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OCTOBER 1989 ............................................................................................................... 3
Twice a year we bring many of Stereophile's contributing editors to Santa Fe to take part in a weekend-long discussion of the magazine's "Recommended Components" feature. The result, as you will see from this issue, is a fully revised listing that incorporates our opinions of new components and all our experiences of existing recommendations. During their last visit, however, the magazine's writers and editors also spent time discussing the magazine, the role of its equipment reports, and the nature of subjective reviewing. The discussion was frank, informed, and informative, and should prove interesting to anyone concerned with how this magazine reaches its value judgments—a full transcript will appear in the November issue.

We recorded that discussion using Nakamichi's new 1000 R-DAT recorder. You may have noticed that reviewers for other magazines only test tape recorders by copying a CD or three at the end of their measuring sessions—by contrast, Stereophile's resident technofreak, Robert Harley, dragged the fabulous two-box Nak into the beautiful setting of Santa Fe's Loretto chapel and used it to record an album's worth of acoustic music that will eventually appear as a CD. Did the Model 1000 prove up to the task? November will include a blow-by-blow account.

Other equipment reports in the November issue include yours truly on the new D600 "digital" loudspeaker from Meridian; Larry Archibald on the expensive Waveform loudspeaker from Canada; Dick Olsher on the latest version of the bestselling Quicksilver monoblocks; Guy Lemcoe on the synergistic marriage between the VPI HW19 turntable and the Eminent Technology 2 tonearm; and—sound of bells!—the return of the venerable J. Gordon Holt (in whose ears we trust) as an equipment reviewer. JGH will literally be looking at a high-quality TV Monitor from Tera and offering an assessment of the "Video Standard" LaserVision disc from Reference Recordings.

We hope you enjoy it. But remember, the easiest and cheapest way to read Stereophile regularly is to subscribe. Turn to p.127, fill out the form, send it off, and sit back to wait for the biggest, best-written, most informative, and not forgetting most entertaining, high-end magazine to arrive in your mailbox at the start of every month.

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Stereophile, October 1989
"B" like my friend Frank. He imagines that he’s purchased certain products—right now he’s imagining that he bought a pair of hard-to-get English speakers which he has read a review of but hasn’t heard. This is ideal, since the speakers can sound better and better as Frank imagines more and more. When he tires of these speakers and gets excited about something else, he doesn’t have to trade them in. He only needs to start imagining the next product." That was Sam Tellig’s friend Frank, back in March of this year. No one could have said it better, but I have a followup.

Of course, I don’t guess many of you really took Sam’s advice—otherwise, why would you continue to read Stereophile and all the other audio magazines? Sam’s advice just puts things into perspective. After all, is your current equipment really that bad? Isn’t it just that you’ve got an itch to get a little closer to the real thing, to go out and spend some money, to convince yourself of the tremendous savvy you possess when it comes to the purchase of hi-fi equipment? From experience, you just know there’s a good chance your system won’t be better, just different—it might even get worse!

Recent events have been concatenating in the direction of an idea that respects Sam’s cheapness, but at the same time deals with the need to buy, the need to experience differences, the need to learn. Here’s the idea: Forget about big, expensive speakers—buy cheap ones. Often.

My first inkling in this direction came as I attempted to delve into yet another major
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speaker left over from one of our real reviewers. (You may remember that I reviewed the Altec Bias 550 in Vol.12 No.4 only because JGH was in the process of changing houses, and the Mirage M-1 that I wrote about in Vol.12 No.6 had been originally scheduled for TJN until it became clear that bis residence was also to change—from Las Vegas to Los Angeles.) Just recently I was left with a big, heavy, hard-to-set-up and fussy speaker, diverted from Las Vegas to Santa Fe.

I dutifully set up these speakers (I won't tell you which ones—that comes in November), and, after much moving of bulk and switching of amplifiers and arranging of cables and struggling for a bit of music... well, I just got fed up and set up the Thiel CSI.2s that had just arrived from the aforementioned Sam. (You'll remember from the June issue that ST was not their biggest fan, being a bit put off by a lack of satisfying bass. We had him ship them out here to make sure it wasn't a sample-to-sample variation that caused the different 1.2 assessments. It wasn't—more later.)

Dick ("The Terminator") Olsher was over at my house to augment my impressions of the biggies, and he kept digging up nice things to say. (Even Terminators are nice to little children and big speakers.) After all this struggle I just set up the Thiels in the most elementary fashion, and, lo and behold, there it was: music! Sure, the littlest Thiel can't put out low bass, and, yes, they're far from perfect. But there it was, music—something no amount of prying and moving could elicit from the big, expensive products I was trying to review. DO was dumbstruck by the difference. "Gee, there's space on this record... where did it come from?" I, of course, being familiar with the record, knew the space was there all along, just disguised by how much was being attempted by the review speakers.

They just did too much, in the process obscuring the essence of music. As JA points out most mildmanneredly in the introduction to his report on small speakers in this issue, the more you try to get from speakers the harder it is to get it. To some extent this is due to limitations of source material and real-life rooms. True reproduction of low bass will overload most rooms, and let you know of far too much subway activity at the recording site, not to mention plain old rumble. Nevertheless, the worst problem is that most big speakers fail at what they attempt. Or, just as often, they succeed at low bass but sacrifice the midrange. Viols are no longer violin-size, basses fill the entire space between the speaker or are simply too chesty.

The late '60s and early '70s were big on the slogan "Small is beautiful"—if you've seen pictures of me, you can guess it's not my favorite! In speakers, though, I frequently have to go along. "Cheap (and usually small) is beautiful." Of course, there's a big proviso: you have to choose from among the elite. I wouldn't say that Stereophile has identified all the good small speakers out there, but choosing from the following four—all in the same approximate price category and all of which got rave reviews in our pages—you can't go wrong: the Spica Angelus, Magnepan MG2.5/R, Thiel CSI.2, Vandersteen 2Ci.

Readers could do much worse than set up the best front end and electronics they can afford and just drop into this welcoming nest whatever small, cheap speaker is all the rage. The most you'll pay for any of the above is $1550. For many of you that won't seem so cheap, but I was knocked over by the results of our Readership Survey (Vol.11 No.10). Most of you readers seem to own relatively inexpensive electronics but quite expensive speakers, many of them costing as much as $3500-$4000/pair.

My recommendation is the opposite. It's not that expensive speakers don't deliver when you buy them (though most will be seriously compromised by inferior electronics), but they are quickly bettered in their respective price ranges—and you've invested too much in them to just sell them off and take a $1200-$5000 beating in the process.

And that's just the half of it. It's my observation that the bigger and more expensive your speaker, the more you have to tailor the rest of your system to just that speaker's idiosyncrasies. Right now I'm listening to the ultimate paradigm in that respect, the Infinity IRS Betas. Though they can do wonderful things (we've had our doubts upon occasion, but no more), you have to use just the right equipment. You don't want the Levinson 20.5s on the midrange-tweeter panels, though they're a most optimal amplifier in every other situation I've used them—only tubed gear will do. (I'm using the splendid VTL 500s to excellent effect.) And forget the Carver Seven T-mod on the bass.
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towers, in spite of this mono amp's 575 Wpc rating into 8 ohms (900 Wpc into 4). Only the ultimate authority of a Krell KSA-200, or its ilk, will do. I don't mean simply that the Krell's better; I mean you don't even want to listen to the Betas with the Carvers (though first indications are that it's an excellent amplifier with more modest loudspeakers).

Those are only the most basic problems. Let's talk about preamplifier choice, CD player choice, cartridge choice, cable choice—all verrry touchy. AARRGGH! When you're finished, it's all too easy to have a system in which Betas sound magnificent but nothing else will be even tolerable. You've learned about equipment, but what have you learned about music?

Let's try something else. Say you've invested your hard-earned dollars in the few amplifiers that get universally rave reviews and recommendations, a great phono system, and a good, inoffensive, but modest CD player. Then, about two years ago, let's say you bought a pair of Spica Angeli to round everything out. They set you back all of $950—less than almost any cartridge in AB's recent cartridge roundup. Wow, you said, what imaging, what music! No esoteric conflicts here, just sit back and relax.

Of course, no speaker's forever (even an inexpensive one), and six months later—having learned volumes about imaging specificity on half your record collection (you haven't been able to listen yet to the second half of your 5000-record collection), you decide that the Angeli round off just a little too much, so you grab your latest Stereophile and read about how great the Magnepan 2.5s are, according to JA and L.A. Buy 'em!

Maybe you lose $350 on your Spicas, and the new Maggies cost $1550, but that's still cheap compared to the speakers owned by most Stereophile readers—and really cheap compared to high-end speaker cables. Why, it's half as much as a 1-meter pair of highly touted interconnects! (The $350 you lost on the Spicas, that is.) Assuming that you pay attention to the caveats emphasized by JA and JGH regarding room choice and speaker placement, you'll now be happily ensconced at home enjoying the fabulous, big sound of 2.5s, with the ultra-extended, yet easy on the ears, high end of the Magnepan ribbon tweeter. You can't believe such a sound is available for so little—why, your favorite dealer can't get this kind of sound even on his $40,000 worth of gear, not most of the time. And, judging from the Stereophile reports, this is far, far better sound than any reporter hears at a CES or Hi-Fi Show!

Six months later (I think you're getting the idea), the big sound of the 2.5s is wearing a little homogeneous—but look, there's a Thiel 1.2 with a rave review. Sounds musical. Small. Forgiving. All the right words, so you hasten to a Thiel dealer for an audition, and find a precision that's lacking in your 2.5s. Not easy to trade in a speaker that's worth more than what you're trying to buy, so you sell the Maggies to a friend (who may be following your footsteps all the way) for $1100, and that happens to be just what the Thiel cost. Meanwhile, except for carting the speakers home, unpacking them, and packing 'em up again, you're having a ball. You got to hear your second 2500 records on the Maggies and can't imagine what the first 2500 will sound like on the Thiel.

Six months later, the Vandersteen 2CI's have found their way into your home, and you're recognizing yet another set of virtues, including real bass (for only $1395 with stands)—and who knows what's next? This is not a literal recipe, of course. You do have to choose your speakers carefully—make sure they're consensus All-Americans, but you can use anyone's ears you trust, not just ours. Keep them one year, two years at a time—whatever's comfortable. Pursue the same idea in backwards order. Don't trade in each speaker at all, just put them in a corner. Don't get past the first step, that's okay too.

I'm advocating component-of-the-month (every six months, actually), but only with speakers. Keep everything else pretty much the same—a new cartridge every once in a while, an experimental (but cheap) cable. Buy cheap speakers. If you choose carefully, they're unfussy, much less fussy than the Class A (or, for that matter, Class B) recommended speakers. Just drop them in, and learn all over again the lovely things on your records. Remember, they may be inexpensive, but there's a good chance you're hearing more from your records than your friend who spent $6000 on speakers. Have fun. That's what it's all about.

1 The is the Seven T-mod, not the $19,000 Silver Seven on which the T-mod was based. They sound identical, at least according to Bob Carver talking in person; maybe Mike Kay of Lyric Hi-Fi, the only store to sell the Silver Seven, had some input in recommending that they don't sound identical. So far, Silver Seven reviewing has been confined to the environs of Sea Cliff, NY—can't imagine why.
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The Maggies are alive . . .

Editor:
Larry Archibald's review of the Mirage M-1 in June included some nice comments about RCA's Sound of Music soundtrack. Thinking I might be missing something, I hurriedly hauled out my copy (a gift from my mother, no less), cleaned it, and listened to it through my MG IIs. Yes, Julie Andrews sounded like she was right in my living room, all right, but my living room had taken on the quality of a huge barn with amplified violins recorded on peaky condenser mikes. And my brain is still vibrating from the electronic rrrrverber-rationnnnn. Come on, L.A. It's really too bad JA didn't take you at your word and barf all over your report. Shame!  

Herb Barringer  
Kaneohe, HI

Sheer, good-humored entertainment?

Editor:
Many thanks to everyone at Stereophile for making available this quality magazine to the music-loving community. Stereophile provides an essential forum for high-end as well as (increasingly) top-notch mid-fi audio equipment manufacturers. In addition, along with the rest of the "underground" audio press, it provides a needed counterbalance to the mass merchandising/mainstream publishing juggernaut. But perhaps the greatest contribution is the sheer good-humored entertainment found between its covers.

I have spent many hours enjoying the purple prose of the equipment reviews. But the humor is not all subtle—not by a long shot! The hilarious soap opera some time back starring gonzo PR artist Bob Carver and a seemingly befuddled JGH was a classic. Perhaps the best part was JGH's semi-coherent musing on why he had been unable to detect any sonic difference between an el-junko Carver and a sacred Conrad-Johnson tuber. (The answer, of course, is that Gordon was sandbagging. I approve. No point in giving away all our audio secrets to the likes of Bob Carver, eh, Gordon?) There is variety, too. Who can forget that complex tragi-comedy, the Great Interconnect Comparison Report? One had to have sympathy for that poor fellow faced with the task of making dozens of wiring connections and then having to come up with some kind of verbiage to justify having done so; not to mention justifying the cost of some of that wire. My hat is off to this truly creative soul.

And then there are the letters. An award should be devised for the most outstanding amateur attempt at audio arcana. My vote goes to the guy who, after he spent a mint on silver bullion, discovered that solid-core 14-gauge commercial cable provided "silkier, creamy highs; tighter, better defined bass; more refined midrange with better detail and incredible, stable soundstaging." "The overall improvement," he averred, "is as if several sonic veils had been lifted from before my speakers." I bet if he had tried the solid-core before he read Alvin Gold's ground-breaking article on same he would be thinking to this day that he had made a worthwhile contribution to van den Hul's corporate profitability.

The pinnacle of existential prose is reached in the December '88 issue and deserves special commendation. I refer to the NoNoise process exposé. NoNoise is an aberration which must be expunged. As I read this inspired tract, I wanted to jump up and shout, "Yes! The hell with the masses. Let's keep these great classical works (as well as the genius of Duke Ellington) to ourselves! The music is only for those of us with access to the original 78 recordings. For it is only on these badly worn, physically abused, low, low-fidelity shells that the true character, ambience, and musicality of the original performances live. Only from these can we hear the attack and decay of the instruments, can we get a feel for the soundstage. Yes, from worn-out mono! It's metaphysical stereo!! What does it matter if half of the musical information is covered up with snaps, crackles, and pops and most of the rest is worn away?! The select know the scores by heart. We were there, spiritually. Why, we don't even need the 78s!
Not when we have the finest ambience synthesizers built right in!!"

So, keep up the good work and... good listening!  
Stephen F. Williams  
Bartlett, TN

Music in the Last Days

Editor:
Richard Lehnert's review of Wagner recordings in the July issue made very interesting reading. However, the statement that all theaters throughout Germany were closed at the end of August, 1944, is not quite accurate. According to Albert Speer's memoirs (Inside the Third Reich, Memoirs by Albert Speer, Macmillan Co., New York, 1970, p.463), the Berlin Philharmonic Orchestra gave its final public concert a mere 18 days before Hitler's death. I quote from the book: "Early in April 1945, Gerhart von Westermann, the general manager of the Philharmonic, informed me that on Goebbels's order the members of the orchestra were to be conscripted in the last call-up for the defense of Berlin. I telephoned Goebbels and gave all the reasons why the musicians should not be drafted into the People's Militia. The Propaganda Minister reproved me sharply: 'I alone raised this orchestra to its special level. My initiative and my money made it what it has become, what it represents to the world today. Those who come after have no right to it. It can go under along with us.'

"Remembering the system Hitler used at the beginning of the war to save favored artists from being drafted, I had Colonel von Poser go to the draft boards and destroy the papers of the Philharmonic musicians. In order to give the orchestra financial support as well, my Ministry arranged a few concerts.

"'When Bruckner's Romantic Symphony is played, it will mean the end is upon us,' I told my friends. That final concert took place on the afternoon of April 12, 1945. The Philharmonic Hall was unheated and everyone who wanted to hear this last concert in the imperiled city sat huddled in overcoats. Electricity was usually cut off at the hour of the concert, but for this one day I ordered the current to be kept on so that the hall could be lighted. The Berliners must have wondered. For the beginning I had ordered Brünhilde's last aria and the finale from Götterdämmerung—a rather pathetic and also melancholy gesture pointing to the end of the Reich. After Beethoven's violin concerto came the Bruckner symphony, dear to me especially for its architectonic final movement. That was the last music I would hear for a long time to come."  
Bernard A. Engholm  
Carlsbad, CA

A fascinating—and true—story, but my statement stands: even in the brief excerpts of Speer's memoirs quoted by Mr. Engholm, it's obvious that these were special concerts. The rest of Germany's theaters remained closed.
—RL

Taking offense

Editor:
I have been a satisfied subscriber for several years. I would certainly like to have a complete system of Class A components, but my current system and budget force me to live a Class C-D musical lifestyle. Yes, of course I enjoy reading and dreaming of $4000 amps, but I must say I share the enthusiasm of many current and past readers in my desires to see more reviews of products in the $500-$1000 price range (though, unlike some dissatisfied dreamers, I will not cancel my subscription!).

However, I must take offense to and say I am disturbed by a comment on p.94 of the July issue by James Stoneburner. Though I can not afford $8000 speakers, I believe JA, JGH, and (maybe?) ST can, but I have never read, in six or seven years, a comment by them or any other writer such as..."...my days of staying within a budget are long past." C'mon, Snob Stoneburner, perhaps there are those who are as ecstatic about your financial independence as you are, and some such as myself who are even slightly envious, but is it really necessary to flaunt it—the IRS may catch on!

A correction is in line re: Miles Davis on p.176 of that same issue. During the 30 years that RL contends Mr. Davis did not record a soundtrack, he certainly did. I have in my possession the soundtrack recording to Jack Johnson, music by Miles Davis, Columbia Masterworks S 30455, recorded (if my memory serves me correctly since my Schwanns are packed away and the album has no date on it) just after his progressive Bitches Brew era.

And to all of you who are intolerant of others' tastes in music—lighten up! Chill out! King Crimson and Frank Zappa are my two favorites, but I won’t deny that “Take Five” is one of the masterpieces of modern music, or that Scheherazade may be the most beautiful, or at
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the least the most romantic music in the past 1000 years! If you rock'n'rollers say classical is boring, well, you've never given it a chance. If you hardheaded baroque lovers think rock stinks, well, next time you're in an elevator just listen: 90% of the easy-listening tunes today are the songs of the Beatles and Simon and Garfunkel. Maybe you don't like it, but, as Danny & the Juniors said 35 years ago, "rock'n'roll is here to stay!" And you heavy-metal lovers—hey, Beethoven and Bach have been around a few years and they're not going away too soon! So hey everybody, dig it? Mellow out, go with the flow, and just have a nice day. Enough!

Brad Berman
Naples, FL

You're right, and my back's still raw from self-flagellation after I let that one slip by. I even own a copy of the Jack Johnson soundtrack! Brain damage from too much high-volume We Want Miles. Mea culpa.

—RL

OK, one more letter

Editor:
Having read Mr. Evans's reply (July '89) to my earlier letter (April '89), I was left wondering if he had read the letter which I thought I had written. Given his intensely negative reaction, I feel I have failed to properly communicate my thoughts about certain "elitist snobs" among the lovers of classical music. I will try to clarify my position here.

My initial letter was written in response to a letter from Mr. Peter Reichelt (January '89) in which he asserted that rock music is "childish" and "frivolous" and broadly claimed that it is of such inherently poor quality that using high-end equipment to play it is a waste, and that it is therefore totally inappropriate for testing audio equipment.

It was Mr. Reichelt's equating of classical music with "maturity" and rock music with "frivolity" which propelled me to complain about "elitist snobs." That is not to say that people who prefer classical music are elitist snobs; the snobs are those who boldly assert as undeniable truth that only classical music is good and that all other music is bad. My point is that while stating a preference for a particular kind of music is fine, such heavy-handed moral judgments are totally inappropriate and offensive. In point of fact, I happen to like classical music—about 20% of my collection is classical. Mr. Evans's backhanded insults regarding my knowledge and appreciation of classical music are made in ignorance and are not appreciated.

Mr. Evans apparently misunderstood my point regarding the auditioning of audio equipment. I appreciate that he uses only classical music for auditioning because he is familiar with it. Of course you should audition equipment with music familiar to you. However, that does not translate to the belief of Mr. Reichelt and J. Gordon Holt that only classical music is suitable for auditioning. Acoustic sources with which you are familiar are the appropriate material, whether that source is symphonic, Andean folk, Indian sitar, etc. As far as rock & roll is concerned, while I do not deny that there are many recordings which wouldn't be particularly useful for testing purposes, I maintain that there are a number of recordings which use acoustic sources that are suitable for auditioning.

I hope I have made these points clear: 1) any form of musical expression is valid; 2) differences in preferences are merely that—they are not a basis upon which to judge others; 3) any acoustical source is a useful tool in determining the fidelity of audio equipment. I urge Mr. Evans to reread my original letter more carefully.

Thomas C. Willett
Atlanta, GA

Adcom problems

Editor:
I am writing concerning the Adcom GCD-575 CD player and what appears to be an unusually high failure rate. Although Sam Tellig (Vol.12 No.3) and Peter Mitchell (Vol.12 No.6) both considered the Adcom to be a best buy at its price, there seem to be some indications that this CD player may have a rather short operational life span. In the March 1989 issue (Vol.12 No.3), Lewis Lipnick mentions experiencing sonic problems with this player and had to have it replaced. In the July issue (Vol.12 No.7) it was noted that the 575 used for JA's amplifier listening tests at the High End Hi-Fi Show "didn't want to play" and had to be replaced. I am now on my second GCD-575 due to sonic problems that developed in my first unit.

I've contacted Adcom customer service regarding possible problems with their player but, not surprisingly, did not receive an acknowledgment that these players were failing at an inordinate rate. The company did convey
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—Lewis Lipnick
Stereophile Vol. 12 No. 3
March 1989

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International Audio Review #53-54

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to Sam Tellig in his column (Vol. 12 No. 3, March 1989) that a production upgrade had been undertaken, which might indicate a possible attempt to rectify problems with this player. In any event it appears that, unless the examples I’ve noted above are merely isolated cases (there are also rumors regarding this player’s integrity), you may be recommending a potentially defective product to your readers.

I am sure it would be greatly appreciated by many of those readers (especially me) if there is any information you may be aware of concerning reliability problems with this particular CD player.

**Dennis L. Chase**  
New Cumberland, PA

Peter Mitchell tells me that he hasn’t had any reliability problems with his sample of the GCD-575. However, we forwarded a copy of Mr. Chase’s letter to Newton Chanin at Adcom. His response appears in this month’s “Manufacturers’ Comments.” —JA

### The best listening room?

**Editor:**

Which is the best listening room to accurately evaluate audio components and recordings and why: a) an anechoic chamber, b) a Don Davis LEDE room, c) a domestic living room? And I mean correctly dimensioned ones.

I dislike recordings made in an anechoic chamber (eg, Denon’s extra-dry CD), but I think Mercurys and EMIs and Ambisonic recordings (especially if the UHJs are played through several speakers) will sound fine in the anechoic room.

Any comments?

**Yip Mang Meng**  
Singapore

I am sure that many will rise to their feet, shouting “Good Grief” or some such extreme expletive, but I do not bold with the commonly accepted wisdom that a Live-End/Dead-End listening room, with the speakers at the dead end and the listener at the live end, is the optimum playback situation. Maybe if you are a recording engineer, a case can be made for listening in an LE/DE or even an anechoic room on the grounds that you need to be able to hear every little detail. But for musical enjoyment from two-channel playback, it is more important, in my opinion, that the room be reasonably live across the entire audio band, though without flutter echo and obvious standing-wave honks. It is also paramount that the speaker have no nearby plane lateral surfaces to provide image-destroying early specular reflections; this the LE/DE room certainly does arrange, but in too gross a manner, I feel.

My reasoning is twofold. First, the dead end of a typical LE/DE room will only be really dead in the midrange and above, leading to a room reverberant field that has insufficient treble energy and a rather lifeless sound. Second, the speaker designer, unless he be Brian Cheney of VMPS, will not have done the final “voicing” of his design in either an anechoic chamber or an LE/DE room, but will have probably used a more typical room, as described above. The tonal balance of the design will therefore take into account some contribution from reasonably early room reflections; to remove these completely will alter the speaker’s sound from what its designer intended.

The subject is an important one, and I intend to publish more on it in future issues. In the meantime, if I have stood on your listening room’s toes, write in and let me know. —JA

### Do we censor pro-PBS letters?

**Editor:**

Why should Stereophile, a magazine devoted to high-quality audio (and video), publish only anti-PBS letters [following Jack Hännöld’s “As We See It” on PBS funding in April]?

Is not PBS high-quality radio and television? Does not PBS bring great concerts and events from all over the world into your living room in audiophile quality picture and sound to those who have bothered to obtain a really great radio or television?

Does not PBS set the standard for quality programming?

And are not the best shows copied by commercial broadcasters when they can?

Does not PBS save us from imaginative commercial FM stations with Guns ’n Roses or Def Leppard with maybe 3dB dynamic range shouting tasteless commercials?

And has PBS broadcast Howard Stern?

(I believe that our own local PBS station once monopolized the airwaves with a program called “On The Way Home,” which I believe evolved into the current PBS news format.)

I have sincere doubts that anyone in America does not get his tax money’s worth from PBS broadcasts. Private funding for PBS is not very efficient, and those who should and can give often do not. (Cable provides no money for
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essential

"Letters:" support
omission
issues,
PBS.) But Michael K. Stahls from Salinas, CA ("Letters," July), complaining about the inanities of PBS, was especially offensive. Mr. Stahls' suggestion that "taxation is legalized theft" is even more inane than he claims PBS to be!

PBS is theft, when paid by taxes? Yet the construction of freeways in Salinas, funded in part by those of us out here in Ohio, who may never drive on them, is not theft?

The real issue, the proposal for a new tax to pay for PBS, in this era of no new taxes, was not discussed. "Revenue enhancement" must no longer suffice as a deceptive word. Now it is to be "user fee," as in "catastrophic care surcharge fee" or "radio fee." These fees are charged like a tax and collected like a tax by those very people who collect taxes, yet it is proclaimed not to be a tax!

If this canard looks like a duck and quacks like a duck, I say it is a duck! Or should one duck the issue?

I do not like a new tax on radios or advertisers, since there is more than enough money in the general fund to pay for public radio and TV. A radio tax will provide new radios that come in parts that are not radios until they are plugged together to avoid the tax, or radio kits.

Surely a country that proclaims itself to the world as the richest nation can afford a broadcast system that nations we claim to be poorer can afford?

Donald Bisbee
Columbus, OH
As an enthusiastic supporter of PBS—I quickly reach into my pockets come pledge time if only in the vain hope that our local station will cease interrupting excellent programs all the sooner—I was surprised that every one of the letters we received on the subject was anti-PBS. I can only assume that everyone assumed that everyone else would write in to support PBS, therefore they didn't have to—
the Confidently Apathetic Liberal phenomenon.

—JA

A misstatement & an omission?

Editor:
I am writing to correct a misstatement and an omission occurring in the June and July 1989 issues, respectively. In the former, JA's assertion on p.153 that, when using the Quad ESL-63 US Monitor speaker "to get full HF measure for a normal listening position, it will therefore be essential to use stands," going on to recommend the Arcici stands which raise the speakers some 14" from the floor—thereby creating a serious decor problem for many users—is incorrect. The desired performance can also be obtained by using the speakers on the floor, tilting them backward using small blocks of wood. For many readers, I suspect, this consideration could make the difference between choosing or not choosing this particular speaker. While bass performance in some rooms may be improved by using stands, this will not be the case for all rooms.

In the July issue, TJN reviews the Grado MM cartridges but does not mention a serious incompatibility problem that exists with certain turntables such as the Linn Sondek. I recently purchased a Grado Signature cartridge which, although producing fine sound, gave a noticeable hum that increased in volume to the point of unacceptability as the stylus approached the center of the record. Switching off the turntable motor entirely eliminated the hum. The pickup manufacturer advised me that these cartridges may indeed hum with this turntable, implying the design of the latter was at fault. Audiophile Systems, importer of the turntable, took the position that the Grado cartridge lacks the necessary and expected shielding to prevent hum pickup with certain turntables. Thus a warning to potential users of this combination appears very necessary!

Steven Paradis
New York, NY
As far as I am aware, Grado owners do still need to take care when choosing a compatible turntable due to these cartridges' lack of electromagnetic screening. As far as Mr. Paradis's assertion that I was wrong about the need to use the Quad ESL-63s on stands goes, yes, his suggestion about tilting the speaker will ensure that the listener gets a full measure of high frequencies if he or she would otherwise be sitting above the speaker's optimum axis. But the main reason to use stands is that the proximity of the boundary to the radiating panel when the speaker is used directly on the floor gives rise to an excess of upper-bass energy (due to constructive interference), which is then isolated by a corresponding dip in the lower midrange (due to destructive interference). The response through this frequency region becomes smoother, to the benefit of the music, when the speaker is used on a good stand. Indeed, when I was fortunate enough to hear the pre-production prototypes

Stereophile, October 1989 19
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of the ESL-63 in Peter Walker's laboratory in Huntingdon, England, back in early 1981, "P.J." demonstrated the speakers sitting on wooden chairs, using a broadcast concert of, if memory serves me correctly, a sonata for cello and piano. He explained that raising the panels away from the floor enabled the speakers to perform at their best, but that in Quad's opinion, consumers would never buy the ESL-63 if told that it had to be used on a suitable stand. I guess that Mr. Paradis's reaction proves Mr. Walker correct in this assumption.

—JA

Say What?
Editor:
I am sure you will not have the courage to print this letter, for that would take a certain amount of editorial character and fortitude that I am sure you do not possess. I do not doubt that somewhere along the line, either sooner or later in the editorial process, the decision will be made to silence my voice and censor this epistle, whether it is made by the editor himself or by the ultimate censor, the publisher. You know, our forefathers fought numerous wars, died numerous deaths, and suffered numerous painful and debilitating wounds so that the First Amendment and the freedom of expression protected thereby could survive in this troubled world; but it takes only one narrow-minded editor or publisher to halt the free flow of ideas and stifle diverse viewpoints. That is why I am sure this letter will never see the light of day in your August publication.

Nambeir Cram
Washington, DC

Actually, I wasn't going to publish this letter, but then a) feeling that I was being subjected to some sort of test, and b) noticing that Mr. Cram's name spelt backward coincidentally is the same as that of Marc Richman, a DC-area audiophile who has often written to Stereophile in the past, I decided to. After all, letters from a number of frequent correspondents are included in this month's collection and I wouldn't want to have left Mr. Richman — sorry, Mr. Cram — out. But don't write in to complain.

—JA

Wrong Price!
Editor:
I was quite favorably impressed by Guy Leme-coe's review of the AR ES-1 turntable which appeared on p.138 of the August Stereophile. At the quoted price of $684.90, I decided that the time was ripe to replace my vintage 1969 AR XA turntable. However, when I called Audio Advisor to place my order, I was disappointed to learn that the cost of the components as reviewed was actually $884.90.

According to "Dave" of Audio Advisor, the difference of $200 resulted from Stereophile's error. He pointed out that AA's ad on p.164 of your August issue gives a price of $694.90 including armboard but excluding cartridge.

At just under $700, I'm ready to buy this turntable, but $900 is just high enough to make me pause. I invite your comment.

Michael A. Kilgallen
Brooklyn, NY

There must have been some kind of mix-up when Richard Lehnert phoned The Audio Advisor to check the current price of the AR ES-1. AudioQuest PT-5/AudioQuest Ruby combination, as he does with every component reviewed. It appears that he was given the wrong figures — see "Manufacturers' Comments" elsewhere in this issue. I apologize to those readers, like Mr. Kilgallen, and to reassure them, I feel that the combination is still worth the actual price of $884.90. Buying a good turntable set-up in these latter days of the LP is still one of the better decisions you can make — how else are you going to play your copy of the Stereophile flute and piano recording?

—JA

One point for Bob
Editor:
Carver repaired and added updates to my CD player that was one year out of warranty — for no charge!

One point for Bob.

Jim Herr
Micanopy, FL

One point for Wadia
Editor:
I recently purchased a Wadia 1000-64 outboard DSP. The unit sounded wonderful (even my "tin-ear" friends loved the unit)! Unfortunately, it had a small reliability problem which was triggered by high ambient temperatures.

I called Wadia, and surprise! I received the best support I have ever encountered from any company, anywhere. Dave Feyerreiser's assistance was courteous and extremely professional. Once they had received the unit, Wadia

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21
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provided an accurate description of the source of the problem (a highly unusual one), which to an engineer like myself was sweet music indeed (how many times have you received completely ridiculous answers from incompetent support personnel?).

Wadia's staff even went to great pain and expense to make sure they were able to match the date of the unit's return to my demanding travel schedule. Even the repair turn-around time was fantastic; my unit was back in my hands in just over a week!

I prefer not to have a problem with a unit, but random failures are facts of life. Wadia's commitment to quality clearly extends not just to their excellent product design, but also to their support infrastructure. The commitment and performance of the Wadia employees have convinced me that this is a company I will happily do business with again.

Thank you, Wadia!

Dan Clark
Portola Valley, CA

Do audiophiles enjoy music?
Editor:
The more I read Stereophile, the more I am convinced that I am not an audiophile. After reading John Atkinson's evaluation of the San Francisco Hi-Fi Show amplifier test, I'm sure!

When I listen to music, I am not looking for ultimate accuracy in reproduction. I am anxiously awaiting an emotional experience. For me, the difference between an Adcom and a VTL amplifier will not affect how I feel about the music. Sure, there is a point where component performance is so poor that you are distracted from the music, but Adcom vs VTL will not make or break my emotional response.

I had a roommate in college who I guess you could call an audiophile. Every night after dinner, he would slowly approach his system, lay his hands on it, and stare at it as if in worship. When he played music, I was never sure if he was enjoying it or merely evaluating the system's performance. When we talked about music, he talked about the components, not about the emotions he experienced while listening.

I'm not really trying to make a point here; I'm just wondering how audiophiles feel about music. They must love some aspect of it. But I wonder if there is a point where the "musical experience" becomes less important or somehow obscured due to unnecessary concentration on the system's reproduction of an event. All I know is that live concerts can make me smile, they can make me cry, and they can give me goosebumps all over. When I want to feel that way again at home, the memories of the performance coupled with a decent recording and playback can elicit the same emotions.

Paul Gowan
San Jose, CA

Listening tests & frequency response
Editor:
I've just been reading your and Will Hammond's joint blind listening report in the July Stereophile. As you say, this will probably be sniped at regarding small points of methodology, but overall it seems fine to me. However, I write to offer one suggestion and one comment.

My hunch is that you have probably put your finger on the essence of the perceived differences in terms of frequency responses at the speaker terminals. I guess that this was not revealed in those 1978 HFN/RR tests either because the Quad and Naim amps offered similar source impedances, or because there were two few sessions and listeners to throw up statistically useful data. Anyway, since the whole phenomenon arises from an erratic speaker impedance curve, I wonder what would have happened if you had simply paralleled each speaker with an 8-ohm resistor— or, better still, made up a network of three tuned accepter circuits to offset the three impedance humps, giving a much more nearly flat curve. This would be quite legitimate, as there are loudspeakers around which do offer a fairly flat impedance modulus, so no one could complain about unfair loading.

My other point concerns the relative uselessness of the percussion recording in revealing differences, which I would have predicted. Gilbert Briggs showed many years ago, at his famous Royal Festival Hall demonstrations, that one can get away with murder when it comes to bangs and crashes. He had a recording of clanking chains and other noises on a tugboat which invariably brought the house down with its "realism," even though he admitted that it drove the system well into distortion. Sustained tones, be they vocal or instrumental, allow the ear time to assess what is going on, but drum and cymbal strokes (assuming no actual hard
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clipping) have gone almost before they arrived. They may be fine for revealing loudspeaker transient defects, but not, I suggest, the elusive subtleties of good amplifiers. John Crabbe
London, England

Listening tests & musical detail
Editor:
Your report on the listening test at the recent Stereophile High End show led me to wonder whether it might not be useful to play the first test component, amplifier "A," twice. Is it not possible that when the same amplifier was used on both runs, people heard what they thought to be differences, but actually only perceived details in the music, of which they had not been aware the first time around? This solution might also be at least a partial answer to John Iverson's suggestion (July 1989, "Letters," p. 30) to have a "learning phase," so that people are more aware of "what to listen for."

Peter Aizupitis
Arlington, VA

Listening tests & source variations
Editor:
In reading your report on amplifier comparison testing ("Blind Listening," July '89), I was struck by the fact that about 62% of listeners heard a difference when hearing the same amp, which is very close to the number that heard a difference when in fact the amps were different. Could this mean that what was heard was not amplifier differences, but source differences? You seem to have assumed that playing and replaying a CD will yield an identical signal. Is it not possible that due to error correction, interpolation, disc-reading errors, etc., that no two digital/analog conversions of a selection will be quite the same, and that an audibly different result can occur?

John Fare
Sepulveda, CA

Listening tests & flawed methodology?
Editor:
Your blind listening test had a serious fault. The Hafler preamp would have introduced all kinds of ground which would seriously weaken the purity of the signal presented to the tube amp. Your small amount of comment as to which is the better amp could not possibly be determined with such a flawed setup. If you had a better preamp, maybe 90% of the people could have correctly identified each amp.
I hope you do a lot better next time.

Gil Lytton
Los Angeles, CA

Listening tests & skilled listeners
Editor:
Regarding your blind listening experiment reported in the July 1989 issue, I believe that you have made a major step forward in research strategy without quite recognizing it. Your key finding is that of individual differences among listeners in ability to discriminate between amplifiers. As I see it, there is no more reason to expect that everyone can discriminate the sound of one good amplifier from another than there is to think that everyone can tell the difference between a masterpiece and a merely competent artwork. The ability to make subtle sonic distinctions may be a reflection not only of training and experience, but also of constitutional differences in perceptual acuity and musical talent. It is safe to conclude that additional studies of large groups of unselected listeners would be a waste of time.

