a good case for each of the 14. "Täglich zu Singen" is a gentle, direct song in which the singer asks God to give her just as much as she needs each day. Connell keeps her rich tone delicate, and it works. The very next song, "Die Allmacht" (the disc is
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WorldRadioHistory
Stereophile, October 1991
well-programmed to show off Connell's vocal gifts), requires a great outpouring of tone to express this hymn of praise. Again, Connell makes it. The purposefully operatic "Dem Unendlichen" closes the recital with a flourish; it, too, is a hymn of praise, but requires even more drama than "Die Allmacht."

I'd be remiss if I didn't mention the epic, 18-minute-long "Klang der Ceres," to a text by Schiller. It's the story of Ceres and her search for her daughter, Prosperina, who was abducted by Pluto and dragged to the Underworld. Connell and Johnson treat it as the theatrical cantata it is, and despite the fact that it rambles a bit, the listener gets involved. I had never heard this song before and believe that this is its first recording. A hint: it can't be listened to casually; you'll have to give it its full time if you want to get anything out of it.

Connell is impressive throughout the recital, aside from a few weakish low notes (the transition from mezzo to soprano has de-emphasized her bottom register). It helps, incidentally, that she's so well recorded; the big voice shines without ever numbing the piano part— I've heard Connell in person and got the feeling that she could bury a light piano accompaniment. This one's a gem, too, although, like Vol.3, I'll be listening to it in pieces, rather than as a whole, in the future.

What can one say about the artistry of Elly Ameling which hasn't already been said? She's been on the scene for 30 years and continues to please with her insights, sensitivity, and the sheer loveliness of her voice. She never resorts to tricks, and although her voice is small, her emotional range is not. Her disc (Vol.7) is devoted to 24 of the 150 (!) songs Schubert composed in 1815. (Lest you think him idle, let me add that he also managed to crank out four operas, a bouquet of religious music, a pair of symphonies, a piano sonata, and other goodies—but what else would an 18-year-old be doing with himself?) Given Schubert's huge output, I again wonder if this is an interesting enough unifying theme, but never mind.

The opening song is another epic, though only 11 minutes long this time. It's a drippy ballad about a lady who, missing her lover, follows his trusty dog into the woods and finds him dead, killed by her father's arrow. She tears the arrow from his breast and plunges it into her own. It's enough to make you scream with glee, really, but Ameling, happily, understates the melodrama by singing at a spooky mezza voce half the time; she makes the whole loopy affair rather appealing. The third song, "Stimme der Liebe" (Voice of Love), is a graceful charmer; the fifth, "Des Mädchens Klage" (The Maiden's Lament), also from a poem by Schiller, is fine piece of melodrama, and Ameling wrings all of its truth from it.

Later on the disc we find "Wer kauft Liebesgötter?" (Who will buy these Cupids?), a ditty by Goethe penned as a duet for Papageno and Papagena to be inserted in a sequel to The Magic Flute. It's a delicious, quick, witty setting, and quite odd for Schubert. The recital ends with two settings of another Goethe poem, "Sehnsucht" (Longing), composed on the same day. (He set it three times thereafter as well; so did Tchaikovsky, calling it "None but the Lonely Heart.") The comparison is interesting: The anxiety of the first gives way to plain sadness in the second. Ameling is recorded on this recital with a very flattering rosy glow around her voice, which makes the introspective songs all the more atmospheric. Yes, another winner.

Not so Vol.9. Arleen Auger is a terrific Baroque stylist, but for most of this disc she seems out of sorts. The theme is "Schubert and theatrical or operatic inspiration," although a couple of the songs are a stretch. The final song, the very famous "Der Hirt auf dem Felsen," is apparently included because its vocal virtuosity is operatic (see what I mean?). At any rate, from the very first song, "Miserò pargololetto," it's clear that Auger's top register is going to grate; her B-flat is tough to take. In addition, she's recorded rather cruelly, and the voice sounds as if it has more of an edge than I've ever heard in it before. She does well by four Italian "canzonets," which tax neither her voice nor her interpretive gifts (I'm sure she was just having an off day or three), but they're shallow pieces. She's quite marvelous in "Der Hirt," however, and Thea King's clarinet obbligato is a treat. The bottom line seems to be one's tolerance for a particular voice. Auger's is hard to take here; Ameling's is a joy. Having to listen to a singer for 70 minutes whose voice one simply doesn't like can be a chore. But the music is never less than honestly and intelligently performed, and Schubert completists will have to own these regardless of any inherent or external problems. I've said nothing about Graham Johnson's playing until now because my comments apply to all the discs: one couldn't ask for more able support or more finely honed interpretations. And yes, despite my reservations, I'm looking forward to the next batch. This is a wonderful endeavor; much praise is in order.

—Robert Levine

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Listen up, guys'n'gals! You remember The Four Aces, The Four Lads, The Four Freshmen, The Hi-Lo's, and all those other Four-Part Guy Groups of the '50s and early '60s, right? And everyone who went to high school during that era remembers a group of four guys in your very own school who sang at proms and weddings, yearning for a professional career. Most of these groups didn't make it, but the four guys known as The Plaids almost did. In fact, they were on their way to their first professional gig (at the Airport Hilton Cocktail Bar—The Fusel Lounge), wearing their custom-made Plaid Tuxedos, when their car was hit by a bus on its way to the Ed Sullivan Show, where a group called The Beatles were about to make their first appearance. The teens miraculously escaped unharmed, but their heroes were killed instantly. That would be the end of the story, were it not for the Power of Harmony, the Expanding Holes of the Ozone Layer, and other Astro-Technical stuff, which has allowed them to come back to record the album they always dreamed of making.

All right, enough of the introductory stuff (it's mostly cribbed from the liner notes, anyway)—is the record any good?

ANY GOOD? Is Perry Como relaxed? Does Johnny Cash wear black? [Did Lloyd-Webber's Aspects of Love deservedly close early on Broadway—Ed.] Why, this record is so good, I guarantee that anyone with an affinity for this sort of music will go absolutely ape over it, or I will personally give them a refund. (Of course, I will be the judge of whether the person has shown affinity for this music, and, it seems to me, anyone who doesn't like this record cannot possibly have any affinity for the music.) The Plaids—Jason Grae, Stan Chandler, David Engel, Guy Strohman—sing better than the guys in most of the groups they're emulating. The arrangements—by James Raitt, son of John and brother of Bonnie—are vintage 1961, and everyone has about as much fun as it's possible to have while wearing a bow tie. Best of all, while they have fun with the music, they're not making fun of it. The music is all familiar stuff: "Three Coins in the Fountain," "Heart and Soul," "Lady of Spain" (Stan Chandler sings it superbly—while the rest of the cast presents the entire Ed Sullivan Show in the background), "Shangri-La," "Sixteen Tons," "Perfidia" (the second verse sung in faultlessly Anglo-accented Spanish "for our Mexican-speaking neighbors south of the border"), "Love Is A Many Splendored Thing," etc.; the script that provides continuity is by Stuart Ross, who wrote, directed, and choreographed the stage show, as well as writing the cribbed-from liner notes (thanks, Stuart!).

As if all that weren't enough, it's all presented in "Living Stereo," with voices spread left-to-right, just like in real life. Neat.—Robert Deutsch

SITTING PRETTY: 1990 Studio Cast

John McGlinn, cond.; Music by Jerome Kern, Lyrics by P.G. Wodehouse

New World 80387-2 (2 CDs only). Elizabeth Ostrow, prod.; Paul Goodman, eng. DDD. TT: 106:00

Sitting Pretty is one of the Princess Theater musicals, shows that attained considerable success in their day (the 'teens and the 'twenties), but which have, for the most part, fallen into obscurity.* Their obscure status would certainly change if John McGlinn had his way, and the recording of Sitting Pretty is the first evidence of his efforts to revive this neglected chapter in the history of the American musical theater. In its way, it is as much of a triumph as his acclaimed Show Boat (EMI CDS 7 49108 5).

This is not to say that Sitting Pretty is an undiscovered Show Boat. It does not deal with themes more cosmic than which girl is going to end up with which boy, and whether Uncle Jo, a former resident of Sing Sing, will make off with the jewels during the Penningtons' big party. The music does not have the grandeur of "Old Man River" or the romantic sweep of "You Are Love," but songs like "You Alone Would Do," "There Isn't One Girl," "Shufflin' Sam," "A Year From Today," and—my favorite—"The Enchanted Train" have a delicate tunefulness and charm that are nevertheless quite irresistible. McGlinn argues that P.G. Wodehouse is the most forgotten and underappreciated of the major lyricists, and I'm inclined to agree. [Me too.—Ed.] Who else, in a song making reference to Omar Khayyam's requirements for a happy life, could come up with lines like "You wouldn't find me tipping Or reading Keats or Kipling"?