Thus the identification of "golden-eared" listeners should be the first step in research. Having identified this small minority through blind tests (with replications to winnow out those who scored high by chance), the more interesting second step in research could begin. The golden-eared group could be given a wider range of amplifiers to compare, and their preferences could be studied in addition to their same/different discriminations. Their qualitative comments about a range of amplifiers would also be of interest. It is likely that there would be substantial individual differences in preferences among golden-eared listeners, despite their shared ability to make subtle discriminations; these differences would also be worth studying. This two-step research project would be extremely time-consuming and costly, but what significant research is not?

As always, "more research is needed," but one implication of existing research is clear. Ideally, prospective consumers who are considering investing substantial sums in equipment should have an opportunity to put themselves in the test in a blind listening situation. They should determine beforehand if the gold...
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in their ears is commensurate with that in their wallets. While the majority of buyers risk wounding their egos by failing to qualify as “golden-eared,” they can at least have the satisfaction of counting their unspent money. Sadly, dealers would have more to lose than to gain by offering customers this opportunity. Perhaps such a situation could be established in Santa Fe—always a nice place to visit!

Jon G. Allen
Topeka, KS

Listening tests & discerning listeners

Editor:
I think JA has shed some useful light on the continuing and vexing blind test debate, but I don’t quite accept his hypothesis, as stated, that a blind listening test can conceal subjective differences. How then to explain the ability of participants with golden ears to hear those differences with very few errors, even in such tests?

Two things seem clear: that the ability to discern these differences is a learned skill, and that blind testing, as described, impedes that skill. Those of us whose work demands the evaluation of high-end products know that many audiophiles, even those outside the trade, clearly hear differences among amplifiers through extended listening, as in home evaluations, and generally agree in their descriptions of those differences, given the looseness of our language in these matters.

Why should this be surprising, or dismissed by those who don’t hear them? How many artists or art dealers can choose, visually, the Rembrandt for the fraud? Who, but a violinist who has lived with one, can tell the Strad from the good copy? It takes time and practice to make fine distinctions.

Nor should the fallacy of the A-B test be surprising. Perhaps the most basic function of the brain is to seek and sense differences. (Did something just move in the leaves? Does that clamor of birds suggest the presence of a predator, or just a nesting dispute?) The second time we read a novel, see a movie, hear a piece of music, listen to a new record, the experience is clearly different from the first time.

I think the most significant aspect of his data, as JA suggests, lies in the vastly greater error in indicating a difference where none existed than in failing to mark a difference when there may have been one. His instinct was right in offering two warm-up trials before going on with the test, but I think that’s not good enough. Let me suggest an experimental format for further exploration of this question: Choose as test items a variety of two-minute musical excerpts, chosen for some aspect of their clarity or detail. Tell the participant that each item will be played three times without change, with ten-second pauses between repeats, and then, after the third pause (allowing enough time to switch amplifier outputs), the fourth play may be the same or different. I expect that while there will still be a tendency to err toward false differences, the results will have generally greater significance, and should provide, at least, a basis for selecting a panel of listeners with sufficient aural acuity to move on to the sticky business of making qualitative judgments between amplifiers.

Jerry Landis
Berkeley, CA

Listening tests & variable listeners

Editor:
I would like to add a comment to the conclusions drawn on your recent amplifier comparisons as reported in “Blind Listening” published in the July Stereophile. I have read several reports on blind amplifier comparisons and have observed that the issue of the relative performance of different test subjects is often treated in a tentative or delicate way. For example, in your recent article, you comment (with apparent surprise) that over half of the test subjects did not do well, even though all are keen audiophiles. You offer poor listening conditions and lack of experience with concentrated listening as possible reasons for this result. While I agree that conditions and training will affect the scores of an individual, it is my experience that sensitivity to sound quality varies widely with individuals. This sensitivity does not seem to be learned. Some non-audiophiles that I know have it, and some audiophiles do not. Involvement with the field of audio does not seem to be a predictive factor for this.

If I am correct that sensitivity to sound quality varies widely with individuals and is based primarily on innate talent rather than experience, then why is this situation not more widely recognized? Are we concerned that, to be valid, our field of high-end audio has to be appreciated by the population at large; that, to be
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For Those Who Care to Listen
worth achieving, the differences in the sound of amplifiers must be acknowledged in a democratic fashion? Are we perhaps reacting to the charge that to hear a difference you would need "golden ears," implying an elitist or status-seeking stance? May be the next time a friend questions our interest in a high-performance component and says, "Gee, I'm sure I wouldn't be able to hear any difference," and we are about to respond in the usual way with: "Oh no, the differences are significant, anyone can appreciate them," we should answer instead: "Well, not everybody does hear the difference."

Thank you for pursuing research/educational topics in audio. I attended JA’s demonstration on recording techniques at Stereophile's 1987 New York show and found it very informative.

Dean Fuller
Waltham, MA

Listening tests & audible differences

Editor:

Thank you for trying blind amplifier testing. I fear you have let the statistics unduly influence your conclusions; 52.3% vs 50% is a small but statistically significant difference. It does not follow therefore that there were only slight audible differences. The differences could have been profound but only recognized by a few listeners.

Let me suggest a two-stage approach to analyzing this data. Consider some of the selections as subject qualification trials. Use them to identify qualified subjects. Then analyze the performance of the qualified subjects on the remaining selections. My guess is that you will be able to show strong audible differences in a sizable subset of your subjects. These differences appeared small only when diluted by the larger pool of subjects. Furthermore, I will argue that this methodology is sound because, under the null hypothesis, performance across trials should be independent. (If you do reanalyze the data, please use an exact test of its significance.)

Harry Lewin
Bronx, New York

Listening tests & unconfident listeners

Editor:

One of a deluge of letters you're probably getting about the single-blind amp comparison at the Stereophile High End Show:

1) Since 30 of the 56 presentations involved different amps, isn't it true that if all subjects responded "different" to all presentations, then the rate of correct identifications would be 53.6% (i.e., 100% x 96%), suggesting erroneously that differences were indeed heard? If audiophiles do tend to say "different" more frequently than "same," then this would influence your test results in a similar—though less extreme—manner. Or am I misunderstanding the conclusion you seem to draw in the footnote on p.17 of the July issue?

2) If the aforementioned audiophile tendency accounted for the difference between the success subjects had for A-B or B-A comparisons vs with A-A or B-B comparisons, then perhaps one could conclude that, when faced with the HFN/RR drum track, audiophiles lose confidence and begin to guess "same" and "different" with equal frequency.

3) Is it possible that subjects must identify in their minds the identity of the amp during each presentation in order to be able to compare relevant performance parameters, in contradiction to your suggestion on p.8 that the "same"/"different" choice doesn't require this sort of identification? If so, then you could make the blind test easier for the subjects as follows: First describe the nature of the subjective differences existing between the two power amps to the subjects, so they know what to listen for. Second, for each paired presentation, inform the subjects of the identity of the amp playing during the first presentation. Thus subjects need only guess whether the second (unidentified) presentation is the same as the identified amp, or is the other amp. This is still a valid blind test.

4) Next time, run the high-scoring subjects through the test a second time to see whether they are simply "lucky coins" or truly skilled listeners.

Ralph Gonzales
Wilmington, DE

Listening tests & biased listeners

Editor:

Congratulations on your recent amplifier listening test. This was, by far, the best audiophile-related blind test I know. The "forced choice" of a response of "same" or "different"—regardless of "better," "sweeter," or other adjectives—prevents many potential issues from clouding the results. The sheer number of samples
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 best conventional loudspeaker of the decade!"

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makes the results statistically compelling. There was obviously a great deal of care and forethought in setting up the trials.

Thank you for publishing so much of your data—unlike the blind listening tests of, say, Stereophile Review, having all of the data allows us to gaze at the numbers and think. Thinking about these numbers, I was startled to realize that Table 2 on p.15 implies a false-positive rate of about 62%. A false-positive is when the subject reports hearing a difference when the trial consists of two聆听ings to one amplifier. I had assumed that the same music played through the same amplifier would sound the same and that the subjects would report “different” only if they heard a difference, hence I expected a false-positive rate of zero.

An explanation for the high false-positive rate is subject-bias. Indeed, JA quoted a listener as saying “You have to care about whether there is a difference or not.” Caring may be reflected in biased responses. The effect of listener bias on the results is dismissed in footnote 9 by what I consider handwaving, and footnote 8 describes a Chi-squared test that supports the audibility of differences in amplifiers with respect to guessing “different” 50% of the time. If the subjects are guessing “different” more than 50% of the time, and by chance, more than half of the trials use two amplifiers, then the expected results would show more than 50% of the responses are correct. For example, if subjects guess “different” 90% of the time and “same” 10%, and the trials have two amplifiers 90% of the time, the expected true-positive rate is 90% x 90% = 81%, and the expected true-negative rate is 10% x 10% = 1%, for a total expected correct-response rate of 82%. Thus, a correct-response rate of more than 50% does not necessarily show audible differences—the success rate must be significantly more than the expected success rate due to (possibly biased) guessing. According to Table 2, there were 1134 + 758 = 1892 trials with different amplifiers, and 823 + 815 = 1638 trials with the same amplifier; thus, about 54% of the trials involved different amps. Thus, the question is: Are the results explained by biased guessing or is the success-rate significantly greater than would be expected by biased guessing?

The best estimate we have for listener bias is the false-positive rate: it should be zero, but Table 2 shows it to be 62% (that is, the number of incorrect A-A responses and B-B responses divided by the total number of “one amp” trials). Repeating the Chi-squared test mentioned in footnote 8 with a probability of guessing “different” of 62% (rather than 50%) and a probability of guessing “same” of 38% (rather than 50%) yields a Chi-squared statistic of 3.16, which is within a 95% confidence interval; that is, the results are most likely due to biased guessing.

The wealth of published data allows a deeper analysis: as there are two variables of two values (a “different” or “same” response, and “one amp” or “two amp” trial), a Chi-squared test with three degrees of freedom can be computed. If the results are due to biased guessing, the probability of a true-positive is the probability of guessing “different” when the trial has two amps: 62% x 54% = 34%, the probability of a false positive is (100%-62%) x 54% = 20%, true-negative = (100%-62%) x 46% = 17%, and false-negative = 62% x 46% = 29%. The Chi-squared statistic for these probabilities and the responses from the tests is 2.78, again within a 95% confidence interval.

In short, the data from the Stereophile blind listening test are most likely to be due to biased guessing rather than audible differences between amplifiers.

I don’t necessarily like this conclusion—I have my biases, including a belief that some people can hear better than others. Such exceptional individuals may not be readily obvious from tests with a small number of trials per person, but such tests can be used to find people who are either able to distinguish between the sound of amplifiers or are “lucky coins.” As such, I am disappointed by Michael Fremer’s reluctance to continue with certain double-blind listening tests: we can conclude that either he is lucky or he can hear better than most people, and a few dozen additional blind trials would (probably) make clear which.

Kevin Willoughby
Framingham, MA

Listening tests & statistics
Editor:
As an experimental psychologist, I was glad to see an attempt to apply some of the methods of my science to the issue of audible differences among amplifiers (“As We See It,” Vol.12 No.7). While you did a great many things right in setting up this experiment, there are some seri-
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ous flaws in your statistical analysis which have important implications for interpreting your results.

The basic problem is that your respondents were (as you sort of acknowledge in your footnote on p.17) biased to respond “different”—i.e., that they could hear a difference between the amplifiers being compared. In fact, it can be calculated from your Table 3 that 2228 (approximately 63.1%) of the responses were “different.” Given this fact, and the fact that overall the amps really were different on 53.6% of the trials, the expected performance by chance can be calculated as approximately 50.9%. (This calculation is based on the assumption that only the bias to respond “different,” and not the actual situation, determines responses. The number of correct responses expected by chance is then 0.631 (the expected proportion of “different” responses) x 1892 total “different” trials, plus 0.369 (the expected proportion of “same” responses) x 1638 total “same” trials. (The result of this calculation is about 1798, or 50.9% of the total.) This may seem like a small variation from your assumed chance level of 50.0%. In fact, however, the overall percent correct of 52.3% does not differ significantly from the correct chance level of 50.9%. (The Chi-square with one degree of freedom is approximately 1.34.) Therefore, the data do not show a statistically significant tendency to discriminate between amplifiers—Larry Archibald’s comment (footnote p.17) is right on the mark.

A second comment concerns the so-called “differences between ability to distinguish amp difference and ability to determine sameness.” This apparent difference is simply an artifact of the bias to respond “different.” As the calculations above show, the expected (by chance, given the overall bias) levels of performance for “same” and “different” presentations are 36.9% and 63.1% respectively—indistinguishably different from the obtained levels of 38.3% and 64.4% (Table 3). Thus, any “caviling about test conditions” might be rejected, but not on the basis of this huge apparent difference.

A third (and final) comment concerns differences among the musical selections. While I have not done any detailed calculations like those above for the individual selections (this seems likely to be futile, given the reduced statistical power when using just part of the sample), note that the bias to say “different” varies substantially—as percent correct for “different” goes up, the percent correct for “same” goes down. What may be really going on here is simply this: Audiophiles believe that some types of music are more likely to reveal differences than others, and adjusted their response biases accordingly.

The upshot of all of this is that your data do not demonstrate audible differences between the amplifiers tested, under the conditions arranged. In statistical terms, the null hypothesis of no difference cannot be rejected. However, it is important to note what this conclusion (and the preceding argument) does not mean:

1) It does not mean that your respondents were deliberately biased to respond “different”; 2) It does not mean that the null hypothesis of no difference is true—simply that it cannot be rejected with an acceptable degree of probability on the basis of the current data; and 3) it does not mean that the gist of (most of) the admirable restrained conclusions on p.20–21 are incorrect. I suspect the main lesson of this exercise in fact is just how difficult methodology for this kind of research really is.

By the way, I believe that there are real audible differences among amplifiers—though I’ll probably never be able to afford most of those reviewed by Stereophile.

Rich Carlson, Ph.D.
Pennsylvania State University
University Park, PA

Listening tests & contingency tables
Editor:
I did not then have time to read or analyze the results of your listening test in detail, but I was struck by a certain consistency in the reported results. I copied a few of the key results for later study and offer my analysis for your consideration.

Using the normal approximation of the binomial distribution, I calculate a probability of approximately 0.065% of obtaining, purely by chance, any number of correct responses outside the range 1685–1845 (1765 ± 80) in a total of 3530 trials. Thus, while the proportion of correct responses in the test, \(1846/3530\) or 0.5229, is only slightly greater than 0.5, it has a high degree of statistical significance.

An interesting alternative interpretation can be arrived at by employing a common statisti-
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cal tool: the contingency table. This technique tests for dependence between two classes of variables; in this case, the test stimuli and the participants' responses. The first set of classifications examined is illustrated in the contingency table:

<table>
<thead>
<tr>
<th></th>
<th>AB</th>
<th>BA</th>
<th>AA</th>
<th>BB</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Different&quot;</td>
<td>743</td>
<td>475</td>
<td>503</td>
<td>507 2228</td>
</tr>
<tr>
<td>&quot;Same&quot;</td>
<td>391</td>
<td>283</td>
<td>320</td>
<td>308 1302</td>
</tr>
<tr>
<td>Total</td>
<td>1134</td>
<td>758</td>
<td>823</td>
<td>815 3530</td>
</tr>
</tbody>
</table>

The statistic employed to test for dependence in the contingency table is Chi-squared. The procedure for calculating Chi-squared for a contingency table can be found in virtually any statistics text. Chi-squared for this contingency table is calculated to be 4.581. At the 0.5 level of significance, the experimental value of Chi-squared must be at least 7.851 to permit dependency to be declared in the 2 x 4 contingency table. Using the classifications of the above tale, one would conclude that the responses were independent of the stimuli.

One might reasonably argue that the 2 x 4 contingency table is too demanding and that the stimuli should be divided into only two classes, as were the responses. This classification is tested in the following contingency table:

<table>
<thead>
<tr>
<th>Amplifier</th>
<th>Response</th>
<th>Different</th>
<th>Same</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(AB or BA)</td>
<td>(AA or BB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Different&quot;</td>
<td>1218</td>
<td>1010</td>
<td>2228</td>
<td></td>
</tr>
<tr>
<td>&quot;Same&quot;</td>
<td>674</td>
<td>628</td>
<td>1302</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1892</td>
<td>1638</td>
<td>3530</td>
<td></td>
</tr>
</tbody>
</table>

Chi-squared for this table is calculated as 2.772. The critical value, again at the 0.05 level of significance, is 3.841. Thus, this contingency table also indicates that the responses were independent of the stimuli.

The 0.05 level of significance employed in the above analyses corresponds to a 5% risk of falsely declaring dependence. Other levels of significance could have been selected. A level of 0.05 is commonly employed in research applications and is not generally regarded as highly demanding.

The two contingency calculations described above suggest that the participants in Stereophile's listening test were inclined to perceive a difference between the two test segments of recorded music regardless of the sequence of amplifiers employed. In other words, the responses were independent of the stimuli and reflected a relatively consistent 61–66% bias in favor of hearing a difference. It is unclear whether this consistent bias was personal or pointed to some unrecognized flaw in the design or execution of the experiment. In the light of this interpretation of the results, the statistical significance of the 1846 correct responses in 3530 trials is called into question. A bias toward hearing (or reporting) differences favors correct responses in trials employing two different amplifiers and incorrect responses in trials in which the same amplifier is repeated. In the overall test, the condition of different amplifiers was employed in 1892 3530, or 53.5% of the trials, thus creating an overall bias in favor of correct responses.

While it is difficult to determine, after the fact, the cause of the bias described above, I would guess that it reflects some flaw in the design or execution of the experiment. Specifically, I suspect that it is a consequence of group behavior. The sonic differences which were being evaluated in this test were probably, at best, very subtle, leading to much uncertainty in the minds of participants. It would be reasonable to suspect that there were participants in most test sessions who believed that they heard sonic differences and who, further, telegraphed that belief verbally, by body language or in some other similar manner. I suspect that participants who were having great difficulty detecting sonic differences may have been influenced as much by the behavior of their peers as by the intended test variable. In short, I am suggesting that the flaw in the experiment may have been in conducting the test, in part, as a social event (fun), rather than as a rigorous test (work).

In the absence of a basic flaw in your experiment, the above statistical analysis suggests to me that Stereophile's amplifier test may have neatly pinpointed a key element in the high-end audio business: a propensity (is compulsion too strong a word?) on the part of aficionados to hear differences. It is intriguing to speculate how revealing your test might have been if, for instance, the audiophile's archetypical villain, the deadly Pioneer receiver, had been included. In view of the questionable ability of the participants in this test to distinguish between amplifiers of distinctly differ-

Stereophile, October 1989
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HI-FI Answers, England

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Harry Somerfield
San Francisco Chronicle, San Francisco, CA

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Bill Brassington
The Audiophile Society Journal, Rye, New York

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ent design and measurably different frequency response, the prospect of similarly designed tests of speaker cables, interconnects, CD rings, or other such sonic, though not economic, trivia is almost too delicious to contemplate.

Paul F. Sanford
Portsmouth, NH

Listening tests & compromised results

Editor:
I read with great interest your article on blind listening tests of amplifiers in the July 1989 edition of Stereophile, since this is an area in which I am quite interested. Nothing would please me more than to have a nonsubjective answer to the question: Can you really tell? (I suspect you can tell the difference between amplifiers, but I'd like to be firmly convinced.) I also appreciated the care you took in your testing and the fact that you correctly chose to ask the listeners only to decide whether they could tell a difference between the sound quality of music played on different amps. As you point out, this avoids adding listener preference to the test, which is a significant randomizing factor. I was disappointed, however, in other aspects of the test's construction. While you wisely decided to choose the amplifiers at random and to discard selections in which the same amplifier occurred too many times in a row, you did not symmetrize your test with respect to the number of times the amplifiers were switched and kept the same. This seriously compromises your test results.

As pointed out by Larry Archibald in footnote 9 on p.17, your results indicate that the listeners were strongly biased toward hearing a difference between samples whether or not the amplifiers were switched. This is undoubtedly a normal reaction for any person who is asked to participate in such a test, and such biases must be carefully removed from the results. You argue in the same footnote that you don't think that this affected the results since "anyone answering 'different' to every presentation would still have scored no better than chance, ie, 50%." However, this is only true if there were an equal number of times that the amplifiers were changed and kept the same. This is not true of your test. This is exactly my point!

From the results in Table 2, we can deduce that people selected "different" roughly 65% of the time. If we make this assumption and further assume the listeners cannot tell the difference between amplifiers, then applying this percentage to the data in Table 2 (ie, the number of times A-B, B-A, A-A, and B-B were presented to the listeners), I calculate that the listeners would have answered correctly 51.1% of the time due to this effect alone! This is quite close to your measured result of 52.3% correct answers. While there may still be some evidence that the listeners can tell a difference between amplifiers (since 52.3% is larger than 51.1%), this must considerably reduce the significance of your test.

This same effect may also strongly influence your results concerning which type of music is best to differentiate between amplifiers. As you'll note from Table 4, the music selections that did best were exactly those pieces which had the highest percentage of amplifier changes during the test. Indeed, the drum recording, which you concluded was ineffective for telling amplifier differences, was the only piece for which the number of times that the amplifiers were switched and kept the same were roughly equal! This really seems damaging to your case.

Because of these flaws, I remain unconvinced that listeners can tell a difference between amplifiers. Please don't let this discourage you, however! I'm looking forward to more and better tests. But next time, please be careful to remove this bias by symmetrizing with respect to amplifier changes. By all means, select when to switch amplifiers at random, but ensure that there are as many samples of A-B, B-A, A-A, and B-B in your test.

Richard Peutter
Center for Astrophysics and Space Sciences
University of California, San Diego, CA

Listening tests: a thorough analysis

Editor:
I have read with great interest your article, "Blind Listening," in the July 1989 Stereophile. In view of the importance of the subject, please allow me extended comments on methodology and analysis. Hopefully I am beating the drums neither for subjectivists nor objectivists, but for understanding of the data you present.

For brevity, let D represent "different," and S, "same." D trials refer to trials where the amps were different; D responses, to "different" answers. Similarly for S trials and S responses.

Stereophile, October 1989
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1) Your tests biased the correct-response rate upward, due to having more D trials than S trials, namely 1892 to 1638, or proportions of 0.5360 to 0.4640. It is to be expected for two reasons that subjects in a state of uncertainty on a given trial would be more likely to answer D than S: a) The EC (emperor's clothes) syndrome may cause them to avow something they haven't experienced. Having been told that there are important differences between amps (in price, architecture, etc.), they expect differences and thus are more inclined to respond D than S in a state of uncertainty. b) Subjects, particularly audiophiles, tend to have "pride of hearing" that leads them to believe they hear differences, however subtle; they would rather be wrong in answering D than in answering S. For whatever reason, the inclination to answer D is indicated by the fact that 0.6312 of the responses were D, namely \[ \frac{2208}{3500} \].

When the 0.6312 D response rate is coupled with the 0.5630 proportion of D trials, the expected proportion of correct responses attributable to chance is raised above 0.5000. In your study the expected proportion becomes \[ 0.5360 \times 0.6312 + 0.4640 \times 0.3688 = 0.5094 \]. What is happening in principle can be appreciated by using an extreme example: If subjects always answer D, and if all trials are D, the expected correct-response rate becomes 1.0000. Similarly, if there is a bias toward D responses coupled with a bias toward D trials, the correct-response rate is biased upward.

Your correct-response rate is 0.5229 (namely, \[ \frac{1848}{3500} \]). Seemingly, this is 2.29% above the rate that chance would tend to produce. But, as we have seen, what we may call D-bias produces an expected rate of 0.5094 due to chance. Therefore, your correct-response rate is only 1.35% above what chance would produce (namely, 0.5229–0.5094).

Note that the inclination to D responses would have no effect on the expected correct-response rate if D trials and S trials were equal in number.

2) Allowing for D-bias and using the binomial distribution as the correct probability model (rather than the normal distribution as an approximation of the binomial), what is the significance level of a 0.5229 correct-response rate? Now the significance level is 0.0555 instead of the former 0.0034 (you gave the significance level as "just over 0.001," based on the normal approximation). If one employs the conventional 0.05 criterion of significance, one could conclude that the correct-response rate of your study is not significant, particularly if one is an objectivist.

I don't buy that. It is better simply to state that the significance level is 0.0555 and let the reader make his own judgment as to significance of results (possibly the reader feels that 0.10 is a sufficient criterion of significance). Researcher and reader should recognize that the significance level is appreciably higher than first thought, but still quite low; and that the risk of Type I error (concluding that subjects can differentiate between amps when they really can't) is still a comfortably low 0.0555.

3) The D-bias readily explains why subjects have a higher correct-response rate on D trials than on S trials; that is, 0.6438 to 0.3834 (namely, \[ \frac{1219}{1892} \) to \[ \frac{628}{1638} \]). If subjects are disinclined to answer S, to that extent they are unlikely to have correct responses on S trials. To illustrate by an extreme example, if subjects never answer S, they will have a zero correct-response rate on S trials.

4) The article may give the illusion to some readers that subjects can differentiate between amps 0.5229 of the time. However, one must correct for the fact that chance tends to produce a correct-response rate of 0.5000 (in the absence of D-bias). To exclude the effect of chance, a well-known formula is

\[
\text{ph} = \frac{(p-n)/(1-n)}{\text{when } p > n; \text{ otherwise } p-n = 0}
\]

(\text{ph} \text{ is the correct-response rate based solely on hearing and not on chance; } p \text{ is the actual correct-response rate; } n \text{ is the rate attributable to chance.)}

Therefore \[ \text{ph} = \frac{(0.5229-0.5000)/(1-0.5000)}{0.0458} \]. Thus we estimate that the subjects in your study can differentiate between amps about 4.6% of the time.

Repeating the procedure but this time using 0.5094 as the expected correct-response rate, allowing for D-bias, we obtain \[ \text{ph} = \frac{(0.5229-0.5094)/(1-0.5094)}{0.0275} \].

Altogether, whether we do or do not allow for D-bias, the estimated correct-response rate

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1 For derivation of this formula, see my article in the May 1989 issue of JAES.
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based on hearing alone is unimpressive—either 2.75% or 4.58%. What the statistician calls "effect size" is quite small, possibly trivial in the view of some persons.

5) Your study shows that 0.2733 of the subjects had above-average correct answers, namely 5, 6, or 7. The binomial distribution provides an expected proportion of 0.2266. The significance level of this result—probability of getting a proportion of 0.2733 when we expect 0.2266 due to chance—is a low 0.0080. Therefore it appears realistic to conclude there are some persons who can truly differentiate between amps (KEOs or Keen-Eared Observers).

We may estimate the proportion of subjects who can truly differentiate between amps by employing the principle of the formula given in Point 4: (0.2733–0.2266)/(1–0.2266) = 0.0604. That is, we estimate about 6% of the subjects are KEOs.

However, this estimate does not allow for D-bias, which raises the proportion of above-average subjects due to chance. Let us assume that this chance proportion bears the same ratio to 0.2266 as does the chance rate of 0.5094 to 0.5000 for all responses. Therefore 0.2266 becomes 0.2309 (namely, 0.5000/0.5000 x 0.2266). Accordingly, we obtain (0.2733–0.2309)/(1–0.2309) = 0.0551. Thus we have a not-too-rough estimate that about 5.5% of the subjects are KEOs.

6) Point 5 gives us a handle on an interesting figure: the percentage of audiophiles who can truly hear differences. This may provide a clue as to the potential market for high-end audio electronics. In view of the possible importance of the 0.0551 point estimate, it may be desirable to obtain an interval estimate as well. At the frequency employed 95% confidence level, the lower and upper confidence limits are respectively 0.0052 and 0.1085.2

In sum, we have a point estimate of 5.51% for the KEO percentage, and an interval estimate of 0.52% to 10.85% at the 95% confidence level.

7) I tend to agree with the person who objected that equating of amplifier levels should be on the basis of wide-band noise rather than on the basis of a 1kHz signal. Imagine that one amplifier operating into the chosen speaker has a perfectly linear response, while the other has a pronounced inverted-U response, say 3dB down at 50 and 10kHz. If their levels are made equal at 1kHz, the total output would be lower for the second amplifier than for the first. Quite likely a fair number of subjects would hear the difference in total output for much program material.

Therefore we expect the same in this case. If 95% confidence level, the lower and upper confidence limits are respectively 0.2309 and 0.2733.

My thanks both to those correspondents offering comments and to those who took the time to provide further statistical analysis of the data collected at the April listening tests. Indeed, I was both surprised and pleased that Professor Burstein took the time to carry out such a detailed investigation. Regarding the results, we only realized that there was an imbalance between the number of "Same" and "Different" presentations after the weekend's listening was over. I was wrong in assuming that this wouldn't affect the results. Such is life! In addition, the apparent commitment of the listeners toward detecting a difference was not something that could have been predicted ahead of time in any meaningful way. (Note that I used the term "commitment" rather than "bias," which is too loaded a word, I feel. The 505 participants obviously took the test extremely seriously and, according to the conversations I had after each session, tried very hard to answer correctly. The mechanism by which this "bias" operates, as noted by John Koval in the next letter, is probably a matter of answering "Different" when actually not sure.)

Most of the correspondents who raised the point seem convinced that this built-in commitment for audiophiles to hear differences was a primary factor behind the detection of differences. However, having discussed this at length with my collaborator, Will Hammond, he suggests that this may not be an absolute reason as, say, that suggested by Mr. Peutter and Dr. Carlson, supporting Professor Burstein's more cautious conclusions. (Incidentally, Mr. Peutter's statement in his otherwise excellent letter that the non-discriminatory drum recording was the only music selection where the number of "Sames"

---

2 For the procedure employed to obtain these confidence limits, see my article in the May 1989 issue of JAES.
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and "Differents" were approximately the same is not true. The drum recording featured 265 "Differents" and 239 "Sames," whereas the solo piano recording, which did prove discriminating, had 245 "Differents" and 260 "Sames.") For if it were the only explanation for successful identification, then why were the individual sessions so different? Looking at Table 2, on p.15 of the July issue, it can be seen that Sessions I, II, III, IV, V, and VII conformed to the general trend in that the rate of successful identifications was higher when there were more "Differents" than "Sames." Yet Sessions VI and VIII produced contrary results. Session VIII had three "Same" presentations and four "Different," yet the listeners overall scored worse than average at 48.1% correct identifications, while Session VI listeners scored better than expected despite having four "Sames" out of seven presentations. It could be argued that these were random fluctuations due to chance. Yet, as each session featured a large "n"—the total number of trials—shouldn't it be expected that any supposed listener bias would still have made its presence known? Unless another factor were influencing the overall scoring, which I conjecture was the differing ability among the listeners to consistently detect subjective differences. Not all listeners will be KEOs. But some must be!

My original conclusions remain unchanged after this correspondence:

1) Hearing amplifier differences under blind conditions is not a trivial or easy task. However, the results tabulated in the July issue suggest to me that this was possible between the test VTL and Adcom amplifiers, even given the sub-optimum conditions of these tests. As pointed out above, taking the non-symmetrical Same/Different balance, the overall results still only just missed that 95% confidence level; i.e., the risk of making a Type I error, falsely concluding that the listeners overall could hear a difference, is one in 18 rather than one in 20.

2) People seem to differ widely in their ability to bear such differences, but whether this ability is intrinsic or learned or both is open to question. (I suspect that, like ball handling and control, it is a mixture of both.)

3) In the case of the specific amplifiers and loudspeakers used in our tests, there were frequency-response differences that might well correlate with any aural identification. Further work—which does not consist of inserting active equalizers into the signal path—is required here.

4) Not all music is equally good at revealing subjective differences. As suggested by John Crabbe, percussive, transient-rich music seems to be less revealing of amplifier differences than music with more of a sustained nature.

5) Will and I intend to organize further tests, taking careful note of all the points raised in these letters, at the 1989 Stereophile Show to be held in New York City at the end of April. I hope we'll see you there. After all, one point not mentioned in any of these letters was that this kind of listening, if not exactly fun, can still be extremely stimulating.

—JA

Is JA a secret objectivist?

Editor:

I'd like to congratulate John Atkinson on what appears to be a well-done blind listening test. Personally, based on the frequency-response difference that he measured between the amplifiers, I would have expected a more positive result in favor of an audible difference. However, the conditions appeared to be less than optimum, which probably accounts for the observed results.

Concerning the higher percentage of correct responses for difference as compared to sameness, I feel that this would be an expected result due to the "natural" bias of the majority of the audience. They are attuned to the idea that there should be differences and therefore would tend to select a difference when there was uncertainty, even though the amps were actually the same. This is no different from the situation with an audience naively disposed to the idea that there is no audible difference between amplifiers. They would, of course, be disposed to select no difference when there was uncertainty in their minds, even though there might be an actual audible difference.

On a slightly different note: For someone so vehemently against objectivists, JA is, I'm happy to say, with all his technical measurements, doing a great job of becoming one. I do realize that he seems to equate objectivists with those who believe there is no audible difference between amplifiers, etc. (I suppose that there are some who believe such a thing). But a more accurate definition would be those who believe there are measurable reasons for audi-
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able differences, and if there are no "significant" measurable differences, then there are probably no audible differences. I do hope he keeps up the good work, because I'm sure he will find that there is, in fact, a strong correlation between at least certain measurements and what we hear. I am, of course, a strong believer in frequency response as the magical measurement, and I hope he pursues the correlation.

John Koval
Santa Ana, CA

B&W 801 Matrix Alert

Editor:
I feel a bit like I'm swearing in church or refuting Einstein, fouling Stereophile's pages here with mild criticisms of the blessed new 801s. But if repeat advertising's anything to go by, lots of your readers will own them and want to know the results of our research.

Down here in the remote Pacific, after the sheep have been put to bed, we high-enders have ample time to commit what all manufacturers must regard as indecencies. Goldmund Studios are shredded and rebuilt, EAR 519s become unrecognizable, and Acoustat 2+2s undergo more change than a pupating Grizzled-Skipper moth. Alas, it didn't take long for an unsuspecting pair of 801s to be set upon with similar intent. What was found in the belly of these beasts?

First, there's an alarming design error in the APOC electronic protection circuitry. When an 801 is bi-wired, if you connect the bass input out-of-phase with the mid/treble and apply moderate power (20W), then it's good night nurse to your protection circuitry. Owners whose golden attributes spread across as far as the snout department will even detect smoke.

This is all due to the commercial compromise (CC) of using one common LED to warn of any protection action from the separate LF and MF/HF circuits. The LED link causes amplifier current (when over 16V peak) to flow directly through the Zener regulating diodes, destroying them.

It's very easy to wrongly bi-wire a speaker, or perhaps intentionally do it, and it's my guess that a good many of the new 801s have had their immune systems destroyed. An easy test for damage is to disconnect the speaker leads, then put a moving-coil ohmmeter (low ohms range) across the two black input posts. If it indicates a short or lowish resistance in either direction, then damage has occurred. A "capacitive" reading is normal. What you're checking are two 15V Zeners connected back-to-back in series across these posts. Yuk!

The APOC protection circuits draw their operating power from the speaker input signal. This loading is very non-linear and excessive, consisting (per APOC) of an 82 ohm resistor in series with a silicon diode, charging a 100µF supply capacitor.

If your speaker cable and all connections have a resistance of 0.2 ohms, then a waveform symmetry distortion of about 0.2% (over 200Hz) will be introduced as the supply capacitors gather charge. Granted that, once charged, the signal will only be loaded again if a higher voltage peak occurs. But on crescendos from cold — the waveform worm comes out.

More CCs follow — there's a common relay contact and common XLR connector-pin shared by the midrange and tweeter. The resolving power of these two transducers deserves more than this sort of nonsense.

How about induced crosstalk between driver signals? The performance of the crossover board here is something frightful to behold. In fact, owners can easily do an experiment to check this without instruments: just connect only the LF terminals and play some music. Listen to the midrange unit squawking away, when in fact it should be dead quiet. You'll even see the cone moving on the bass notes. Look at this: at 160Hz when the woofer is fed 6V, the "disconnected" midrange is fed a whopping 1.2V! Worst of all, the crosstalk is, of course, not phase-coherent with the LF driver.

Anyone can hear that this extraneous midrange behavior has a substantial influence on the sonics of the new 801. When it is removed (we've reduced it by 40dB), you have a different speaker.

The tweeter doesn't escape the wayward crossover behavior either. Whoever offered this board for the masses should be fed a warm cup of skunk saliva as a deterrent against reoffending. (Wonder if he also was the one who shackled the poor DM6, whose true sonics were exceptional.) Anyway, the tweeter circuit receives some of the midrange's signal, compromising a potentially divine HF performance. This crosstalk can only be accurately analyzed by totally isolating the tweeter circuitry from the rest; ie, tri-wiring — mandatory.

Stereophile, October 1989 45
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for the new 801 anyway, having the impedances, crossover points, resolution it does. Reduction figure here: 20dB.

Let’s skip the reproducing crosstalk problems (MF to LF, HF to MF). The results of all this surgery and more? As I said earlier, a different speaker. There’s a new cold, clean freshness. In fact, the mid octaves are so vivid and free of sterility as to defy the speaker’s dynamic status. This stands out especially on properly recorded massed choral voices, e.g., Opus 3 Test Record 1, track B3. The naked chill of the vast church acoustic almost has you reaching for a blanket. Also apparent is less hardness at power. Image-movement resolution is so tight as to defy improvement (Opus 3 8017, River Road, track A4). Interestingly, lesser recordings (e.g., Telarc 81035, Fauré and Duruflé Requiems) show no real improvement through the enhanced 801s.