The cast of Sitting Pretty includes some of the brightest young talents in musical theater. David Gaines takes a major step toward stak-

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I'm indebted to the latest issue of Show: Music for confirming my suspicion about James Raitt's familial connections. Show: Music, a must-have magazine for fans of musicals and film music, has had some serious financial difficulties during the past year, to the point that it ceased publication, but I'm pleased to say that it's back, better than ever, still edited by Max O. Prenz, and is now published by the Goodspeed Opera Foundation. Subscriptions ($17 per year, four issues, add $10 for overseas air-mail postage, $5 for Canada and Mexico) can be obtained by writing to Show: Music, Box 466, East Haddam, CT 06423-0466.

4 Very Good Eddie was revived in 1975 by the Goodspeed Opera House and went on to Broadway. I thought it quite enchanting, but the change was not a universal response; I remember overhearing one patron exclaim with his wife, "We came all the way from Jersey to see this!" Perhaps he expected something like Oh, Calcutta!

Stereophile, October 1991

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ing his claim for the mantle of John Raitt; he is ably partnered by Paige O’Hara, Jason Graae, Judy Blazer, and others. The great Roberta Peters contributes a hauntingly beautiful “Days Gone By,” the final B-flat floated with a delicacy that a soprano 30 years her junior might envy. John McGlinn’s musical direction has the sentiment-without-sentimentality that is fast becoming his trademark. The recording is of the entire score, including an appendix of numbers cut prior to the show’s opening. If I had to offer a criticism, it would in fact be about the decision to record all the music, including orchestral and vocal reprises. Out of the dramatic context; ie, without linking dialogue, some of these reprises are decidedly anticlimactic: you think the song is over, then they start again for no obvious reason. The sound quality is much like the recent sterling efforts from BMG/RCA; not surprising, given that it was recorded by RCA’s Paul Goodman in their Studio A. Highly recommended, of course.

—Robert Deutsch

**Jazz**

**PAT COIL: Steps**
Sheffield Lab CD-31 (CD only). Lincoln Mayorga, Doug Sax, Clair Marlo, prods.; Mike Guzaski, eng. A/D. TE: 49:11

Missouri has spawned yet another exceptionally talented musician. Hailing from Jefferson City, 37-year-old Pat Coil receives his solo-album debut with this release. An alumnus of North Texas State University (where he was a member of the renowned One O’Clock Band), Pat went on to serve for over two years as pianist in Woody Herman’s Thundering Herd and has worked with, among others, Grant Grissman, Ernie Watts, Carmen McCrea, Bette Middler, and fellow Missourian Pat Metheny. Clair Marlo, another Sheffield recording artist, produced *Steps*, which effectively demonstrates what’s meant by contemporary “fusion”: a mix of rhythm & blues, gospel, jazz, and classical musical styles.

For the recording, Pat assembled a group of outstanding LA session-men including Tom Scott, Peter Erskine, Michael Ruff, and John Patitucci. Their professionalism shows on every track. As is customary with Sheffield Lab, the music was recorded live onto two-track analog master tape. Doug Sax mastered, and the sound is typical of recent Sheffields I’ve heard: free of glare and grain and clean as a whistle, with tight, floor-shaking bass, well-extended treble, and lush mids (listen to the sound of the acoustic piano and strings on the heartfelt “A Son’s Remembrance,” for example). (These comments apply to the CD only. The planned LP release was scrapped at the last minute.)

This music may not be to everyone’s liking, but anyone who knows and loves the music will have to respect and admire such talent. Pat wrote and arranged all tunes but “Show Your Children Love,” co-written with his wife, Colleen. They cover the wide range of human emotions with skill, taste, and compassion. The album’s opener, “Sierra Highway,” is laid-back, with a positively lilting melody line. Tom Scott’s unmistakable tenor sax is featured along with an exciting, amazingly fluid electric bass solo by Jimmy Johnson. “The Wisdom To Know” is a jazzy, up-beat tune, again featuring Tom Scott’s wailing tenor sax, with John Patitucci’s growling electric bass and William Kennedy’s dynamic drumming supporting an uninhibited piano solo from Pat. “The Way It Looks From Here” features an irresistible melody effectively carried over beautifully recorded Latin percussion (how does engineer Mick Guzaski get such a fine cymbal sound?), etereal vocals (courtesy of Michael Ruff), Pat’s impressive acoustic piano jamming, and Dean Parks’s acoustic guitar. The gospel-inspired “Show Your Children Love” sent chills up my spine (due, in large part, to Phil Perry’s magnificent and powerful lead singing). I just love the intro to this song and the way intensity builds as the music progresses. Another favorite of mine is the album’s closer, the impressionistic “Trails of Angels,” featuring the soprano sax of Brandon Fields, Russ Ferrante’s tasteful synthesizer work, and Pat’s acoustic piano.

I’m happy to say that, with the exception of an occasional heavy hand on the drum mikes, the music is well-served by the recording. More important, the album is devoid of those sonic “blockbuster” tracks which can liven-up dealer demo rooms but do little to further one’s appreciation of music.

When I first put *Steps* into the drawer of my CD player, hit “1” on the remote, and sat back to listen, I felt compelled to discard what I was hearing as yet another album of music-to-load-the-dishwasher-by. Repeated listening, however, assured me that such a condemnation would be a serious mistake. Unlike a lot of similar music being recorded these days, *Steps* has substance, style, and craft. The tunes are well-arranged and stick in your head—Pat Coil has a real talent for songwriting. Although I only occasionally listen to fusion these days, I found...
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myself becoming more involved in the music with each listen. When music is done this well, it's hard not to.

—Guy Lemcoe

JOEY DeFRANCESCO: Part III
Columbia CK 47063 (CD only). Steve Escallier, eng.; Joey DeFrancisco, Horace Ott, prod. DDD. TT: 72:00
BARBARA DENNERLEIN: Hot Stuff
Enja R2 79654 (CD only). Carlos Albrecht, eng.; Matthias Winckelmann, prod. DDD. TT: 52:12

Like swing, "Soul" seems intangible: if you have to ask, you'll never know. It's not something one has or doesn't; it can be possessed in varying degrees. And let's get one thing straight right off: while as a concept it may have originated with Black culture, you don't have to be Black to have it any more than being Black guarantees it. The Four Tops have more than the Four Freshmen, but Barbara Streisand has more than Diana Ross.

No doubt due to its roots in the church, the Hammond organ has been more closely associated with soulful music than any other instrument. The litany of Hammond players helps define the very genre of "soul/jazz": Jimmy Smith, "Groove" Holmes, Jimmy McGriff, "Big John" Patton, Jackie Ivory, etc.

This form of jazz continued the populist tradition that had taken a severe beating with the death of the big bands and the rise of be-bop. Though informed by the Parker/Gillespie revolution, soul/jazz remained closer to the blues and church music than the more heady bop style—you could even dance to it! Organ trios (organ, guitar, drums, sometimes fleshter out by sax) popped up in mostly Black clubs across the country offering music that ranged from Miles to Muddy. Joey DeFrancisco and Barbara Dennerlein both mine this tradition, but in very different fashions.

My personal love of organ jazz insisted that I try my damndest to like DeFrancisco's latest effort. I failed. I could have forgiven Part III its "music as athletics" approach to the up-tempo numbers, dismissing it as youthful exuberance. (Leonard Feather's fawning liner notes straight-facedly describe the tempo of "Dr. Jekyll" as "obscenely fast."). I could have forgiven its ignoring the existence of the last 30 years of musical developments in the interest of preserving a worthy musical tradition. 6 I could have forgiven the skating-rink sounds and the grandstanding dynamics as they are parts, albeit not my favorite ones, of the aforementioned tradition. What I could not find it

6 Although it does seem, as a recent article in Tower's Pulse magazine pointed out, that this sort of behavior in young jazz musicians is being encouraged by major labels to help attract a new audience to their money-making reissues, this in itself is not necessarily a bad thing. But it does discourage the seeking-out of young artists exploring new musical territory.

in my heart to forgive was the utter lack of soul. "Gut Bucket Blues" is indicative—it contains all the right licks but none of the grease. If it did, they wouldn't have to tell us it was a "gut-bucket" blues, it would just be one. The icy, sterile recording does nothing to help. Only on Monk's "Rhythm-a-ning" does the composer's quirkiness goad DeFrancisco and company into dispensing with the competition racing and the self-congratulatory "hip" licks long enough to get down to some deep and funky playing.

Much is made of Joey DeFrancisco's age (20), but he's been playing for 16 years. Unfortunately, his years of experience have given him less the mien of a maturing artist than that of a jaded entertainer.

Barbara Dennerlein, only a few years DeFrancisco's senior, did not grow up as he did in the bars and lounges of Philadelphia, but in Germany, a country not generally known for its funkiness. Nevertheless, Hot Stuff is a good example of how age is no excuse and background not necessarily a hindrance.

Her debut album, Straight Ahead, set musical and sonic standards that will be hard for her to beat. A blowing session that ran the gamut from the title's straight-ahead to free jazz to true "gutbucket" blues, it fairly leapt out of the speakers and grabbed me by the throat. Hot Stuff gets off to a false start with "Hot Stuff," which is anything but. Though passionately played, the meandering tune smacks of 70s-style fusion. But by the second track, "Wow," Dennerlein is back in the saddle with a nasty, funky strut that shows off Mack Mondesir's soulful drumming.