The driving equipment, incidentally, is the Well-Tempered, Koetsu Black, Mac C22 mod, and EAR 519 valve monos. Due to interest in this project, an enhancement manual with photos is being put together to give other 801 fans a ticket to Nirvana’s (front) doorstep.

Tom W. Lewitt
Pinehaven, Wellington, New Zealand
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USA: Peter W. Mitchell

The DAT wars are over. At a June 9 meeting in Athens, Greece, major record companies and hi-fi manufacturers agreed to adopt the Philips One-copy system described in this column in March 1988. The International Federation of Phonographic Industries (IFPI) and the Recording Industry Association of America (RIAA) have withdrawn their opposition to DAT, and new DAT recorders equipped with the Philips circuit will go on sale next spring. (Reports in Time magazine and elsewhere suggested that redesigned DAT machines might be in stores before Christmas, but that's not likely.)

Existing DAT recorders can't copy a CD in the digital domain; but any current DAT recording, once made, can be infinitely "cloned" by digital DAT-to-DAT dubbing. Under the new agreement this situation will be reversed: new DAT recorders will be able to record digitally freely from any source (including CDs and digital broadcasts), but DAT-to-DAT dubbing will be restricted.

The restrictions can be summed up in two parts. Digital sources can be copied onto DAT, but the DAT copy cannot be copied further. Analog sources (LP, FM, or microphone) can be recorded on DAT, and the resulting DAT recording can be dubbed onto a second DAT (for editing, or to make a safety backup tape), but the second-generation DAT copy cannot be copied further. These rules apply only to digital dubbing; analog copying remains unrestricted.

Several versions of the one-copy idea were considered, bearing names such as Solocopy and Solo Plus (see the August 1988 issue for details). But the final version is only slightly different from the original One-copy proposal. Of course, after the bureaucrats and lawyers got involved, it acquired a less easily pronounced title: the Serial Copy Management System (SCMS).

The SCMS compromise has been endorsed by the Electronic Industries Association (EIA), Consumers Union, the Home Recording Rights Coalition, and other groups involved in the DAT controversy. But at present the agreement controls only the 15 Japanese and 3 European manufacturers who attended the Athens conference. To make sure that it applies equally to everyone, including manufacturers from Korea.
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"Fanfare", Vol.10, No.4

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Lewis Lipnick
"Stereophile" Vol.10, No.5 Aug, 1987

CES - Winter '88
"The Death of Mid-Fi: The Big Chill in Vegas"
Michael Fremer
"The Absolute Sound" Vol.13, Issue 52, page 250

CES - Summer '88
"We weren't there."

CES - Winter '89
"...I am pleased to note that the sound in the Kinergetics room was stunningly true to the sound of the original Steinway. Nice one, Ken and Tony."
John Atkinson
"Stereophile" Vol.12, No.3, Mar. 1989
and Taiwan, and to satisfy antitrust laws in the US and Japan, legislation will be proposed in several countries to mandate the inclusion of an SCMS circuit in every DAT recorder sold to consumers. On July 28 the RIAA and EIA jointly agreed to support such a law in the US.

The RIAA has been trying to get the Congress to impose a royalty tax on blank tape to compensate record manufacturers for presumed losses due to copying. But to avoid debates that might delay passage of the SCMS law, the RIAA has decided not to pursue royalties in this Congress. The National Music Publishers Association still opposes any copying without compensation, and may try to block the SCMS compromise in Congress.

The restriction on digital DAT-to-DAT dubbing was designed to answer the recording industry’s stated fear that once a CD had been copied onto DAT (via either digital or analog inputs), a daisy-chain of DAT recorders could produce an indefinite number of perfect copies, undercutting the economics of the record business. Under the agreement, new DAT recorders will put a copy-protect “flag” bit into every tape’s digital subcode. A complementary detector will disable the recording circuits when it encounters this flag in an incoming digital bit-stream, thus restricting DAT-to-DAT copying.

The agreement is a victory for consumers, since present-day DAT recorders contain two copy-protect mechanisms that inhibit any digital copying of CDs. Consumer DAT decks don’t record at the CD’s 44.1kHz sampling rate, and the recording circuits are disabled when a copy-protect flag bit is detected in the CD’s digital bit-stream. These inhibitions will be removed from new DAT recorders.

Thus future DAT decks will be able to record from any source, analog or digital, but the resulting DAT copies will not be cloneable in the digital domain. Consumers will retain their present freedom under copyright law to copy existing recordings for personal use—for instance, to collect favorite selections, or for playback in the car. (The DAT cassette’s tiny size, long playing time, and immunity to vibration make it a superb medium for the car.)

The proposed SCMS copy-protect flag is actually a two-digit code. The first digit indicates whether the recording is copyrighted and the second digit specifies whether DAT-to-DAT digital copies may be made. Thus when you make a digital dub of a CD, the code recorded on the tape will be 1-0, identifying a copyrighted recording that cannot be copied further. When you record through the DAT’s analog inputs, the source is assumed to be copyrighted, and the code will be 1-1, allowing one generation of digital dubbing. (Note: the code specifies generations, not the number of copies. You can make as many copies of the first DAT tape as your patience allows, but each copy would be coded 1-0, barring further copying.)

The circuitry that generates these codes, and blocks recording when an incoming digital signal contains a 1-0 code, will be contained in an IC. Philips will make the SCMS chip for sale to DAT makers, and will also place the design in the public domain so that manufacturers can produce their own.

One category of DAT users may find the SCMS restrictions crippling: hobbyists and basement-studio musicians who want to bounce signals back and forth between DATs for editing and special effects. That can be done in the digital domain with today’s DATs, and will continue to be possible with DAT decks designed for professional users, but not with future consumer DAT recorders. However, to accommodate the needs of semipro recordists and musicians, the SCMS standard includes a provision for future digital microphones (mikes with built-in A/D converters) and keyboard synthesizers, which may identify themselves to the SCMS circuit as non-copyrighted digital sources. When such signals are recorded, the SCMS code would be 0-0, allowing unlimited digital dubbing.

One puzzling question remains in this saga. Why, after years of fighting against the DAT with tooth and claw, did the RIAA suddenly cave in? Digital copying of CDs was already obstructed in DAT recorders by copy-flag sensing and the exclusion of 44.1kHz recording. (Consequently, although DAT recorders have been available in Japan for nearly three years, Japanese audiophiles have refused to buy them.) But blocking digital copying of CDs wasn’t enough to satisfy the RIAA; it also tried to cripple analog copying by imposing Copycode protection. When that failed, the RIAA threatened million-dollar lawsuits against any manufacturer that dared to sell DAT recorders to US consumers without a foolproof copy-protection system.
"After the Monitors, I simply cannot go back to listening to a speaker that is less transparent. The Monitors make everything sound so interesting, so involving. They are so good that one stormy evening, I thought to myself why go out to a concert? I think I'll stay home with my Monitors." Sam Tellig, Stereophile, May 1988 (Model R952MD).

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In the SCMS agreement, hi-fi manufacturers and consumers appear to have won everything they wanted—inunhibited freedom to make digital DAT dubs of all CDs (regardless of their copy-protect flags), plus unrestricted analog recording from any signal source. We’ve lost only the ability to make second-generation digital dubs; and, as the RIAA knows, that will stop only amateurs, not professional pirates.

The RIAA appears to have won nothing. Preventing second-generation digital dubbing is trivial; few consumers would ever do it anyway. If professional pirates can’t find a way to bypass the SCMS circuit, analog copying on a DAT will be good enough for any conceivable black market. In fact, for a professional pirate engaged in large-scale dubbing for profit, analog copying is preferable because it can’t be traced. Who knows what digital codes CBS might bury in its CDs in order to help the FBI trace illicit digital dubs? (By secretly conducting film prints, the Motion Picture Association has helped the FBI put many videotape pirates in jail.)

The RIAA didn’t like the One-copy system when Philips proposed it two years ago; why accept it now? Two answers have emerged from press interviews with RIAA and IFPI executives: 1) While large Japanese manufacturers were scared off by the RIAA’s lawsuit threat, one small company (Nakamichi) is about to deliver a DAT recorder that contains no copy-protection at all, brazenly violating the RIAA’s prohibitions. The RIAA would have to either put up or shut up. If the case actually went to court, it could take years and cost millions. In any case, it would make for very embarrassing PR if the giant RIAA were seen to be beating up on little Nakamichi, whose cassette recorders are widely admired not only by consumers but also within the industry (by recording engineers and big-name recording artists).

2) The DAT issue had to be settled this year, for better or worse, in order to establish a precedent for dealing with the home-recordable CD, which will be launched next year and represents a much greater potential threat. In fact, the RIAA never really cared about the DAT for its own sake, because DAT recorders are too expensive for mass-market popularity.

In terms of manufacturing cost, a DAT recorder is like a CD player (PCM decoding and playback circuits together with a complementary set of input filters and digital encoding circuits), plus a tape recorder (heads, preamps, very complex signal-formatting circuits, recording-level meters and controls), plus a miniature VCR (a scaled-down version of the helical-scan mechanism in an 8mm deck). With efficient mass-production, DAT recorders may gradually decline from the present $1500-$2500 range to the $800 level, but they are unlikely to fall below $500 (the pricing threshold that separates high-tech hobbies from the consumer mass market). And without millions of DAT players in circulation, the market for illicit DAT dubs will remain too small to undercut record company profits.

But according to Tandy’s initial announcement, the home CD recorder/player may cost only $500 when it is introduced next year, with blank CDs priced at $5 or less. Even if the recorders cost more, people won’t have to buy any new equipment to play pirated copies of popular CDs; there are already 15 million CD players in American homes, and millions more are added each year. So the Athens agreement included a promise of additional meetings beginning this fall to discuss the possible application of the SCMS (and other copy-prevention schemes) to the recordable CD.

The last three years have been extremely profitable for the record industry, thanks in large measure to retail prices that have remained artificially high ($15 for CDs, $8 for cassettes). At Warner Records, for example, last year sales grew 33%, to $2 billion, and net profits jumped 50%, to $300 million. If consumers can make a duplicate of a popular CD for $5 instead of paying $15 in a store, it won’t take long for CD pirating to cut into those profits.

**DATs for pros**

If home-recordable CD machines will cost less than a DAT recorder and will produce discs that can be played on everyone’s CD player, why would anybody want to buy a DAT? DAT may already be virtually obsolete as a consumer product, but it is finding a home in the pro audio world.

At a recent convention of the National Association of Broadcasters, Panasonic previewed a low-cost DAT-based digital recording studio. It includes improved versions of the existing Panasonic SV-3500 (tabletop) and SV-250 (portable) DAT recorders, which use good-sounding “MASH” oversampled sigma-delta analog/digital converters, plus a matching dig-
"Music heard so deeply that it is not heard at all, but you are the music..." T.S. Eliot

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The new DAT recorders contain all of the features needed to make master tapes for CD production—SMPTE time-code with either internal or external synchronization, 44.1kHz recording, AES/EBU (pro) and Sony/Philips (consumer) digital interfaces, and read-after-write heads for immediate off-the-tape monitoring.

The MASH converter first appeared in the Technics SV-MDI portable DAT recorder, whose sound has not lived up to the encoder's promise. According to JEI (a trade magazine about the Japanese electronics industry), the problem was in the analog electronics. While redesigning the recorder's input circuit to adapt it to professional requirements, Technics engineers discovered that the consumer version could easily be overloaded by high-frequency transients. The Panasonic pro version has balanced XLR inputs with plenty of headroom for studio-level (+4dBm at 0dB) signals, and reportedly sounds very good.

The pro-audio features in new DAT recorders from Panasonic, Fostex, and Nakamichi reflect a growing trend: popular acceptance of the DAT format among professional users who want the clarity of digital at a moderate price. For example, some duplicators of recorded cassette tapes have replaced analog dubbing masters with DAT, eliminating the slight veiling caused by flutter and amplitude modulation in analog tapes. When recording studios want performers to hear an edited tape for approval, they often send a DAT copy of the master (and, if necessary, a portable DAT player). KABC, a major Los Angeles radio station, uses a DAT deck to play pre-programmed commercials during baseball games to a network of 30 affiliated stations, replacing analog cartridge tapes. (Dozens of commercials can be recorded on a single DAT cassette. Since DAT selections are encoded with ID numbers like the track numbers on a CD, the player can easily be cued to the start of any selection.)

Four years ago I wrote that DAT should be viewed, not as the digital replacement for the mass-market analog cassette, but as the digital successor to the Revox (and other) open-reel tape recorders that have served both audiophiles and small-scale professional users such as radio stations and independent recording studios. That is exactly what is happening now.

DAT recorders are used in many studios to provide a safety (backup) tape at a fraction of the cost of a second full-size recorder. In analog recordings, dropouts are "soft" faults: the level or tonal balance of the sound is briefly altered, usually in only one channel at a time, but you can continue to enjoy the music. In a digital recorder, while small dropouts are completely restored by error-correction logic, dropouts that exceed the system's correction capacity become "hard" faults. The result is either a burst of noise or a total interruption of the sound as the player goes into muting, breaking the flow of the music.

This is a nontrivial problem, as users of present-day digital recording systems have learned to their grief. Many digital recorders have no provision for off-the-tape monitoring of the signal as it is recorded, so a dirty head or a defective tape can't be detected until the recording is played back—which may be too late. For this reason, important digital recordings are always made with at least two recorders running in parallel. According to Jack Renner of Telarc, on several occasions both the primary and backup tapes proved to be defective, and a second backup recorder (a Sony PCM-F1) saved the day.

Read-after-write monitor heads were previously thought to be impractical in the R-DAT format, because of its VCR-like rotary-head mechanism. For this reason alone, the new Panasonic DATs will attract the attention of many serious recordists. And DATs will increasingly be used to master CDs, following the example of Robert Harley (Stereophile's new technical editor). To edit a recent DAT recording, RH used a new digital editor based on an Apple Macintosh II personal computer; it provides much of the same control and editing flexibility as the large Soundstream and Sony digital editors, at a fraction of their cost.

With the spread of PC-based editors and the new generation of pro DAT recorders, I anticipate a further surge in the number of CDs produced by small independent labels—continuing a trend based on the Sony PCM-F1, another low-cost digital recorder that was intended to be a consumer product but was adopted by professionals. Some of today's most successful independent labels, such as Chandos and GRP, were built on a foundation of F1 recordings. Just as cable-TV's variety has undercut the programming monopoly of the big three TV networks, cheap digital hardware makes it easy for anyone to start a record company—aided by
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Don't be surprised if some DAT-mastered CDs sound better than those recorded on a PCM-1630. Pro recording gear is typically massive, rugged, and complex, with a development schedule of several years; and it often remains on the market for several more years before it is redesigned. For instance, the original Sony PCM-1610 was in production for six years before the PCM-1630 succeeded it, and the latter is now five years old. Pro hardware companies have been slow to adopt the high-resolution A/D converter designed by Bob Adams at dbx; so, for a new series of jazz CDs, the Chesky brothers used a digital recorder that was privately modified to accept the dbx converter, with noteworthy results.

Consumer products are cheaper and less complicated than pro gear, and are subject to more intense brand competition; so they are upgraded every year or two. Witness, for example, the ferment in CD-player technology. Rapid evolution in the quasi-consumer DAT format could make it the performance leader as well as the budget alternative. Note, for example, the modular design and innovative non-VCR mechanism in the Nakamichi 1000, the read-after-write heads in the new Panasonic pro DATs, and the several methods that have been proposed for adding time code to the DAT format. The MASH sigma-delta converter, requiring neither an anti-aliasing filter nor a sample-and-hold circuit, represents the direction of digital audio's future; but it appeared first in a DAT, not a studio recorder.

But optimism about the DAT's future may be misplaced. The Institute of Broadcast Technology in Munich, West Germany, conducted tests of 19 DAT recorders and two dozen blank DAT cassettes to see whether the format lives up to professional standards for reliable playback. Some tapes developed audible dropouts after only a few plays, and tapes recorded on some machines did not play reliably on other decks. It remains to be seen whether that represents a few bad apples or an industry-wide trend.

USA: Jack Hannold

You can read above how the RIAA-approved SCMS one-copy system works. SCMS may sound like the ideal solution, but in my opinion, it isn't. The deal calls for legislation requiring SCMS used in consumer recorders, and that's the rub.

Passage of such a law is by no means a sure thing. Billboard reports that there is already dissension within the ranks of the anti-taping forces: BMG/RCA, one of the six major international record firms, has already defected. And the National Music Publishers' Association opposes the plan because it doesn't levy royalty taxes on DAT blanks and recorders. ASCAP, BMI, and the Songwriters' Guild of America may join the opposition for the same reason.

But in a remarkable radio interview, RIAA president Jason Berman was surprisingly frank: "I've been fighting the home taping wars for ten years, and I must admit I haven't had great success in getting Congress to restrict home taping," he said. "And what we've achieved here is, for the first time, a restriction on home taping." He called it a "very, very important precedent:"

A precedent for what? For the kind of confiscatory "royalty taxes" on recorders and blank tape, which Congress has rightly refused to enact in the past, to further enrich the increasingly oligopolistic record industry represented by Mr. Berman?

It is because of that important and dangerous precedent, not because they are giving up anything, that I feel Stereophile's readers, too, should oppose such legislation. I believe that every serious audio enthusiast, every audio journalist, every audio retailer, and every manufacturer not a party to the agreement should do so as a matter of principle, no less than as a matter of self-interest.

UK: Ken Kessler

Summer's fading fast, a relief for all concerned. In addition to being the hottest, most uncomfortable summer in the UK in something like 13 years, it's also been less than wonderful for hi-fi sales. At least, that's what I've been told. It might also be that the only manufacturers, dealers, and distributors who phone me up are those who've seen happier times.

1 Billboard, 8/11/89, pp. 5 & 85.
2 On the program All Things Considered, National Public Radio, 7/28/89. The interview was conducted by ATC co-anchor Robert Siegel.
3 If you want to add your voice to the protest against anti-taping legislation, here are the addresses you need: Hon. (Member's Name), US House of Representatives, Washington, DC 20515; Hon. (Member's Name), US Senate, Washington, DC 20510.
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Naturally, there are those who behave as if everything’s hunky-dory, and I’m growing weak at the thought of even one more floating phone call from Antony Michaelson. According to AM, his Musical Fidelity company (British Fidelity in the US) is doing so well that he’s likely to be made a director of the World Bank, or Chancellor of the Exchequer at the very least. While others are changing to sackcloth and ashes, Antony’s donning pure silk. But here’s why:

Forget all about the smash success of the Digilog, Musical Fidelity’s affordable outboard D/A converter. Ignore the “modern classic” A-1 integrated amplifier. Pay no heed to the powerhouse A370 and A470 monster amplifiers. What has Michaelson in such a swoon is the runaway success of his new baby integrated amplifier—and the thing isn’t even in production yet. The Musical Fidelity B-1 is such a sure thing that all stocks have been pre-sold through February 1990. The magazines are so keen to get their hands on it that one magazine bought a pre-production show sample from a dealer to get the scoop.

The B-1 signifies the latest in a series of waves in the budget sector. After a few years’ worth of relative calm, the low end is about to explode. UK audiophiles have enjoyed a decade and a half of stunning sounds “on the cheap” with good, basic systems featuring the Dual CS-505 or Rega Planar 2 and 3 turntables, NAD and Rotel integrated amplifiers (Arcam Alphas for those with a bit more money), and any of a few dozen £100/pair speakers. Variations on the themes included Revolver and Thorens turntables, Naim’s NAIT 2 and Mission’s Cyrus amplifiers, as well as a few others, but the bottom line has been “Do it all for under £500 ($800) complete.”

After a few years of dabbling in the mid-to-upper sector, certain British makes have decided to stir up the budget sector once more, and it began with the frighteningly good Celestion 3 loudspeaker. Selling for only £99/pair ($160), the Celestion 3 gives the impoverished music lover such niceties as near-luxury styling, a metal-dome tweeter, and coherent, cohesive sound for less than many would spend on a pair of stands. Working backward, from speakers to source, we now have the second element in the Budget System of the 1990s.

Musical Fidelity’s B-1 delivers its first blow against the competition by looking sexy and expensive. It’s also the first of what could be considered the Mk.III look in Musical Fidelity’s history, a sleek beast which suggests a price tag of two and a half times the actual cost. Then, the B-1 adds a left hook by offering both moving-magnet and moving-coil phono inputs. It has a headphone socket. Although rated at 32Wpc, it promises to deliver bags of current, and behave more like a genuine 50-watter than a compromised budget offering. And the British can buy it for only £199 ($320). In real terms (allowing for wage increases, inflation, etc.), that’s less than a British audiophile would have paid for an NAD 3020 in 1980.

I don’t get my hands on a B-1 until a week after the deadline for this column, but trusted colleagues have told me that—for once—Michaelson is using understatement when he describes the B-1 as “awesome” and that “it will kick the s—t out of the [names deleted to protect the vanquished].” Zen-like, you can hear the sound of one hand rubbing as Antony describes over the phone the havoc his amp will wreak.

Considering that Musical Fidelity is one of the fastest-growing companies in the British specialist sector, the B-1 could push the company into the major leagues. Already strong in a number of markets, Musical Fidelity needed only one more key distributor to complete the process for world domination, and that’s been accomplished only recently with the appointment of Music & Sound Imports as the company’s US distributor. Provided that the pound/dollar relationship doesn’t go haywire, the B-1 could be the first British amp to crack the American “entry-level” sector with any real and noticeable impact.

The third part of the Budget System of the 1990s exists only as rumor at this point, so allow me to speculate on what will complete the triumvirate which so far consists of the Celestion 3 and the Musical Fidelity B-1. I first heard the rumor at the Chicago CES and it followed me back to the UK. With Linn Products closed for their summer holiday, I haven’t been able to confirm the whispers, but then I know Ivor Tiefenbrun well enough to expect him to say whatever he thinks will make a fool of me in print. According to far too many reliable sources, word is that Linn will release a new budget turntable, coming in below the Linn Axis at around £200 ($320), yet fitted with a version of the Linn Basik tonearm and maybe
Interested in a 200 Watt Amplifier?
May We Suggest Something More Powerful...
A 100 Watt Aragon.

Interview with Anthony Federici—Mondial Designs Ltd.

Q. How can a 100 watt Aragon be more powerful than a 200 watt amplifier?
A. The amount of watts has become a security blanket for the consumer. Wattage and power can be measured by many different methods. A method was adopted as a standard to offer the consumer a reference for one of the many methods of measuring power. That is why it is possible for amplifiers to measure as 200 watts by this one method of test, but for the Aragon to measure more powerfully by several other methods of test.

Q. Can you give an example of how the Aragon is more powerful?
A. The standard test is a guideline for amplifier power into an 8 ohm resistive load. Many 200 watt into 8 ohm amplifiers are less powerful than the Aragon into 6 ohms, 5 ohms, 4 ohms, 3 ohms, 2 ohms and 1 ohm. This includes some that are far more expensive than the Aragon 2004.

Q. How is this accomplished?
A. There’s no trick to doing it, you need a large power supply. The most expensive amplifiers you can purchase all have one thing in common, a large power supply. In fact the 2004 has a larger power supply than the vast majority of 200 watt amplifiers.

Q. If the 2004’s power supply could produce an amplifier of over 200 watts why did you create a 100 watt amplifier instead?
A. Because we’d rather produce good sound than useless specifications. The uneducated consumer will look at the power rating into eight ohms and buy the amplifier with the higher rating. The educated consumer will listen to the amplifiers on high quality speakers to make a decision. How the amplifier powers and controls the speaker will influence his decision, not some misleading specification.

Q. Doesn’t a “200 watt into 8 ohms” specification mean something?
A. Yes—if you own speakers which are mostly resistive, and the impedance remains at 8 ohms throughout the bandwidth. Under those conditions a 200 watt amplifier with a smaller power supply will play louder before clipping. However, the overwhelming majority of quality speakers are not 8 ohms throughout the bandwidth, and are not resistive.

Q. Is a large power supply the only thing that matters in an amplifier?
A. No, of course not. The amplifiers’ sound quality, through a wide variety of speakers, is of paramount importance. Achieving the highest sound quality level requires a large power supply, excellent circuit engineering, the finest quality components, and the highest level of manufacturing.

Q. Does the Aragon satisfy this criteria?
A. The Aragon’s circuits were designed by an internationally acclaimed engineer, designing some of the world’s finest amplifiers. From the Tiffany input connectors to the tightly matched output transistors only the finest components are employed, and the 2004 is manufactured by military and medical electronic contractors to the highest standards.

Q. How much more does the Aragon cost compared to typical 200 watt amplifiers?
A. At $1150 the 2004 is a bit more expensive than some, but far less expensive than most.

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The speculation suggests the following, with the competition even offering estimated costings to prove that it can be done. I’ve been told to imagine a Linn Axis-like player with two key parts removed, namely the true suspended subchassis and the sophisticated electronics. With these gone, you would have a Linn equivalent of the Rega, the Moth, the Revolver, and a host of other simplified players. Where the soothsayers come unstuck is in figuring out how the deck comes supplied with an OEM-sourced arm which alone retails for half the cost of the whole package.

If this turntable is about to be launched—and I have no reason yet to believe otherwise—it will do to the competition what the B-1 will do to rival amplifiers. The Linn name is still revered in the UK, with budding audiophiles still regarding the Linn Sondek LP12 as the ultimate goal. It was this strong brand identity which guaranteed the success of the Axis, the “long-awaited LP-12 for the poor”; a less expensive Linn-badged player will make entry into the Linn Club an even quicker process.

But what about CD for the “starter” system? So far, it doesn’t seem too important, what with the UK specialist audience still showing the greatest resistance to CD. Compared with the US and Japan, it’s as if CD never happened in the UK, though analog is suffering. But if a CD player is to take precedence over a turntable in the classic British budget system, someone is going to have to come up with a “killer” machine for £200–£250. There are whispers about a hot new Rotel CD player, the Phillips-based RCD855, built in Rotel’s own factory in Taiwan, but at £249 (including remote) it will prove to be too much for that cost-conscious buyer who can’t stretch to a penny beyond £500 for the system. Even if you do your math and strip the system down to a £150 amplifier instead of the B-1, and add in the Rotel and the Celestions, you’ve still used up your budget of £500 without allowing for the mandatory extras without which no British consumer would be happy: decent cables and stands. Which might explain why Rotel has also announced something totally unexpected for a Far Eastern manufacturer: a new turntable, UK-designed and belt-driven, to sell for £179 ($285).

But please don’t take the above to mean that the BVD—Black Vinyl Disc—is doing anything more than holding its own in the UK. I visited a local hi-fi store this week on one of my regular forays into the real world, and they told me that, despite carrying a range of decent, affordable decks including Thorens, AR, and Dual, they were selling no more than two or three per week. To top it all off, I just learned that Max Townshend, the most vehemently pro-analog manufacturer in the UK, is moving with his wife, family, and Rock Reference Turntable to the US.

Max, one of the most entertaining and truly radical figures in British hi-fi for the past decade-plus, is not one of the individuals we can afford to lose. I know, I know—he doesn’t shift all that much equipment, but he’s always been a relief from the po-faced dinosaurs and virtually insane flat-earthers who make up large segments of the British manufacturing community. Often written off as “Mad Max,” he’s been proven right far too many times to count. One small example is the way he was pooh-poohed over a decade ago for promoting thin-strand cables, yet for the past couple of years, Jimmy Hughes, DNM, and Alvin Gold have almost made careers out of the subject. He was championing high-mass turntables, zero-resonance plinths, fine-line styli, outboard power supplies, master-tape-us–LP comparisons, and modular construction throughout the late 1970s and all of the 1980s with scant recognition. I just hope that Max finds a kinder reception in Houston, Texas. At least they, like the Australian Max, think big out there.

I’ll leave you this month on a sick note. Despite the continued, steady sales of vinyl LPs in the UK, one major chain of record stores recently sent around a memo to its buyers to cease purchasing LPs of anything other than “chart” releases. I heard about this from the press officer of a company which is necessarily concerned, because its entire output consists of reissues and archive material. Although the company also produces CDs, their findings are that blues, soul, early rock’n’roll, vintage jazz, and a number of other genres are still dominated by LP purchases rather than CDs. And although this chain will still be stocking the label’s CDs, such coercion won’t necessarily force the customers into switching formats, so the label will lose sales even if they were to release everything in both formats.

I’d call it “blackmail,” but “silvermail” somehow seems more appropriate.

Stereophile, October 1989
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The other day, I received an SME 309 tonearm—the new one with detachable headshell which looks a lot like an SME V and retails for $995. Sumiko, the importer, recommended I put it on a SOTA or something. Being the Anarchist, I opted for my AR ES-1—using a heavy set of springs (available from AR). I also installed the excellent new Ortofon HMC20 cartridge ($400). I have never taken to the size or the looks of the SOTAs. Or the prices.

The sound is superb: nuances, detail I have yet to hear from digital. I’ll be writing about the arm soon, and the cartridge, too, but in case you’re wondering in the meantime: yes, the arm sounds as good as it looks, and it looks fabulous; the cartridge is excellent; and the ‘table/arm/cartridge combination synergizes beautifully.

The AR/SME/Ortofon combination—with my Classe Audio DR5 preamp—produces far better sound than I have heard to date from digital: more detail, more ambience, superior soundstaging, more precise imaging: you name it. Digital needs to get a lot better and needs to do so fast. Otherwise, there may be a crisis in high-end hi-fi, if there isn’t one already. What’s the point of pursuing perfection elsewhere in audio—speakers or amplifiers, for instance—if digital falls so far short?

But don’t despair—not just yet. There are hopeful signs on the horizon—namely the arrival of CD separates: outboard processors and DAC-less transports. This should render certain CD product categories obsolete: expensive, all-in-one players, for instance. Kludges, too—those $200 Magnavoxes turned into $1200 wonders by the addition of $60 or so worth of parts, an hour’s labor, and a favorable mention in Stereophile or TAS.

Surprisingly, US-based audiophile firms like Adcom and B&K have been slow to produce CD separates. PS Audio has been promising its digital processor for more than two years, but I have yet to see a production sample. But by the time you read this, Aragon may be on the market with its Model D2A digital processor at $995 suggested retail. Theta’s Mike Moffat had a hand in its design.

Meanwhile, two small British companies have managed to come up with affordable processors: Arcam and British Fidelity (Musical Fidelity in the rest of the world). This company, headed by Antony Michaelson—a clarinet player of some note—has always been noted for the musical quality of its products: tubelike, truthful timbres from solid-state gear. British Fidelity has a new importer: Music and Sound Imports, who will be bringing in selected products, not the entire line. Among the first products to be imported is the British Fidelity Digilog processor.

Before the Digilog arrived, I had been using a new Marantz CD75 SE Mk.II player, a Philips machine tweaked by Ken Ishiwata, produced in Belgium, and sold only in the UK—for £350, or about $575, inclusive of VAT. Damned good machine.

The Marantz excels in two areas: it is pleasantly spacious and it is exceedingly sweet. What it lacks is low-end heft and weight, giving the player a slightly tipped-up, lightweight tonal balance: something I find typical of less expensive players in general. The older, more expensive Marantz CD94 has more low end, more richness and warmth. But not more...
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detail. It's too bad that Marantz USA doesn't offer the CD75 SE Mk.II—too busy selling rack systems, I suppose.

When the Digilog arrived, I just added it to the system, going digital-out from the Marantz via optical cable to the optical-in on the Digilog, and then Cardas Hexlink from the Digilog to the CD input on my new Classé Audio DR-5 preamp. Power amp was the Classé DR-8. Speakers, Quad ESL-63 US Monitors. The system is all tweaked up with special cables and power cords—I'll have to tell you about it sometime. Not now.

The Digilog and the Marantz player (alone) sounded almost the same. Not surprising, perhaps—they use the same Philips TDA 1541A 16-bit dual DAC. Where the Digilog excels, like the Marantz, is in the reproduction of ambience—the sense of spaciousness. There's a lot of "there" there.

It can be quite dramatic, especially when the recording has kicked in but the musicians haven't. One second, dead silence; next second, the sound of the room; next second, the music in the room.

The Digilog scores over the Marantz in being more dynamic and in having more low-end weight—more bass, more balls. Because it has this low-end weight, the tonal balance seems more natural than that of the Marantz player. I got fatigued, on occasion, listening to the more lightweight Marantz.

Still, I would ask my dealer to let me try a Digilog—at home—before I would consider my purchase final. Try to arrange it so you get to listen for several hours.

If you decide to purchase the $995 Digilog and it is made obsolete by a dramatically better processor at the same price, well, you won't lose as much sleep as you would had you paid $4000—$8000 for a processor... or a super-expensive one- or two-box player. When the time comes, you could probably dump the Digilog without a terrible beating. I think processors, as a product category, will hold their value better than all-in-one CD players.²

It's true, better processors than the Digilog exist now, but I'm not tempted to buy them.

A Mike Moffat–designed Theta DS Pre will set you back $4k. A Dan D'Agostino–designed Krell Digital SPB64X software-based digital processor may send you into sticker-shock at $9k.

Let's take the Theta—which is more of a fair test than the Krell. It's only four times the price of the Digilog. The Theta scores in dynamics, soundstaging, and the ability to render sibilants without the slight delay, or smear, that I consistently hear with the Digilog—and with the Marantz and most other CD players, too. Not that sibilants turn tizzy with the Digilog—they are just not as crisp as they are with the Theta... or the Krell.

As for the Krell, well... I heard a near-production prototype for a few hours. I need to listen more. I can say that the Krell excels in two areas: detail and dynamics.

Back to the Digilog. You should know that it is a processor only—no line amp stage, no variable out (volume control). It just has an on/off switch and a series of LED indicator lights to tell you what input is selected and what the processor is doing. You can use the Digilog with a DAT machine—if one of dose appeals to you. The Digilog is small enough that you may be able to squeeze it into your cabinet atop your CD player.

The Digilog has two coaxial inputs and one optical input. I used the optical input for most of my listening, and found the sound slightly more transparent than I did with the various conventional interconnects I had on hand. A slight problem is that if you use the optical interface for CD, you won't be able to use it for DAT unless you want to switch the cable back and forth: there is just a single optical in.

Another problem is that if the power goes out, the Digilog will go off with a pop—no problem if your preamp or power amp has automatic output-relay mute protection. You certainly don't want to turn the Digilog off while the preamp is on, switched to CD, and the volume is up! Actually, it is probably best to leave the processor on all the time—with a surge protector between the Digilog and the wall outlet!

The bottom line is that the Digilog is a damned good $995 processor: listenable, dynamic, with good low-end weight, neutral and non-fatiguing midrange and treble. If the resolution doesn't compare with the Krell—or the Theta—if the dynamics fall somewhat short, well, so does the price. Recommended.

² As for kluged players, I question whether they hold any more trade-in value than the machines from which they were modified. I know one person who was offered $75 trade-in on his modified Magnavox; the same as if it had not been modified. If you buy any of these kluges, I think you're crazy, especially now that you have alternatives such as the Digilog.
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The Sony CDP-X7ESD

No more cheapskate stuff, right.

You were expecting, maybe, a review of the latest Discman or a cheaper player? Uh-uh. I went straight for the Sony CDP-X7ESD—Sony's top single-box player, at $2000 suggested retail.

Construction quality, as you might expect, is excellent. I especially like the solid way the drawer slides into the chassis, with all the finesse of the door closing on a Mercedes...or an Acura.

The player has coaxial and optical digital outputs, also balanced outs (with variable volume control). Another goodie is provision for turning off the LCD display, either from the chassis itself or from the remote. The front of the chassis has a clean, uncluttered appearance—you do your programming from the remote.

Of course, Sony has some real competition—and from its own players, particularly those in the ES series. There's a solidly constructed CDP-608ESD which retails for half the price of the CDP-X7ESD, for instance. And a CDP-508ESD at $550, which also has optical and coaxial digital out. All three players incorporate Sony's proprietary digital filter with "45-bit computation"—extra internal computing-power accuracy—combined with 8x-oversampling dual DACs designed to take advantage of the digital filter's additional bits of precision. Don't worry too much about this technotalk: the idea is to achieve full 16-bit accuracy. Extra computational power is what Mike Moffat's Theta DS Pre digital processor is all about.

But how about the sound of the Sony CDP-X7ESD?

First the good news. The CDP-X7ESD excels in dynamics. It has a lot of low end, and it has real low-end punch, the kind you generally do not get from such much-lower-priced machines as Sony's own $550 CDP-508ESD. I refer to real weight—the player's ability to open up and let it rip, in much the same way that a powerful amp will.

What I fault about the Sony is, first, a certain thinness, or slightly threadbare quality to the overall sound—the strings, in particular, seem undernourished, compared, say, to the Sony CDP-X7ESD feeding the Digilog via its optical digital output. And while the Sony is not a lifeless-sounding player in terms of ambient information, it doesn't excel in quite the same way that the Digilog does—or the Marantz CD75 Mk.II SE, for that matter. We're not talking about a bad-sounding player, by any means. But I think it should sound better for the price.

Rudi Kothe at Definitive Hi-Fi, in Mamaroneck, New York, sells the Sony ES line, so, at an informal gathering of the Thursday night philes, we compared the $508ESD, '608ESD, and 'X7ESD—roughly double the price with each move up. Speakers were Vandersteen 2Ci's, and the amp was B&K Sonata monoblocks—it wasn't convenient to do it in one of the other rooms.

Here's what we found. The three players are close in sound. The '508ESD is a very fine player at the price: $550. Its overall tonal balance is lacking in low-end weight, but I've come to expect that from less expensive players. Move up to the '608ESD and you not only get an obvious improvement in construction quality, you also get a noticeable increase in bottom-end balance and dynamic punch. Move up again to the 'X7ESD and you get—what? A little more dynamic punch—but not much. At least, not in this system.

We tried a CAL Aria tubed player (around $1600). And that player sounded different: the strings were richer, fuller, there was more ambient information—more of a sense of
“there” there. All of us found the sound much more involving than that of any of the Sony players. Yet the CAL could not compare with the Sonys, certainly not the ’608ESD and the ’X7ESD, in terms of construction quality: it’s a much more flimsy machine, and there’s something chunky about it, ergonomically.

I tried my sample of the Sony ’X7ESD at home again, listening for the sibilant smear I talked about before—and yes, it was there. No worse than the Marantz CD75 Mk.II SE or the Digilog—but still, sibilants were not so crisply articulated as they are with either the twice-the-price Theta Ds Pre or the four-times-the-price Krell SBP 64X... or my analog system.

I wonder about the ’X7ESD. It’s not that it does anything terribly wrong—it doesn’t. It’s just that I find the player offers little sonic improvement over the CDP-608ESD, which retails for half the price.

For me, the Sony CDP-X7ESD, at $1995, joins that category of expensive, single-box players, including the Onkyo DX-G10, whose sonic performance falls somewhat short of what might be expected for the price.

Serious Listeners
Oh, those again!

True, there are some products I never stop talking about, and here may be another. Like other writers, I can’t resist the temptation to joke about the Serious Listener ear extenders: how they make you look like Spock. But underneath the joking, you probably detect that I think the things “work.” In other words, they tend to change the sound in ways that I approve: adding more focus, more immediacy, more bass than you get with only your God-given ears in place.

I hope HP tries a pair—maybe it would reconcile him to the sound of the “new” Carnegie Hall. Serious Listeners certainly help at Avery Fisher Hall. I wore them to two Mostly Mozart concerts, and found that they improved the somewhat unfocused, bass-shy, dynamically deprived nature of the hall. Maybe every subscriber to the New York Philharmonic should be given a pair.

Of course, you look weird when you wear the things. My wife cares, and doesn’t. I don’t, and do.

“You just like attention,” says my wife.

It’s true, I do. It’s great when people stare. Then they look away—do I have some kind of hearing problem? Do I wear prosthetic ears?

A few people in the audience have recognized the Serious Listeners. One evening at Mostly Mozart, two people came up to me in the lobby to ask if I were Sam Tellig.

I’ve been having a lot of fun with this product. But seriously... I like the way the music sounds when I wear the “ears,” and I particularly wouldn’t want to listen at Avery Fisher hall without them.

Kebischull 35/70 amplifiers
I get nervous when someone buys something just on my say-so. Just because I like a product doesn’t mean you will, too—different tastes, different systems. Different ideas, even, of what tonal neutrality is. An amplifier that one reviewer considers dark, for instance, I may think is just right. An amp I might rate right-on, another reviewer may deem dark. “Dark” is a favorite adjective of those who prefer a bright, tipped-up, “audiophile” sound. I’ve seen it applied to some of my favorite amps.

It’s dangerous, I think, to put your total faith in one reviewer—myself included. Besides, how reliable can a reviewer be who wears Serious Listeners to Avery Fisher Hall? Not very, right. Good! Don’t just run out and buy a product on my favorable mention. I might be wrong. I might change my mind—happens often. You may not agree.

Beware, especially, of reviewers who seem to like everything they hear—a new favorite amp or speaker every issue, usually without reference to their favorite amp or speaker in the previous issue. I think a reviewer should be required to turn in a certain quota of negative reviews—like a cop who’s expected to issue a certain number of traffic tickets. Isn’t that one of the reasons High Fidelity went belly-up? No negative reviews? Reviewers should tell their readers whether or not they would buy this or that component, if they had to lay out their own money. I would buy the Digilog, for instance—and did. I wouldn’t even think of purchasing the overpriced, overbuilt, underwhelming Sony ’X7ESD.

Reviews can be dangerous. Look at my friend Lars—he bought his pair of ESB speakers on favorable reviews by JGH and the late Richard C. Heyser, among others. Of course, he says he likes his ESBS. He keeps all the favorable reviews around for reinforcement.

Lars whipped out a reprint of Heyser’s re-
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view of the ESBs in *Audio*. I read it.

"Well, yes, this is, overall, a favorable review. Of course, Heyser does mention that the speakers are top-heavy—easy to tip over. He-he." I paused to point to a paragraph, "And he talks about a certain 'wolf tone' hovering over the midrange. That's what I hear with these speakers. A-000000000000."

"Maybe I should get a pair of WATTs."

"Oh, no. Oh, no. Keep these. Like the Irish say, 'Better the devil you know than the devil you don't.'"

Now, on to the Kebschull 35/70 mono tube amps, which DO praised in these pages. And not without reason. I arranged to borrow a pair over a long weekend, from a dealer friend.

I put them into a system consisting of a Classé DR-5 preamp and a pair of Quad ESL-63 US Monitor speakers. Most of my listening was with the British Fidelity Digilog processor, but I also used the Ortofon HMC20 in the superb SME 309 arm (I bought it) on my beloved AR turntable—excellence on the cheap. Dave Magnan interconnects (terrific but I wouldn't pay the price) between preamp and mono power amps, and AudioQuest Clear Superlitz speaker cable (big blue garden hoses; my daughter says they're macho) completed the system.

The $2375/pair Kebschulls are something special, as Olsher said. Timbres are very appealing—piano especially. The midrange and treble are smooth and sweet. The treble is extended—up to a point. Deep bass is reasonably tight for a pair of low-powered tube amps. The sense of spaciousness—*there* there—was excellent.

So what’s my *kvetch*?

Tonal balance—it ain’t quite right, in my opinion. The sound is too lean. Bass isn't ample enough—the amps sound anemic from the midbass through the lower midrange. Treble sounds tipped-up until you get to the tippity-top, where it sounds rolled-off—brushed cymbals, snare drums, triangles, and the like. I found tape hiss accentuated. Some CDs exhibit a strange ringing, which is perhaps the fault of the CDs but is accentuated by the amps. And the amps clip—even on chamber music, even on my Quad ESL-63 US Monitors.3

I tried these amps with some other speakers and things were worse. The Kebschulls could not drive the Wilson Audio WATTs to decent levels without cooking out. Nor could they do justice to the Vandersteen 2Ci’s. Or the Celestion SL700s.

There's another problem with these amps: no cages. The two EL34 output tubes, heavily biased into class-A, run extremely hot. If your bare leg brushed up against one of these amps, positioned low behind the speakers, you could suffer second-degree burns! The Kebschulls also represent a hazard to small, creeping children, dogs and cats. (I had to keep Khrupskaia out of the room.) The least Kebschull could have done is to design protectors around the output tubes à la Klimo’s neat little individual tube cages, reminiscent of Fritz Lang's *Metropolis*.

So while these amps are beautifully made and gorgeous to look at, and while the sound is so appealing in some ways—smoothness, sweetness, airiness—that I even contemplated buying them until I listened longer and found them thin, not sufficiently zaftig, I would have to say to these Munich-made babies: *Nein*.  

**Comrades!**

This column is completed two months before press time, so I don't know how many people will have signed up for the Russian trip mentioned in last month's column by the time you read this. If you would like more information on the trip, please write to: Russia Tour, P.O. Box 1198, Ridgefield, CT 06877. This is my own box, and I check it nearly every day. The tour leaves March 29, 1990, returns April 9. Cost is $2495 per person, double occupancy plus $35 for handling your visa. A $500 deposit per person secures your place. Certain cancellation penalties apply beginning 45 days prior to departure. If you've always wanted to visit the Sovyetskii Soyuz, this is your chance. $3

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3 It would be fair to point out that DO experienced no dynamic range problems with the Kebschulls driving the Quads, although his room—approximately 20' by 13'—is not large. (It now appears that ST's sample had a bad tube.) —JA
Tube Amp for Under $1,000!
from Vacuum Tube Logic and Audio Advisor

David Manley has become one of the legends of hi-fi. While working as a recording engineer, he couldn’t find a good-sounding amplifier. So he built his own. Then he figured other people might want good-sounding amplifiers, too. So he founded Vacuum Tube Logic.

The low-price tube amp challenge.
“Congratulations, David. Our customers love the sound of your tube amps. But some can’t spend thousands on an amp. Can you help?” we asked David Manley.
“I have just the amp for you,” replied Manley. “Everyone will love the sound, yet it will cost under $1,000. No amp near this price will compare.”

Class “A” sound.
When we first heard the Stereo 50/50 we were startled by the smooth, grain-free sound. Manley explained, “The 50/50 runs Class ‘A’ for half its output. This gives the amp a smooth, effortless sound.” Rated at 45 watts per channel, the 50/50 sounds more like 90 per channel. “Tube watts sound more dynamic than transistor watts,” Manley advised us. “The Stereo 50/50 is powerful enough to drive most 4, 6, or 8 ohm speakers.”

Two amps are better than one.
For more power and the remarkable openness of mono amps, Manley makes the VTL 80 Watt Mono Block amplifiers. The transparency is breathtaking. The midrange is smooth, treble clear and superbly articulated. Bass is tight and dynamic. Imaging is solid, holographic, and three-dimensional.

We credit Manley’s genius for the sound. Manley himself thinks the Russian tubes are at least partly responsible. “The Russian KT-66 is one of my favorite tubes,” says Manley. “It’s transparent and tonally accurate, yet tough as a tank.” One listen and you’ll agree. Conservatively rated at 80 watts per channel, the 80 Watt Monos sound like 150!

The VTL Stereo 50/50 and the VTL 80 Watt Monos are built to the rugged military-grade specs of all VTL components. Heavy gauge chassis. Cardas internal wiring and Cardas RCA input jacks. High quality five-way speaker connection posts. Russian KT-66 output tubes. The VTL Stereo 50/50 $999.95 plus $19.95 ship in US. The VTL 80 Watt Mono Blocks $1995.00 a pair plus $39.95 ship in US. Satisfaction guaranteed.
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Until now, if you wanted the smooth, open, airy, DYNAMIC sound of a tubed preamp, you would have had to lay out BIG BUCKS. No longer! The VTL Maximal is a true high-end tube preamp for only $699.95. You'll love the clear, crystalline highs, warm—yet neutral—midrange, and tight, dynamic bass.

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If you follow CD player reviews in Stereophile, TAS, and elsewhere, you know that many reviewers tout tubed CD players for their smooth sound, true timbres, and natural soundstaging. The new VTL CDB582 combines the latest Philips technology (16-bit twin DACs, 4X oversampling) with a new tubed circuit by David Manley. The result is MAGIC!

"The 582, made by Philips, gets data off the disc more accurately than any other machine we tested," says Manley. "To improve performance, we install my special tubed digital-to-analog output stage."

The VTL CD582 starts with the Magnavox CD582. All convenience features are retained. 20 track memory, 3-speed music search. Shuffle play. 19-function wireless remote. Don't look for the VTL CD582 in stores—we're buying all they can make. Phenomenal value at $995.00. Add $9.95 shipping in US. Satisfaction guaranteed on all above VTL products.

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Stereophile. October 1989
Doug Sax is undoubtedly one of the most controversial and outspoken figures in audio. As co-founder, with Lincoln Mayorga, of Sheffield Lab, Doug pioneered the first modern direct-to-disc recording. His perfectionist methods may be controversial, but the results certainly are not: Sheffield Lab recordings are nearly universally praised by the audiophile community, while the Billboard Hot 100 always features at least one Sax-cut disc.

Doug was an early champion of tube electronics and a vociferous critic of digital audio. In fact, he once distributed T-shirts with the inscription “Stop Digital Madness.” While at Disctronics, I worked on the CD mastering side of many Sheffield projects, and consequently had several interesting digital audio discussions with Doug. To share Doug’s fascinating ideas and opinions with Stereophile readers, I met him at The Mastering Lab, his disc-mastering facility in Hollywood, and asked him what, specifically, did he find wrong with the sound of CD?

Doug Sax: I think that the Compact Disc is still in its infancy. I don’t think you are getting a 16-bit product. You are getting maybe 14 bits out the door. Professional recorders are marginally 16-bit, but off the tape, in video storage! I doubt it. Have you ever been in a professional, high-quality TV station? It’s sort of a shock when you look at a live monitor. What you have there is 525 lines. You’ve got the real NTSC, and when you get home to your TV, you say “This is chopped liver!”

I think that compares with what can be done in a 16-bit, 44.1kHz linear system. Current digital recordings are probably on the level of a home TV compared to that studio monitor. There is much to be done to bring it up to what it’s capable of. It’s strange because the home

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1 The worldwide standard for CD master tapes is a 3/4" U-Matic video tape. In this format, digital audio is stored as a video signal: white represents binary one and black binary zero. Each horizontal line of video stores 193 bits.
format [CD] has virtues over the professional format [CD master tape]. It's a total reversal of where we'd been in audio up to the introduction of CD. The professional master tape was always stunning compared to the home format which is a generation down, a mass-produced pressing that wears out as you look at it, is hard to play back, with compromises made to get it [the recorded sound] into your home. CD has no wear: optically verified that it has all the dots and dashes, when it's optically verified two years later it still gives the same read-out. The professional format in digital form is a video-based tape that gives you more errors the more you play it. It may be good for 25 plays, but where do you draw the line? No question that you're going to play it 50 times. No way. You cannot make a data-to-data copy that is inaudible. I'll stake my reputation on it.

Home storage is now dramatically superior to the professional format. So it's an opportunity. Everyone seems to think that oversampling playback is better, is the way to go. But almost no one, with a few exceptions, has an oversampling CD on the record side in their possession. You also have the fact that you're "polishing the tail." You're at home and you have your fancy CD player and its 8x-oversampling or a million times oversampling and its la de da de da—but it's not been done to the recording. That's gone through stonewall 22kHz filters, through an A/D converter that will not measure and give the true numbers of a 16-bit converter.

Robert Harley: How then do you account for CD's enormous popularity?

DS: Their strongest point is that they play back at the same level with the same frequency response. Probably the easiest thing in the world to do is to play an LP record incorrectly.

RH: With CD you don't have the vagaries of cartridge alignment.

DS: A thousand vagaries. That makes evaluating what a record can do secondary to being smart enough to put together a system properly aligned, components happy with each other, that could play what's on a phonograph record. The easiest thing is to play a record wrong. I go around to high-end stores and hear records played abominably; and they're the people selling the equipment. You always read about the average guy on the street who says "I got my CD player and can't believe how great it sounds. What an improvement over records."

Now, you've got some guy at a high-end magazine who says, "They still don't have the music I have on my best records." They are both true statements.

RH: The guy on the street has a hundred-dollar turntable... DS: ... and never got what's on the record. It's very difficult to get what's on the record. And for $195 you can buy a player that will get 80–90% of what's on that CD. Many of these even sound better than some of the $2000 audiophile players. Now I can say that because I've heard some $2000 audiophile players—they have oversampling, all the buzz words—that didn't do what was on the tape. I made the tape and I would expect that, at the minimum, their playback would be as good as my professional playback.

RH: How many of the problems of CD can be attributed to the input section of a Sony PCM-1630? It uses half a dozen op-amps in the signal path, including 5532s.

DS: 5532s, properly implemented, are better than most of what you've got in your hi-fi, believe it or not. They're not the fault. But the complexity of the circuitry is to be questioned enormously, as is the fact that the 1630's not oversampling, that it's not a very linear 16-bit converter, that it has between two and ten times the distortion of your home playback system. If you look at your CD player and say "Well, look at this, 0.01% distortion, 95dB S/N." But that's off a code from a computer put on that disc. It's not an in-through-out measurement of the system. Because you don't get these numbers from an A/D that's in a 1630 or a 1610 or a Mitsubishi or any other professional recorder. You don't get these numbers. You don't get your 0.002% distortion, because the A/D converters won't do it. You don't get your...
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noise numbers that would even show a true 16-bit system. And after a couple of generations of video tape, those numbers will get worse because you're not getting all the data over. Martin Colloms will tell you that the biggest factor is that the time in the video machine is skewed. The numbers are there but they're not in the same time [relationship] they were recorded and it doesn't sound the same.3

**RH: Do you mean jitter?**

**DS:** Yes. You know that this signal is converted to FM, to get put on to video tape. Then it gets decoded, then it gets clocked out, and the deck itself is full of jitter. It's very primitive storage. But look how good the home storage is; it's not going through FM. The decks themselves would make this stuff better than it is. The players, however, vary enormously in their jitter, and even though they'll measure the same distortion off a disc, they won't sound the same on music.

**RH: So you think the weak links are the A/D converters and the tape transports?**

**DS:** Those are probably the grossest links. And the filtering and sample and hold circuits. And this process changes the sound. It becomes "digital." I think that if you had a well-conceived 2x minimum oversampling, truly linear, 16-bit system with no degradation in the storage, you wouldn't recognize it.

**RH: Do you expect digital to get better?**

**DS:** I expect it to get better and I'm working to make it better. One of the things you have to do to make it better is you have to know that it's not right. All you have to do is say "this is terrific" and then you don't improve it. In other words, realize it's here to stay but be critical of it. We're possibly going to construct and offer for sale an A/D and D/A box that interfaces AES/EBU4 so you can take your 1610 or your DASH or whatever, use it to store, but we'll handle the signal path from A to Z.

**RH: Is it similar to your modified Sony PCM-1610 at The Mastering Lab?**

**DS:** What we have is highly modified, but we haven't gone the whole route. There will be some point where you need a separate chassis and your own architecture so you can do exactly what you want. But there are enormous efforts going on, mostly by American companies, on the A/D side.

**RH: Is there anything intrinsically wrong sonically with storing music as ones and zeros, or do you think the problems are in the implementation of current technology?**

**DS:** The latter.

**RH: Do you think digital will one day sound better than analog?**

**DS:** It should. Digital is analog. Digital is only the storage. The only way we have to evaluate it is to listen to it. Until we can plug ones and zeroes into our heads, we're going to have to listen to it. I don't know if you're going to get everything you need within the format. It's interesting because there are 18-bit D/A converters—aín't no 18-bit A/Ds. If there were, there's no way to store 18-bit numbers. And if you had a professional recorder that would store 18 bits in and out and really get some low-level resolution, the CD cannot be expanded to 18 bit.

**RH: We really are locked into the CD standard.**

**DS:** I don't know if it's true—I get mixed stories—but a DAT can [handle more than 16-bit data], from what I understand. Again, you're sitting at home with an 18-bit converter, 64x oversampling. It's like taking the finest ground-glass spectacles to look at a photograph in a magazine. Well, it's even clearer, it doesn't refract light, but it's still a photograph in a magazine. You can do all you want but if you really want to get the quality, the photograph itself has to be better. It has got to be pressed with more dots, or it's got to have something better done to it. I'm constantly amazed to hear guys say, "Well, I tried this new CD player and I think it really does it." It doesn't really do it because the recording doesn't really do it. "I got a new arm and cartridge and all my records sound fantastic." They can't. Only a handful of records sound fantastic.

**RH: How many records a year sound great to you?**

**DS:** About 10 a year of commercial things. Maybe that's high. I've been on the committee

3 See last month's "Industry Update."

4 AES/EBU (Audio Engineering Society/European Broadcasting Union) is a professional digital interface format. It is nearly identical to the SPDIF (Sony/Philips Digital Interface) found on many CD players and DAT machines.
Statements on the Art

STEREOPHILE’S 1989 RECOMMENDED COMPONENTS
Quotes from Stereophile, Vol. 12, No. 4, April 1989.

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Key to ratings: Class A, Best attainable sound; Class B, The next best thing; Class C, High quality, but still affordable; Class D, Significantly lower fidelity, but still recommended; Class K, Keep an eye on this product.
that does the nominations for best engineering, and I have no idea why anyone submitted these recordings for good engineering. It's hard to come out with five that really sound like something at the end of a year, and those are often not even the best five because there are nine voting chapters—Nashville, Chicago, New York, etc. Everybody goes in to make a really terrific record... What's your opinion of pre-emphasis?

**RH:** From the playback side, I think it's better not to use it. Who knows what the de-emphasis circuit is like in some of these CD players? It's better not to have the extra electronics in the signal path.

**DS:** Makes sense to me.

**RH:** What do you think of pre-emphasis?

**DS:** Well, your comments are right. It's an additional variable in the playback chain. But digital doesn't really handle the dynamic range as well as good analog. There are virtues to pre-emphasis technically—it takes low-level, high-frequency information that digital would miss and boosts it to where digital can capture it. I do hear more resolution in pre-emphasized product. It is quieter. You can actually hear more resolution. Especially on classical, where the resolution is more meaningful. Some of our CDs are emphasized. Digital doesn't hear down to the low levels. Obviously it becomes more coarse. If it were a 16-bit logarithmic system, I would probably be dramatically more impressed by it.

**RH:** A logarithmic system is one in which, as signal level decreases, the amplitude between the quantization steps also decreases.

**DS:** Basically, it would have the same distortion at -40 level as it had at 0 level. At 0 it would have higher level than what we now measure, but the level is up there only one or two or three times on the whole record, flash peak. Particularly if it is classical. But that distortion would be the same at -60 in a logarithmic system. It wouldn't become coarser and coarser in its abilities as you drop down in level. Linear digital is the opposite of analog. Analog becomes more and more linear as you drop down in level. The propensities to cause distortion increase at high levels, which would be saturation of the magnetic materials and hard working of the analog amps. But if you drop down 40dB, everything is sleeping. The particles are all very linear. There is lower and lower distortion with lower and lower level.

**RH:** Distortion is particularly noticeable when you bring down a digital fader and get near the bottom of its travel.

**DS:** The analog equivalent of that is the volume control. When you bring that way down, it's fine—no distortion. But [in digital] these low-level components that you can isolate when you take the fader down to -60 are going on all the time. In a system with a recording of that clarity, it is covered up by the loudness of the signal, but it's still not resolving the low level correctly. You put in a -60 tone and it sounds like a buzz saw, it sounds like a kazoo. You open them up on a live signal, like a concert hall, you hear it gating on the room noise. It's like "I hear it, now I don't, now I do." It's a joke. It has a long way to go.

Look at it from the standpoint that says it sounds pretty good now. After the way it started its journey, it sounds pretty good, and if you know how many areas in which the format can be improved, if you know how bad some of the areas are now, you can visualize the fix. It's going to have to sound better. As I said, what it is capable of is just like your home TV compared with a studio monitor...

**RH:** That's an interesting analogy. People are more discriminating visually than aurally since they get a reference of reality every waking moment. If people were exposed to real musical events more often, their acceptance of what is good sonically would change.

**DS:** Take a string quartet. You've got two violins, cello, and viola facing each other. If the room has any size and you back off to the fourth row, you'll be surprised how small the string quartet is. If you sat in the 15th row and shut your eyes, it would sound like mono. Now you go on to the perspective of someone in the audience, not at Carnegie Hall but in a 1000-seat hall, and you sit in the eighth row and you tell me the angle between the string quartet and the listener. Now, you come up and you mike them. You put the violin over here and the cello here, a couple of mics, nothing esoteric. You take this home where you'll be 10' from the speakers and the violin now goes way over here and the cello goes way over there and it sounds fantastic. But does it sound the way the string quartet did when you were in even a good seat in the audience? Not remotely. And if you made a recording that conveyed the true size of it, even at 20' out of your speakers, nobody would like it. Because all of the other record-
In Britain – home of many audio aristocrats – one name is legendary. So seminal, in fact, that several dictionaries list “Tannoy” as the synonym for “sound system.”

62 years after its founding, Tannoy remains the loudspeaker of choice for audio professionals. More recording studios choose Tannoy for their monitors than all other brands combined. It is no coincidence that 98 of the 100 top-selling albums since 1983 were mastered on Tannoys. In 1988 the industry recognized Tannoy’s accomplishments by making it the first loudspeaker to receive the prestigious TEC award, created “to honour the audio industry’s greatest achievements.”

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ings have a cello that's as big as this room, and it sounds as big as an orchestra. In fact, when you put on an orchestra, which is in reality 60' across, it doesn't sound any bigger than the string quartet. And they want it live so they rec
ord it in a barn and here you get these bigger-than-life instruments with five seconds of decay and people sit at home and say "Here is a string quartet."

The recording I'm most proud of is my new upcoming album of a string quartet. People don't realize how small a string quartet is. I have two recordings of Michael Newman, solo gui
tar. I put him in the Mastering Lab between my speakers just the way he would image, turned all the equipment off and let him play. Do you realize how quiet a classical guitar is? It's a delicate, gorgeous, quiet instrument. It's a big problem because I can play it out of the speakers 20dB louder than he is. It sounds wonderful. Loud clarity. But you go in front of the Harry James Band and that band is 20dB louder than my speakers can play with a 300W amp. You're afraid to get close to the band with mics. So conversely, the dynamic range of a quiet instrument without a big image comes out overblown, enormous, like a solo piano that goes wall to wall.

Listen to a solo concert grand piano from 15'. Shut your eyes and tell me how big that piano is, how much left and right. You hear recorded piano, even well-recorded piano, and it seems to go off the speakers. But when a live pianist goes from the top to the bottom of the piano, the thing doesn't move, it comes from the same place. It sounds about this big (holds hands about two feet apart). Sure it picks up room and size, but it's almost mono. Yet if you made an almost mono piano recording, if you made something that would play out of big speakers that were 10' apart that sounded the way it really did in size to you sitting there at 10', you would be panned out of the world for having a recording that has no dimensionality.5

So in recording, there's reality and then there's how much fudging that is acceptable. You're used to having the small instrument sound enormous and used to having the enor
mous instrument, the orchestra, sound small.

Because you have a speaker that is much bigger than a guitar and much smaller than a symphony orchestra, you've got problems.

**RH:** Theoretically, the digital recording medium has no effect on the sound quality provided there are no uncorrected errors. Do you believe different digital tape transports have different sonic characteristics?

**DS:** They do. I don't know why. I don't use Sony decks. I can tell you that any Sony video deck will kill the sound. I've discussed it with Sony and they were about as interested in hearing it as you are in buying New York City for three trillion dollars. They said, "We'll do something about it — go away." I did and they didn't. But it's a major, major factor in degradation. **Major** factor. It's interesting to take A/D and D/A without tape storage and then put the video recorder in the signal path. It doesn't get better. Then when you put a Sony deck in the loop, you don't recognize it coming out. I've demonstrated it—to a non-caring world. I was hoping somebody would find it and fix it. You know from your CD mastering work what video tapes are like. Why don't we have disc storage for master tapes?

**RH:** There is a sigh of relief sometimes after a master tape has been cut and the tape is no longer needed. Many tapes are right on the edge of working and not working.

**DS:** If computer storage were on U-Matic, the country would be out of business. Somebody's bank account would suddenly be short $2 million.

**RH:** Do you think DAT is an improvement?

**DS:** Not as it stands now, no. But it has the potential to do whatever you want. The weakest part of DAT is the storage. I can make a DAT tape that sounds excellent—not using their convert
erS, but my converters. But if you play it 10 times it doesn't sound the same. Look at the density of packing. The 1630 video storage is one thing I talked about in Japan because they know it is not good. I can talk about that without apology and not get into anyone's bailiwick, like why they use six op-amps when two will work. You don't step on any toes talking about the storage. They just don't like to talk about it. Sony sewed up the world. You can send a 1630 tape to any plant in the world. Why rock the boat?

Most record companies will not use "master" tapes for CDs. They run it through their digital faders, clean up the fades, put digital

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5 Those who have listened to the Stereophile flute and piano LP or my piano recording on the HFN/RR Test CD will realize that accurately capturing the true size of live instruments is a particular obsession of mine. It is also one of the reasons why I think Doug Sax's recordings of Michael Newman are among the finest acoustic guitar recordings extant. —JA
I'M SORRY
I DIDN'T CATCH
YOUR NAÏM
The Mastering Lab

Located for 21 years in the heart of Hollywood, The Mastering Lab is the oldest independent disc-mastering facility in Southern California. The rows of gold and platinum albums lining the lobby walls attest to both the room's longevity and its creative excellence.

Designed, built, and operated by Doug Sax, The Mastering Lab is somewhat of a maverick among disc-mastering rooms, reflecting Doug's single-minded (and often controversial) zeal for musical accuracy. Indeed, the facility is the very embodiment of his audio philosophy: Nearly every piece of equipment is either custom-made or highly modified to meet Doug's standards.

From such a perfectionist, one would expect a room filled with the latest cutting-edge technology. Although The Mastering Lab does feature some of the newest digital equipment, its heart and soul have remained essentially the same for its entire existence. The electronics in the signal path, as well as the monitoring system, were designed and built by Doug's brother, Sherwood Sax, 20 years ago, with only minor updates. Active electronics are kept to an absolute minimum, with everything using tubes, even the amplifiers that drive the mastering lathe cutting head. The mastering console, its front-panel paint long since worn away, has wear marks in the metal around frequently used knobs.

In addition, the monitoring level for evaluation and equalization has remained the same for 20 years. This unique consistency allows Doug to know exactly what's on the tape, without second-guessing the monitoring system or being fooled by the ear's varying sensitivity to high and low frequencies at different sound-pressure levels. Maintaining a stable, long-term reference produces a significant advantage: Each project can be compared, under identical conditions, with two decades' worth of records before it.

Every component in the signal path at The Mastering Lab, even switches, has been evaluated for its sonic transparency and, if necessary, redesigned and replaced. The tape machines have been completely rebuilt to be all-tube and transformerless. For program equalization, passive circuitry is used with a single class-A amplifier at the output to recover the equalizer's insertion loss. All XLR connectors have solid-silver contacts, chosen after extensive listening tests. The Sony PCM-1630 and JVC VP-900 digital processors used for making CD master tapes have also been modified: In addition to a new line stage, the input and output filters and sampling circuits have been replaced, with all changes based on listening tests.

The result is a facility that allows the music on the master tape to be transferred to a master lacquer or CD master tape with a minimum of degradation. Just as important, however, is the ability of the system to resolve what's on the master tape so that correct equalization decisions can be made, improving the sound of the record or CD.
THE LINN AKITO

A decade ago, when low mass, spindly arms were all the rage, Linn set new performance standards with the Linn Ittok tonearm, with its large diameter, thin wall arm tube and precision bearing assembly.

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Now, by applying the lessons of the Ekos to Linn's budget-priced Basik Plus tonearm, Linn brings the high-performance arm within reach of the masses. To quote Linn:

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By increasing the arm tube to Ittok proportions and using a massive bearing assembly, this new arm is capable of providing superb results. The Akito is the perfect partner for the Axis turntable with one of our 'K' range of cartridges.

At $395 the Akito is an affordable improvement to any hi-fi system. And with an Akito on a Linn Axis turntable, the special package price of $795 makes the combination an absolute bargain!

For additional information on Linn Hi-Fi products, and the name of the dealer nearest you, contact:

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black in, and they're thrilled. But the fact remains that it doesn't sound like the original tape that was made. The consumer has no idea, though. A couple of cuts on our new Clair Marlo CD [Sheffield Lab CD-29] sound about as least CD as anything I know — with resolution and echo. I'm very proud of that. The eighth and ninth tracks on that CD don't sound like other CDs. But that tape was made by me, not on a Sony deck. It was transferred directly from the original tape by Distronics. It wasn't a copy. Nobody got into it. And it sounds quite excellent. It has resolution. Though it doesn't sound as good as the master tape, which is analog, it sounds right to me.

RH: You have the opportunity to hear the real musical event and immediately afterward, bear both analog and digital playback of that music. What differences do you bear between the two?

DS: The digital loses nuance. It doesn't flow as well. I don't know how you would quantify that. It has less echo. Transients aren't as good in the high end. If I had a terrific, linear, A/D it would sound closer. I've gone as far as I can with what's available in one sense. But we're a long way from needing to change the format. I think the oversampling technique is meaningful to get rid of the phase shift and some other problems. The Apogee filters don't have time delay but they lose resolution. They go through a lot to correct the phase, but they don't have the resolution. To me, it's a bad tradeoff. I'd rather have the resolution and a little bit of artifact than have the artifact removed and a little bit of opaqueness to the sound. That is preferable to something more clear that you can see through. It's in its infancy.

The LP is probably dead except for maybe the tweaks. Harmonia Mundi, in their American productions, record everything analog and the engineer, with whatever converters he can get, transfers to digital. I don't know if they are losing money or not. But the analog tape comes to me and I make an LP of it and the LP is generally believed to sound superior to the CD.

RH: What tape format do most of your clients send you for disc mastering and CD master-tape preparation?

DS: These are not budget acts. They can mix to whatever format sounds the best. Cost is not a consideration. 30ips half-inch analog tape with no noise reduction is the preferred format today. There are sonic disadvantages to half-inch over quarter-inch when you get down to the nitty-gritty. But the advantage is quite simple: for the same recorded level, $\frac{1}{2}$" is 5dB quieter than $\frac{1}{4}$". On an already quiet format, 5dB is quite meaningful. You won't pick up a CD made from half-inch analog and complain about noise. The thing that interests me is that

Stereophile, October 1989

6 Replacement filters that reduce phase shift in the Sony PCM-1630 are supplied by a company called Apogee (not the loudspeaker manufacturer).
I've just designed a new solid state amplifier. In many ways, it's my best work and I'd like to tell you about it.

I've given my new solid state Silver Seven-t more absolute maximum output current into low impedance reactive loads (including 0.5 ohms) than almost any amplifier I know of: 50 amperes. In fact, Dan D'Agostino's BIG Krell is the only one that tops it.

Not only that, I've also given the Silver Seven-t more output voltage than any other amp except my own Silver Seven Vacuum Tube Amplifier (which beats it, but only by a few volts). Nobody else's amp that I know of has more output voltage — and that includes the new OTL tube amps on the market.

I can get all this voltage and current because I have a great patent, the Magnetic Field Power Supply. In updated form with lots of energy storage, it easily produces five times as much current as any other power supply of the same manufacturing cost.

**But Bob, how does it sound?**

Beyond the sheer power required for explosive transients and rolling thunder, the ability of an amplifier to reproduce the subtle, dimensional shadings of a delicate soundstage depends on its transfer characteristics (a scientist would say transfer function). I've given my new solid state amplifier a transfer function that comes as close as I can possibly make it to my Silver Seven Vacuum Tube Amplifier.

No, they are not exactly the same. But with production nulls at approximately 40dB, they are very, very close. So close that if I close my eyes and drop my concentration for a moment, the transistor version can completely fool me into thinking I'm listening to the vacuum tube Silver Seven.

Like the Silver Seven, the Silver Seven-t is a mono amp design, so you will need two for stereo; the pair costs $2,000.00.

Until my next ad, warmest regards,

Bob Carver

PS. If you'd like to know more about transfer functions, voltage and current, and the Silver Seven-t, please write to Carver Corporation, Literature Department, P.O. Box 1237, Lynnwood, WA 98046.
the half-inch, 30ips format that really started to get going about six years ago has only returned the analog tape format to what it started out as in 1948. In '48 the tape speed was 30ips, mono on quarter-inch. There are people who say, “Look, I know digital is not quite there, but look—it's only 10 years old. Look at how much time analog has had to get itself together.” And I say if I could get my hands on master tapes made in 1950 I could shock your pants off. The analog format started exactly where it is today. **RH:** *And they used tubes back then.*  
**DS:** They used tubes. They started off with 30ips tape speed and quarter-inch track width and a quieter curve than they use today. That's how it came out of the box. When we go back to the Lab, I’ll show you the 23rd machine Ampex ever made, delivered to Radio Recorders in October of 1948. So the truth of the matter is that the analog tape recorder was running at its prime when it was introduced in this country. It comes from the Magnetophon that the Germans developed in the late '30s and was brought over here in '46-'47. Bing Crosby and a few people put up a bunch of money and it became Ampex. Ampex doesn't make any audio equipment anymore, but they were the world standard for many years. A classic example of an American company checking out of a whole industry.

There are those who feel they can get a better CD coming from an analog tape than they can by putting it live on the digital. I know some people who record the rhythm tracks digitally and record everything else on the analog machine. What is interesting is that the major classical recording companies—DG, Philips—decided *en masse* that they were going to record only in digital. It is only the American independent companies who, with the artist and engineers, really make the decision on their own how they’re going to record. Some record digitally and some record analog. The only thing that can be said accurately is that there is nothing in a professional half-inch analog tape that keeps it from being the best, without hurting the product or making these artists feel they're not getting a great-sounding product. Some of them hate digital. But they are in a position, regardless of what they come out with, to make their own decisions about which format they use.

Mitsubishi now has a 96kHχ-sampling-rate digital 2-track that I hear is terrific. Almost *every* new digital machine that has been raved about has been reviled a year later. It's like you hear this amp is great, then two years later you see it's not on the "Recommended Components" list anymore. And you write a letter and someone says, "Well, we found the coloration of the midrange was not recognized instantly." So you get the amp of the moment and the speaker wire of the moment. It is this type of ventures that lose credibility for the audio magazines. A funny thing is if the amp is really good, it's good. There are not that many good amps around. It has to be that some of the amps they said were good really weren't. They were new; they liked the bells and whistles. But they have to survive the test of time. In 1958 the very first solid-state amps were offered for sale. I heard one of the first ones. Prior to that I had never heard a solid-state device. I walked into where I went to listen to my audio. Got a call to "Come on down, you won’t believe it.” Went down with my recordings, which I treasured and knew sounded good. There was one telling recording of a solo violin recorded outdoors, no room acoustics. A very good recording of unaccompanied Bach. I still have the record. I hooked up a big KLH 9, a legendary electrostatic speaker, to this brand new solid-state 100W amp. I put on the record and couldn't believe my ears. Jack, the proprietor of the store, said "What do you think? Have you ever heard anything like it?” And I said "No, not live, not recorded, I’ve never heard anything like it. It's horrible. It's the worst thing I've ever heard in my life." And immediately he said "that's because you've been used to hearing the soft transformers of tubes." I said, "Forget about that malarkey. I play in an orchestra. I stand next to a violinist warming up every day. And that is atrocious. Get your McIntosh 60 out. I can't believe you're buying this terrible sound.” He said "That's history. That's yesterday's technology.” And in a period of three or four years,
I have to say that the AE1 is one of the finest, most transparent cone speakers I have heard.
...As far as I'm concerned, it redefines the art of miniature speaker design.
*John Atkinson, Stereophile, Sep 1988.*

This is without doubt a wholly remarkable loudspeaker, and a stunning endorsement of the well developed metal cone bass units.
...on current showing the state of the art miniature, bar none.
...to the author's knowledge, the most awesomely dynamic and articulate miniature ever made.
*Alvin Gold, Hi-Fi Choice, Jun 1988*

There is no point beating around the bush – these speakers are a revelation. Their dynamic performance is in advance of anything I've heard before.
...And what a product, Few new companies in the hi-fi field can boast a speaker that leapfrogs existing references and sets new standards of technical and musical excellence.
*David Prakel, Hi-Fi Answers, Mar 1988.*

The AE-1 has an 88dB/W sensitivity, and is designed to handle — and I mean *handle* — something like 200W. But those are just numbers — the reality is quite extraordinary.
...As astonishing as the dynamics of the AE-1 are, so too is its bass extension, which has depth and fullness quite out of line for a speaker this size.
*Alvin Gold, Stereophile, Aug 1988.*
everything was solid-state. McIntosh couldn’t sell an amplifier. They had the best amplifier and didn’t think the new stuff was any good, but they couldn’t get dealers to even stock them. I was the only guy who thought this was the worst thing he’d ever heard.