Labelmate Mitch Watkins's guitar adds a Texas blues feel and a rock edge to the proceedings. I miss the humor that trombonist Ray Anderson added to Straight Ahead, but Englishman Andy Shepard's tenor provides additional proof that soul is a matter of neither race nor geography. Hot Stuff is marred by some weak compositions and a bit more synthesizer than I would have liked (Dennerlein proved on Straight Ahead that she doesn't need technology to sound modern). The sound, more subdued here, is still unable to mask the joy and sheer abandon that Barbara and company bring to the party (things almost fall apart at the end of Watkins's solo on "My Invitation," only to pull out breath-takingly at the last minute).

But it's only by the impossibly high standards of Straight Ahead that this one falls short. Hot Stuff gives ample evidence that this is no talking-dog act or child prodigy, but a young, musically mature artist with something to say, and saying it with fire, funk, and soul.

—Michael Ross

Stereophile, October 1991

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WYNTON MARSALIS: Soul Gestures in Southern Blue

Vol. 1: Thick in the South
Wynton Marsalis, trumpet; Joe Henderson, tenor sax; Marcus Roberts, piano; Bob Hurst, bass; Elvin Jones, Jeff Watts, drums
Columbia CK 47977 (CD only). TT: 56:05

Vol. 2: Uptown Ruler
Wynton Marsalis, trumpet; Todd Williams, sax; Marcus Roberts, piano; Reginald Veal, bass; Herlin Riley, drums
Columbia CK 47976 (CD only). TT: 53:02

Vol. 3: Levee Low Moan
Wynton Marsalis, trumpet; Wendell Anderson, alto sax; Todd Williams, tenor & soprano sax; Marcus Roberts, piano; Reginald Veal, bass; Herlin Riley, drums
Columbia CK 47975 (CD only). TT: 48:48

All three: Steve Epstein, prod.; Tim Geelan, eng. DDD.

Wynton Marsalis has edged away from The Edge ever since he scared himself silly on Live at Blues Alley and said he'd never play like that again. Well, he's young. Soul Gestures in Southern Blue has none of Alley's white heat, but don't be fooled by a mere hearing or three; or by the fact that it takes WM three CDs to say what Miles said in Kind of Blue: a lot goes on in these stealthy tracks.

The trilogy went down so easily at first that my I was immediately suspicious, but repeated listenings were even slicker. This is real blues in all shades, shapes, sizes: cool, hot, slow, fast, outside, downhome, country, city, suburban. It's easy-listening in the best sense: I didn't want it to end.

I found these 18 blues (all but three of them Wynton originals) so effortlessly engaging because, for the first time, I heard the complete lifting of constraints from Marsalis's playing; he's graduated from the hard-knocks school of his previous trilogy, Marsalis Standard Time. Soul Gestures includes newfound freedoms in blowing and composition that move like a sea breeze through a long-locked house.

Soul Gestures is, in a word, Wynton Marsalis's masterpiece. But don't misunderstand me: I use the word in its original sense; ie, a piece of work completed as proof that the apprentice has fully learned his trade, earned entirely the title of "Master." It's important to remember that, in this sense, a craftsman's masterpiece almost never ends up being the best of his life's work, though it's always, by definition, his best work to date. As it is here.

In these dates Wynton proves that he's at last relaxed enough, confident enough, master enough of his craft to allow himself the occasional cracked or flubbed note; he's finally saying through his horn things emotionally important and vulnerable enough that he can't risk not saying them right now, regardless of mis-

7 I have a sneaking suspicion that I've made this paragraph's points before in regard to Marsalis. Well, this time I really mean it!

takes—he might not get a second chance. Miles Davis has said that jazz without mistakes isn't jazz. I think even Miles might recognize three these three blues records as quintessential jazz.

With the exception of Vol. 2's wonderful fictional (?) barbershop conversation deftly parodying all criticisms ever made of Marsalis's music, Stanley Crouch's endless liner notes consist of his usual flatulently polysyllabic flapdoodle. So go directly to the paragraphs in italics, Wynton's own program notes for each track. And program music it is: WM's detailed, almost note-for-note exegeses of his own compositions, arrangements, and playing reveal a man who can hear—and, more important, finally tell—a story entirely within the jazz/blues idiom. From his notes on "Harriet Tubman": "This blues begins in the bass with a motif that speaks of late night mystery. Its muted bell-like quality uses bass harmonics for an allusion to the African thumb piano. The drums come in with another motif to further enhance the African underpinnings. Siren horns and a bass vamp signal the beginning of a journey on the Underground Railroad, then the sound of the blues and the wash of swing identify this as a uniquely American expression. The piece ends as it begins, in the bass, reminding us that even though the journey has ended, there is still much more to do, and other trips, no matter how dangerous, will be on schedule, will be in a minor key and departing." The guy can write. But prose aside, like all great music, "Harriet Tubman" and her sister songs transcend any one program, any single story. Still, WM's notes give a fascinating view of the meticulous workings of the man's mind.

Though these discs were recorded from 1985 through 1990, contemporaneous with Majesty, Standard Time, Crescent City Christmas Card, and Tune in Tomorrow, they're superior in every way. Quickly evident on Vol. 1, Thick in the South, is a new, pared-down quality to WM's writing—sparse, dramatic arrangements of lean, nobly ascending melodies. Also reiterated throughout the series is WM's unique dynamic sense—often sharp juxtapositions of loud, soft, and all points in between characterize Marsalis's direction more than any other bandleader I know of. Vol. 1 is one of the last dates of Marsalis's classic rhythm section of Marcus Roberts, Bob Hurst, and Jeff Watts, with the surprising addition of Joe Henderson throughout and, on two of the longest tracks, none other than Elvin Jones. Joe—well, what can I say about Henderson, who is finally beginning to receive the recognition he's so long deserved? This hidden, loose-jawed giant of great swing, sophistication, and constant surprise seems to blend effortlessly no matter where he drops in,
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though, unlike on McCoy Tyner's recent New York Reunion on Chesky, he's given little to do here. Not so Jones, whose ability to set up a slow, commanding groove with so few notes (yes, this is Elvin Jones I'm talking about!) is almost frightening, his playing is so open and sparse. The category of "Blues Drummer" is almost unknown, but I'd say Jones heads it as easily as he has "Jazz Drummer" all these years.

If Vol.1 spreads out the blues map and limns its boundaries, establishing the spread of the blues lingo and its grammar, Uptown Ruler's considerable energies focus tightly on the Holy City itself, New Orleans. Marsalis's notes for this disc constitute a concise primer in Crescent City theology, the polyglot spirituality of the only city in the US that is not in the US. WM presents The Uptown Ruler himself, Nawlin's mythical hero, protector, and avatar, as a humble, scholarly, infinitely open-minded arbiter of justice and compassion. In fact, WM seems to be responding indirectly to critics of his own musical conservatism when he says, "he doesn't have to be up to date because he so clearly perceives the past, the present, and the future."

Vol.2 is a far more svelte, smooth, serene, urban album than Vol.1; rhythms are sublier, harmonic relationships farther from blues roots. But the spirit of the blues never leaves—the album is all lament, whether of pure grief, genteel regret, deep remorse, or rueful laughter over past foolishness. Wynton's current quintet, keeping only Roberts from Vol.1, coheres better than that group, even if it doesn't surprise as much. Marcus Roberts's playing seems to grow more Monk-like all the time. And as drummer Herlin Riley spends not nearly as much time riding cymbals as do Watts and Jones, the entire album's tone is more dark and somber; "Prayer" reminds me of a vintage Wayne Shorter tune from, say, Neufetti or Sorcerer—that same sparse desert stonescape—while the black humor of "Down Home With Homey" hits all the bases from Duke to Miles. Long sensitive to attacks on his tendencies toward "intellectual" playing (always a bad word in jazz, it seems), Marsalis makes of necessity a virtue in "Harmonique," his ever-modulating homage to the Uptown Ruler's powers of pure mind.

Marsalis adds alto sax player Wessell Anderson to make a sextet for the final Blues Cycle disc, Levee Low Moan (originally recorded as Majesty of the Blues Vol.2). The melodies are fine, but this volume is really a study in groove. As in, How slow can we play and still keep folks's feet moving? As in Boogie. As in the title track's hot, humid playing, true hothouse flowering at last. Listen to Anderson's angular, ear-stretching break here. Herlin Riley's hollow-point drumming on "Jig's Jig" will make you do the Pigeon Strut lying down, sitting up, or doing the horizontal crawl. Wynton's music has never made me get up and dance before, but this one did it. "In the House of Williams" is a hard, mean, lost Blues à la Duke with a driving 6-beat. And after the Studies In Mute that the Standard Time series became, WM finally plugs one in for the final track, "Splendid Starling," another carefully built groove underpinning a sinuous, fan-dancing melody.