Time has shown that all of these designs had nonlinear distortion, crossover notch, high distortion products, and are now reviled by the whole world. The whole world is now in total agreement that these amplifiers, at least for certainly the first five years, were unusable for playing music. No one uses them in their homes today. They are unlistenable. I was right. But it took 15, 20 years to prove it.

RH: There is a big market today for those old McIntosh tube amps.

DS: For those tube amps. No one is trying to find an early solid-state amp whose distortion rose as you went down in level. The violin became a buzz saw. The thing that shocked me is that Jack bought it. He had this totally ugly sound coming out of a gorgeous KLH 9 and thought it was terrific. Now that he had something to show whether he had ears or not, it turned out he had no ears. Actually, these early digital recordings can be considered a hearing test. If you think they sound good, you fail. And that’s how time will prove it.

It is interesting that Stereophile has a real divergence of opinion here. I talked last January at CES to Larry Archibald, who went down to Peter McGrath’s place and heard some master tapes, the digital copies and the whole thing, and he summed it up so well when he said, “It wasn’t that I heard a change so much when it went from the analog to digital, it’s what wasn’t there. Just the type of things that make it interesting to listen to.” It’s all those subtle things that make it worthwhile; they’re there on analog but they’re not there on digital.

The biggest error is, when Jack sold his McIntosh, he lost the ability to go back to what had been a reference for 20 years and reeducate his ears. When I record, my digital machines are rolling, but so are my analog machines. I’m not making a judgment of any kind as to which is going to do it. I can listen to it a month later and relax and pick which contains the most music, which conveys the music, which represents what I and the musicians heard. Once you make your decision, then you lose. You improve your microphones, get a better preamp, learn better mike tech-

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Current Development Corp., Westmoreland, NY (315) 339-2908
CSA Audio, Upper Montclair, NJ (201) 744-0600
Landes Audio, Chester, NJ (201) 879-6999
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Old Colony Sound Lab
PO Box 243, Dept. KC8, Peterborough, NH 03458-0243

Stereophile, October 1989
niques. It's how people go astray. Like the guy who sold his tube amp: he's got nothing to go back to and say, "Gosh, I can sit in the room with this for hours, I don't get tired." Then he wonders what these guys are writing about because they all have tube amps for references. Where's the world now on amplifiers? All the magazines have a couple of good tube amps for reference, for musicality. The total entity of music, whether it's one lute or a rock'n'roll record or a symphony orchestra or a Dixieland band, tubes handle the whole spectrum better.

RH: *There are more companies making tube amplifiers today than there were two years ago.*

DS: *How about 10 years ago? It was Audio Research all by itself. The interesting thing is that the speaker/amp combination is the most vital thing. Once you get that right you shouldn't change. You can play with everything else, but you shouldn't change that. It's your microscope. It's how you evaluate everything. If you change the amp at the same time you're evaluating a new CD player, you're chopped liver. Have you heard these VTLs? I've only heard them once and I was very impressed. Effortless, musical, great body, great bottom end. I think that's great, this English guy, David Manley, coming out of nowhere. Has Gordon Holt reviewed them?

RH: *He said they're the best amps he's ever heard.*

DS: *Good for him. He should keep them. Then he can better evaluate his CDs. You should get them and use them as a tool for evaluation. I feel very strongly that you have to have a very high-resolution amp so you can know what you're evaluating. Especially if you're going to evaluate CD and DAT and stuff that reeks of solid-state. Maybe some will reek less than others, but you don't want any solid-state in order to audition it. If you hear a solid-state sound suddenly come out of your speakers, well, the only thing solid-state is the CD player, not my amp. This amp, on its own, will never produce that sound. A lot of the solid-state amps have strong colorations. Maybe the same kinds of colorations you don't want to hear in your CD player. And maybe if you're evaluating two CD players and one has it and one doesn't and if your amp has it, how are you going to know the one that doesn't have it? What is the state of the art in solid-state amps now?*

RH: *Krell, Thresbold, and Mark Levinson are*
Top Choice of Tough Customers

FROM STEREOPHILE, VOL. 12, NO. 1 (JAN. 1989)

the stereophile
readership survey

TOP 30 LOUDSPEAKER BRANDS

<table>
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<tr>
<th>Brand name</th>
<th>Percentage of Stereophile readership owning brand</th>
<th>Percentage of speaker owners that would not buy the product if they had it to do over again.</th>
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<tr>
<td>Magnepan</td>
<td>6.9%</td>
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Magnepan
1645 Ninth St., White Bear Lake, MN 55110
Doug with his 1948 scully cutting lathe.

all bighlly regarded.

DS: Describe them: their size, power, cost.
RH: Class-A. very large, and expensive.
DS: Isn't it funny though, in 1989 the hot setup in solid-state amps is larger, more expensive, and produces more heat than tube amps. Think about that. Where's the progress? That was solid-state's thing: it's small, runs cool. Now if you want solid-state that sounds good, you turn it on and the lights dim. Look at that next to the VTLs. The thing that's so funny is that in 1989 you have a lot of agreement that the best amps are tube, but you couldn't give one away in 1960. And the solid-state amps then were wretched. Not only that, but they were unreliable. They had no virtues except that they would put out more power into an 8 ohm load. I know audiophile guys who buy this amp, then that amp, sell that, and 10 years later they've got that system just wonderful. Then they go in their closet and get their McIntosh 60, dust it off and say "I wonder if it still works?" They fire it up, plug it into the system, and they're stunned that it sounds better than their improvement upon improvement upon improvement.

RH: What is the future of LPs?
DS: If there's a future in this? [points to his cutting lathe] If digital gets itself together, it will never come back. There will never be any reason. But let's say digital doesn't get any better than it is today — then this will be sort of like tube amps where you have more people wanting to buy them in five years, critical listeners, than want to buy them now. This lathe—made by Scully in 1948, the first lathe made in this country that had the ability to vary the spacing between the grooves on command from the program—made my first record. If you get a piece of equipment that you use professionally for 20 years, generate income from, you've got a good investment. There is a visual value for machinery that looks like machinery instead of like kiddy toy stuff. And the black disc itself, I've always enjoyed the whole look of it. When you get a perfect disc, a master lacquer that you cut just right, there is a look to it, a shine. You have a finished product that you can look at without even listening to it and say, "I made that good." And you never get that feeling when you ship out a CD master tape. This lathe will go home with me when it retires.

RH: You must be attached to it after all this time.
DS: In one sense yes, in another no. I don't want to be wedded to the past, but I don't want to forget its virtues.
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Recommended Components
Components listed here are ones which we have found to be among the best available in each of four quality classes, and whose purchase we most highly recommend. Following each listing is a brief description of the product’s sonic characteristics and a code indicating the Stereophile Volume and Issue in which that product’s report appeared. Some products listed have not yet been reported on; these are marked (NR). We recommend that any product’s entire review be read before purchase is seriously contemplated (products without reviews should therefore be treated with more caution); many salient characteristics, peculiarities, and caveats appear in reviews, but not here. To obtain back issues of the magazine, see the advertisement in this issue. (We regret that we cannot supply photocopies of individual reviews.)

Some of the listed items are discontinued models (†), retained in this list because their durability and performance distinguish them as “classics,” and because they sometimes may be obtained for substantially less than their original cost. (Upgrade modifications are available for many.) In general, however, 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, Apart from that exception, Stereophile’s “Recommended Components” listing is almost exclusively concerned with current products 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.

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

We indicate products that have been on this list in one incarnation or another since the “Recommended Components” listing in Vol.9 No.7 (November 1986) 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 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 shortlist 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's Union" would presume to tell you whom to marry!

Class A:
Best attainable sound, without any practical considerations; "the state of the art."

Class B:
The next best thing to the very best sound reproduction; cost is a factor, but most Class B components are still quite expensive.

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

Class D:
Satisfying musical sound but significantly lower fidelity than the best available. Many of these products have obvious defects, but are inexpensive and much better than most products in the price category. Bear in mind that appearance in Class D still means that we recommend this product. Below this level, system colorations start to become so great that guidance becomes almost impossible and any recommendation is out of the question.

Class K:
"Keep your eye on this product." Class K is for components which we have not tested (or have not finished testing), but which we have reason to believe may be excellent performers. We are not actually recommending these components, only suggesting you take a listen.

Turntables
Editor's Note: An audiophile worth his or her salt should consider at least one of our Class D recommendations or, preferably, one of the four Class C turntables and their variants as the essential basis of a musically satisfying top system. An in-depth audition as part of a preferred turntable/arm/cartridge combination is required before purchase is mandatory. If an insensitive turntable has not made its way into Class D or is not listed in Class K, assume that it is not recommended under any circumstances. Underachievers are more common in the world of turntables than in any other area of hi-fi.

A

Versa Dynamics 2.0: $12,500
Ingenious vacuum hold-down, 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 has heard, particularly in its presentation of silent backgrounds and tight low-bass response. Only drawback is the need to house the air-pump module — for once not a reworked aquarium pump — in a separate room. A noise-reduction housing for the pump is now included in the purchase price. (Vol. 10 No. 8, Vol. 11 Nos. 1 & 4)

B

SOTA Star Sapphire Deluxe Series III: $1600 ★
A synergistic match with the SME Series V tonearm, the Series III, complete with the acrylic Supermat, is significantly better than earlier versions, due to the use of an aluminum armboard, new motor drive pulley, new suspension springs, and ribbed platter construction. Compared with the standard SOTA Sapphire, the vacuum holddown significantly improves bass range and detail, as well as resolution across the audio range. The SOTA "Electronic Flywheel" line conditioner ($300, Vol. 9 No. 2) improves performance very slightly further. If you find the cost-no-object "superdecks" tantalizingly out of reach, JGH recommends that you set your sights on the SOTA Star Sapphire. "The best turntable performance you can buy for anywhere near its cost," quoth JGH. (Vol. 10 No. 5, Vol. 11 No. 1)

C

Linn Sondek LP12: $1165 ★
The standard against which newer turntable designs have been measured for 15 years now, the Linn is felt by some to be more colorful than other Class C tables (particularly in the upper bass). 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 much better now in this respect than it used to be (low-bass extension suffers when the LP12 is not set up correctly). Latest version has a laminated armboard which, with Zener mods to the Valhalla board, results in a considerably more neutral sound. Despite vibrations with other decks, JA remains true to the basic design he has used near for nearly 12 years. (Vol. 7 No. 2)

RATA Torlyte-modified Linn Sondek: $600
Russ Andrews' drastic Linn modification alleviates the lack of transparency in the upper bass typical of older models, rendering the turntable more compatible with such tonearms as the SME V. The Linn guarantee will be voided, however. Recommended only to those who have a Linn that they will not mind irreversibly modifying. (Vol. 10 No. 3)

SOTA Sapphire Deluxe Series III: $1195 ★
The standard SOTA lacks vacuum disc clamping but is easy to set up and use, attractive, ingenious in design, and sonically excellent. With the new Supermat it comes close to its much more expensive brother, the Star Sapphire, in sonic neutrality, midrange naturalness, and high-end sweetness. Vacuum clamping is available as a $695 upgrade. (Vol. 10 No. 5)

VPI HW-19 III: $1140 ★
The Mk. III version of the VPI 'table, cosmically more elegant than the original, achieves a standard of sonic neutrality that put it close to the latest SOTA Star Sapphire, and at a much lower price. The HW-19 readily accommodates a wide range of tonearms — air-bearing designs such as the ET 2, in particular — and is very stable. The $300 Power Line Conditioner (see Vol. 12 No. 2) is a worthwhile accessory. (Vol. 9 Nos. 4 & 5)
Well-Tempered Turntable: $1695 (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 works well—but it's available w/o arm for $975. (Vol.11 No.3)

D
Acoustic Research Connoisseur ES-1: $550 ★
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—the Cheapskate just loves the AR with the Rega RB300, while Guy Lemco enjoyed the sound with the AudioQuest PT-5. Intrinsic character is a bit fat in the upper bass, but is nevertheless musical. Availability is limited, but The Audio Advisor has supplies. The AAs metal armboard should be regarded as mandatory (Vol.11 No.4), the Cheapskate then feeling the sound with a felt mat to be Class C and rivaling the Linn LP12. Merrill's modifications of the Connoisseur are also said to be worth investigating. (Vol.8 No.7, Vol.11 No.4, Vol.12 No.8)

Linn Axis: $795 (inc. Basik tonearm)
Versatile, "turnkey operation," two-speed belt-drive deck with electronic speed control and ingenious suspension. "Smaller" sound than the Sondek, perhaps limited by the good, but not outstanding, performance of the Linn tonearm. The latter has been improved since its original introduction, however. (Vol.10 No.1)

Rega Planar 3: $599 ★
Synergistic mix of no-nonsense deck with superb arm. Lack of environmental isolation may be problematic; some recent reports of variable wow & flutter; 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)

Sonographe SG3: $595 ★
Better-sounding than the basic AR, the Sonographe may be hard to find. It is worth seeking out. Good value in the armless version. (Vol.9 No.7)

VPI HW-19 JR turntable: $600
West-Coast price is $25 higher. An upgrade kit turns the JR into a fully-fledged HW-19. (See GAG's review and "Manufacturers' Comments" in this issue.)

K
Alphonson Sonata, Ariston Q-Deck, Basis Debut, Roksan Xerxes, Dunlop Systemdek 11X, Elite Rock Reference, Heybrook HB2, Michell Gyrodek, Revolver Mk.II, SOTA Cosmos, Versa Dynamics Model 1.0, VPI TNT.

Deletions
Goldmund Reference due to lack of recent auditioning.

Elite Rock & Excalibur combination replaced by significantly more expensive Rock Reference yet to be auditioned.

Tonearms
A
Air tangent: $3600
Setting a new price level in this listing, this beautifully made Swedish parallel-tracking tonearm 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 "billowing" soundstage and a well-defined bass. Better in the highs than the SME, it is 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)

Linn Ekos: $1995
Rivals the SME in midrange neutrality while providing a much better match with the Linn Sondek LP12 than the English arm, which loses control of the bass when mounted on the Scottish turntable. Azimuth adjustment not possible. (Vol.12 Nos 3 & 4)

SME Series V: $2250 ★
Extraordinarily neutral pivoted tonearm, with the lowest resonant signature of any. 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, says SWW, but JGH feels that the whole bass range is somewhat exaggerated. Certainly JA feels the latter to be the case when used with the Linn LP12. Some compatibility problems with cartridges having low height, but otherwise the new reference. Very pricey, but ergonomically and aesthetically a work of art. A finish worthy of Tiffany's, according to AHC. A less versatile version, the IV, appears to offer many of the V's sonic virtues at a lower cost ($1500). (Vol.9 No.6)

Wheaton Triplanar II: $1795
Limited-availability, unusual-looking pivoted tonearm with logically thought-out VTA and azimuth adjustments. While not as neutral as the SME V, and not having as much bass—the balance is on the lightish side—the latest version of the Wheaton excels in its ability to enable the cartridge to retrieve spatial information and present a detailed, solid soundstage. (Vol.11 No.1)

B
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. Idiosyncratic nature of low frequencies precludes a Class A rating. Very fussy to set up and use and needs a very stable subchassis turntable—VPI, SOTA—to give of its best. 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. (Vol.8 No.7)

Linn Ittok LVII: $965 ★
Slight resonant colorations in the upper midrange com-
pared with the best arms, which can add both hardness and a false sense of "excitement." Bass and lower midrange still among the best, however, and superior to the similarly priced competition in these areas. (Vol.8 No.7)

**Well-Tempered Arm: $720 ★**

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, and 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**

**AudioQuest PT-5: $350**

Medium-mass tonearm with straight aluminum arm-tube wrapped in clear polyolefin and nondetachable headshell. Pivot damping optional, while VTA adjustable with setscrew at base, but no azimuth adjustment, with which it can be supplied as a package at reduced cost. Works well with AR and VP1 JR turntables, with which it can be supplied as a package at reduced cost. AudioQuest Sapphire cable adds $95 to price, but should be regarded as essential, says Gary Galo, the sound with the basic cable being rather veiled, if not totally muted. (Vol.12 Nos.8 & 10)

**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 table, but also recommended by the Audio Cheapskate as an ideal substitute for the arms that come with the AR and Sonographe '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**

SME 309, Graham Engineering Unipivot, Naim ARO, Souther/Clearaudio, Roksan Artemiz.

**Pickup Cartridges**

**A**

**Editor's Note:** The rather wide range of performance represented in Classes A and B suggests that a recasting of the entire cartridge section would be desirable. This will occur in "Recommended Components" in the April 1990 issue of the magazine, following intensive auditioning of several more recent contenders.

**Dynavector XX-1: $1295**

"Easy on the ears," said AB in his review of this high-output MC which features a switchable "Flux Damper." Soundstaging, too, was an area where the Dynavector excelled, producing a "panorama with quality." Highly detailed presentation perhaps slightly offset by a feeling that the sound was slightly larger than life in being too harmonically rich from the upper-bass downward. Benefits significantly from regular "Flux-Busting." (Vol.12 No.6)

**Jeff Rowland Design Group Complement: $2500**

Setting a new upper limit for cartridge price, the high-mass Complement, which lacks any kind of cantilever, also 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, 5 5gm or more shifting the coils from their optimum position, effectively resulting in mono reproduction. (Vol.12 No.7)

**Linn Trolka: $1750**

Lightish balance, but musical integrity not compromised by superb retrieval of information. As good as the Koetsu Red at presentation of the soundstage. 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)

**Monster Alpha Genesis 1000 II: $800**

As sweet in the top five octaves as the Koetsu Red Signature but more detailed, in the same league as the Virtuoso DTI. The best cartridge Monster Cable has produced. (Vol.10 No.5)

**Ortofon MC-3000: $1000**

The "second most neutral cartridge" JGH knows of. 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)

**Spectral MCR-1: $1190**

Hand-built and hand-adjusted, the Spectral produces a delicate rather than forceful sound, with remarkable faithfulness to the true tonal colors of instruments, though AB felt it to be a little romantic in nature when compared with the Jeff Rowland Complement. Latest Signature version could well be better but not yet tested. (Vol.12 No.7)

**Talismann Virtuoso DTI: $1200 ★**

The first high-output 'coil to make Class A. Warmer balance than the Talisman, with first-rate imaging and excellent harmonic contrast. The champ when it comes to retrieval of HF detail, but a top end that is 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 concurring that spatial detail "is sketched out with exquisite dimensionality." VDH style 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. 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: $1075**

Not particularly cable-fussy, but does require atten-
tation 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 4041-L cartridge: $550**

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 "Functionally Perfect-copper" coil windings, said to improve the sound of the low-output version slightly but that of the "H" high-output version to a significant extent. (Vol.12 No.3)

**Signet/Audio-Technica AT-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). A point worth noting is that it has very high output for a low-output 'coil, minimizing phono-stage noise. (Vol.12 No.2)

**Grado Signature TLZ: $500**

The only MM model to break out from the confines of Class C, the TLZ features slightly more open highs than the AudioQuest 4041-L, an open, lively midrange, a taut midbass, and expansive low frequencies, according to TJN. (Vol.12 No.7)

**Krell KC-200: $1100**

Slightly better than the KC-100 in all the areas where that cartridge performs best, with excellent dynamics, but too bright a presentation overall just holds this sapphire-cantilevered sibling of the KC-100 out of Class A, felt AB. Needs low, 47-ohm loading for the sound to become fully coherent. (Vol.12 No.6)

**Krell KC-100: $800**

A wide, deep, and focused soundstage are coupled with liveliness and clarity. If a little bright, the KC-100 "exceeds in soundstaging and separation of individual details within the soundstage," said TJN. Like the KC-200, borderline Class A, but smoother overall than its more expensive stablemate. (Vol.12 No.2)

**Linn Karma: $1225**

Forward balance, with good, but not excellent, imaging. The whole is better than the sum of the parts, the result being consistently musical, particularly on rock and jazz material. (Vol.10 No.5)

**Madrigal Carnegie 2: $850**

Borderline Class A performance, with a tight, well-defined bass, but let down by an overall reticence, a loss in exuberance, when compared with the Rowland Complement or Spectral cartridges. Sins of omission rather than commission make this rather dark-sounding pickup more suited to classical enthusiasts, thought AB. (Vol.12 No.6)

**Monster Cable Alpha Genesis 500: $500**

Tight deep bass, clean high frequencies, but overall a lightweight tonal balance, thought TJN. This inexpensive cousin of the Class A Genesis 1000, however, provides stunning image depth. (Vol.12 No.2)

**Ortofon MC-30 Super: $600**

Much less expensive derivative of the MC-2000 features almost Class A performance in some areas, particularly regarding bass performance and tracking, but less good soundstaging. Slightly less neutral tonal balance than the '2000, being a little bright and forward, will render it incompatible with systems optimized for CD playback. (Vol.10 Nos.1 & 5)

**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 and a more palpable image, and a less "exciting" sound. (Vol.12 No.4)

**van den Hul MC-10: $775 **

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 set-up. (Vol.9 No.6, Vol.10 No.5)

**C**

**A&R P777Mg: $150**

Polite, sweet sound and a neutral tonal balance, but this English MM from Audio Influx is a little undernourished, dynamically. Will work wonders in an otherwise brashly balanced system. (Vol.10 No.4)

**Adcom XC/Microridge II: $360 **

Very smooth and neutral, much like master tape, with excellent trackability. Hochs perhaps a little sweeter than more expensive vdh version. Excellent value for money. (Vol.7 No.8, Vol.10 No.5)

**AudioQuest Ruby: $200**

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

**Audio-Technica AT-F5: $325**

Somewhat laid-back, not at all forward or peaky, said the Cheapskate of this gray-import MC, available from Music Hall and Lyle Cartridges. Add the fact that it "plays tunes" without being too overdone in the bass, and you can see why ST prefers it to the Shure V15 V-MR. (Vol.11 No.7)

**Denon DL-160: $115**

KK felt the highs to be a little too soft, but deep, deep bass and wide, wide soundstaging gave this budget high-output MC a BIG sound. The Cheapskate was less impressed with the bass, but felt that its smooth, relaxed presentation of detail was most seductive. A winner in systems tending to be upfront. (Vol.9 No.8, Vol.10 No.1)

**Grado Signature MCZ: $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)

**Linn K9: $275**

Remarkably neutral, clean-sounding MM fitted with a good diamond, features good transient response and bass dynamics, though slight tendency to edginess and

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upfront balance will favor systems optimized for non-
classical rather than classical music reproduction.
(Vol.10 No.1)

MAS Econocoll: $199 ☆
Considered an extraordinary buy when AHC reviewed it
in 1984, this budget-priced MC now has stronger
opposition. Nevertheless, it is fast, very smooth, and
has very good trackability, good soundstaging and
imaging, coupled with a slightly laid-back quality.
(Vol.7 No.8)

Nagaoka MIll Boron: $150
Clear, precise midrange and treble are allied with rather
veiled bass, but the mixture will work well in inexpen-
sive systems where the need for unfatiguing highs out-
weighs the lack of low-frequency clarity. (Vol.10 No.2)
Less expensive MP11 Gold ($100) almost as good.
(Vol.10 No.4)

Ortofon MC-20 Super: $300
Wide but shallow soundstage and somewhat exagger-
ated high end will mean careful attention to system
matching. Like the X5-MC, the MC-20 Super will do
well in systems having a depressed top octave. (Vol.10
No.5)

Ortofon X5-MC: $300
This high-output MC features low frequencies that are
extended and tight, and the Gyger-profile stylus
retrieves more detail from the groove than the simi-
lar X3-MC. Somewhat forward-sounding, however.
(Vol.11 No.7)

Shure V15 Type V-MR: $297 ☆
Very neutral midrange and bass, slightly soft high end,
high compliance. Excellent value at often-discounted
price. You sacrifice a bit of detail both compared with
good MCs and the more expensive ($400) Shure Ultra
500. A "budget reference," according to both AHC and
the Cheapskate. Recommended for its unsurpassed
tracking ability, excellent reliability, and listenability.
Frequently available at significant discount. (Vol.7 Nos.5
& 8, Vol.10 No.5)

D

Goldring Epic II (US version): $80
At last a challenger—albeit a more expensive one—for
the budget crown of the cheap Grados. Good track-
ability, and more extended HF response than the Epic
sold in the UK (but less good soundstaging), make it
suitable for use in relatively expensive LP players until
the budget can be stretched for a Class B or C cartridge.
(Vol.10 No.1)

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. When your friends need to change the cartridge
on their old Dual or Garrard, this is the one to rec-
commend. Will hum if used with older AR decks; lack of
suspension damping can lead to woofier pumping, even
flutter, with high- or even medium-mass arms. Dealers
aren't in love with it; at $25, how much profit can there
be? (Vol.7 No.8; actual review was of an earlier version,
the GTE+1)

Nagaoka MP10: $60
Rivals the cheap Grado as a bargain-hunter's dream.
Lacks attack and detail, but sounds well-integrated
across the frequency band. (Vol.10 No.4)

Ortofon MC-10 Super: $100
"Uncolored, detailed, and composed," said KK of this
conventional-output MC, with a performance evenly
balanced across the board. Sins of omission rather than
commission lead to a recommendation. Recent price
reduction makes this Ortofon much more competi-
tive. (Vol.10 No.2)

Shure VST III cartridge: $100
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

Clearaudio Veritas, AudioQuest AQ7000, Monster Cable

Deletions
Current samples of Koetsu Rosewood Signature and
Ortofon MC-2000 not auditioned in too long a time; Ar
dom SX/S with den Hul felt not to sound as good as
less expensive XC/Microridge II.

CD Players &
Digital Processors

Editor's Note: The class ratings are a little different
for CD players: 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 we
write this. We urge caution to someone about to pur-
chase an expensive "state-of-the-art" CD player and
note that perhaps the wisest strategy these days would
be to buy separate player 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 this issue.

A

Accuphase DP-80L/DC-81L: $13,000
This beautifully constructed two-box CD player is the
most expensive on the market but does offer a sound
quality commensurate with that price. A similar tonal
balance to the Sony R1 combination, but rivals the
Theta at retrieval of information and detail, and the
Tempest II at soundstaging. It may be unbelievably
expensive, but this Accuphase does excel at the ability
to present the musical values within a recording. Note
that the output is phase-inverting. (Vol.12 No.3)

Philips LH11000: $4000
A solidly constructed two-chassis player (transport and
DAC), with an ergonomically excellent "universal"
remote control, the LH11000 uses premium versions of
the Philips 16-bit, oversampling chip set. The sound
features superb retrieval of detail and an excellent sense
of space, but with rather a more laid-back midrange
presentation, overall, than the Tempest SE or Sony R1.
The latter player also has more impact in the lowest
decibels. (Vol.12 No.6)

Sony CDP-R1/DA5-R1: $8000
As beautifully made as the Accuphase, this expensive
player features a unique twin-optical datalink between
its two chassis. JGH felt the low frequencies to be ex-
aggerated in level, but otherwise had no criticisms of its
sound, finding the soundstaging and ability to retrieve

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detail to be “stunning” and the overall sound “silky.” (Vol.11 No.12, Vol.12 No.2)

**Theta DS Pre D/A preamplifier: $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 soundstage and a superb transparency. Less expensive DS Pro ($3200) dispenses with the preamplifier functions. (Vol.12 No.3)

**Wadia WD1000 DM64 decoding computer: $4950**

Featuring 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, this single-box sibling of the expensive WD2000 offered the best CD sound that Martin Colloms had heard as of summer ’89. A “striking” level of clarity and transparency was coupled with pinpoint focus and a tight, powerful, tuneful bass. 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 HF spurious present in the analog output might lead to trouble with some pre- and power amplifiers. As with the Theta processors, the Wadia’s DSP program is held on replaceable ROM chips, allowing for relatively inexpensive performance upgrades. (Vol.12 No.9)

**B**

**Arcam Delta 70 CD transport: $1295**

A high-quality CD transport using Philips’ top mechanism with optical and coaxial serial digital outputs. (See RH’s review in this issue.)

**Barclay Bordeaux: $1500**

The review sample was based on a Philips CD880 chassis, with premium Philips chips, but current production is based on the very similar CD80. A high degree of HF transparency is coupled with excellent soundstage focus and extended, well-controlled low frequencies, allowing the music to communicate considerably more effectively than via the stock machine. Overall presentation is more upfront than the softer-sounding Marantz CD-94. (Vol.12 No.8)

**British Fidelity Digilog D/A converter: $995**

(See RH’s review in this issue.)

**California Audio Labs Tempest II: $2995**

Now considered borderline rather than true Class A, this two-box player is less good at retrieving detail and possessed of a slightly soft low end. Its slightly “untidy” presentation notwithstanding, the tubed Tempest is still the champ both at presenting a wide, deep soundstage and at vocal reproduction, where it features a lush, liquid (if rather forward) midrange. Some controversy over the $1000 more expensive Special Edition (reviewed in Vol.12 No.6), which replaces Philips’ oversampling chip set with premium Burr-Brown 18-bit DACs and a custom digital filter to give a more analytical, more controlled sound. The SE “launders the music” when compared with the II, however, according to Lewis Lipnick, though many ‘philes will relish its wealth of detail. SE digital filter does appear to offer increased low-level resolution compared with Philips filter, though the tradeoff is limited headroom at 0dB. (Vol.11 No.10, Vol.12 No.3)

**Precision Audio DIVC-880: $1299**

Like the Barclay Bordeaux, the review sample was based on a Philips 880 chassis, though current production uses the similar CD80. More detail than the Marantz CD-94 and with better bass control and articulation, it lacks the older player’s midrange and HF smoothness. Original sample both a little dry in the treble and slightly lacking in soundstage palpability when compared with the Bordeaux, which just kept it from achieving a Class B rating. Modifications have been made in production that RH found to alleviate this sonic characteristic; a true Class B rating is now in order. (Vol.12 Nos.8 & 10)

**C**

**Adcom GCD-575 CD player: $600**

High Class C sound from this modestly priced player due to its superb resolution of detail. Dynamics a little restricted, however, and balance may be too lean for some tastes. Some question over reliability—see “Letters” and “Manufacturers’ Comments” in this issue. (Vol.12 Nos.3 & 6)

**Arcam Delta Black Box: $650/$799**

Outboard digital processor for use with CD players and DAT recorders, that uses a selected Philips 4x-oversampling, 16-bit chip set and a custom LSI to look after the digital signal handling. Tonal quality a little forward in the midrange, with slightly “tizzy” highs, and upper bass rather soft, but very musical sound nonetheless. (Vol.12 No.2; also see RH’s review of the optical-input version, which costs another $149, in this issue.)

**California Audio Labs Aria Revised: $1595**

The first version of this hybrid player failed to impress, but a major circuit revision in Summer ‘87 results in a player that, according to LL, “doesn’t get in the way of the music.” More open sound than that of the Sonographe SDI, and excellent at decoding the spatial and musical characteristics of a recording, though the midrange is not up to the standard set by the considerably more expensive Accuphase and Tempest II. (Vol.11 Nos.1, 3, & 10)

**Marantz CD-94: $1800**

Some disagreement over the sound of this immaculately constructed, beautifully finished, Japanese Philips player, as Sam Tellig felt it to be almost as good as the two-box Tempest II at capturing the atmosphere of a recording, and better, in that it sounds less ripe in the upper bass, than the Accuphase. “Palpable presence,” coupled with impressive soundstaging and a tubelike smoothness of response, he concluded. TJN disagrees with the Cheapskate, finding the sound to be too smooth, leading to blandness. Having listened to it at length, JA tended more to the Cheapskate’s way of thinking, though he doesn’t think it scales Class A heights, the sound lacking detail. (Vol.11 Nos.9 & 10, Vol.12 No.2)

**Meridian 207 Pro: $1990**

Incorporates full-function preamplifier, including remote control of volume. More neutral in the midrange than the Aria, with excellent soundstaging, the
207 is slightly less analytical overall. Optional phono board costs $250; 1R remote control $150. The ideal player to use with Meridian's new D600 “digital” loudspeakers, the remote for which controls the CD-player functions. (Vol.11 No.11)

Onkyo Grand Integra DX-G10 CD player: $2500
A provisional inclusion for this massively constructed Japanese player due to initial uncertainties over alignment of its true 18-bit DACs — the left channel was almost Class B; the right, Class C. The Cheapskate felt the overall sound to be on the bland side, but with excellent dynamics and a firm, tight bass, nevertheless. Expensive for Class C. (Vol.12 No.3)

Yamaha CDX-1110U CD player: $1199
Balance a little on the lean side, but the Cheapskate thrilled to the spaciousness of the sound offered by this “shifting-bit” player, coupled with “an exquisitely smooth, sweet, and delicate high end.” Yamaha could learn from, say, Onkyo when it comes to laying out the front-panel buttons in a logical manner, however. (Vol.12 No.3)

D

Magnavox CDB582 CD player: $229
Rather rough-sounding, with limited resolution of detail, but good value when discounted. (Vol.12 No.3)

Rotel RCD 820BX2: $749
Less smooth, a cooler balance than, for example, the Denon ‘1500, but more musical, was LJs finding, feeling that this UK-designed, 4x-oversampling Japanese player had excellent clarity and focus. Not as deep a soundstage as the Sonographe, and occasionally sounds a little “sparse and brittle,” but edges slightly ahead of the American player in terms of detail. (Vol.11 No.8)

Sonographe SD1 Beta: $795
Using the now-venerable 14-bit Philips chip set and a little dark-sounding and lacking resolution when compared with the best Class B machines, the Sonographe is nevertheless one of the more music-sounding players around. Throws a deep soundstage when compared with unmodified 16-bit Magnavox players. (Vol.11 No.11, Vol.12 No.3)

K


Deletions
Audio Concepts/MSB, Euphonic Technology ET650PX Mk.II, Kinematics KCD-30, and The Mod Squad Prism all replaced by new versions based on latest generation of Philips chasis, yet to be auditioned; Precision Audio DIVC-471 replaced by DIVC-880; Tandberg TCP-3015A due to doubts concerning the company's US distribution arrangements; Denon DAP-5500 and Marantz CDA-94 D/A converter now too expensive for sound quality on offer; Sony D-15 discontinued.

Preamplifiers

A

Conrad-Johnson Premier Seven: $7850

The phrase "without any practical consideration" in the description of an archetypical Class A component applies in spades to this expensive, two-chassis, dual-mono, tube preamplifier. The two switched-attenuator volume controls are a pain to use and feature too-large changes in level, particularly at the lower end of their travel, which is where they are most often used, due to the excessive line-stage gain; the line stage is polarity-inverting; the tape-monitor arrangements give potentially speaker-destroying positive feedback when the switches are inadvertently set wrong; and it takes Hou-dini to gain access to the right-hand channel tubes. But the sound from LP, using low/moderate-output MC cartridges, is stunningly true to the original, both in musical terms and when it comes to the Audio Anarchist's "palpable presence." The Premier Seven is probably the most neutral, best-imaging, all-tube preamp ever to reach full-scale commercial production. (We have yet to hear the Counterpoint SA-9/SA-11 combination under familiar circumstances.) Though the Seven's distortion is a little high for a late-'80s design (but still innocuous) at around 0.1–0.3%, circuitry buffs should ponder the fact that this is achieved without any loop negative feedback! With a phono stage based on nuvistor, this is one linear circuit. (Vol.11 No.11, Vol.12 No.8)

Mark Levinson No.26: $4995
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. 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. Digibuffs can obtain a basic version without phono stage. Should they change their mind, an outboard phono unit, the No.25, is available. (Vol.11 No.5)

Mark Levinson No.25: $1875/$1800
(High/Low Gain)
$2825/$2750 with PLS-226 power supply
MC—line-level phono preamplifier featuring identical circuitry to the phono section of the No.26 and conventional unbalanced outputs, the No.25 can be powered from the No.26's PLS-226 supply or from its own, with which it achieves a stunning degree of transparency, neutrality, and musicality. (NR, but see the No.26 review in Vol.11 No.5)

The Mod Squad Deluxe Line Drive AGT: $1095
Its passive nature places demands on the components upstream of it to be able to drive a fairly demanding load, but if that is 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. (Vol.12 No.1)

Threshold FET 10: $4150
Two-box solid-state preamplifier — phono ($1650) and line stages ($2500) available separately — with separate 'c' series power supplies. Not quite as rich-sounding as the Audio Research SP1, according to JGH.

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and not quite as much image depth, but accurate, transparent, and capable of intensely musical sound. Borderline Class A sound with its basic power supply (when the combined price drops to $3550, ie, $1350 phono/$2200 line stage) but true Class A with its upgraded, better supply. Threshold having taken the hint from the fact that a number of FET-10 owners—including JGH—had bought the John Curl–designed Vendetta Research power supply. Owners of the original power-supply version can have their preamps upgraded by any authorized Threshold dealer. (Vol.10 No.6, Vol.11 No.1)

Vendetta Research SCP-2A phono-preamp: $2250

A dual Mono MC-line-level RIAA equalizer and preamplifier from John Curl that redefines the presentation 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. (Vol.11 No.6)

B

Conrad-Johnson PV9: $2950

Single-chassis derivative of the Premier Seven, this all-tube preamp shares many of that thoroughbred’s operating idiosyncrasies, including the excessive line-stage gain and the kamikaze tape-monitor switching. But for those with Grados or Talisman high-output MCs, the sound from LP, if rather laid-back for some tastes or some systems, will approach Class A quality. Line stage is polarity-inverting. (Vol. No.5)

David Berning TF-12: $2950

“Incredible liquidity” and “an impressively wide, spacious soundstage,” said JGH, but ultimately he found the TF-12’s phono stage to be too mellow, feeling that it erred from neutrality in the opposite direction from the Klyne SK-5A by about the same amount. JA feels, however, that this tube preamp’s unique combination of musicality and remote control of volume and balance deserve a guarded recommendation, particularly in systems verging on too bright a presentation. (Vol.11 No.7)

Dolan PM-1: $2395

Solid-state Canadian preamp with a warm sound reminiscent of a C-J tube design. Mellow, musical balance, but bass a little soft. (Vol.11 No.4)

Electrocompaniet EC-1: $2095

A clean and detailed sound, especially at low frequencies, with realistic dynamics. Balance a little on the warm side. “Excellent value for money” and “An outstanding recommendation,” proclaimed SWW, if not quite reaching the standard set by the more-expensive Klyne. EC-1A ($1795) is identical to the EC-1, apart from lacking the MC-2 MC board. (Vol.10 No.9)

Klyne SK-5A: $3250

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

Meitner PA61: $2395

Fully remote-control solid-state preamplifier that scores in low-frequency extension and soundstage presentation. Absolutely perfect at switchable from the listening seat. Somewhat bright—“with a little sparkle,” noted AB in his review—but a relative lack of detail and dynamics precludes a Class A rating. Best used with the Meitner “Translink” line-level isolating transformers. Price includes wired remote; $2495 with IR remote. (Vol.11 No.6)

The Mod Squad Phono Drive: $1295

Beautifully engineered, stand-alone MC/MM phono stage with line-level output. Includes low-output-impedance line 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. (Vol.12 No.1)

Motif MC-7: $3500

The Motif is an all-FET preamp designed by Conrad-Johnson, and sounds it. In fact, it has the same virtues as the all-tube Premier Three, but is better at them: the high-frequency sweetness is there, but highs have more extension; the imaging is as three-dimensional, but more specific. Highly recommended; the only thing missing is the warm glow of the tubes. (Vol.9 Nos.1 & 7)

C

Audio by Van Alstine Super-PAS Three: $595

Owners of vintage Dynaco PAS2, -3, and -3X tube preamplifiers can send them to Frank Van Alstine to be modified for $350 or can rebuild them themselves with an AVA kit of parts for $200; otherwise AVA offers Super-PAS preamps constructed on new Dynaco chassis for $595. Featuring rather a lean tonal balance with less well-defined low frequencies than should otherwise be the case, the Super-PAS 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 LF headroom on phono input mandates careful matching of cartridge and tonearm. Now uses Chinese 12AX7A tubes with 25% higher gain. (Vol.11 Nos.10 & 12)

Forté 2: $890

Basic preamp from Threshold’s Nelson Pass, using premium ICs, that accommodates all but the lowest-output MCs—gain and loading all being adjustable internally. “No significant shortcomings apart from dynamics,” said the Audio Anarchist, while the line stage, if not as neutral as the best Class B and A models, renders the sound of CDs a little on the mellow side—not a bad thing. (Vol.12 No.5)

Hafler Iris: $800

Ingenious, all-FET remote-control preamp designed by Acoustat’s Jim Strickland, with analog volume and 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 overall that doesn’t quite approach the PS 4.6/M-500 combination, although more musical than the Class D contenders. Version without the remote control and IR receiver card is available for $650. (Vol.12 No.6)
NAD 1300: $399
Full-function preamp with versatile tone controls. Superbly quiet, delicate-sounding MC input; excellent dynamics; slightly forward tonal balance better suited to rock or jazz than to classical music; rather lightweight bass; extended highs. (Vol.11 No.12)

Linn LK1: $1050
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 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 MM should note that the MM input has limited headroom, particularly at high frequencies. Remote control—essential—adds $110 to price. (Vol.12 No.7)

The Mod Squad Line Drive AGT: $595
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)

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. Line-section is sweet, though a little wispy in the highs, rather than punchy and dynamic, but can be switched out. TJN suggests that the overall performance is of almost Class B standard when the 4.6 is coupled with the M500 power supply (which raises the price to $1104). (Vol.11 Nos.9 & 12)

Superphon CD Maxx line preamp: $399
Inexpensive, line-level-only active preamplifier with unique styling and extremely neutral sound. (Vol.11 No.9)

Adcom GTP-400: $350
GAG enthused at length in his review over this inexpensive IC-based tuner/preamplifier 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 and not particularly detailed; overall sound very enjoyable. Tuner section, although not offering the ultimate in selectivity, will be good enough for most users and, again, offers enjoyable sound. (Vol.12 No.9)

Parasound P/FET-900: $395
Neutral line section with good dynamics; MM-only phono stage has slightly astringent treble. (Vol.11 No.12)

QED PCC passive preamplifier: $250
Unusually styled but well-made passive control center, lacking transparency and dynamics when compared with active preamps. (Vol.11 No.12)

Audio Research SP15 & SP14, Krell KSP-7B, MFA Magus, Classé 5, Conrad-Johnson PV-8, Counterpoint SA-9/SA-11, SA-1000, SA-3000, & SA-5000, Adcom GPA-565 & ‘555 Mk.II.

Deletions
Audio Research SP11 discontinued; Krell KRS2 on the grounds that preliminary auditioning of Krell’s new KSP-7B suggests that it sounds at least as good, perhaps better for significantly less money; Theta DS Pre as a preamplifier as continued auditioning suggests that it works best with a separate preamp; dbx CXI, due to uncertainties about supply; Denon DAP-5500 now too expensive for Class C; Adcom GFP-555 replaced by Mk.II, yet to be auditioned.

Moving-Coil Step-up Devices

A
Mark Levinson No.25: $2825/$2750
(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-2A: $2250
Ultra-quiet dual-monophono preamplifier includes RIAA equalizer to line-level output. See “Preamplifiers.” (Vol.11 No.6)

B
Conrad-Johnson Premier Six: $985
Possessing colorations and transparency similar to those of the Premier Three, the Six can be ideal for use with transistor preamps, but requires careful matching. (Vol.8 No.5)

Counterpoint SA-2: $1095
Superb preservation of detail, low distortion, lovely midrange. The noise is noticeably higher than that of the Klyne (see below), but the problem with fat bass on early units has been corrected. Comes with an interesting tube-bias adjustment for tailoring the sound to your tastes; the SA-2 can be made to sound rich and euphonic or somewhat lean—as long as you don’t go crazy wondering what’s right. (Vol.6 Nos.2 & 3)

Electrocompaniet MC-2: $450
Deleted from "Recommended Components" in 1986 due to lack of availability in the USA, this solid-state head amp is now distributed by Music & Sound Imports. In the original review, AHC felt it to be better than the Klyne in terms of openness and dynamics, though less universally applicable. Must be used with cartridges having less than 50 ohms source impedance, so essential to audition with your chosen cartridge before purchase. (Vol.8 No.5)

Klyne SK-2a: $750
A close rival to the Counterpoint SA-2, the basic difference here being solid-state vs tubes. Superb bass, very deep and tight, excellent high-frequency extension, excellent imaging. It still lacks the three-dimensionality of tubes, but only slightly. Adjustable high-frequency rolloff and cartridge loading are boons for those with several MC cartridges. A bargain at $750. (Vol.7 No.3, Vol.8 No.5)

The Mod Squad Phono Drive: $1295
 Matches both MM and MC cartridges with versatile
loading options. Line-level output. See “Preamplifiers.” (Vol.12 No.1)

C

Music Reference RM-4C: $750 ♠
Not as good as the best tube step-ups, but similar in character and less expensive. The RM-4 is flexible and a good deal. (Vol.8 No.5)

Deletions
Audio Research MCP-33 and MCP-2 discontinued.

Power Amplifiers

A

Editor’s Note: Class A amplifiers differ sufficiently in character that each will shine in an appropriate system.

Krell KSA-200 & 80B: $5500/$3950
Preliminary rating. Full review to appear shortly. (KSA-80, Vol.12 No.4)

Mark Levinson No.20.5: $11,500/pair
Class-A 100W monoblock with fully regulated power supply for output stages. Successor to the legendary ML-2, the slightly different No.20 was the finest power amplifier JA has used, particularly regarding soundstaging and the authority of low frequencies. The No.20 had a somewhat soft treble balance compared with the No.23 and ARC M-300, but got the best from loudspeakers with which it was used, particularly regarding low-frequency extension and definition. 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 remains. Offers both balanced and unbalanced inputs. (Vol.12 No.9)

Mark Levinson No.23: $4975
Notably less laid-back than the No.20.5 (or Krells), careful system matching is more necessary with this 200Wpc powerhouse of an amplifier. The result, however, is a sound that is harmonically correct, focused, and possessing great dynamic contrast, though with a bass that, though extended, is not quite as tight as the Krells (or No.20.5), according to LL (and JA). “Amazingly lifelike soundstage dimensionality” (l), concluded LL. (Vol.11 No.9)

Prodigy 150 monoblock OTL: $7000/pair
Monstrous OTL tube amp, developed from the Futterman designs once sold by NYAL. Tonal balance very dependent on load impedance presented by loudspeaker. 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)

Vacuum Tube Logic 300W 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 that is 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 electrostatics and with Infinity IRS Betas. (Vol.11 No.10)

B

Aragon 4004: $1595
Attractively styled class-AB solid-state amp, designed by Krell’s Dan D’Agostino, and capable of high current delivery into awkward speaker loads. Fuller sound than the Adcom 555, “being less dry in the top octaves,” said TJN, more neutral tonal balance than the Motif MS-100, and even better soundstaging than the Onkyo M-508, make it a borderline Class B contender. Good value for money, very high power rating—200Wpc—and an excellent reputation for reliability, according to LL. (Vol.10 No.9)

Boulder 500: $3695 ♠
Mistakenly dropped from “Recommended Components” in 1988 due to a misunderstanding over its availability, this powerful solid-state amplifier, based on Deane Jensen’s 990 discrete op-amp module, extends the traditional strengths of solid-state amplifiers throughout the frequency spectrum. Transparent sound and tonally very neutral, though with possibly a trace of hardness in the mids, possibly redressed by recent, unauditioned circuit refinements. (Vol.9 No.5)

Classé DR-3B: $3195 ♠
Now in a “B” revision, low 25Wpc and class-A operation remind one of the classic Mark Levinson ML-2. Mellower and richer than the Krells, and lacking their dynamics, the Classé DR-3 produces a sweet, detailed sound, with surprising output capability for the modest power rating. High Class B. Particularly well suited to Apogee Scintillas. (Vol.8 No.8)

Classé DR-9: $3495
First class-AB design from this Canadian manufacturer, the DR-9 gives up little to the DR-3 and scores highly in its ability to deliver high power into low-impedance loads. “Its strong suits are definition, detail, depth, and dynamics,” said AB, to which must be added transparency and an extended spectral response. Less robust in the lows and leaner than the Krell KSA-200, the DR-9 excels at the reproduction of a convincingly real soundstage. Now features balanced and regular operation. (Vol.11 No.10)

Electrocompaniet AW100: $2195
Offering the antithesis of “transistor” sound, the solid-state AW100 pleased both tube-lover DO and the anarchistic ST with its lack of midrange grain, its excellent bass control and dynamics, and its sweet high frequencies, though some may find its sound slightly “dark.” A best buy. (Vol.12 No.3)

Kebuschull 35/70: $2375/pair
West German, low-powered tube monoblock that DO preferred to the Quicksilvers, Klimo 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.” The Anarchist feels that DO correctly described the Kebuschull’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)

Meitner MTR-101: $3400/pair
Beautifully styled all-FET monoblock with “Floating Charge Current” power supply. Excellent dynamic contrasts, well-controlled, tight low frequencies, if,
ultimately, not quite the overall authority of a Class A design. Would appear to give its best in an all-Meitner system. AB reports that current production is better than the vintage reviewed. (Vol.11 No.6)

**Motif MS100:** $3250
Solid-state stereo power amplifier from C-J with neutral, if slightly laid-back, midband and, according to TJN, “gorgeous” highs. A thin tonal balance, according to LA, which will mean that it will be at its best with high-quality moving-coil loudspeakers rather than electrostatics and Infinities. (Vol.10 No.9)

**Nestorovic NA-1:** $6000/pair
Formerly called the Alpha-1, this tube monoblock, when driven in balanced mode (by, for example, the Klyne SK-5A, Levinson No.26, or Rowland Coherence One preamps), comes close to combining the best of solid-state performance with the best of tubes, being euphonic-sounding but with a tight, well-controlled bass. Latest version has uprated power and lower noise. (Vol.9 No.8)

**PS Audio 200CX:** $1950
“A best buy,” thought TJN. Exceptional LF performance, treble clarity, and stereo focus are coupled with a cool character compared, say, with the Aragon 4004. Not at its best with speakers having a peaky treble. (Vol.11 No.12)

**Quicksilver:** $1850/pair **☆**
The Audio Anarchist 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. 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. New version using KT88s not yet formally reviewed—a report is in preparation—but preliminary auditioning suggests that the new tube eliminates a residue of glare in the upper mids, giving more of a “see-through” quality, DO finding the amp more transparent than the VTL 75-watter. LA, however, feels that despite the Quicksilver offering an overall “pleasant” sound, it is still a “low-resolution” design. Extraordinary long-term reliability for a tube design, points out Mr. Tellig. (Vol.7 No.3, Vol.8 Nos.2 & 4)

**Vacuum Tube Logic Dual 75:** $1950
Low-power stereo tube design with somewhat forward balance offers Class A performance in several areas, notably soundstage definition and high-frequency quality. Low end excellent for a tube design. An anemic lower midrange according to JGH, however, precludes a Class A ranking. Soon to be replaced by 90W version. (Vol.11 No.1)

**Vacuum Tube Logic 100W Compact Monoblock:** $2650/pair
A rather forward midrange is allied with excellent bass control for a tube design and clean highs. Dynamics a little more limited than the 100W rating would imply. Conservative operating conditions for its four EL34s should endow this VTL monoblock with long tube life. (Vol.11 No.11)

**C Adcom GFA-555:** $700
Dropped from the last “Recommended Components” due to a lack of recent auditioning, the popular and powerful ‘555 is reinstated following Stereophile’s purchase of a recent sample. Low frequencies are extended and tight, with considerable weight and authority; soundstaging is wide and deep; the midrange is neutral; but it should be noted that the ‘555 has a somewhat brittle treble compared with, say, the B&K ST-140, Porté 1a, or VTL 100W monoblocks, according to JA, that both lend the sound an overall slightly “artificial” cast and will mean a lack of sympathy with speakers having exaggerated high frequencies. (Review in preparation.)

**B&K ST-140:** $498 ☆
The 100Wpc MOSFET ‘140 costs little enough to make it into Class D, but the sonic, after extensive auditioning, convince the Cheapskate that it belongs in Class C. LA disagrees, feeling that it should be “high Class D.” It features a very easy and enjoyable high end, deep but not extraordinarily powerful (if occasionally mushy) low bass, a tube-like tonality with a smooth, sweet midrange—“Not too much MOSFET mist”—and good performance elsewhere. We can’t figure out how B&K does so well for so little. More powerful ST-202 ($648, reviewed in Vol.10 No.8) is very similar. (Vol.7 No.4, Vol.10 No.7, Vol.11 No.10 mono version, Vol.12 No.4)

**Bedini 150/150 Mk.II:** $1000
An early sample of this solid-state amp failed to impress, but the Mk.II revision proved to be an exceptional performer with dynamic loudspeakers, matching the low-frequency performance of the no-longer-recommended Eagle 2A with a considerably greater degree of transparency and neutrality. Tonality is somewhat “dark-sounding,” according to DO. (Vol.11 No.2)

**Classic Audio CA 260:** $1299
Available exclusively by mail order, this beautifully constructed, dual-mono, FET-driver/tube-output, limited-edition hybrid was designed by George Kaye, once of NYAL, and features genuine McIntosh output transformers. Somewhat dark in sound but “within the context of . . . Class C . . . I can’t think of a more musical performer,” said DO. (Vol.12 No.5)

**Conrad-Johnson MV-50:** $1685
Expensive for Class C—unavoidable with a tube amplifier—and not quite transparent enough to make it into Class B. Classic tube sound, with an under-controlled bass, but also a quite superb midrange and lower treble, which happen to be the most critical regions for music reproduction. Very liquid. The antithesis of grainy sound. (Vol.9 No.2, Vol.10 No.8)

**Counterpoint SA-12:** $1095
Hybrid (tube driver stage, MOSFET output) design which the Cheapskate felt to be “the best all-round amp” he’d heard in its price class. JA and GL have also heard it sounding terrific in diverse systems. Tube-like character, with a more forward balance than the MV-50 but a “smooth, delicate midrange.” (Vol.10 No.8)

**Discrete Technology LS2A:** $1250
More musically natural than the earlier version of PS Audio 200, and a warmer balance than the Adcom GFA, the solid-state Distech is less powerful than either. A touch of highest-end sound with a taste of tube quality for $1250. Latest “A” version has upgraded components and can be identified by new faceplate. (Vol.10 No.2)

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Forté Model 1a: $995
The original Model 1 was too dark-toned to merit recommendation, but the "la" revision is dramatically more open-sounding. Class-A operation means that it runs hot. A considerable break-in period aside, the 1a offers a natural tonality, detail without exaggeration, bass drive without boomininess, and only gives up a little precision and bass impact to the Class B competition. A best buy. (Vol.12 No.8)

Haffler XL-280: $675
Though JGH doesn't agree with the claimed neutrality of this solid-state model, finding it a little dry and not quite as sweet as he would like, he still felt that it had "as nice a high end as any solid-state power amplifier in its power class." Excellent performance for a modest price ($600 in kit form). (Vol.10 No.1, Vol.11 No.7)

Linn LK280: $1495
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 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. (Vol.12 No.7)

NAD 2600A: $799
Lively, upfront sound, possessing excellent impact and solidity, with "beefy" low frequencies. High frequencies a little dry, but good value for money considering the high (150Wpc) power and excellent dynamic headroom available. (Vol.10 No.2, Vol.11 No.8)

Onkyo Grand Integra M-508: $1200
Unusually good soundstaging, with sweet top end reminiscent of tube designs. Bass perhaps lacking the last amount of visceral wallop, but excellent value for money. (Vol.10 No.4)

C (Integrated Amplifiers)
Naim NAIT 2: $795
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, and the line stage is somewhat rolled-off in the highs. (A slightly tilted-up treble on the RIAA response ensures that LP reproduction is more neutrally balanced.) (Vol.8 No.5 original version, Vol.12 No.9)

D (Separates)
Adcom GFA-535: $300
"Extraordinarily clean, detailed, and musical... Far more detailed than I would ever imagine a $300 amplifier could be," said the Cheapskate 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. (Vol.10 No.8)

Carver M1.0t: $650
The result of Bob Carver's notorious challenge to Ste-reophile that he could make an amplifier sound the same as a selected tube amplifier, the M1.0t's sound is definitely tubey, although in our opinion, the production version doesn't sound like the target amplifier, now revealed to be the Conrad-Johnson Premier 5. (See also The Audio Critic 10 for a rather different conclusion drawn from Stereophile's auditioning, one that adheres rather too closely to Bob Carver's commercial needs, according to JAH.) Dynamic range is excellent, soundstaging is somewhat two-dimensional, low frequencies are extended but a little ill-defined in the upper bass, and the treble is "tinkly." Now rather expensive for Class D, but a lot of watts for the money. (Vol.10 No.3)

Parasound HCA-800 II: $365
Mk. II version of this budget amplifier, said to address sonic problems found in the original review, has upgraded parts, including polypyrolene capacitors. Much more respectable performance in view of this amplifier's cost, felt TJN, offering a viable alternative to the similarly priced Adcom GFA-535, though he felt it to sound a little closed-in when compared with Class C models. Built-in level controls mean that it can be used direct with a CD player. (Vol.11 No.2, Vol.12 No.2)

D (Integrated Amplifiers)
Arcam Alpha 2: $350
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 sweeps a recommendation. (Vol.12 No.9)

Audiolab 8000A: $695
A little expensive for Class D, the full-featured Audiolab doesn't compete on absolute sound-quality grounds with the not-much-more-expensive NAIT 2 or the less-expensive Creek 4140 S2, said RH in his review. It is considerably more powerful than either, however, and has impressively tight, well-defined low frequencies. Many will prefer its more upfront, more analytical balance, particularly with inherently dark-sounding loudspeakers. (Vol.9 No.1, Vol.12 No.9)

Creek 4140 S2: $550
Excellent soundstaging, with a sense of air and openness, coupled with "satisfying" bass reproduction, leads to a recommendation for this inexpensive British integrated. Top octaves a little forward, but not to the extent of either the Audiolab or Arcam models. (Vol.8 No.5 original version, Vol.12 No.9)

K
Audio Research Classic 150, VTL 500 monoblock, Carver Seven-t, Krell KSA-200, Spectral DMA-50, Threshold SA/1. (The jury is still out on the latter, a Class A contender, despite JGH's positive "Follow-Up" reviews in Vol.11 Nos.7 & 11, due to doubts concerning the latest version's tonal balance. A report on the re-auditioning will appear as soon as we can wrest the review samples away from JGH.)

Deletions
dbx BX1, due to concerns about its continued availability now that dbx is owned by Carillon. Jeff Rowland Design Group Model 5 considerably revised, implying that a re-audition is necessary.

Stereophile, October 1989
Loudspeaker Systems

A

Editor's Note: The argument among Stereophile's contributors as to whether the B&W 801 Matrix—see entry—should be included in Class A leads me to emphasize to prospective purchasers of Class A loudspeakers that three of the following four models will make great demands that the amplification and source components also be of Class A caliber if the sound is not to be compromised.

Apogee Diva: $8250/pair
That classic, idiosyncratic Apogee balance—full bass and depressed treble—doesn't detract from AB's feeling that this three-way, full-range ribbon has the finest ability to communicate the essence of a musical event that he's ever heard. Seamless transitions between the drivers, vivid, stable imaging that envelops the listener, and an ease in handling wide-range, dynamic peaks lead to a Class A recommendation. Dedicated electronic crossover, the DAX, leaves the matter in no doubt. West Coast price: $8400/pair. (Vol.11 No.8)

B&W 801 Matrix Series 2: $5000/pair
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-coil speaker capable of competing with the best plansars. As LL put it, "a true musician's reference transducer." Strengths include excellent low-frequency definition, a highly detailed midrange, and unstrained dynamics. Bass-alignment filter now included in purchase price. Best used with stands: we have had good results with the Sound Anchors and with the wooden, sand-filled Arcicals. There is strong disagreement among Stereophile's reviewers whether the 801 is a true Class A loudspeaker system. LL (and LG) make a strong case that it should be on the grounds that its flaws are nowhere near as extreme as the other three Class A speakers, meaning that it is more likely that an 801 owner will get Class A sound than owners of the other three recommended models, particularly if the bass filter is replaced by one of the after-market models, such as those from Discrte Technology and Denver dealer Listen-Up. AB, however, strongly feels that the 801 doesn't come close to the Apogee Diva in overall recreation of a musical experience, while DO (without having heard the 801 in his own system, it should be noted) is scornful of the notion that a dynamic speaker can belong in the same class as the electrostatic Sound-Lab. All of which suggests that those with wallets capable of stretching to accommodate a putative Class A loudspeaker should listen to the 801, then make up their own minds. (Vol.10 No.9)

Infinity IRS Beta: $12,000/pair
Full-range, five-way, electrodynamic area-drive system with separate stereo, moving-coil subwoofer towers and servos/crossover electronics. Capable of being finely-tuned almost ad infinitum. At its best with tube electronics on the panels (ARC preamp and VTL 300 and 500 power amplifiers, for example), which will ameliorate a tendency for the upper octave to be somewhat exaggerated in level, and needing a big room to allow sufficient distance for the sound from the individual drive-units to properly integrate, the Beta is the best speaker JGH has auditioned in terms of transparency, harmonic accuracy, and the ability to convey the dynamic scale of a recording. (In this last respect, the Beta is the best speaker system JA has auditioned.) Extreme versatility offered by low-cost controls helps in getting flat, high-level, extended (to below 20Hz), in-room LF response, provided that a beefy amplifier (Krell, Mark Levinson, etc.) is used. Lower treble can sound rather "zingy" with the wrong ancillaries, but this can be significantly ameliorated by covering some of the tweeter and supertweeter radiating area with tape. Imaging precision on the original review samples was less good than expected, due to a slightly out-of-spec crossover and drive-units on one side. Infinity promises that good QC will be a major concern of theirs from now on; to judge by the most recent samples to be auditioned in Santa Fe, this does appear to be the case, though a thorough reread of the "Followups" in Vol.12 Nos.1 & 6 is a prerequisite, as is in-store audition, prior to making a purchase decision. (Vol.11 No.9, Vol.12 Nos.1 & 6)

Sound-Lab A-3: $6350/pair
JGH's preferred reference loudspeaker, this big, curved-panel, full-range electrostatic produces exceptional imaging and a stunningly natural midrange. Warm-balanced, the treble is sweet and musical. Sensitivity and dynamic range are on the low side. Latest version has a revised HT power supply, resulting in slightly higher sensitivity and an improved dynamic range. The previous Class B ranking for this speaker was due to JA finding that it persistently lacked mid-treble transparency, being rather aggressive and grainy in this region. Recent auditioning with the VTL 300 amplifiers revealed that this had much more to do with the solid-state amplifiers with which JA had heard it in JGH's system, leading to a consensus that the A-3 does deserve a Class A recommendation after all. (Vol.9 No.6, Vol.11 Nos.6 & 11)

B

Editor's Note: I make no apologies for the wide variety of loudspeakers listed in this group. 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 true high-end sound. Following the protests of many readers and, more importantly, pressure from JGH that small speakers should automatically be excluded from Class B because of their lack of LF extension, I have split Class B into two sections—full-range and mininitors. To be included in Class B, 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 recommendations, with the exception of the Quad and Vandersteen, are floor-standing models.)

B—Full-range

Magneplanar Tympani IVA: $3750/pair
Offering excellent performance for their price, the IVAs have exceptional high-frequency performance and a delicate midrange with excellent harmonic accuracy. Though not as fuzzy as the Scintillas, room considerations and placement are more important than with most speakers for proper imaging. Bass is good, but
 requires an amp with high current capability. Most serious weakness is a lack of impact, particularly in the lower midrange. (Vol.8 No.6)

Magneplanar MGIIIA: $2195/pair ▁ Hard to set up, requiring more than the usual love and care, but uncolored sound. Fundamentally easy to drive, but does need plenty of volts. Works beautifully with ARC amplifiers. Tonaly very neutral (apart from a tendency to brightness in smaller rooms, which can be alleviated by inserting a 1 - or 2-ohm resistor in ribbon tweeter feed), and a degree of "Maggie slam" in the upper bass. Coherent, transparent, musically satisfying, excellent value for money. JA and MC recommend this speaker highly; JGH could not, based on its failing its "goosebump" test, albeit when compared with more expensive speakers. (Vol.7 No.4, Vol.9 No.4, Vol.10 No.1)

Martin-Logan Sequel II: $2500/pair The revised version of this bi-wirele 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 A quality in these regions were it not 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 mids and highs unsupported. This leads to a "threadbare" overall balance that particularly irritated the Audio Anarchist. There is continuing discussion as to whether the magazine's review samples were faulty in that the woofers were wired out of phase—JA discovered that the woofers and the electrostatic panel had the same acoustic polarity, which is strange in view of the symmetrical 12dB/octave crossover slopes—see DO's "Follow-up" in this issue. In the meantime, an even greater extent than usual, prospective Sequel purchasers should listen for themselves with their chosen ancillaries before making any decision. (Vol.12 No.1, original version; Vol.12 Nos.8, 9, & 10)

Mordaunt-Short System 442: $2500/pair Unusual dynamic loudspeaker from the UK features an integral stand, "floating" enclosure, and a second, reaction-canceling woofer to achieve low levels of midrange coloration. Tonal balance is a little forward, and HF from the titanium-dome tweeter is a little wispy (though free from grit or sizzle). Best used bi- or even tri-wired. (Vol.11 No.3)

Mirage M-1: $4000/pair Tall, dark, and handsome bipolar design from Canada that resembles the B&W 801 and Vandersteen 2Ci, if not in sonic signature, in that its fundamental sound quality seems much less sensitive than usual to the characteristics of the amplifier with which it is coupled. 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 listener into the music even at low levels. Bi-wired, bi-ampable version: $5000/pair. (Vol.12 No.6)

Nelson-Reed 8/04B: $3250/pair One of the few moving-coil loudspeakers to get a recommendation from J. Gordon Holt, the three-way, reflex-loaded 8/04B combines high sensitivity and astonishing dynamic range with deep, tight low frequency and well-defined imaging. Overall balance is somewhat forward, while treble is not quite up to the standard set by other Class B contenders. (Vol.11 No.4)

Ohm Walsh 5 Revised: $5000/pair Unusual in being the only omnidirectional loudspeaker to be recommended, the Ohm Walsh 5, with its unique inverted-cone, almost-full-range driver, has clarity and transparency to rival the best minimonitors, according to DO. Bass, with near-wall placement, is deep and full, coloration levels are low, and the soundstaging, though very sensitive to room positioning, is excellent. (Vol.10 No.4, Vol.11 No.8)

Quad ESL-63 US Monitor: $3990/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, which bothers some listeners (LA) more than others (ST, LG, DO). 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 are less dry-sounding than early production. Can really come alive with the right amplifier, and benefits from modifications, most especially suitable stands (we have found Arcotic to work well). Aficionados should investigate the Celestion dual-mono subwoofers, which, being dipoles, stand a good chance of integrating in-room with the dipole Quads, while TAS's HP has achieved excellent results mating the Quads with the woofer panels, also dipoles, from the Tymanl 1A. The current version, the "US 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)

Snell Type C/II: $1890/pair Borderline Class B sound for this fairly large three-way design from the pen of Kevin Voceks, with a neutral midband and excellent low-bass extension let down by a slightly exaggerated high end (even with secondary, rear-facing tweeter turned off) and some upper-bass leaning. Very, very room-sensitive. "The reality of vocal sound comes through better than any other speaker" according to LL, however. Current production incorporates a continuously variable HF level control. (Vol.12 No.5)

Synthesis Reference System: $7350/system Close to achieving a Class A recommendation, this four-enclosure dynamic system was felt by JGH to have a slight lack of energy in the midrange which robbed orchestral crescendos of their full power. Nevertheless, extraordinarily precise yet spacious imaging and the deepest, smoothest bass he has heard in his listening room led JGH to label the SRS "superb," almost rivaling his beloved Sound-Lab A-3s in overall performance. (Vol.11 No.8)

Thiel CS3.5: $2450/pair One of the finest US-designed box speakers, the 3.5 is the result of a long collaboration between designer Jim Thiel and the drive-unit manufacturers. Combines superb transparency and imaging with excellent low-
bass extension—an active equalizer is used—though it relies on music having a normal spectral balance if the woofer is not to run out of excursion capability. (Organ recordings with sustained high-level pedal passages are to be avoided, for example.) A balance opposite to that of the Apogee Duetta, with a slight tendency to a tilted-up HF, makes careful system matching crucial. Its Dynaudio tweeter is perhaps outdated when it comes to clarity by the SEAS unit that Thiel uses in the new CS1.2, but the real Achilles Heel of the design appears to be the equalizer, which compromises HF neutrality somewhat and is often outdated by the electronics with which the 3.5 is used. (Vol. 10 No. 1, Vol. 12 No. 1)

**Vandersteen 2Ci: $1195/pair **
*(stands necessary)*

After 12 years of continual refinement, an excellent full-range box speaker. Balance of the 2C was a little rolled off in the highs, according to AHC, but the latest CI revision has full measure up to 16kHz or so (though it lacks ultimate transparency in this region). Superb delineation of recorded detail, a neutral, tuneful midrange (apart from a degree of character 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 no matter what ancillaries with which it is used, mandates a confident recommendation. $260/pair dedicated Sound Anchor stands push the speaker's performance envelope further. (Vol. 9 No. 6, 2C; Vol. 12 No. 5, 2Ci)

**B—Minimons**

**Acoustic Energy AE1: $1500/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 midrange. (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. Good stands, such as Celestion's own $300/pair 18" SPLSI's, are mandatory. (Vol. 10 No. 2, original version; Vol. 12 No. 5)

**Celestion SL700: $2999/pair **
*(stands included)*

Very expensive for a small speaker, price includes excellent stands. Improves over the SL600 in the areas where that speaker excels, and sets new standards for a box loudspeaker, both regarding transparency combined with neutrality and upper-bass clarity. In contrast with the SL600, overall balance is rather on the bright side—a little like a moving-coil CLS—which makes demands on careful system matching. Though 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. Almost. (Vol. 11 No. 9)

**C**

**Acoustic Spectra 22 loudspeaker: $1850/pair **
*(See DO's review in this issue.)*

**British Fidelity MC2: $649/pair **
*(stands necessary)*

Small speaker couples a version of the excellent Monitor Audio-designed tweeter found in the Acoustic Energy AE1 and Monitor Audio R952/MD with a good, if not outstanding,woofer. Bi-wiring is an option. Tonaly correct, detailed high frequencies are coupled with good rendition of soundstage depth and a warm, rather close balance, resulting in an opposite-balanced design that nevertheless rivals the Spica TC-50 in the ability to separate the music from artifacts of the recording. Distribution in the US is now through Music & Sound Imports. Still a good buy at the new, higher, price. (Vol. 11 No. 7)

**Epos ES-14: $1195/pair **
*(stands necessary)*

A speaker that has long been a Cheapskate 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 $200. (Vol. 11 No. 6)

**Image Concept 200: $1000/pair **

"The deepest bass per dollar," thought JA of this elegant, floor-standing, two-way design from Canada. An otherwise excellent soft-dome tweeter is a little sizzly in the upper treble, with a slight tendency for the sound to harden at very high levels. Sensitivity on the low side, which, coupled with the low impedance, will mean more careful amplifier matching than usual. Excellent image definition, however, and overall, an impressively neutral balance. Good things are coming out of Canada these days, perhaps due to the excellent facilities offered to designers by the Canadian National Research Council. (Vol. 11 No. 8)

**Kindel Purrist LT: $895/pair **

Top octave a little soft and an apparent lack of weight in the lower midrange of this floor-standing loudspeaker are offset by low levels of coloration and respectable LF extension. Excellent performance at the price. (Vol. 11 No. 2)

**Magnepan MG2.5/R: $1695/pair **

A two-way featuring borderline Class B performance in the right rooms with the right ancillaries, though its dipole radiation pattern, tendency to midrange "bloat," and less-than-seamless blend between the Magnetplanar panel and the ribbon tweeter make system matching more problematic than with the similar three-way MG111a. A taste of true high-end sound, however, at an affordable price. (Vol. 11 No. 6)

**Monitor Audio R952 Gold: $1750/pair **

High Class C performance with the right ancillaries from a floor-standing English loudspeaker equipped with twin woofers and a fine aluminum-dome tweeter (anodized gold in the latest version). Coloration levels are mild, apart from a somewhat lively box, though

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the balance is a little forward in the presence region, which is particularly unkind to CD. This is offset by highish sensitivity and an astonishing transparency in the midrange and treble, presumably due to the minimalist crossover. Sealed-box bass is lightweight, but articulate with reasonably good extension. (Vol.11 Nos.1, 2, & 5)

**PSB Stratus: $1500/pair**

A fruit of the excellent facilities provided to the Canadian loudspeaker industry by the NRC facility in Ottawa, the first sample we received of the Stratus was found by JGH to have a veiled sound, lacking impact, despite being “eminently listenable.” The second sample, however, which conformed to the manufacturer's spec, was impressively neutral, with excellent dynamic performance. (Vol.11 No.5)

**Rauna Balder: $1300/pair**

Unusually styled two-way floor-standing design with cast-concrete enclosure (which can be painted to match room decor) and a rear-mounted port. Though said to be a transmission line, bass loading is more akin to reflex and a little loose. High treble is dull, but apart from those minor defects, this speaker has a superbly neutral midband and clean mid-treble. (Vol.11 No.6)

**Rogers LS3/5a: $649/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 concerning overall dynamics and HF smoothness and clarity when compared with Class B miniatures such as the Acoustic Energy AE1, Celestion SL6005I 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 be. The LS3/5a is also being manufactured by Spendor, Harbeth, and Goodmans, and differences between any current LS3/5a's should be cosmetic only. (Vol.3 No.12, Vol.4 No.1, Vol.7 No.4, Vol.12 Nos.2 & 3)

**Snell Type Q: $780/pair (stands necessary)**

Small speaker which successfully takes on the British on their own ground. An open, airy quality, excellent delineation of soundstage 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)

**Spica Angelus: $1275/pair**

Only the second full-range model to come from this Santa Fe manufacturer in five years, this idiosyncratically styled, floor-standing speaker has much in common with the TC-50, including a superbly defined, if lightweight, bass register and the ability to throw an astonishingly accurate soundfield. Treble transparency is a little lacking when compared with most Class B speakers, hence a Class C rating overall, but still one of the best loudspeakers in this price region JA has heard. (Vol.11 No.2)

**Spica TC-50: $550/pair (stands necessary)**

The coherence and imaging of the mid- to upper midrange rival the Quad and LS3/5a and would be considered excellent in a speaker of any price; at $550 they’re a steal. The high frequencies roll off above 16kHz and the low end is designed to be very controlled down to the lower limit of about 55Hz. This makes it perfect for matching to a subwoofer—a pair of Kineraetics BSC-SW100s with their stands and matching amplifier are ideal—but it sounds a little lean as a stand-alone. Easily damaged by amplifier overload. Latest version features a cross-brace between front and rear panels. Price is for oak or walnut veneer; black finish $50/pair extra. (Vol.7 Nos.2 & 3, Vol.9 Nos.5 & 7, Vol.11 No.1; also see JA's review in this issue.)