Years separated these sessions, but the recorded sound reflects the dubious consistency of the producing/engineering team of Steve Epstein and Tim Geelan: ie, standard-issue CBS jazz sonics: disembodied instruments of indeterminate position popping out of digital black; overwide, overmiked drums; saxes hard left and right. But there's little digital harshness through my Vandersteen 2Ci's, which admittedly make almost everything sound pretty good.

For the first time in Wynton Marsalis's career, I wished for a carousel player so I could put these three on infinite repeat. Every one of these discs is well worth buying; they're available individually, so pick one up and take it from there. These are the first Wynton Marsalis records that I can imagine listening to with as much enjoyment 20 years from now. Throughout all three my feet kept tapping, my head moving in that hipster's headshake that looks like a "no" but is always a "Yeah!!" That's enough for me.

—Richard Lehnhrt

CLARK TERRY: Having Fun

Clark Terry, trumpet, flugelhorn, vocals; Bunky Green, alto sax; Red Holloway, alto & tenor sax; John Campbell, piano; Major Holley, bass, vocals; Lewis Nash, drums

Delos DE 4021 (CD only). John Eargle, eng.; Ed Bland, prod.; Amelia Haygood, exec. prod. DDD. TT: 70:40

CLARK TERRY: Live at the Village Gate

Clark Terry, trumpet, flugelhorn; Piquito D'Rivera, alto sax; Jimmy Heath, soprano & tenor sax; Don Friedman, piano; Marcus McLauren, bass; Kenny Washington, drums

Chesky JD 49 (CD only). Bob Katz, eng.; David & Norman Chesky, prod. DDD. TT: 60:35

Each of these Clark Terry releases has strong pluses. While I can do without some of "Mumbles's" vocals—they strike me as trite or unnecessary—there's a great deal of strong playing. On both dates, Terry, now 70—who, way back when in St. Louis, helped give a guy named Miles Davis a start—demonstrates that he still swings hard and that he can direct and drive a band with consistency.

On both occasions, Terry shares his time with talented quintets, each augmented by a strong saxophonist. On the live date, he works in quintet with reedman Jimmy Heath and a rhythm section that features pianist Don Friedman and the truly remarkable Kenny Washington

- Stereophile, October 1991
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274 WorldRadioHistory
There’s a mythic musical dreamscape in America’s heart, somewhere to the left of Oz, called Capricornia. Here Georgia blues’n’boogie, Memphis R&B, and thin-toned San Francisco psychedelia got together in a funky commune and lived on organic peanut butter (crunchy), white bread, beer, mushrooms, and lots of dope. The result was a pack of dirty white blues/rock/soul mutants whose caprrots went all the way down, and their battle cry was “Whipping Poo-o-o-o-o!”

Georgia’s Allman Brothers Band was the eldest hybrid, and they recorded for Phil Walden, who’d just left Stax/Volt to found Capricorn Records. Based on the Allmans’ astounding success in the early ’70s, Walden built a Dixie Rock empire, signing to his quickly growing, goat-logic’d label dozens of bands from the Southeastern US. But within a few years, fame, booze, drugs, womanizing, and ego had destroyed his bread’n’butter account, and Capricorn’s too-fast growth deepsixed the label, which took most of its bands with it into Faulknerian oblivion. (Anyone heard tell of Grindertwitch lately? Fallenrock? Blue Jug? White Witch?)

Now Capricorn, reinvented, reborn, and rehorned, is distributed by those Other Brothers, the Warners, and the first release (Capricorn #10001, in fact) is Widespread Panic from—you guessed it—Georgia. Producer Johnny Sandlin used to work with the Allmans, and the lineup’s familiar: two guitars, keyboard, bass, percussion, drums. Yes, Panic has that same loose, doubly propulsive drive that goosed the Allmans Themselves into FM AOR/Classic Rock heaven, with differences: David Schools must have taught himself bass by listening to Phil Lesh on old Grateful Dead records. He’s intelligent, lyrical, and precise all at once—listen to “Barstools and Dreamers.” Lead guitarist Michael Houser was probably just down the street at the Airplane mansion, copping licks from Jorma Kaukonen—his guitar lingo is built on vintage ’60s Haight-Ashbury blues buzz. Hell, I didn’t think anyone still played this kind of flanging, whanging, nasal tone. Sounds great, though Houser’s not in the same league as Duane or Dickey.

Panic lacks the Allmans’ sunny, soaring side; there’s no “Elizabeth Reed” here, no “Blue Sky,” certainly no “Jessica.” But the group-written songs are nearly always interesting, and often unpredictable. Lead singer John Bell is vocally self-involved, but his decidedly dark, writerly lyrics are haunting if fulsome: “Walls bricked with books / pages bricked with words / each mark has been stained in your honor // I’m not begging for mercy / I see no love of mercy in you.” This from “Mercy,” which reminds me of Country Joe & the Fish’s acid-stained chamber rock. From “Makes Sense to Me”: “I was

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**Rock & Pop**

**ALLMAN BROTHERS BAND: Shades of Two Worlds**

Epic EK 47877 (CD only). Tom Dowd, Allmans, prod.; Jay Mark, eng. DDD. TT: 52:36

**WIDESPLAYD PANIC: Widespread Panic**

Capricorn 10001-2 (CD only). Johnny Sandlin, prod.; Steve Tillisch, Johnny Sandlin, Alan Schulman, Jeff Coppage, engs. AAD. TT: 72:51

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Stereophile, October 1991
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talking' to a homeless drunk about religion / He said 'It's all I got, but it ain't much / 'Cause the way I feel these days / I'd rather have a gun than a crutch.' And there are some nicely observed moments, as in "C. Brown": "He aims his eye, cocks his head." And "Proving Ground" is a loping, howlin'-drunk tune with backwoods guitar, no less—a kick-out-the-jams break that reminded me of the days when the music was better than the stage show—and a hair-raising chorus hung on these words: "Find out just how tall I am by jumpin' in the middle of the RIVER!!"

How can you fault a band that starts out its major-label debut with a cover of Van Morrison's ancient "Send Your Mind," and outdoes The Man himself at it? Besides, that loose, lazy, trick-wristed Georgia Boogie beat by way of the Crescent City is all-night addictive. And with a guest spot from the Wayne Jackson Horns, this band is so correct I almost shouted out "Whipping Po-o-o-o-o-st!!" Check it out.

Johnny Sandlin's muffled, distant, dated production style has a slightly attenuated top end, and Houser's guitar is mixed too far back. But there's not a single synthesizer here, no fade-outs—concert endings are used throughout—and few or no overdubs. The album sounds more or less live in the studio, though not nearly as vibrant as the Allmans' new one. Speaking of which...

I used to have to watch it. If I played so much as the first minute of the Allman Brothers' 1971 Fillmore East twofer, I'd have to play all 76:26—four LP sides—straight through. And if my Georgia Funk Jones was really bad, the segue tease at the end of side four's 22 minutes of "Whipping Post" would yank the ring in my ear straight on to the two-sided "Mountain Jam" on Eat A Peach. I couldn't help myself—Duane and Dickey's twin slide-guitar leads sinusoidally insinuated themselves into a groove already ploughed deep into my brain by that amazing four-man rhythm section of Gregg Allman, Berry Oakley, Butch Trucks, and Jaimoe.

Duane and Berry died 20 years ago, and the Allmans' collective spirit deteriorated badly throughout the '70s. They broke up for what everyone thought was good (in both senses) in 1980, but regrouped in '89 to tour and release the solid and workmanlike if woodsheddy Seven Turns. But it took two more years to cook up Shades of Two Worlds.

Folks, this masterpiece of Southern Gothic High Drama Boogie is not. Gregg's smoky vocals—he's still my favorite blues singer—and erupting B-3; Dickey Betts's fluid, full-bore slide; Butch's and Jaimoe's drums and congas—they all cook hard on this disc. Shades, in a word, is what Widespread Panic never quite is: exciting. This record bad to be made.

The production of Tom Dowd (who's worked with the Allmans since their first album in 1969) is brisk, up-front, full-bodied, spacious, almost fiercely in-yo-face, and very live in the studio. (You can "hear the walls" in "Get On With Your Life.") Gregg tears into one strong, hook-filled tune after another with some of the best soul/blues plumbing in the biz. Nobody Knows' rails impassionedly against universal cosmic ignorance. "Get On With Your Life" picks up where Fillmore's "Stormy Monday" left off—the ABB works these changes better than any band I know, white or black. Dickey's snaky slide on this one will mess you up some, Duane's replacement Warren Haynes plays no-nonsense, sharp-toned lead, and Gregg's organisms are as good as he's ever played—a perfect Allman Bros. track, and "live" as hell. "Midnight Man" is a macho blues strut with a Memphis attitude and a break that sounds like Cream at its best. Betts's "Kind of Bird" instrumental warps in and out of blues and bebop before turboing into one of those rhythmically intelligent, ever-changing jams so many of us lurched to throughout the 70s. (When, no matter what band you went to hear, there was always some idiot in the back shouting out "Whipping Po-o-o-0-st!!")

I'm convinced it was the same guy every time.) The ABB has regained the courage of its original go-whatever-the-hell-the-music-takes-you mandate, which is more than I can say for the Dead (who, these days, seem finally to be living down to their name).

Best of all, Shades ends with an almost-acoustic (except for the bass played by—I'm not kidding—Allen Woody) set-down of Robert Johnson's "Come On In My Kitchen": straight, no-bullshit country blues that starts out slow and picks up fast, with five-part harmony on the chorus.

This is the best studio album the Allmans have ever made. (Those of you who know Fillmore or the live half of Peach will grok the italics.) Widespread Panic is definitely worth listening to, but only after you've put on your Shades for true perspective. Dixie rock and Capricorn records are alive and very well. Whipping Po-o-o-o-0-st!!! —Richard Lehnert

ROGER McGUINN: Back from Rio

Timed to coincide with the induction of fellow former original Byrds David Crosby, Chris Hillman, Mike Clarke, and the late Gene Clark into the Rock 'n Roll Hall of Fame, it's a shame Roger (Jim) McGuinn's first solo LP in ten years is so indifferent. Archly titled to suggest the return
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278 WorldRadioHistory
Stereophile, October 1991
of the prodigal expatriate—but dedicated in a liner note of tiny type to "all the fans who knew I didn't really go to Rio"—this album is a cover-up from start to finish. Like former Jefferson Airplane and Hot Tuna guitarist lord Jorma Kaukonen, McGuinn has apparently been working the national club circuit as a solo act. He just can't bring himself to admit it.

Roger, who began his career as an accompanist for the folk-music equivalent to Mégadeth—'60s hit groups The Limeliters and the Chad Mitchell Trio—has spent his life creating covers and fighting with his talented bandmates. Most of these went on to develop more compelling and personally voiced bodies of work, standouts including Gene Clark's haunting solo LP No Other (Asylum, 1974), which started out as a poke at psychedelic styles and ended up getting serious. Other great spinoffs include work both Clark and Clarke did with electric country star Doug Dillard and the exploratory country-rock of The Flying Burrito Brothers, composed of Chris Hillman and the late Gram Parsons, who had also joined the Byrds for a brief stint.

Through his Byrds and through his buddies, McGuinn was nevertheless able to exercise his flawless eye and ear for style, folk rock, country rock, psychedelia, and granny glasses. McGuinn invented or developed or dabbled in them all, and, focusing on the sound of a ringing electric 12-string Rickenbacker, obsessive studio technique, and tight, high harmonies, he created a signature sound all his own.

With the exception of "Eight Miles High," however, name one seminal Byrds song. "Mr. Tambourine Man"? Bob Dylan. "Turn, Turn, Turn"? Pete Seeger.8 The tradition continues. "Without my friends, this album could never have happened," McGuinn says in a press release, as he performs tracks by Elvis Costello ("You Bowed Down"), Eurythmic Dave Stewart ("Your Love is a Goldmine"), and a collaboration with Tom Petty ("King of the Hill"). Except for his work on Jules Shear's "If We Never Meet Again," a compelling, hook-filled tune raised beyond the general vH-1-style sludge through the quality of its composition, back-up by Michael Penn, and a spirited performance, McGuinn brings nothing to the other tracks except to make the listener wish he were listening to the originals. Petty and bandmate Ben-

8 Oh Beth! What about "So You Want to be a Rock'n'Roll Star," a true pop-art song that certainly had a seminal influence on me, at least. I first heard it live at a London club called Middle Earth in 1968. The one-night-only gig to remember Byrds lineup and program was eclectic, combining as it did much of the Younger than Yesterday and Notorious Byrd Brothers music played by a large (eight-piece) band that may have lacked Crosby and Gene Clark but foreshadowed Sweetheart of the Rodeo by including Gram Parsons and Doug Dillard (the latter on Rickenbacker electric banjo, no less).

mont Tench also play on this album; why they feel their mission in life is tiding up the musical shambles of heroes who hit their strides when the Heartbreakers were 14 is beyond our ken, but hey, this is payback time.

Just as bad, not even time-warped guest vocal chores from Chris Hillman, David Crosby, and former Eagle Timothy Schmidt can save this still-born hodgepodge of LA soft-rock thawed from ca 1972. "Back from Rio" reads like one of painter Julian Schnabel's mid-life crises commemorated in an arty and premature museum retrospective, generally and more properly reserved for when you're dead, or Very Important But 80 (like Georgia O'Keeffe).

While McGuinn keeps working his chiming electric 12-string, his voice, and his pals, his material ranges from the mundane—"The time has come to talk for hours / Underneath the silver skies"; "Now that you're gone / It's no fun without you" ("The Time Has Come"/"Without Your Love")—to the ridiculous: the cutesy and absolutely awful "Car Phone." And don't miss the eponymous semi-obligatory environmental rant ("The trees are all gone / And you know it's all wrong"), or his deeply considered distillation of the meaning of life: "All you need is someone to love" (the single "Someone to Love").

Here's the nub of the album's problem: The style, punch, and musicality of "Someone to Love" is so fine that for a few seconds you'll think you're listening to the second coming of the original Byrds. Unfortunately, that makes the letdown of the sophomoric lyrics even worse. Equally unfortunate, each song's musical development and style is so similar that just about everything sounds the same, and that makes Back from Rio an extremely tedious 44 minutes.

Finally, for anyone expecting a nice mono album, too bad—this one's labeled "Digital Stereo." Having gone for broke, you'd expect the production team to spare no expense. Nope. This is a pallid, ordinary, boring-boring-boring multitrack studio mix, McGuinn's guitar to the front, his voice pasted on top, tons of overdubs mixed later and all life mixed out. For someone reputedly as attentive to technology as McGuinn, this cookie-cutter production is another unpleasant surprise. But this is a cookie-cutter album, and stale, store-bought Oreos at that. Touring Scandinavia revivified careers for Eric Andersen and Tom Waits; check the import bins for McGuinn's next dream LP, cut live in Oslo.

—Beth Jacques

RICHARD THOMPSON: Rumor and Sigh

Stereophile, October 1991

WorldRadioHistory 279
Imagine the consternation at Watsamatta U if Bill Shakespeare's ghost sauntered into a dissertation defense and told the assembled eggheads in no uncertain terms that Hamlet is not:
a) an existential hero; b) a Marxist; c) a mama's boy; d) all of the above. That's how I feel sitting here trying to write this review after Richard Thompson politely dismissed most of my pet theories about his latest album as the residue of coincidence or products of an overactive imagination. Trust the art, not the artist, I say to myself. So if you want to know what Richard Thompson thinks about Rumor and Sigh, turn to the interview on p. 228. If you still want to know what I think, Richard be damned, keep right on reading.

From beginning to end, Rumor and Sigh hangs together better than any of Thompson's other solo albums. After a couple of laps through those earlier records, I'd often latch onto a few choice cuts—say, "How Can I Ever Be Simple Again," "Al Bowlly's in Heaven," and "Valerie"—and play them over and over, bypassing some of the swampier stuff in the middle. This time I feel no need to rush past "Backlash Love Affair" to get to "Psycho Street."

Maybe that's because there's a trail running through these 14 seemingly unrelated songs.

Not that Thompson makes it simple for us to follow. Check out "I Feel So Good," the album's first single, about an ex-con's first night out. At first blush, it could be the soundtrack for a new Roger Ailes campaign commercial: "Willie Horton II—the Nightmare Continues." Listen more closely and you'll hear a feminist sensibility that would make Molly Yard stand up and cheer. So it's only natural the next cut is entitled "I Misunderstood," which kind of sets the tone for the whole album. Never one to shy away from extremes, Thompson merrily juxtaposes "I Misunderstood," which asks the musical question "Can't we just be friends?" with "Behind Grey Walls," in which a man tenderly takes his lover for electroshock therapy. What ever happened to going to the movies?

For my money, the most remarkable song here is "1952 Vincent Black Lightning." Look at the lyric sheet and the "boy gets bike / boy meets girl / boy gets shot / girl gets bike" story line seems like something from the second half of a 1950s drive-in double feature. I admit I'm a sucker for a story song, an acoustic guitar, and things mechanical and British, but Thompson goes beyond the call here. Every image ("Red hair and black leather / my favorite color scheme") is sharp as a switchblade, and he sings as if the life he saves may be his own. This kind of earnestness is particularly disarming coming from
a card-carrying cynic like R.T. . . And once the ride is over, you’re left with a slightly queasy remembrance of how easily, how effortlessly you followed him from love to death in three easy verses.