**SR Bolero: $1549/pair (stands necessary)**

This Swiss reflex-loaded minimonitor's good dynamics, fundamentally neutral tonal balance, and excellent upper-bass definition are let down by the rather fizzy highs characteristic of its Focal tweeter, which also reduces image depth in this region. Works best with tube amplification. Matching Forte stereo woofers increase dynamic range but at the expense of upper-bass smoothness. (Vol.12 No.4)

**Synthesis LM-210: $1195/pair**

Excellent dynamics and very transparent sound from this floor-standing model, coupled with a good standard of neutrality. (Vol.10 No.8)

**Thiel CS1.2: $1090/pair**

Borderline Class B, lacking only ultimate dynamic range. This modest-sized floor-standing speaker offers an outstandingly detailed sound, with superbly precise soundstaging, a neutral midband, and a less critical treble balance than the older CS2 (although VTL mono-blocks produced rather a “hissy” sound). ST reports that the Electrocompaniet AW100 sounds terrific with the 1.2s. Low frequencies are full, but only become too ripe when used with, say, a tube amplifier, states JA. ST demurs, feeling that the bass was a little light-weight, which might suggest some room dependency in the low-frequency balance. A best buy at the price, nevertheless. (Vol.12 Nos.1 & 6)

**Thiel CS2: $1650/pair ★**

The CS2 is more amplifier- and front-end-fussy than the other two Thiel speakers—anything too extended or peaky preceding the speakers will make the sound too relentless. It will be harder to get the CS2 to perform at its best than, say, the CS1.2, but in the right system the '2 will offer remarkable coherence, excellent imaging, a natural midrange, and extended highs. (Vol.8 No.6, Vol.12 No.1)

**VMPs Tower II/R: $1575/pair**

Smallest of Brian Cheney's multi-way, floor-standing designs, the Tower II is available in a number of versions starting at $878/pair (kit). The version reviewed had all the options, including a ribbon super tweeter, hence the "R" nomenclature. Excellent imaging, despite wide baffle and considerable drive-unit spacing, due in part to Cheney's misnamed "QSO Holosonics" crossover concept. Superb bass extension and dynamic range, if a little loose; a clear yet unexaggerated high end; and a natural, nonaggressive midrange, concluded TJN. (Vol.11 Nos.5 & 10)

**D**

**Camber 3.5A: $660/pair (stands necessary)**

A well-engineered example of the classic two-way reflex enclosure from north of the border. Treble rolls off a little early; bass extension is fair, if lacking clar-
ity; imaging specificity is good; and high sensitivity and "easy" impedance ensure a good match with inexpensive electronics. Due to be replaced in March 1990 by 3.5TI, which will cost $699/pair. (Vol.11 No.8)

Celestion 3: $250/pair (stands necessary)
(See JA's review in this issue.)

Magneplanar SMGa: $495/pair
Musical sound, with relatively well-extended low frequencies, considering the size of the panel. Not that transparent, and high frequencies recessed, but a musical bargain nonetheless. (Vol.10 No.7)

Monitor Audio R300/MD: $699/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. (Vol.12 No.4)

Paradigm 5se: $349/pair (stands necessary)
A rather soft midbass, a slightly colored midband when compared with the better Class D loudspeakers, and a typical soft-dome tweeter treble, but excellent performance at the price. A well-balanced design. Needs to be used on good stands. (Vol.11 No.1)

Quadrant Q-250: $695/pair (stands included)
Not outstanding in any one area, but overall quite musical. Lower midrange a little uneven despite claims made for unusual box shape minimizing resonances. Price includes matching wooden stands. (Vol.10 No.8)

Rauna Freja: $675/pair (stands necessary)
This concrete-enclosure two-way features rather a forward midband, but throws a wide, deep soundstage with low levels of resonant coloration. Verges on Class C sound quality with the right ancillaries. (Vol.12 No.1)

Rauna Tyr II: $675/pair *
(stands necessary)
A small, concrete-enclosure loudspeaker with very smooth, neutral, musical balance and excellent imaging and soundstaging. A good musical buy. (Vol.9 No.2)

Spectrum 208B: $449/pair (stands necessary)
Easy to drive and possessing excellent bass extension and a clean treble, the 208B is let down by relatively high levels of midrange coloration. (Vol.12 No.1)

Wharfedale Diamond III: $300/pair *
(stands necessary)
This tiny speaker has no bass, but just scrapes a Class D recommendation on the grounds that its tonal balance is fundamentally musical and will get the best from inexpensive amplification. Treble is not in the same class as the more lightweight-sounding Celestion 3. (Vol.12 No.2)

K
Apogee Duetta Signature and Stage One. ATC SCM50A, Snell 3 Improved, ADS CM7, Vandersteen Models 1 & 4A, Precise Monitor 10, PSB Cirrus 260

Deletions
Apogee Scintilla due to improved performance of less expensive Duetta Signature; Wilson WATT replaced by new version yet to be auditioned under critical circumstances; Angstrom Reflexion now 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 satellrites are major if the integrity of the upper bass/lower-midrange region is not to be compromised. There are no Class D subwoofers listed: we strongly recommend those trying to subwoofof on the cheap to instead look at the possibility of acquiring more expensive full-range loudspeakers.

A

Threshold PCX electronic crossover: $1600
Available in two versions, offering either selectable crossover frequencies from 75Hz to 1602Hz or 750Hz to 16,020Hz, the PCX offers fixed 18dB/octave slopes and matches the Threshold FET-10 in appearance. Sonically the most transparent crossover DO has yet auditioned. (Vol.12 No.1)

Velodyne ULD-18 subwoofer: $2595
(inc. crossover, amplifier, and servo electronics)
(See LG's review in this issue.)

B

Celestion System 6000: $2699/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 set-up 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). (Vol.10 No.2, Vol.12 No.1, but also see LG's follow-up in this issue.)

Nelson-Reed 120/4/P subwoofer: $1200 each
Four 12" drive-units in an IB enclosure, with two used in stereo, gave flat extension to 20Hz with high dynamic range in Gordon's room, though with a less smooth characteristic, despite careful positioning, than the Synthesis Reference System's against-the-wall towers. "P" revision can be run in 2-ohm mode. The high-pass satellite feeds of Nelson-Reed's all-active AC-1204 electronic crossover ($570) are veiled; the same company's PC-1204 passive high-pass unit ($50) should be regarded as essential. (Vol.11 No.4)

Velodyne ULD-15 subwoofer: $1795
(inc. crossover, amplifier, and servo electronics)
(See LG's review in this issue.)

C

Audio Concepts Saturn subwoofer: $640/pair (kit)
Using two 12" woofers in a compound configuration, the 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

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with equalizing the Saturn’s response to be flat to 20Hz.
Kit w/o cabinets: $280. (Vol.12 No.1)

Audio Control Richter Scale Series III equalizer: $349
Versatile six-band, half-octave low-frequency equalizer and analyzer incorporating 24dB/octave crossover factory preset to 90Hz. Slightly "muffled" in sound quality when compared with the Threshold, the Richter Scale nevertheless offers the woofer fan the best chance of achieving a successful integration between the subwoofer(s) and the satellites. (Vol.12 No.1)

Cogan-Hall ContraBass 12 subwoofer: $895
Unusually styled, the cylindrical ContraBass uses a single 12" driver firing downward in a reflex cabinet. A passive, line-level equalizer network attempts to extend the response to 20Hz, but DO felt that the octave between 20Hz and 40Hz was still too rolled-off for it to be termed a subwoofer. Nevertheless, the ContraBass’s speed will facilitate matching with high-quality satellites. (Vol.12 No.1)

Kinergetics BSC SW-100 subwoofer system: $878/pair
Kinergetics BSC SW-200 subwoofer interface and stereo bass amplifier: $654
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.1)

Sumo Samson subwoofer: $750
Massive, large enclosure uses a reflex-loaded 15" JBL driver to give high power handling and extension to 20Hz (~3dB) when used with the Sumo Delillard crossover, which incorporates suitable EQ. Effective and cost-effective means of adding extension to a typical monitor-based system, but highish-Q bass tuning means that system/room optimization can be a somewhat protracted affair. JA noted, to his surprise, that when set up correctly, a stereo pair of Samsons added considerable image depth and stability to the sound of his SL600s. He has also heard a pair of Samsons working well with Martin-Logan CLSes. (Vol.11 No.4, Vol.12 No.1)

Sumo Delillard stereo electronic crossover: $550
Featuring independently switchable high-and low-pass crossover frequencies, Bessel-type filters, low-pass slope selectable between 12 and 18dB/octave, low-pass level control, a bypass switch, and both mono and stereo inverting and non-inverting subwoofer amp outputs, the Delillard is the most versatile means of integrating one or two subwoofers into a system JA has found. High-pass output is not quite as transparent in the treble as a straight-wire bypass. (Vol.11 No.4)

K
Velodyne ULD-12, Entec, and Janis subwoofers.

FM Tuners & Antennae

A

AudioPrism 7500 indoor FM antenna: $150
Low-VSWR (Voltage Standing Wave Ratio), vertically polarized, omnidirectional indoor passive design that, like the Day Sequerra, will provide optimum in urban high-signal-strength areas. 89.5" height. (Vol.12 No.5)

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

Day Sequerra FM Broadcast Monitor: $11,500
A recasting of Richard Sequerra’s and Sidney Smith’s Model 1 tuner from the mid-'70s, this is the most musical tuner LG has heard, offering natural timbres, superbly defined imaging, and very low noise. Only drawback is wide IF bandwidth, which, while contributing to sonics, can prove problematic with closely spaced FM stations. (Vol.12 No.6)

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)

Magnum FT-101: $679
An analog tuner, the FT-101 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 '101 consistently sounds superior on most stations. Examination of three different samples confirmed good quality control as of February 1988. (Vol.8 No.4, Vol.10 No.3)

Magnum 205 FM Booster: $229
Not a tuner, but an excellent RF amplifier to optimize selectivity and reception in areas of poor signal strength. (Vol.10 No.6)

Revox B-260-5: $2500
Ergonomics are initially daunting—there are 60 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 among the best LG has heard—"no harshness, no SCA birdies." Remote control costs an extra $160. Less-expensive ($990) B-160 preserves much of the 260's audio and RF performance. (Vol.12 No.7)

B

Denon TU-800: $500
Excellent sound—"smooth and tubelike"—coupled with good RF performance, particularly adjacent-channel selectivity, and very low distortion in super-narrow mode. (Vol.11 No.5)

JVC FX1010TN: $470
Very quiet background, coupled with excellent RF performance, apart from image rejection. Model reviewed was the almost identical FX-1100 BK (Vol.12 No.4)

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 FT-11 FM tuner: $449
(See DAS's review in this issue.)

Onix BWD1: $850
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 snatching signals from the ether. Among the best-sounding tuners. (Vol.10 No.8)

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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. (Vol.11 No.5)

C
Hafler DH-330: $425 ($400 kit)
In its current guise, one of the finest-sounding tuners DAS has reviewed, with good sensitivity and stereo separation and low distortion. To be replaced by the Iris tuner, which can be controlled via the Iris preamplifier remote. (Vol.10 No.9)

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)

Onkyo T-4087: $420 
Most selective of all tuners in this class. Does most things well, but not quite to the more expensive T-9090 II. Low noise reception on cable FM. (Vol.9 No.3)

Quad FM4: $695 
Good-quality construction. Very sensitive with flawless audio if properly aligned. Lacks high adjacent-channel selectivity and mono-stereo switch. (Vol.8 No.4)

D
Adcom GTP-400: $350
Excellent budget-priced preamplifier, with integral FM/AM tuner offering good sensitivity but only reasonable selectivity. (Vol.12 No.9)

Arcam Alpha 2: $330
Warm tonal balance, excellent stereo separation, but only average RF performance. (Vol.12 No.7)

Marantz ST-54 AM/FM tuner: $319
(See DAS's review in this issue.)

NEC T-710: $299
Clean sound with good dynamics, if not quite possessing the selectivity of the now-discontinued Nikko NT-950 or the stereo weak-signal quieting of the Proton 440. (Vol.11 No.10)

Proton 440: $270
The best of the Schotz noise-reduction tuners. Superior fringe performance when high adjacent-channel selectivity is not needed. Audio OK. (Vol.8 No.1)

Bogen TP-100A: $232 
$199 from Fordum Radio (see Magnum review in this issue). Very clean sound; good stereo. Small size, good looks make it a good choice where space is at a premium. Usable only for medium-strength signals. Sensitive AM. (Vol.9 No.3)

K
Akai T-93, Magnum Etude, Arcam Delta 80, Klimo Ertnax, Nikko Gamma 600
Deletions
dbx TXI due to doubts about availability; Accuphase T-107 very expensive but not auditioned in too long a time.

Signal Processors
Editor's Note: I feel 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 I 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.

A
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/cut 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)

K
Cello Audio Palette

Surround-Sound Decoders
(Dolby MP, SQ)
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.

A
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)

B
Lexicon CP-1 processor: $1295
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 harsh coloration being noticeable. Unique in being able to correct for tape azimuth errors. (Vol.12 Nos.1 & 8)
C

Fosgate Tate 101A‡ ☆
Best SQ decoder yet produced; discontinued, but worth looking for if you need SQ decoding; has position for Dolby MP, but there is some Front/Rear spill at higher frequencies; hard-wired remote control; rough top end and some veiling.

NEC PLD-910 Dolby surround-sound processor: $999
Full logic control, with fine adjust (0.1ms steps) of rear-channel delay individually for each channel. Excellent remote means that you won’t ever have to touch the main unit other than to turn it on and off. Sounds darker, less detailed than the Shures. (Vol.12 No.8)

D

Sansui DS-77: $400
Basic non-logic surround-sound processor—Rear channels don’t have delay or Dolby-B noise reduction—with built-in amplifier for Rear-channel loudspeakers. Excellent stereo synthesizer circuit. Surround decoding “only a little worse” than the logic-directed models, says BS, though basic sound quality only average. (Vol.11 No.3)

Yamaha DSR-100 Dolby surround-sound processor: $599
Full-logic companion Dolby decoder for DSP-3000 synthesizer. No input-level control and lacks a surround channel level adjust. Rather dark-sounding tonal balance keeps this inexpensive decoder from being a best buy. (Vol.12 No.8)

Deletions
Shure HTS-5200 discontinued.

Surround-Sound
Synthesizers

B

Lexicon CP-1 digital audio environment processor: $1295
The best-sounding hall simulator BS has heard, but with only three room models. Versatile choice of reverberation parameters, however, although less flexible, overall, than the Yamaha DSP-3000. Includes a reasonable Dolby surround decoder. (Vol.12 Nos.1 & 8)

Yamaha DSP-3000 surround-sound synthesizer: $1899
Superb remote control; 18-bit D/A converters on main channels; needs full six-speaker system to work at its best; specific Hall models synthesize early reflections only, relying on reverberation already present on recordings to flesh out the illusion. Doesn’t produce quite as believable an illusion of a real acoustic space overall than the Lexicon, felt BS, but some models, the Cathedral and Chamber, are better than the American unit’s equivalents. (Vol.12 No.9)

C

Sony SDP-505ES‡
Excellent-sounding and versatile 16-bit digital delay line running at 44.1kHz for rear-channel ambience synthesis extraction. Integral 14Wpc amplifier for rear channels. Front channels do not pass through active circuitry, so veiling of main-system sound is minimal. Superseded by similar $850 SDP-777ES, which adds full remote control and Dolby Pro logic decoding. (Vol.11 No.3)

K

JVC XP-A1000, Lexicon CP-2

Home Recording Equipment

Editor’s Note: With the exception of the Fostex listed below, none of the microphones listed has been formally reviewed. However, Robert Harley, Stereophile’s Technical Editor, has had extensive experience with many professional models and has compiled most of the thumbnail sketches of each’s sonic signature. Other professional models to look out for on the secondhand market are cardioids from Sony (C37P & C500), Milab, and Calrec, figure-eights from AKG, B&O, and Coles, omnis from Schoeps and B&K, and PM2 mikes from Crown. The Shure C81 cardioid is also reported as having quite a flat response. Anyone about to undertake serious recording should ignore all “amateur” microphones; as a rule of thumb, you should spend as much, or more, on a good pair of mikes as you do on your recorder.

A
dbx 700 processor‡
A more solid sense of the fundamental,” said BS in his review, when compared with the Nakamichi DMP-100, with a smooth bass tone. At its price of $4600 ($4995 with mike preamps) the 700 was expensive, but undoubtedly the best recording system this magazine has yet reviewed. Its failure was undoubtedly due to its lack of compatibility with CD mastering systems. (Vol.10 No.5)

EAR 824M stereo mic preamplifier
Extremely neutral, very quiet, all-tube, balanced preamp from Tim de Paravicini, with switchable level controls and 48V phantom mic power. Used by Water Lily Acoustics and also to make Stereophile’s first commercial recording. (NR)

EAR “The Mic”
Using a single 6DJ8 tube and a fist-sized output transformer, this rectangular-capsule (sourced from Milab), switchable pattern—omni, cardioid, figure-eight—mic is a little soft in the highs, but has extended low frequencies and a midrange that is extremely true to the original sounds. “No trace of edge or glare” says RH. Easily the best microphone JA or RH has heard. (NR)

Sony DTC-1000ES R-DAT recorder
A healthy R-DAT gray market is flourishing and some professional models are now officially imported, including some expensive professional portable models. Offers all the sonic performance and more of Sony’s PCM-F1 VCR combination in a small, user-friendly package, with all the convenience of CD. In contrast to Martin Colloms’s very positive review, reports in The Boston Audio Society Speaker (Vol.16 No.1) found that many of these early machines suffer from increased levels of distortion at low levels. The reason for this discrepancy is unknown. (Vol.10 No.5)

B

AKG C414 EB
A popular, large-diaphragm condenser mic, 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. (NR)

**AKG The Tube**

One of the few currently produced tube microphones. Smooth, open, and uncolored, *The Tube* captures detail without solid-state stridency. (NR)

**Calrec Soundfield Mk.IV**

Having used both Mk.III and Mk.IV versions, JA feels that the highly praised, variable pickup pattern of this stereo/Ambisonic mic is let down by an overall 'grayness' and lack of midrange detail, coupled with a slightly hard lower treble. Nevertheless, is excellent at capturing a true stereo image with width and depth. (NR)

**Neumann U-87**

A perennial mic favorite among recording engineers. Wide, flat response gives it a similar sound to the 414, but with more 'reach' in live, stereo mixing applications. Used extensively on vocals. (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. (Vol.7 No.7)

**Telefunken 251**

Classic tube mic 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)

**AKG 451**

Small-diaphragm condenser cardioid with removable capsule. Tonal balance leans toward the thin and bright, but very detailed. Good on drums. Same diaphragm used in C34 stereo mic, which has similarly bright balance. (NR)

**Electrovoice RE-20**

Large-diaphragm dynamic with excellent LF response and smooth top end. Used extensively in radio broadcasts. Good on brass instruments, especially saxophone, due to its softer HF, but less detailed than most condensers. (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 TD-V711 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")

**Revox B-215-S cassette deck: $2800**

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 Nakamichi, with their automatic play-azimuth adjust, probably get a slight bit more off prerecorded tapes. Less-expensive ($2300) B-215 cosmetically different but otherwise identical in performance. (Vol.8 No.7)

**Sony TC-K730ES Mk.II cassette deck: $850**

Minimalist, three-head, twin-capstan cassette deck, built — surprisingly — for sound quality. Outstanding soundstaging (for cassette), good dynamics (with high-bias tape), and an airy top end led AG to suspect that this was a deck that had more to do with commonsense engineering than with features. Original TC-K700 auditioned only differs in not having "super-bias" tape-biasing system, which increases HF headroom. (Vol.11 No.1, "Pure Gold")

**Sony TC-D5M: $750**

This decade-old portable only offers Dolby-B noise reduction, but 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-D5 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-capsan, 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 GG. (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 *The Cheapskate* in Vol.10 No.9.

**K**

Nakamichi 1000 and JVC R-DAT recorders. Nakamichi CR7A cassette deck.

**Deletions**

Nakamichi XZ-7/ZX-9 and Tandberg TCD 3014 cassette decks.

**Accessories**

**Adcom ACE-515 AC Enhancer: $180**

Effective AC power-line conditioner with RF filter, 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)

**Arcici Quad ESL-63 stands: $195/pair**

Latest and greatest method of getting the Quads to per-

*Stereophile, October 1989*
form as God and Peter Walker intended. Clamps the ESL-65 in a rigid embrace, also raising it an optimum 16° off the ground. (Vol.10 No.1)

Arcici Lead Balloon Turntable Stand: $325
The opposite approach to that of the Sound Organisation stand, with lead used to provide mass sufficient 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 $30. (NR)

ASC Tube Traps ★
Relatively inexpensive (Hal!) but remarkably effective room-audioscience treatment. These soak up low-to-high bass standing-wave resonances like sponges. (Vol.9 No.3)

Audio Control Industrial SA-3050A Analyzer: $995
Portable (battery-powered) and inexpensive, one-third-octave analyzer with pink-noise source and 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)

AudioQuest Sorbothane Feet
The best means of isolating components from vibration. A set of four big feet costs $40, four CD feet $25. (NR)

CD Saver
Eliminates scratches from CDs and LaserVision discs, rendering the unplayable playable. (The Cheapskate points out that Armorall does a similar job and is much cheaper.) (Vol.10 No.8, Vol.11 No.8)

Cramolin Contact Cleaner
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. JAs and JGH's preferred alignment protractor. (NR)

Distech Powerbridge I & II AC cords: $120-$200
LL reports that these AC cords produce an audible difference with amps and preamps, but whether this difference represents an improvement or not is very much component-dependent. (Vol.11 No.4)

Inouye Synergistic Power Line Conditioner: $525
Expensive, dual-channel AC line conditioner, with sophisticated filtering and spike protection, cleans up the sound from CD players, reported JA, but had variable effects with preamps and amplifiers. (Vol.12 No.3)

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 and component stand: $899
Exotic wood finishes add $100 to price; granite top adds $60; an appropriate amount of lead shot will cost around $100. (See GL's review in this issue.)

Mobile Fidelity Geo-Tape: $15 ★
A valuable test and shopping aid for cassette decks. (Vol.8 No.5)

Monster Cable/Euphonic Technology/Sims/AudioQuest CD rings: $1.50 each
Soft rings that adhere to the circumference of a CD. Presumably by increasing gyroscopic stability—provided the Soundring is correctly centered; not always the case—as well as providing a modicum of disc damping, these make life easier for the player servo circuits, thus reducing time jitter in the digital signal fed to the player's DAC circuitry. (Work by Peter Mitchell and Robert Harley shows that the rings have no, repeat, no effect on the error rate in the raw data coming off the disc.) Their subjective effect, however, is to reduce CD stridency, improve resolution of detail, and render the sound more "analog," according to the Cheapskate. $15 for 12, $50 for 50. Latest version from Monster Cable has different adhesive to allow easy removal if the user is not impressed by the sonic effect. (Vol.11 Nos.4 & 9, Vol.12 Nos.6 & 8)

RPG Diffusors
The first effective method of adding diffusive surfaces to a listening room, these remarkably effective panels join Sonex foam and Tube Traps in helping to tame the so-far untamable—room acoustics. (Vol.11 No.4)

Signet FK-302 Contact Cleaner Kit: $25
Contains abrasive plastic tools for effective inner cleaning of phono plugs and sockets in combination with Cramolin. (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, including those employing vacuum clamping systems. Well worth their cost in a high-resolution system. The SOTA Reflex clamp ($135) gives a somewhat richer, warmer sound and is more effective against upper-midrange and lower-treble resonances. The Goldmund shapes up a flabby lower midrange and controls the more serious lower-treble/upper-midrange problems. Both work well with the SOTA Supermat.

Sound Organisation Turntable Stand: $150
The mandatory ancillary to the Linn turntable, though, as with the more expensive RATA stand, its low height may prove bothersome in a listening room that has to be shared with cats and children. (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)

Sumikko FluxBuster: $250 ★
Moving-coil cartridge demagnetizer: it really works; you need one. (Vol.9 No.4, Vol.10 No.5, Vol.12 No.4)

Sumikko Tweek Contact Cleaner: $18 ★
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)

Target 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
upturned, adjustable spikes to optimize it for turntable use. (NR)

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: $199/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)

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, Artcici Rigid Riser, Celestion SLSi, Target, Heybrook, and Linn.

K
Tice Power Block and Titan, Tripliite line conditioners.

Deletions
RATA Tottle Turnable Support, as Sound Organisation stand considerably less expensive for similar performance.

Headphones & headphone accessories

A
Stax SR-Lambda Signature: $2000
A diaphragm one-third thinner (1 μm) than the Lambda Pro, and a drive amplifier (SRM-T1) with a tube output stage distinguishing 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. (Vol.11 No.8)

Stax Lambda Pro 3: $1200 ✪
The latest version of the flagship Stax headphones, supplied with a dedicated class-A solid-state amplifier, the SRM-1 Mk.II, 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 suck-out, which becomes less bothersome after some hours’ use. Very comfortable. (Vol.7 No. 5, Vol.10 No.9, see also headphone review in Vol.12 No.4)

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, whereas in real life the sound has to negotiate the audio obstacle course represented by the listener’s head and outer ear. “The entire audible spectrum sounds more coherent and seamless,” quoth BS. (Vol.12 No.4)

B
Signet TK44: $300
Transient response and “snap” are not up to the standard set by the Lambda Pro, neither is the sound as open, but there’s plenty of detail, and coloration levels “are close to zero,” according to BS. Very comfortable. (Vol.10 No.9)

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: $160
Very similar performance (and construction) to the Signet TK44, though less comfortable and lacking the latter’s overlord monitoring, at a significantly lower price. The bargain in electrostatic headphones. (Vol.10 No.9)

C
Beyerdynamic DT990: $209
One of the two best dynamic headphones on the market. (The other is the Sennheiser HD 540.) A less detailed sound than the electrostatic models, with a slightly bass-shy, midrange-forward balance, precludes a Class B rating. (Vol.10 No.9)

Sennheiser HD 540 Reference: $199
One of the two best dynamic headphones on the market. Slightly less neutral than the Beyer DT990, being more laid-back with a “wisy,” even bright, high end. (Vol.10 No.9)

D
Beyerdynamic DT 320 Mk.II headphones: $75
Transparent sound, with reasonable LF extension. Some listeners may find its balance to be too bright, however. (Vol.12 No.4)

Sony MDR-282 Turbo2
Best of the in-the-ear cans, with LG-OFC wiring, excellent bass response, and a relatively uncolored treble, despite a somewhat overbright balance. Latest E484 version ($40) said to be slightly better. (NR, but see headphone review in Vol.12 No.4.)

Sony MDR-CD6: $120
A little expensive for the sound quality offered—too much midbass, sound somewhat unnatural—but recommended on the grounds that BS feels these to be the ideal cans for location recording, due to their high sensitivity and good isolation. (Vol.10 No.9)

Stereophile, October 1989
Lazarus Model H1A Configurable Amplifier

Hybrid, tube voltage amplification, solid state output, amplifier. Configurable: Stereo 50wpc pure class A @ 8 ohms, 100wpc @ 4 ohms; Mono (balanced differential operation) 200w @ 8 ohms, 400w @ 4 ohms. Price: $1920. Manufacturer: Lazarus Electronics, 8130 Coldwater Cyn., North Hollywood, CA Tel: 818-982-6477.

Dealers are among the most qualified people to discuss a product. They are exposed to the whole gamut of audio products available. They pick and choose among these to find those they like. They have experience putting systems together that work overall. And they have real product reliability data. We invite you to discuss this amplifier personally with these people.

One of the things that impresses us the most is the openness of the unit. Instruments are suspended in space. It is one of the few affordable amplifiers that will extract the full performance from the Eminent Technology LFT-3 planar speakers. And continues to bring goosebumps to me on our B&W Matrix 801s. Affords us fifth row seating with wall to wall soundstage and pinpoint placement. One of the few amplifiers to fully differentiate individual voices in choral material. A truly world class amplifier."

Gary Hawkins
Owner: The Digital Ear, Tustin, CA,
Tel.: 714-544-7903

"Very reliable: None of my customers have experienced any failures with this amplifier. Musical integrity: I’ve listened to an awful lot of amplifiers, and the H1A is one of the most musically satisfying units I’ve ever heard. Glorious on vocal, with a stupendous image. Doesn’t seem to add or subtract anything. That, by the way, is the highest praise I could give an amplifier. During a recent demonstration, I was stunned by the fact that I was only listening to the music. I had the feeling I was no longer listening to an audio system. Just the music.

Norvell Wathen
Owner, Musical Images, Louisville, KY
Tel.: 502-339-9000

Harmonic accuracy is one of the strongest points of this amplifier. The H1A presents the overtone structure of the music only limited by source quality. Open, airy, dynamic range equal to the best tube amplifiers available, with the reliability of premium solid state electronics. When demonstrating various amplifiers for customers, at the point a single H1A in stereo is inserted, everyone stops listening to the amps, and becomes immersed in the music. And at any time the owner can effect a 30% sonic improvement simply by buying an additional H1A, for dual mono. The H1A really is a superior amplifier in it’s mono mode.

Mark Haflich
O.E.M Audio & Video, Washington DC area
Tel.: 301-589-1191
Sony MDR-S101: $30
A light balance with a lively, open sound, but free from coloration and distortion. A bargain! (Vol. 10 No.9)

K
Beyerdynamic DT990/Pro.

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, though we haven’t used it long enough to verify the claim. (Vol. 5 No.3)

Nitty Gritty Mini Pro 2 record cleaner: $700 ☆
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: $500 ☆
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: $610
Basically a Nitty Gritty 2.5FI with an adapter that allows CDs to be buffed clean in a non-tangential manner. (Vol. 12 No.5)

Rozoll 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: $700 ☆
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)

VPI HW-16.5 record cleaner: $425 ☆
Manually operated version of HW-17 (above), noisier motor; less money. Adjusts automatically to thickness of record. (Vol. 5 Nos. 7 & 9, review was of earlier but substantially identical HW-16.)

Decca, Hunt-EDA, Goldring, or Statibrush record brush ☆
Properly used (held with the bristles at a low angle against the approaching grooves and slowly slide off the record), these are the most effective dry record-cleaning available. (JGH strongly disagrees, feeling that they leave the dust on the record.) No substitute for an occasional wet wash. (Vol. 10 No.8)

DiscWasher record brush ☆
If you don’t have a cleaning machine, the DW system will do an adequate job on relatively clean records, but won’t get out the deep grunge. If you begin to accumulate lots of junk on your stylus after cleaning your record with an older DW brush, the bristles are worn out; send it back for resurfacing or buy a new one. A high-torque turntable is required. (NR)

K
We have yet to try the latest version of the classic Keith Monks record-cleaning machine.

Loudspeaker Cables

Editor’s Note: This “Recommended Components” listing is derived, in the main, from Dick Olsher’s survey of high-quality cables in Vol. 11 No.7. In our opinion, to a far greater degree than with any other component, the sound of cables depends on the system in which they are used. These recommendations are to be used as a starting point, and it is essential to audition very expensive cable in your own system before contemplating purchase. “Drinking by the label” is always a bad thing to do 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 topflight, very expensive system. What is the “best” in absolute terms is not, therefore, necessarily the best for your system.

A

AudioQuest Clear Hyperlitz: $50/foot
The original Clear was an excellent all-around performer. Some system sensitivity, felt DO. Latest version features a similar construction to the Lapis interconnect. (Vol. 11 No.7)

AudioQuest Green Hyperlitz: $25/foot
Very clean and quiet. Some system sensitivity. (Vol. 11 No.7)

Kimber Kable 4AG: $100/foot
A very expensive hyper-pure silver cable that can offer a glimpse of heaven. Significant system sensitivity, so be sure to check for system compatibility before you buy. (Vol. 11 No.7)

Cardas HexLink: $411 first terminated meter, $26.84 each additional foot
Excellent clarity and focus. Only mild system sensitivity. (Vol. 11 No.7)

TARA Labs Space & Time cable: $6.95/foot
Featuring twisted solid-core construction, this inexpensive cable was the champ at helping create a well-delineated soundstage. (Vol. 11 No.7)

B

Distech Platinum Plus: $42.75/foot ☆
Just slight concessions to the best cables money can buy. Excellent focus and transparency. (Vol. 11 No.7)

Kimber Kable 8TC (doubled): $15.60/foot ☆
A double run of 8TC ($7.80/ft) greatly improves the sound. Excellent bass. (Vol. 11 No.7)

Monster Cable M-1 Mk.II: $325/$400 for 15-foot pair with spades $500/$550 for 25-foot pair with X-Terminators

Stereophile, October 1989
Though he felt it to have excellent bass, DO wasn’t impressed overall with the original version of this complex “Balanced-Bandwidth” design, finding that its top was somewhat on the “zippy” side. As it sounds similar to the MIT-750 at a significantly lower price, however, and the Mk.II is less bright, it is recommended for use in systems where its rather soft midrange will not be a problem. (Vol.11 No.7)

Kimber Kable 4TC: $4.40/foot ★
The best bet in Kimber’s regular series. (Vol.11 No.7)

van den Hul CS-122: $3.50/foot
Good focus and sibilant control, but slightly veiled and grainy. (Vol.11 No.7)

Hitachi Linear-Crystal 18AWG: $0.75/foot
Check this out from Precision Audio. Very good focus and harmonic integrity at a budget price. (Vol.11 No.7)

AudioQuest Brown: $1.95/foot
Surprisingly listenable. Does nothing seriously wrong. (Vol.11 No.7)

DNM solid-core: $3/foot
“A nice sense of focus and harmonic cohesiveness,” noted DO. A little expensive for Class D, thought DO, but veiling of the soundstage and a grainy treble keep this seminal solid-core cable from Class C. (Vol.11 No.7)

Kimber Kable 4PR: $1/foot ★
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. (Vol.11 No.7)

Radio Shack 18-gauge solid-core hookup wire: $0.08/ft.
Ridiculously cheap way of connecting speakers, yet reports from some people with ears we trust suggest 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). (NR)

Romex 12-2 (Homewire version): $0.08/foot
Cheap solid-core, with lousy treble, but better midrange and bass. More expensive 10-2 was found by DO to be more veiled and grainy. (Vol.11 No.7)

Component Interconnects

Editor’s Note: See the comments at the head of the loudspeaker cable recommendations. The same caution applies to interconnects.

AudioQuest Lapis Hyperlitz: $400/meter pair
This rather bulky cable offers an exceptionally clear presentation of musical detail, thinks JA. Locking connectors a bit cumbersome. (NR)

Siltech 4-24: $360/first meter w/RCAs, $280/additional meter or unterminated
Astounding transparency and imaging even better than the already outstanding Monster M1000. Recent conditioning suggests true Class A sound. Distributed by SOTA. (Vol.10 No.2)

van den Hul MC Silver: $1300/meter pair
A silly price, but this elaborately wound coaxial cable is apparently flat up into the microwave region, which suggests precision construction. “The best there is!,” according to DO (and also MC) as of Spring ’87. The least signature of any interconnect, with the most improvement noticeable on soundstaging and imaging. (Vol.10 No.2, see also vdH interview in Vol.9 No.8)
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ACOUSTAT SPECTRA 22 / SPW-1 LOUDSPEAKER SYSTEM

Dick Olsher


The Rockford Files

The Rockford Audio-Files, to be more precise. Lord only knows how many divisions the Rockford Corporation is comprised of, but at least three of them are domestic audio-related: Hafler, Carbonneau, and, of course, Acoustat. The Carbonneau Division is based in Michigan, manufactures dynamic drive-units, and is responsible for the design of the Spectra Passive Woofer, the SPW-1. Acoustat, on the other hand, basks in sunny Arizona and specializes in the manufacture of full-range electrostatic loudspeakers.

Acoustat and designer Jim Strickland have been at it for many years, and that's why the Spectra series represents a mature technology with the attendant benefit of product reliability. According to Acoustat, of the thousands of panels put into use over the past 13 years, there have been no known over-driving failures. That's obviously most reassuring to a prospective purchaser about to divest himself of a significant bundle of hard-earned cash. The company's confidence in the product is clearly reflected in the warranty. None of that 90-day—"hope it doesn't break in the meantime"—excuse for a warranty here. The Spectra's electrostatic panels are guaranteed against defective materials and workmanship for the life of the product. The warranty period for the 22's interface electronics is 10 years; for the SPW-1's, 5 years.

My Mylar is lighter than yours

Strickland points out, in the Acoustat "White Paper" on electrostatic loudspeaker design (write Acoustat for a copy of this well-written mini-treatise), that, in the world of planar speakers, electrostats have a potential advantage over planar magnetics as far as the diaphragm mass is concerned. In a magnetically driven planar, the diaphragm, whether a set of wires or foils, or a sandwich of a conductive coating on a plastic substrate, is required to carry large currents on the order of several amps. With an electrostatic design, however, the stators—not the diaphragm—carry the heavy-duty audio currents. Thus, a magnetically driven "diaphragm" must of necessity be more massive in order to safely dissipate all of those watts of ohmic heating. Acoustat typically uses a Mylar diaphragm only 0.65 mil thick—the implication being that "lighter" automatically equates with faster. The missing variable, of course, is force. Newton eloquently showed, a few centuries ago, that a driver's acceleration is given by the ratio of force to mass. A more massive diaphragm could then be made both to accelerate and to stop as rapidly as a lighter one by simply increasing the driving force proportionately.