This rollercoaster of a record ends appropriately enough on “Psycho Street.” Thompson starts with a knockoff of the Nutrasweet theme music from Neighbours, an Australian sitcom which is a big hit in England—combine roughly equal parts “Dynasty,” “As the World Turns,” “Who’s the Boss?,” and “Mister Rogers,” and you’ll get the idea. (I invite my esteemed editor to stick in his tuppence here.) Around this treacly chorus, Thompson fiendishly intones lyrics that sound like Charles Manson’s list of Things To Do Today. Twisted? Sure. Hilarious? You bet.

Surprise, Surprise. The sound on Rumor and Sigh doesn’t let us down. On their third go-round, Richard and producer Mitchell Froom seem to have found the formula. Thompson’s voice and guitar (which, I must add, is in fine form as usual) they leave well enough alone; the tinkering’s in the supporting tracks. “I Misunderstood,” for example, features a striking mix of a natural vocal track with an almost comically bass and drums which will shake the cobwebs off your woofers. Some of the full-band cuts sound a little harsh—“Mother Knows Best,” to name one—but even that seems better than on previous outings.

While we’re on the subject of sound, “Don’t Sit On My Jimmy Shands” should be required listening for all audiophiles. At least twice a week. This “There but for the Grace of God . . .” ballad tells the tale of a geek who carries his 78rpm polka platters around to every party he crashes, and spends the rest of the night protecting them from lardballs looking for a place to sit down. There’s a lesson here for all of us who cling a bit too tightly to the past. Remember this the next time Bang, Baroom, and Harp leaves your humble abode.

In sum, Rumor and Sigh is a brilliant album, but hardly an easy one. Once you’ve sifted through the personas and the period settings, the whispering ballads and the raging rockers, the hyperbole and the understatement, you’re left with a handful of misunderstandings, intentional and otherwise, cutting every which way. She misunderstands him. He misunderstands her. We misunderstand them both. Whether it’s cheek to cheek or at arm’s length, Rumor and Sigh is all about the distance between, and in Richard Thompson’s sad, beautiful world, it’s a distance that’s never quite right.

—Allen St. John

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Audio Alchemy
Digital Decoding Engine v1.0

Editor:
Once again we at Audio Alchemy, Inc. must thank Stereophile, and in this case Sam Tellig, for his flattering comments on our Digital Decoding Engine v1.0. All of us realize how difficult it must be to review a component that redefines a product class like the DDE.

Subjective comparisons aside, Sam instinctively identifies the DDE's strong suit. Namely, it's inexpensive (please, Sam, not cheap), along with being well-built and featuring a host of options not normally available in this product class. Many people seem to echo Sam's feelings when he says, "Digital should be done cheap." The built-in fear of obsolescence still grips the average audiophile when or she comes to terms with "The Digital Onslaught." Alchemy fills the niche with products that perform well while negating the obsolescence issue entirely.

With that in mind, the one point that needs re-clarification is Sam's comment on product in general being superseded by a new version(s). Although made in reference to other companies, Sam did mention to your readership not being "too worried when v2.0 comes out," especially since you've paid only $399 for v1.0. The "Engine" was designed to be fully upgradeable from the beginning utilizing the PS Bus. As new technologies emerge, we can deliver them by offering expansion chassis that merely plug into the Engine's expansion (PS) port. Even at $399, this feature was a must. Our plans are to deliver many such products that feature improved or unique technologies over the next few months. These products will continue Alchemy's mandate of redefining price-to-performance ratios previously thought insurmountable.

In addition, all of us really appreciated Sam's comments on the subjective performance and functionality of the DDE. The phase-inversion switch has indeed proved itself handy on many an occasion. We were pleased as well to see comments like "a lack of grittiness ... plus very good retrieval of ambient information" throughout the commentary. These analyses, especially in light of the cost of competing processors used in this evaluation, are equally gratifying.

We look forward to Stereophile reviewing all of our future products. It was a distinct pleasure to be judged not solely as a $399 D/A converter, but rather as an advancement in the art of digital reproduction. **Mark L. Schifter**
President, Audio Alchemy, Inc.

Boulder 500AE power amplifier

Editor:
Thanks go to J. Gordon Holt for taking time to review our Boulder 500AE power amplifier. Two quick points, and then—about designer listening.

First, although many manufacturers use circuitry which would be classified as "operational," they choose to not use the term "op-amp" because of its popular negative association with the term "IC." Thus, controversy is avoided at the expense of clarity.

Second, hum in most high-quality systems can be readily avoided by ground-loop reduction, and equipment relocation away from magnetic fields.

Now, after 21 years of working solely in audio, I certainly can be accused of reading meters. But listening for design purposes (as opposed to just relaxing with music) also has contributed to my work, especially while involved with Mr. Jensen's extended listening tests of the 990, when it was first developed. Since that time I have heard many circuits which claimed sonic perfection, but in fact fell short of the 990's clarity, musicality, and accuracy. I was the first (mainly because of the high cost) to include the 990 in a manufactured product.

More important, the large number of recording professionals who quickly latched on to the 990s and retrofitted their own equipment provided greater assurance of its sonic accuracy than what I alone thought sounded right.

Through the years I have collected a set of design principles. These include circuit stability, high input and low output impedances, bandwidth requirements, carefully executed ground and power-supply connections, reduction of all types of distortion, RF blocking, comprehension of how audio travels through electronics, elimination of capacitors through DC connections, disciplined lab technique, and yes, high-end's nemesis, reliability.

With great effort and personal fascination, the correlations of listening, lab work, and theory to each other have established this set of design principles. I deviate from them or add to them only when a new idea is thoroughly proven. One of my cardinal rules demands neutrality over coloration, since no matter what color is chosen, sooner or later, as with wallpaper, it will grow tiresome. Once you have been listening to the real recordings instead of an amplifier's sonic signature, you will start
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choosing better recordings and enjoying them more.

Listening tests in general have long been fraught with pitfalls and charlatans. Anyone who is not willing to admit having been misled by listening, at one time or another, is not a credible listener.

Jeff Nelson
President, Boulder Amplifiers, Inc.

Audio Research LS2 line-level amplifier

Editor:
First of all, I want to thank Robert Harley for what we consider an essentially accurate review of the product. And, of course, I am pleased that he seemed to like the unit, overall.

Perhaps the review could have been a bit more clear in presenting the distortion and noise considerations. These figures may not be all that significant, but the following will place these factors in somewhat more clear perspective. You show unweighted S/N ratios of 69.3 and 68.4dB, but you do not specify a reference. Our measurements show these numbers to be essentially correct for an output referenced to 0.5VRMS with about an 80kHz bandpass. Since most modern-day power amplifiers, including ours, have input sensitivities of around 1.5VRMS, a 0.5VRMS reference may possibly plant a wrong conception in the minds of some. Further, since most manufacturers (and some magazines) use IHF weighting for noise measurements, the following numbers are provided to offer a more appropriate reference:

IHF weighted noise output below 0.5VRMS output = 85.20dB, worst channel
IHF weighted noise output below 1.5VRMS output = 94.74dB, worst channel

Another small clarification: Your distortion measurements do indeed reflect mostly wideband noise. That is normal when using your measurement technique, and since static distortion rarely, if ever, translates directly to sound quality, it probably doesn't matter a whole lot. However, for those who want to know, the following numbers represent more nearly the actual 1kHz harmonic distortion measurements (100k ohm load):

Output: 0.5VRMS: 0.0008% to 0.001% or ~94dB (best and worst channels)
Output: 1.5VRMS: 0.0036% to 0.0042% or ~87dB (best and worst channels)

Enclosed please find three printouts from our Audio Precision analyzer showing 1kHz distortion products over a 20kHz bandpass with the fundamental at 0.5VRMS, 1.5VRMS, and 2.0VRMS. Please note the precise correlation between the printout and the 2.0VRMS output distortion figure of ~87dB. Note also that what distortion does exist is almost entirely 2nd-harmonic, with the 3rd-harmonic being down a minimum of an additional 33dB.

The 0.4dB difference that you found between the two channels is the result of the two halves of the 6DJ8 tube not precisely matching. Units as shipped by ARC will normally track to within 0.2dB. As a practical matter, however, the threshold of audibility for differences in level (in the real world) is about 0.5dB.

It is interesting to observe, under the best conditions, that modern-day active circuitry can actually have lower dynamic distortion than the very best of passive components. In the case of comparison to a simple attenuator, that should not be too difficult to understand. At anything but its maximum setting, an additional impedance is inserted into the amplifier's input circuitry with the attenuator. Active circuitry, on the other hand, normally will provide a relatively low and constant impedance into the amplifier's input. It is easier to control the various factors introduced by the attenuator with the active circuitry.

Finally, RH found that using the unit in its balanced mode provided somewhat better sonic results. He should not have found that surprising. Although there is significantly more active circuitry used in the LS2 in the balanced mode, there are good reasons why, other things being equal, balanced output to a power amplifier should provide better sound quality. Before addressing that matter, I should point out, in the LS2, that since the output to the "non-inverting" half of the balanced output is the very same signal voltage as the "single-ended" output, and that same signal voltage is merely "inverted" by additional circuitry to provide the "inverting" half of the balance output, it should be clear that the active circuitry of the LS2 is not the source of this sonic difference. What, then, is the reason for the difference? While there are a number of contributing factors involved, it can be simplistically stated that much of this difference lies in eliminating the signal return from the common ground path between the two devices.

Thank you again for an overall objective review.

William Z. Johnson
President, Audio Research

Gradient SW-63 subwoofer

Editor:
First we have to apologize and thank Dr. Greenhill for having to double-review the SW-63. When sending the prototype to Tovil Distributors, we asked that it not be officially reviewed. But as usual with long-awaited products, the SW-63 prototypes also found their way to the reviewer's listening room.

It is interesting to read the results of the sub-
jective reviewing. Although we cannot agree with all the findings from prototype to "finn-
ished" product, we feel that Dr. Greenhill's comments at the end of the long story are quite
acceptable.

For instance, we cannot see any technical or physical reason for the reverse wiring in the
crossover unit, since the connectors are directly soldered to the PC board; or any rea-
son for the sound-quality difference between the single-ended (RCA) and the balanced (XLR).
We also don't understand why the dustcovers were flapping with the prototype but not the
present ones; technically, they should be quite similar within a fraction of a dB.

We at Gradient feel that it is not possible to
two birds with one stone—ie, quality and quantity. Because of the nature of a dipole radiator being 4.8dB more directive than an iso-
tropic radiator, the dipole bass cannot sound similar to an omnidirectional woofer. As a re-
result, the total radiated energy needed from the dipole for the same sound pressure level is
lower than that of a point-source loudspeaker. You will get more music to the listening place and less rattle in the room. The dipole SW
sounds clearer and more accurate, without boominess. In our opinion, it is best to use a
dipole low-frequency bass unit equal to the accurate quality of the Quad ESL-63.

One aspect briefly touched on is the impor-
tant difference between omnidirectional and
dipole radiators at low frequencies. We have
found in most rooms, especially in difficult
tones, that the dipole bass is easier to position
and the response is much more linear without disturbing resonances.

Thank you again for your patience and thor-
ough review during the transition to the new
distributor of the Quad and Gradient products.

Jorma Salmi & Brian T. Tucker
Gradient Ltd. & Quad USA

PAC IDOS & DIF
Editor:
Thank you for the opportunity to comment on
Sam Tellig's experiences with the PAC IDOS
and PAC DIF.
We thoroughly agree with Sam's belief that
the best way to learn about a component is to
try it in your own system. Full-service, reputa-
table dealers are the backbone of the industry
and the best friend an audiophile can have. Any
of our dealers will be willing to work with an audiophile to see that he uses our products cor-
crrectly and achieves complete satisfaction with his system.
A note on Sam's footnote. When using the
PAC IDOS, remember that its power rating is
1750W. A single IDOS might current-limit if this
ing rating is exceeded. If your system exceeds this
tower usage (that's 15 amperes!), we then rec-
tend using multiple units. Another thought:
Might the overly smooth sound Sam mentions possibly be the way the system actually sounds
with all the harsh, gritty, amusical RFI missing?

Lawrence C. Smith
President
Perfectionist Audio Components Inc.

Eminent Technology 2 tonearm
Editor:
I would like to thank Guy Lemcoe for review-
ing these updates to the tonearm. The damping
trough should only be purchased if the user is
familiar with setting up the tonearm and its
adjustments. It is difficult to move the turntable a long distance without removing the fluid, so
this should also be considered.

Guy's installation and setup comments are
accurate and well-written, so any potential user
should pay careful attention to them.
Lastly, Lew Eckhart and Edison Price played
important parts in the development of the
tonearm. Therefore, I should not be given com-
plete credit.

F. Bruce Thigpen
President, Eminent Technology Inc.

Wisa Audio Pump
Editor:
It is very gratifying to receive such a favorable
review: The catapult into the highest level of
"Recommended Components" confirms the
comments of purchasers of the pump and
surge tank. The amount of work that went into
the report is obvious, and I want to thank Guy
Lemcoe for his efforts.
Herb Wolfe
Airttech Audio Manufacturing, Inc.

VTL 225 monoblock
decaying amplifier
Editor:
We thank you and Robert Harley for re-review-
ing our VTL 225s in their newest (KT90) ver-
sion. We're highly gratified that the new model
continues to enjoy the enviable Class A status in
your "Recommended Components" listing.
We thank Stereophile especially for the con-
cscientious lab efforts you people put into arriv-
ing at your measurements and conclusions.
We'd like readers to know that we have not
withdrawn the EL34 version — it is still avail-
able, on special order, utilizing the EL34 tube
manufactured by the (recently restarted) Czech-
oslovakian manufacturer Tesla, whose version of
EL34 we find to have considerable merit —
very close, in fact, to the British Mullards of
yore.
The KT90 version is now the standard
shipped version with the KT90s employed in

Stereophile, October 1991
triode mode… which would explain both the added “punch” in the bass and the extended highs you reported in your “Conclusions.”

We report further that the KT90 is now in its second large production-run version, and its manufacture has settled down very smoothly and stably; no mean feat for a brand-new design of an ordinarily high-power rated output tube.

David, Luke, & EveAnna Manley
Vacuum Tube Logic of America, Inc.

Muse Model 18 subwoofer
Editor:
I want to thank Stereophile and Corey Greenberg for the “Follow-up” review of our Model 18 subwoofer. It is not often that one is given an opportunity to have two highly regarded reviewers comment on the same product.

Corey Greenberg’s suggestion of a different method of setting the delay control on the Model 18 is quite clever. I am always impressed when someone finds multiple uses for a single piece of equipment. Recording level observation and subwoofer null adjustment—now that’s what I call double duty!

Mr. Greenberg comments on the low-frequency extension as being only a part of the benefit of the Model 18. For him, the more important improvement is the dynamic capability provided by adding the high-pass filters. This observation is an accurate one; the benefits of adding a Model 18 are, in fact, twofold. First, you get a moderate to substantial improvement in LF extension. Second, you get the benefits of a bi-amplified system. Depending upon the type of satellite speaker you use, the distribution of power in most music will net an apparent headroom improvement of 3 to 6dB. This translates to taking a 100W amplifier and giving it the capability of a 200-400W amplifier. Considering the cost involved in purchasing an amplifier of two to four times the power, often the bi-amplified arrangement will win out on economic considerations alone.

As for Mr. Greenberg’s closing comment that “the Muse Model 18 is KICK-ASS!” what more could we ask for? Perhaps I might suggest that “kick-ass” be added to the repertoire of audiophile terms. It certainly works for me. Oh yes, before I forget: our apologies to the local airport.

Kevin Halverson
Muse Electronics

Definitive Technology at CES
I got quite a chuckle reading Corey Greenberg’s article describing his first visit to the CES (August p.68), especially the part about the speakers that provided Corey with “the most fun I had listening to music the whole show,” and their designer, “er, Randy?” Something here sounded familiar; in fact, it sounded just like what happened when Corey visited my room (Definitive Technology) and listened to my latest speakers (the DR 7s).

I called Corey up to ask him if this was us and he said, “You bet!” He also mentioned, in his own inimitable prose, that the DR 7s “kicked ass and rock’n’rolled.” Needless to say, I was thrilled that it was our DR 7 that provided Corey with the kind of listening experience that caused him to fall “back in my chair with a big smile on my face; the kind of reviewer’s smile most speaker designers would sell their firstborn to cannibals for.” (No, Wendy, don’t worry; I wouldn’t sell you even for a Class A rating.)

I’m sorry I was so nervous about the program material. As you well know, some reviewers (not you) have been known to stomp out of the room if you play loud rock and roll or don’t play opera for them. We do, however, design our speakers to sound “great” on all types of sonic program material, but most importantly, we design them to provide the listener with a listening experience which is maximally enjoyable, and we’re glad Corey felt the same way. After all, isn’t enjoyment what this is all about?

Sandy Gross
President, Definitive Technology, Inc.
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(Corey Greenberg on the sound of the Kevlar Reference Screens at the 1991 SCES. Stereophile, Vol. 14 No. 8-August 1991)

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<thead>
<tr>
<th>SOUND LAB</th>
<th>MICROMEGA</th>
<th>MUSIK SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASSE</td>
<td>VTL</td>
<td>MFA</td>
</tr>
<tr>
<td>APOGEE</td>
<td>MIRAGE</td>
<td>MUSE</td>
</tr>
<tr>
<td>MERLIN</td>
<td>HALES</td>
<td>RYAN</td>
</tr>
<tr>
<td>CAL</td>
<td>ROWEN</td>
<td>VMP3</td>
</tr>
<tr>
<td>WELL TEMP</td>
<td>FIRST SOUND</td>
<td>ROTEL</td>
</tr>
<tr>
<td>CARDAS</td>
<td>BRASFIELD</td>
<td>THORENS</td>
</tr>
<tr>
<td>WHEATON</td>
<td>AVALON</td>
<td>SHURE HTS</td>
</tr>
<tr>
<td>VERSA DYNAMICS</td>
<td>AVALON</td>
<td>BENZ</td>
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</tbody>
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ADVERTISER INDEX

Absolute Audio ..................................................... 254
MD19M013Acoustic Energy ......................................... 222
Acoustic Sounds ..................................................... 57
Adcom ................................................................ 36
Apture Products ...................................................... 238
Audio ................................................................. 240-241
Audio Advisor ......................................................... 316
Audio By Design ...................................................... 320
Audio Center ......................................................... 289
Audio Connection .................................................... 300
Audio Dan ............................................................... 310
Audio Den Ltd ........................................................ 318
Audio Design ......................................................... 319
Audio Ensemble ...................................................... 216-217
Audio Express ......................................................... 292
Audio Gallery ......................................................... 314
Audio Haven .......................................................... 289
Audio Images .......................................................... 314
Audio Insight ........................................................... 286
Audio Nirvana ......................................................... 304
Audio Outlet ............................................................ 263
AudioQuest ............................................................. 324
Audio Research ....................................................... 84
Audio Resource ....................................................... 317-320
AudioStream ........................................................... 110
AudioVision ............................................................ 269
Audio Visions .......................................................... 74-75
BAK Components ................................................... 62
BSW Loudspeakers .................................................. 10-11
Bay Area Audio ........................................................ 178
Bose Express Music .................................................. 105
Boulder Amplifiers ................................................... 218
Cable Company ....................................................... 306
California Audio Labs ............................................... 84
Cary Audio Design ................................................... 2, 44-45
Cello ................................................................... 296
Cheeky ................................................................. 285
Chicago Speakerworks .............................................. 252
Cogan-Hall ............................................................. 42
Conrad-Johnson ..................................................... 34
Counterpoint ........................................................... 27
CSA Audio ............................................................... 313
Cumberland Audio ................................................... 294
Dana Audio ............................................................. 274
Definitive Audio ...................................................... 291
Deltach Precision Audio ............................................. 8
Digital Ear ............................................................. 303
Dorian Recordings .................................................... 280-281
Dup-Tech ............................................................... 225
Fairmont Soundworks .............................................. 319
Galvin Carol Audio ................................................... 319
Giles Lilistenter ........................................................ 239
Gryphon Audio Design .............................................. 220
Haffner ................................................................. 282
Hales Audio ............................................................ 232
Harlequin ............................................................... 100
HiFi City ............................................................... 309
J&K Music .............................................................. 262
JS Audio ............................................................... 316
KEF ................................................................. 314
Kief's Audio/Video .................................................... 242
Kimber Kable ........................................................ 242
Kinelectrics ........................................................... 42
Lineaum ............................................................... 264
Lyle Cartridges ....................................................... 242
Madrigal Audio ........................................................ 6, 16
Magnum Dynamics .................................................. 214
Magnum Dynalab .................................................... 110
Martin-Logan ........................................................ 319
May Audio Marketing ............................................... 242
McCormack .......................................................... 145
Meridian ............................................................... 14
Mirage ............................................................... 38
Monitor Audio ....................................................... 238
Monarch .............................................................. 322
Monitor Cable ....................................................... 49-50
MSB ................................................................. 312
Muse Electronics ..................................................... 232
Music & Sound ...................................................... 266
Music Box ........................................................... 12
Music By The Sea ................................................... 244
Music Reference .................................................... 80
NAD ................................................................. 238
NBS Audio Cables ................................................... 70
Nimtech, Inc ........................................................ 26
Nitty Gritty ........................................................... 289
Nobis Technology .................................................... 46
NRG Control .......................................................... 214
OCM ................................................................. 319
O'Corra ............................................................... 302
Old Colony Soundlab .............................................. 270
Omn Sound ........................................................... 380
Parasound ............................................................ 75
Per Madsen Design .................................................. 255
Pioneer ............................................................... 236
Precision Audio ..................................................... 306
ProAc ................................................................. 319
Progressive Audio .................................................. 46
PSS ................................................................. 317
Quad USA ............................................................ 313
Reference Audio Video ............................................. 227
Reference Recordings .............................................. 272
Reference Room .................................................... 83
Rogers ............................................................... 11
Rotel ................................................................. 32
Rowland Design ..................................................... 34
Sarus Systems ....................................................... 314
Savant Audio & Video .............................................. 68
Select Sound ........................................................ 312
Sennheiser ........................................................... 222
Shure Brothers ...................................................... 78
Shure HTS ........................................................... 313
Signet ................................................................. 229
Sorce ................................................................. 102
Sound Advice ....................................................... 256
Sound & Music ...................................................... 226-227, 282-283
Sound Components ............................................. 286
Sound Concept, The .............................................. 316
Sounder ............................................................. 244
Sound II .............................................................. 307
SquareDeal .......................................................... 292
Stereo Plus .......................................................... 288
Stereo Shoppe ....................................................... 318
Stereo Shoppe-FL .................................................... 300
Straight Wire ........................................................ 270
Sumo ................................................................. 248
Take 5 ................................................................. 71, 73
TARA Labs ........................................................... 58
TDK ................................................................. 323
Teac (Esoteric) ....................................................... 60
The Manual ........................................................ 22
Threshold ............................................................ 314
Transparent Audio .................................................. 316
Underground Sound ................................................. 9
Univox ............................................................... 108
Vacuum Tube Logic ................................................ 56
Vandersteen ........................................................ 30
Velodyne ............................................................ 299
Vortex Limited ...................................................... 8
Wadia Digital ....................................................... 20
XLO Electric Company ............................................. 20
It’s easy to get too serious about high-end audio—particularly in one of our “Recommended Components” issues—but recent world events implore us to step back and keep things in perspective.

It’s certain that the world situation will be significantly different by the time you read this; things may be in such a dramatic upsurge that we’ll look fondly back on the stability of a Communist Soviet Union. As someone who believes that the worst thing an American can do is work for the government (apologies to those who do; my life experiences make me feel that way), I can hardly regret the demise of a society in which everyone works for the government. Nevertheless, all is not as it originally seems; the breakup of the Soviet Union will surely bring grief along with euphoria.

My trip to Taiwan with Bob Harley for the Taipei Hi-Fi Show (full report next issue) has also made me feel the need for perspective. I love going to hi-fi shows in foreign countries. The surprising thing is how like our own Hi-Fi Shows (next one in Los Angeles, April 24–26—don’t forget!) they are. After all, these are entirely different cultures, ones where high-end audio is not necessarily an indigenous pursuit. (The few Taiwanese high-end audio companies are mostly quite recent, and all are virtually unknown outside the Far East.) Nevertheless, the care of setup, the enthusiasm of the attendees, the popularity of the best exhibits, all is most reminiscent of what happens right here in the US.

I also like to see just how popular American products are overseas. Not only American, of course; some of the best European products do very well also. The best thing is to see American products set up by their importers much better than I’ve ever heard the manufacturer himself do it at CES!

High-end audio is an imported phenomenon, however. I’ve been told that one of the reasons so many people approached us about starting a Chinese edition of Stereophile was to promulgate a vocabulary and world view in which appreciation of the best sound could develop. This was a humbling notion—after all, I thought, what do we know? In fact, it turns out that the English-language press knows a lot, and has been thinking and writing about hi-fi for a long time. Taiwan (and perhaps other Far East countries) are like the US was before J. Gordon Holt founded Stereophile in 1962 and began to talk about how equipment and music sound (although I suspect there was a background of sound-reproduction discussion in this country dating back to the beginning of the century). I’m honored that people from another culture feel that Stereophile can not only offer opinions about the way products work and sound, but help develop a philosophy.

But let’s not be smugly superior. I found in Taiwan a reverence for excellence in reproduced sound, and product quality, which goes way beyond what I’m familiar with in the US. Yes, we have audiophiles who truly appreciate the quality of what they own, but in Taiwan, Hong Kong, and Japan I’ve seen attitudes toward high-end products which border on the worshipful. Just as I’ve seen in Europe that consumers pay very high prices for extraordinary quality—which they then keep for a very long time—in the Far East my impression is that people buy high-end audio products to keep and revere.

There’s also extraordinary attention to detail. As I mentioned above, on more than one occasion I’ve heard American products sound better abroad than I ever did here—including, to my astonishment, the Infinity IRS Vs. I respect the ears and judgments of Harry Pearson as much as anyone, but I’d never heard the IRS Vs sounding anything like good enough to justify what HP has written about them. Until Taiwan. Believe me, when you get the Vs right they can do things you just about never hear from a loudspeaker: live-music dynamics, scale, ease, and relaxed detail. And, out of the system used to drive the Vs, there was only one product currently listed in Stereophile’s “Recommended Components”: the AudioQuest AQ 7000 cartridge. Everything else (Goldmund Reference, ARC SP-11, ARC M-300s) has appeared but has now disappeared—and it was one of the best systems I’ve ever heard. It inspired in me a feeling of the need for perspective.

Larry

Stereophile, October 1991
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