Rather than focus on moving mass, I think that Acoustat would agree with me that the real issue is a design's ability to apply a uniform drive force to the diaphragm and thus control excursion nonlinearities and diaphragm resonances. By the nature of bar magnets, a true full-range ribbon design—where the ribbon is actually centered in the high-flux magnetic path between the north and south poles of the magnets—would require several tons of magnets. Operating a flat diaphragm either single-ended in front of or behind rows of bar magnets, or sandwiched between two planes of magnets in push-pull fashion, means that it is actually operating in the leakage field of the...
magnets. The result, generally speaking, is reduced motor efficiency and less than perfect control over the area of the diaphragm. With an electrostatic design, in principle, it should be possible to design stators that provide a motor force over essentially the entire area of...
the diaphragm. The magnitude of the electrostatic forces that can be generated depends on the diaphragm-stator spacing and the applied bias voltage. The applied voltage is limited by the breakdown of insulation materials and the ionization of the air between the stator and diaphragm by the electric fields. Intense electric fields can actually rip electrons off air molecules, thereby creating a conductive channel between the stator and diaphragm which leads to arcing.

A peek through the Spectra’s grille cloth reveals a louvered cubic matrix made of a plastic material. There are two of these per panel, front and back, the diaphragm sandwiched between. These structures are the supports for the stator assemblies. Affixed to them are mil-spec PVC insulated wires that actually make up the stators and carry the audio currents. The spacing between these wires and the diaphragm is about 2.5mm; very large when compared with an electrostatic tweeter, but necessary to accommodate the large excursions typical of full-range operation. The 5000V diaphragm bias voltage is fed through a 500 megohm resistor to maintain constant-charge operation.

Variable-width operation
One of the notable problems facing the full-range ESL designer is to provide adequate dispersion of high frequencies. A flat panel with a nominal width of, say, 3’ and radiating full-range will start beaming severely above about 1kHz. As a result, small lateral movements within the listening area bring about disturbing shifts in tonal balance, termed many years ago by JGH the “vertical venetian blind” effect. A common solution is to use a curved diaphragm à la Martin-Logan, or a convex mosaic of small electrostatic elements à la Sound Lab, to improve dispersion through the mids and highs. Jim Strickland does not apparently care much for this approach because it is said to cause time-smearing of treble transients due to the multiple arrivals of HF transients at the listening seat. This phenomenon is claimed to be readily audible with any reasonably large curved radiating surface. I must confess that I’m puzzled about this. I’ve certainly not heard transient smearing from either the Martin-Logan Sequel IIs or the Sound Lab A-3s—both of which use reasonably large curved radiating surfaces.

Acoustat’s preferred solution is embodied in the Spectra line; namely, variable-width operation. The name is actually a clever acronym: Symmetric Pair Electrically Curved TRAnsducer. The panel is electrically segmented into three distinct vertical sectors through the use of RC low-pass filters. The first sector is driven full-range and is said to be about 3.3” wide, defining a line-source “tweeter” radiator. The next sector over is rolled off to reproduce only mids and some lows, while the third sector only reproduces lows. Thus, bass excursions are present on the entire diaphragm surface, while treble excursions are confined to a much smaller area. Scanning laterally across the Spectra’s panel with a cardioid mic, the intensity of a 10kHz sinewave tone reached a maximum at about 7” from the inside edge of the panel. I measured a 15dB drop in intensity at a distance of 7” from the outside edge of the panel. Although the technique sounds quite simple, the real difficulty is in providing adequate drive signal through the upper octaves. The HF efficiency is already low to begin with because of the large diaphragm/stator spacing required for full-range operation. Now restrict the HF radiating area to a small fraction of the total area and it becomes evident that the HF signal will have to be boosted by the interface to avoid a drooping response.

Because the outer sectors of the panel are effectively delayed about 100µs by the RC networks, the flat panel acoustically takes on a slightly convex profile (1” setback). This helps in the dispersion of the mids, which radiate from an array width of over 13”.

The Spectra panels are mirror-imaged. This is necessitated by the fact that the line “tweeter” is not quite centered within the panel area. There are Left and Right panels identified by a 3/8” hole located in the top metal capture plate of each panel. The hole is on the left side of the left panel and on the right side of the right panel—when viewed from the listening seat. Following these instructions, you’re bound to achieve a symmetrical positioning of the tweeters in the listening room.

The SPW-1
It is a refreshingly honest practice for a manufacturer to call a spade a spade. With a reasonably limited excursion capability and a half-power bass response of about 35Hz, this is a solid woofer. Yet too often this sort of design
is touted as a subwoofer in the marketplace. Kudos to Acoustat for not falling prey to advertising hyperbole.

A total of four 6.5" paper-cone woofers share a common enclosure. Although the enclosure is common, each channel is electrically separate and consists of a pair of side-firing woofers wired in series. A 4" vent is located on the back side of the enclosure. The bass-reflex alignment is intended as a maximally flat Butterworth type. Both of the right and left inputs are fused. Spiked feet are included; these thread into the inserts at the four corners of the wooden bottom plate. Their use is highly recommended, especially on carpeted floors, so that the cabinet is solidly anchored to the underlying floor.

A 100Hz, second-order, low-pass, passive crossover is provided. It is physically housed within the SPW-1 box, so that its only outward manifestation is a switch that allows one to bypass the internal crossover. This feature is useful in situations where you might want to biamp with your own external crossover. The SPW-1 receives a full-range signal from each panel, so that if desired it could be operated full-range and crossed-over at a higher frequency using an external crossover. A passive first-order high-pass filter for the Spectras is located inside the MK-2123 interface. It is also switchable for full-range operation of the panels.

A typical configuration would consist of the woofer centered between the Spectra panels and located preferably about 2' from the rear wall. Since the right and left woofer sections are in such close proximity to each other, from an acoustic standpoint they may be considered no different from a summed-bass center channel. However, there are arguments against such a positioning. None other than Paul Klipsch, for whom I have the utmost of respect and whose technical writings I consider insightful, disliked a center bass channel. You see, the corner of a room holds unique properties. As Paul puts it, the corner affords the speaker a system of mirror images, so that, in the bass region, a corner speaker effectively becomes eight times as big as it is physically. Also, a corner is the most remote part of a room from an opposite corner. Hence, a sound generated there can travel farther before the first reflection occurs. Of course, there are cogent reasons for keeping woofers out of corners—it is the optimum position for exciting room resonant modes—but let's not get into that right now. The point is that a system with a summed-bass center channel cannot be located so that the woofer is in the corner—at least not without destroying soundstage accuracy.

All right, are there any other theoretical grounds on which to fault a tri-channel system? Conventional wisdom states that because the stereophonic effect disappears below about 300Hz (ie, bass frequencies are nondirectional), placement of a center-channel woofer is non-critical. You've heard this one, too: "the woofer may be placed anywhere in the room to optimize bass response, while the satellites may be positioned for best imaging." Well, all of this may be perfectly true for sinewave signals, but does it also hold for music as well? I recently came across a paper by Beaubien and Moore (IRE Transactions On Audio, Sept.-Oct. 1960) that challenges this view. Using reproduced music (from LPs) and an experimental set-up that provided mono bass below several selected frequencies, they found that directional perception was 80% even at the lowest filter setting of 100Hz. I do not believe that this remarkable finding, paralleling my own experience, has been refuted to this day. However, assuming for the moment that stereo bass is important, just how objectionable is mono bass below 100Hz? At least from my experience with the Spectra System, I can tell you that the effect on soundstaging appears to be quite small.

Getting ready
Since I did not perform the required initial assembly, I can't personally report on that aspect of the installation. Robert Harley, Stereophile's Captain Fix-it, who set up the Spectra 22s in my listening room, tells me that a major glitch developed while mating the interfaces to the panels: the tilt brackets did not fit into the inside edges of the interface. I'm told that LA, wielding a hammer, adjusted the sheet metal with a few strategically placed blows.

My first job was to finalize the Spectras' room placement. Like any other full-range ESL, the Spectra needs "breathing space" behind the panels for optimum imaging and to minimize bass-loading problems. Acoustat recommends 3' from the rear wall as a good starting point. I settled on a placement one-third into the room from the rear wall and about 4' from the
side walls. This is more or less the location in which just about all dipole radiators seem happiest in this room.

The next task was to decide on the right amount of toe-in. Generally, I find soundstage width most satisfying when the speakers are canted toward the listening seat. The width dimension appears then to extend beyond the lateral spacing of the speakers to encompass the entire width of the room—at least on those recordings possessing a realistic soundstage. I do not believe this to be a case of strong early reflections influencing the perceived soundstage dimensions—the side walls in my room are heavily damped with fiberglass panels. One practical problem with this approach is that I’m forced to listen to a speaker’s tweeter pretty much on-axis. And there are some speakers when that is not the best policy. For example, a hot, sizzly tweeter is much more tolerable, say, 30° off-axis, which means no toe-in. Fortunately, the treble of the Spectras proved to be exceptionally listenable; the final toe-in resulted in the "tweeter" sector aimed at the listening seat, something that requires experimentation with the panels' lateral spacing.

You’ll be well advised to heed Acoustat’s minimum amplifier power recommendation of 100Wpc. I tried several amps over a period of several weeks, and it became apparent that the Spectras really craves a large amp. The Quicksilver monoblocks just ran out of power on widerange orchestral program. The RAM Labs RM-9 (100Wpc) was fine. Not surprisingly, the Prodigy 150W monoblocks (reviewed in Vol.12 No.9) proved an excellent match, bringing the best out of the Spectras.

The front end was pretty much as usual, with a SOTA/SME/Virtuoso DTi LP system. Late in the evaluation, however, I switched to Threshold’s new and much larger "e"-series power supplies for the FET-10 preamplifier. These brought about striking changes— all for the better. The sense of dynamics increased, while the soundstage was better focused with better clarity and transparency through the upper octaves; all of which helped flesh out instrumental outlines with more conviction. My first impression is that if you own a Threshold FET-10, you can’t afford to be without these new babies. TARA Labs’ Phase III speaker cable was used between the amp and Spectras, while Cardas cable was used to connect the SPW-1 to the Spectras.

The sound
As it turned out, a number of pleasant surprises lay in store for me. The first genuine surprise had to do with the quality of the imaging. I had become accustomed to the first-class imaging of the Celeston SL600s. When dictated by the record, a spacious soundstage with precise localization of spatial information and resolution of hall reverber had always materialized before me. The Spectras sacrificed nothing in the way of stage width and depth. Instrumental outlines were solidly fleshed out within the soundstage and remained so even when I shifted slightly in my listening seat. Coupled with its excellent retrieval of low-level information, these Acoustats had no trouble at all in generating a captivating panoramic view of the original recording space. In these respects, the Spectras were essentially mini-monitor-like. But there were differences. While possessing that same sense of dimensionality as the Celestions, image size through the Spectras was clearly larger in the vertical dimension. The SL600s’ presentation was rounder spatially and more compact. The Spectras were actually more lifelike in better approximating the height perspective of individual instrumental outlines. The Weaver’s reunion at Carnegie Hall in 1963 (Vanguard VSD-2150) is a good example. Voices and instruments were clearly spread out within the soundstage along a straight line well behind the plane of the speakers. Even the pickup patterns of the mics could be resolved, as was the audience participation.

In terms of transient speed, retrieval of low-level detail, freedom from boxy or woody midrange colorations, image cohesiveness, and soundstage transparency, the Spectras was clearly representative of the full-range ESL genre. That is to say, it was very good in all of these respects and, to my ears, superior in these areas when compared to similarly priced dynamic systems. However, within the electrostatic realm, the Spectras is clearly bettered in several of these areas. If you’re looking for the last measure of transparency, you’d better consider a Martin-Logan CLS or Sequel. Neither do the Spectras equal the sense of cohesiveness generated by the Quad US Monitors. The Sequel II’s treble is also better defined, with considerably less overlying fuzz. While the Spectra only equaled or bettered the electrostatic competition in terms of imaging, its real strengths appeared to lie in the absence of
any serious weaknesses at a significantly lower price level.

The treble is very listenable, except when the speaker is pushed hard, at which point treble transients lose some control and become slightly smeared, as though the interface was being driven into ringing. The character of the mids was very smooth, and with the Prodigy amps in the chain, musical textures were more than adequately liquid. The timbral accuracy of soprano voices and violin was excellent, with a clean transition from the upper mids to lower treble.

The bass octaves were very nicely balanced, without any of the upper-bass exaggeration typical of many box speakers. There wasn't really any deep bass, bass extension being flat to about 50Hz. Midbass pitch definition was very good, as evidenced by the reproduction of double bass. The bass quality was generally tight and, although lacking convincing impact, the Spectra was much more concussive than my old Quad ESLs.

The overall balance was slightly on the lean side through the mids (500Hz-2kHz), and there is some evidence of this in the Spectra's measured frequency response. A lush tube amp should help beef up this range. Fig.1 shows the in-room on-axis frequency response of the Spectra 22 measured at 1 meter. Many of the dips and peaks below about 300Hz are room effects. However, above 500Hz, the response is typical of the Spectra's nearfield performance—except for the rise in response above 10kHz—2dB of which is due to the measuring mic.

Small-scale works were reproduced with adequate dynamics and without any sense of strain. Pushed even reasonably hard on symphonic music, the Spectras lost their sense of aplomb. They were clearly being stressed: dynamics were compressed, the lower mids were congested, and the upper octaves became increasingly grainy and fuzzy. Enter the SPW-1.

It took me a considerable amount of time to properly integrate the SPW-1 into the system. I tried positioning it centered between and in line with the panels. That didn't work at all. The result was a large dip in the frequency response centered at 200Hz. The SPW-1 was then moved toward the back wall. Still no luck, either in-phase or out-of-phase. Finally, at 3' from the rear wall, with an in-phase connection, things fell pretty much into place. Fig. 2 gives the frequency response of the system with the woofer measured in-room at 80° from the panel and slightly off axis. Note that the bass extension is considerably extended, with a half-power frequency of 35Hz. Also note that room modes are much more prominent than before, the SPW-1 doing a much better job of exciting the room. Yes, the peak at about 175Hz is audible as increased upper-bass body—not at all unpleasant, if truth be known.

Were there any timbral changes or an adverse impact on imaging quality? On solo soprano program material (the Lesley Test), there was no audible timbral change. The breakthrough from the SPW-1 is really minimal. There was, however, a slight defocusing of instrumental outlines which was substantiated upon further listening. This was a minor effect, and should prove inconsequential to most listeners. I already mentioned the increase in upper-bass energy. Other than that, there were a number of significant improvements.

Although the deep-bass extension was more considerable, and I certainly missed it when the SPW-1 was switched out, the most significant benefits had nothing to do with bass extension. Foremost was the considerable extension in dynamic range. Strain and congestion were eliminated from the lower mids, even during high-powered orchestral music. Second, bass impact took on quite a bit of respectability, and resolution of low-level detail improved a notch. After being exposed to the SPW-1 for a considerable length of time, the Spectra 22s alone appeared quite wimpy.

One final thought: If you're really paranoid about the last iota of imaging excellence, and since it is so easy to switch from full-range operation of the panels to woofer mode, one
could conceivably listen without the SPW-1 on intimate music, then switch it back in for the heavy-duty symphonic stuff.

Electrostatic speakers have engendered a reputation for being hard to drive. I asked RH, therefore, to look at the Spectra 22's impedance amplitude and phase with the magazine's Audio Precision test gear. Fig.3—the vertical scale is 2 ohms/division—shows that the amplitude stays mostly well above 8 ohms from 10Hz to 8kHz, with a drop to just under 2 ohms at 19kHz or so, above which it begins to rise again. The electrical phase—dotted line—is also relatively benign, with the worst imbalance between drive voltage and current occurring above 20kHz, where signal levels will hardly ever approach the maximum midband level. The woofer impedance (not shown), was also high, dipping to a minimum in its passband of 8 ohms at 55Hz.

**Summary**

Taken alone, the Spectra 22s are very listenable and quite enjoyable. They excel in the precise portrayal of a soundstage; quite a remarkable feat for a flat-panel electrostatic. The Spectras also display the kind of finesse one expects from an ESL. Treble transients are fast and detailed. Retrieval of low-level detail is very good, and there's a blissful absence of boxy colorations through the lower mids and bass registers. Soundstage transparency is also very good, but not really in the class of, say, the Martin-Logan Sequel 11s. On the other hand, the Spectras are better integrated from top to bottom. The tonal balance is slightly recessed through the mids, but otherwise timbral accuracy is excellent. The transition from the upper mids to the lower treble is especially noteworthy.

The following omissions are pretty common to the genre of small full-range ESLs. There isn't much in the way of deep bass, and the bass registers are impact-shy. Dynamic range is pretty limited, and, when driven even moderately hard, the lower mids congest and the general sound quality becomes considerably strained.

The SPW-1 provides a considerable improvement in terms of bass extension to 35Hz or so, a more punchy kick in the bass registers, and significantly increased dynamics. It is not easy to achieve the best integration between the woofer and the panels; it appears to work best near the rear wall. Its impact on the mids is negligible in term of added coloration, and it only slightly defocuses the soundstage.

The Spectra 22s, with the SPW-1, represent a unique combination of strengths without the burden of any serious weaknesses, and therefore, taken as a system, are clearly deserving of a Class B recommendation in *Stereophile*'s "Recommended Components" listing. And the system price tag of $2450 makes it a good value. The Spectra 22s alone could be considered to be priced a bit too steeply for Class C, but since they belong at the top of that Class, their price tag should not prove an embarrassment.

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**VELODYNE ULD-18 & ULD-15 SUBWOOFERS**

Larry Greenhill

Velodyne ULD-18 subwoofer system. Down-firing, floor-standing, dynamic, sealed-box, self-powered subwoofer with separate electronic crossover and servo-controlled power amplifier system. Driver: one 18" cone, ¾" linear travel, with accelerometer and preamp. Nominal input impedance: 20k ohms. Amplifier power: 400W continuous. Input sensitivity: 300mV for maximum output. Crossover: Independently selectable high-pass (36–212Hz), low-pass (60–193Hz) frequencies and phase (0 or 180° phase) via changing soldered-in resistors on a plug-in seven-terminal "header" socket by dealer. High-pass slopes (6–12dB/octave) can be also set. Unit

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under test shipped with nominal, standard 12dB/octave high-pass slope and both high- and low-pass frequency set at 85Hz. 15Hz subsonic filter point used with the 85Hz crossover. Frequency response: 18Hz–85Hz, +3dB; 104dB at 20Hz with less than 0.5% THD. Dimensions of the "remote" power servo control unit: 17" W by 3.5" L by 11" D. Weight: 15 lbs. Cabinet dimensions: 23.5" W by 31" L by 21.75" H, 5.77 cubic feet. Weight: 105 lbs. Finishes: walnut, oak, black; beveled hardwood edges, hardwood legs with concealed rollers. Price: $2595.


Both: Warranty: 2 years, parts and labor. Approximate number of dealers: 240. Manufacturer: Velodyne Acoustics, Inc., 1746 Junction Avenue, San Jose, CA 95112. Tel: (800) 835-6396; inside California, (408) 436-0688.

Velodyne introduced their series II subwoofer line last fall, and it seems timely to review their largest, most powerful unit, the ULD-18. As the line's flagship, this Velodyne subwoofer represents the most sophisticated and expensive system offered by the company. It is sold as a system, complete with driver, enclosure, amplifier, control unit, electronic crossover, and servo cable and circuitry. Velodyne's unique servo circuitry, manufacturing techniques, and aggressive sales technique emanate from the company's designer, David Hall. In a short five years, Velodyne has aggressively marketed five subwoofers spanning a price range of $645 (the VA1012) to $2595 (ULD-18), and distributed the products widely. Velodynes can be purchased both in very high-end audio stores, such as Lyric High-Fi or Definitive Audio, and in chain stores in the Washington, DC area. Their dealers number 240, and exceed the total dealerships for the seven subwoofers reviewed in past issues of this magazine by Dick Olsher (Vol.12 No.1), J. Gordon Holt and John Atkinson (Vol.11 No.4), or Martin Colloms (Vol.10 No.2). They have been successful in selling a product that has long been considered a well-heeled audiophile's accessory. As I shall point out, the ULD-18's performance more than justifies its success.

The Last Crusade: Is Subwoofing Possible?
The lowest frequencies of the musical spectrum are filled with much of its raw energy. The double-bass, the pipe organ, and the bass drum produce tremendous emotional power. The subwoofer's raison d'être is to enhance the performance of the main loudspeaker by adding accurate, low-distortion sound in the 20–100Hz region. Planar speakers (including
electrostatics) have difficulty generating much output in the low-bass region without doubling or distorting. Panel systems, particularly small electrostatics, are limited in diaphragm excursion, and cannot move a great deal of air.

In theory, the subwoofer should improve a general-purpose loudspeaker's performance by removing a major source of distortion from its range; freed from the constraints of producing low bass notes, they can play louder with greater dynamics. No wonder the most expensive loudspeakers come with large bass-driver towers.

Harry Partch, modern composer and inventor of musical instruments, put it best. The occasion was a recorded commentary of his building of musical instruments to generate profound bass. It was difficult for him to “share” the impact of these instruments via records. He lamented the general lack of “adequate playback equipment” which could convey the power of his huge, 6’ bass marimba, the “Marimba Eroica” (Delusion of a Fury; A Ritual of Dream and Delusion, Columbia MS-30576, side 1). Partch quips: “In the right room acoustically, the Eroica is felt through the feet, against the belly, and, if one sits on the floor, it ripples through his bottom. It is very difficult to put on tape, and especially on records with any fidelity. Adequate playback equipment is absolutely essential, which means that the poorer generally are not privileged to experience a rippling through their backsides by an art form.”

But cost has always been one of the tickets of admission to serious subwoofing. Unfortunately, the best subwoofers and their supporting amplifiers and crossovers are very pricey. The Janis W-1, a 15” unit, now lists for $795 without crossover or amplifier. Sound Lab makes a very exotic electrostatic subwoofer, the B-1, which lists for $6500 mono, $10,000 stereo, and uses panels that are approximately 7’ by 4’ by 4’!” The Entec, another crossover/amp/servo systems approach like Velodyne’s, costs between $1995 and $20,000/pair, depending upon the number of drivers. The Maggie/Crosby-Quad System, a noncommercial hybrid heard in Madrigal’s Consumer Electronics Show display, uses the woofer section of a $3800 Magneplanar Tympani IV system. Stacked against these, the Velodyne ULD-18’s “complete” $2595 price tag does appear more reasonable.

Besides cost, distortion has been the other Achilles heel. Subwoofers, like many dynamic drivers, are prone to large signal-distortion products in amounts greater than 10%, tracking the signal only as well as their voice-coil drives, elastic suspensions, and cabinet designs (acoustic suspension, transmission line, etc.) will allow. Dick Olsher, in Vol.12 No.1, found that these distortion products had disastrous effects on “finesse in bass response,” which he defined as “speed, tightness, pitch definition, and resolution of bass detail.” He dreamed of a subwoofer that would give him both “quantity” of low bass while also maintaining its “quality.” This supposed tradeoff refers to subwoofer distortion, which increases rapidly as signal level increases. Sometimes, the distortion can be so objectionable that one can feel slightly ill.

Why did this problem occur if the subwoofer generates sound in an area where the human ear is notoriously insensitive? As it turns out, our ears are very sensitive not to the subwoofer’s main signal, but to the unit’s harmonic distortion products. A 30Hz marimba beat is felt as much as heard; its third harmonic, 90Hz, is definitely heard, however, and small traces will easily color male voices. If the woofer has 5% Total Harmonic Distortion (THD) at 30Hz, it means that a 90dB spl 30Hz note would produce a 64dB spl 90Hz note. Since the human ear is 10 times as sensitive to the 90Hz note, the sensitivity of the human ear unduly weighs the sound of the 90Hz distortion over the fundamental marimba sound.

1 LA excused himself and left an audition of an otherwise outstanding system at the recent June CES. He objected to a recording of low bass, in this case the Saint Saëns Symphony 3 (“Organ Symphony”). Apparently, deep bass (in this case 32Hz organ notes) can make him feel quite uncomfortable. Chuck Iurilliano, national sales manager of Velodyne, comments that he can feel bass “descending down his body” as the frequency goes down from 25Hz to 7Hz, and the 10Hz notes do induce quite a queasy feeling. I used a signal generator to drive the ULD-1B at 20Hz, and adjusted the peak-to-peak excursion of the cone to about 5” (as Hall suggested). I placed my ear close to the woofer cone (not recommended!). I could see the cone moving, and felt a pressure in the air around my body. As my left ear got within 8” of the driver’s center cap, I experienced definite sharp pain, even though I could not hear the 20Hz note! This means that I was encountering 120dB spl sound levels, although was unable to hear any higher frequencies, indicating (to me) that the THD was well below 3%.

2 Hall suggested an interesting test to illustrate my ear’s sensitivity curve. I turned the ULD-1B’s enclosure over so the driver was facing upward, and poured a few grains of salt on the woofer cone. I again drove the subwoofer with a 20Hz signal, set the cone to 1” peak-to-peak excursion (using a Q-tip, a bit of Scotch tape, and a ruler), and listened. I could easily hear the grains of salt dancing on the cone, but was deaf to the fundamental 20Hz signal, although it was many dB higher in level.
Subwoofer THD will mar the performance of a very-high-quality midrange-treble unit, like Quads, Apogees, or Magneplanars. This was the main reason I did not use my earlier subwoofer (an RH Labs SB-1), despite its otherwise high quality, workmanship, and ability to put out huge amounts of deep bass. Hall’s studies led him to believe that 0.5% THD is the maximum allowable distortion tolerable in a subwoofer. His “High Gain Servo” (HGS) circuitry is said to reduce distortion by a factor of 30. The ULD-18 is rated at 104dB SPL at 20Hz at 0.5%, well within this limit.

**Design features**

The Velodyne subwoofer is part of a system, so one doesn’t have the “hidden” expenses of extra amplifiers or crossovers that might or might not work out. 12dB/octave crossover slopes and the 85Hz crossover point for low- and high-pass filters were selected as the best general match to most full-range systems. The ULD-18’s enclosure, crossover, and amp have been optimized for one another, and are sold as a package. The ULD-18 is only sold as an optimized system, with its own 400W amplifier, error correction, and crossovers optimized for the particular driver in each unit (serial numbers of subwoofer enclosure and remote unit must match!). This means that the audiophile isn’t faced with identifying, purchasing, and trimming in the right crossover with the right slopes, and right high- and low-pass frequencies and right amplifier. It’s all done at the factory! In fact, the Velodyne’s amplifier will not drive the woofer without the servo mechanism in place.

Hall found that every detail of design and production was critical. Reducing distortion at 20Hz means optimizing cone stiffness (propylene proved too flabby), magnetizing the speaker correctly, individually reducing the standing waves in each driver by watching it perform, electronic and mechanical hand-tuning of each system manufactured, and sealing every screw hole with special glue so there is no air leakage. Like balancing a tire, small weights are applied to each loudspeaker and small holes are punched in the cone to break up standing waves. This means each ULD-18 is virtually handmade. Final adjustments are made within each remote unit, so one can’t simply pull another untrimmed remote electronics off the shelf to replace one in the field.

But error correction doesn’t stop with the physical setup of the subwoofer—it continues during every second of its operation. Velodyne’s error-correction accelerometer samples cone movement 3500 times per second. The resulting data on the cone’s real-time behavior are further refined by Velodyne’s special HGS system. The Velodyne 400 amplifier becomes part of this correction loop, with 30dB negative feedback reducing distortion in the amplifier-speaker system.

**Velodyne has refined the concept of motional feedback.** Hall mounts an acceleration-sensitive piezoelectric pickup on the voice-coil form. It generates a tiny voltage proportional to the rate of change in velocity of the cone. An additional amplifier, mounted in the subwoofer itself, sends this voltage back to the HGS system. Additional circuitry in the remote box compares this analog of the acoustic output of the woofer with the command signal coming into the Velodyne remote from the preamp. When there is deviation, the controller alters the drive signal to the subwoofer’s amplifier. Rather than the subwoofer’s acoustical output being distorted, its input signal is pre-distorted in such a way that the acoustic output from the ULD-18 more closely matches the source signal.

Sampling acceleration data is a feature of the Velodyne system. David Clark’s review of the Velodyne ULD-15 for *Audio* (Vol.71 No.11, pp.78–90) best explained the advantages of acceleration-sensitive pickups. Briefly, the rate of change (acceleration) of a subwoofer coil can vary greatly in the profound bass range; it is most critical for the subwoofer cone to maintain the same speed variation from 20–100Hz (“a flat frequency response for a small radiator...results from equal peak acceleration at all frequencies”) than simply to have a capacity to move (large long-throw capacity). The HGS system depends on the accuracy of error data, which becomes the critical factor in keeping the distortion down. Other manufacturers use servos and accelerometer pickups in their price-no-object full-range speaker systems, such as the $50,000 Infinity IRS (Series V). Infinity uses one of the 12” woofers in each of the Beta’s two bass towers to derive the servo signals.

The HGS demands a high-gain loop, as as much as 30dB of negative feedback must be applied, and the actual speaker amplifier has to be powerful (400W) to handle any compres-
sion being applied to the input signal. A “compensation” circuit must be used to prevent the system from turning into an oscillator, where the servo signal runs away with the system. In fact, the owner is warned that the speaker cable leads from the Velodyne remote box (where the subwoofer’s power is generated) must not be inverted when plugged into the subwoofer. Additionally, a gain-compression or limiter circuit is used to prevent the amplifier from going into clipping (or the subwoofer cone from jumping out of the coil gap) by receiving too much input signal, when one leans too heavily on the volume control. Obviously, a clipping amplifier doesn’t respond to error correction. For example, the bass drum beat on David Wilson’s Winds of War and Peace easily drove the Celestion System 6000 into serious, noisy clipping, but not the ULD-15 or ULD-18, the Quad/Velodyne system being able to play this passage louder than the non-servo subwoofer. The gain compressor circuit will signal the comparator circuitry to shut down the subwoofer’s power amplifier for 5 seconds, just as it will shut off if it detects that the servo interface cable is disconnected or the power amplifier’s power supply has developed problems.

Besides costing more than the Series I, the Series II line added a number of critical advantages, including a smarter, more rugged protection circuit for speaker and amplifier, with automatic shutdown for a short, open circuit or input overload. This reduces the likelihood of woofer damage if one reverses the speaker-cable terminals at the subwoofer, turning the servo into a powerful oscillator. The cable carrying the servo feedback to the system’s amplifier was simplified from a DIN cable to a simple phono cable, and the crossover components are now mounted in a plug-in gold-plated carrier, allowing for quick changes of crossover frequencies and slopes. The built-in amplifier is now run in the more efficient Class-G mode to reduce heat and provide the increased voltage swing needed for the signal comparator, gain compressor, and protection circuits.

Description
The original ULD-18 was Velodyne’s first product. The enclosure size was modeled on a published design of an enclosure using an 18” JBL woofer, but one inch smaller in each dimension. Philips had designed a servo circuit to make a small woofer sound like a large one; Hall refined the circuit with special signal compression and protection, in order to make a large woofer sound even better. Yet he and his sales representative found the first 18” Velodyne subwoofer unwieldy to take on the road for dealer demonstrations. He went on to design the ULD-15 in a much smaller enclosure. The higher compression of air necessary for the 15 produced more nonlinearities than found in the 18, and this necessitated a more sophisticated HGS system. The ULD-15’s servo was then incorporated in later models of the 18.

Today’s Series II ULD-18 remains a massive, 105-pound sealed woofer box, finished on all sides in oiled walnut or oak veneer. The woofer faces down, a “floor-loading” position. Even though the cone diameter is only 3” greater than the ULD-15’s, the 18’s enclosure is more than double the size (5.8 cubic feet vs the ULD-15’s 2.6 cubic feet) and almost twice as heavy (105 pounds vs 57 pounds). The 18’s 1” wall thickness exceeds the ULD-15’s by 0.25”. Setup reminded me of JGH’s description of the 10 hours of “sweating and cursing” required to find the best location for two 120-pound Nelson-Reed 1204 subwoofers (Vol.11 No.4, p.122).

Just the act of adding one more huge box to a room already crowded with two large planar speakers can precipitate a decorating crisis and serious domestic friction. Like it or not, the ULD-18’s WAF (Wife Acceptance Factor) may be lower than its sonics deserve. After all, the ULD-18 is as big as a small freezer!

Actually, the ULD-18’s 5.7-cubic-foot enclosure would have been larger, but the technology involved has kept the size down. Its legs have rollers that allow a normal mortal to move it around without scratching the floor. There are the single pair of 5-way binding posts and a single RCA jack for the servo line on the unit’s bottom. A flashlight helps while plugging in the speaker cable, because it is critical to keep the red terminal of the Velodyne amplifier connected to the red terminal of the subwoofer box (if the cables are reversed, deafening low-frequency feedback occurs in massive amounts, and can damage the speaker if continued for more than a few seconds). Aficionados can replace the rollers with Tiptoes for ultimate stability.

The remote is a black, finned box, with a power switch and level control on the front panel and RCA jacks, a pair of 5-way binding
posts for a single speaker cable, and a single RCA jack for the servo line on the back panel. No tape-monitor output is provided on the Velodyne remote, so an external box would be required if you are using an integrated amp or receiver, rather than a preamp. Inside the unit, a single power supply drives all the electronics, including the bridged power amplifier. This "remote" unit is best placed next to the main system's preamplifier, as it divides the signal to all the power amplifiers. A 24' RCA cable is supplied with the system, and serves as the line for the servo signal.

The servo works soon after the unit turns on. One can tap the woofer cone with the servo off and on, and the resulting sound is very different. The servo-activated cone is stiffer and does not make the hollow "thunk" it does when outside the servo loop. Each time the Velodyne system is turned on, it makes a noticeable "pop" as the servo trims in the system. Years ago, this sound meant I had an amplifier with a turn-on or turn-off transient, typical of a prototype unit a manufacturer hadn't put the finishing design touches on. With the Velodyne system, this sound means you're in business.

The crossover and phase adjustments for the Velodyne amplifier are controlled by a series of seven soldered-in resistors on a carrier, which plugs into a socket on the back inside panel. An optional Velodyne data sheet explains the method of changing the crossover high- and low-pass frequencies, the slope of the high-pass filter, and the phase of the system. I found that having additional sets of resistor carriers (available from the dealer) for different frequencies and phase helped with the review; it could also help an owner who buys new full-range speakers. Once set up, plugging carriers in is easy and safe (with the unit turned off, of course). Soldering on the small card is tricky, for the plastic may melt at the same time the solder does.

The Velodyne system is sold as a single woofer system, and the remote unit sums a signal to go to the single subwoofer. Using two woofers requires two remote boxes, with right and left interconnects from your preamp going to the right channel of each Velodyne remote.

**Set-up**

I had auditioned subwoofers before, and had always come back for more subwoofing, despite the following drawbacks. I did not enjoy: the need for an extra amplifier; the sense that bass information came from a different location than the rest of the music; the added colorations in the midrange; or the added clutter in my living room. Despite wood floors, different amps, and using two different electronic crossovers, I could never get the bass to play loud enough without producing all the ills of poorly controlled subwoofing—room overhang, echo, muddied midrange, and loss of imaging.

My listening area is a 5500-cubic-foot living room that opens into the upstairs and to a bigger kitchen area. This open space, comprising the entire first floor and upstairs, has the volume to challenge the performance of a large subwoofer. The floor is wooden, which means it can flex and enhance the subwoofer's action on 25–40Hz notes. The room has two large rugs, five chairs, and a sofa. Tonal balance of the room leans toward brightness.

Moving the 105-pound cabinet around my newly-finished floors was best handled by two people to avoid scratches. The ULD-18 was rolled to two locations. First, keeping in mind the WAF, I "hid" the speaker enclosure behind the sofa, off to the right and behind the listening position. Signal-generator sweeps revealed that location to produce low levels of 20–30Hz bass. Also, it was 15' from the Quads, and the phase and timing differences muddled up the midrange and weakened the power and definition of the bass. Moved to a central spot between and one foot behind the Quads, the subwoofer "disappeared" sonically from the midrange, introducing no colorations from the crossover. I was surprised, because this location meant that the subwoofer was placed next to the back wall, which could have produced heaviness and unwanted bass reinforcement. The ULD-18 remained unobtrusive, only coming to life when deep bass information was present. I also discovered that the floor was not level, which meant that the ULD-18's wooden roller-wheels rattled during loud bass passages (the Defos drum crash). Wadding paper under the loose wheels quickly stopped this annoyance.

Monster Cable interconnects were run from the tape outputs of a Mark Levinson ML-7 preamplifier to the Velodyne Remote control box. From its high-pass outputs, another set of Monster Cable interconnects ran back to the preamp, then to a Threshold Stasis III ampli-
fier to drive the Quad ESL-63s via Monster Cable speaker line. A single Levinson twin-lead speaker cable was plugged into the remote's speaker outputs and run to the subwoofer. For playing CDs, I used a Sansui AU-X911DG integrated amplifier (for its outstanding 1-bit digital/analog converter circuitry), which in turn received the digital output from a Philips 650 CD player. A Revox B-260 tuner was also employed. Vinyl records were played on a Linn Sondek LP-12 turntable fitted with a Magnepan arm and a Marovskis MIT-1 van den Hul stylus MC cartridge, to drive an Audio Standards MX-10 head amp.

Once the crossover slopes and frequencies had been chosen by plugging in the appropriate carrier jig, the level control on the outside of the remote was adjusted. I had chosen the nominal 85 Hz, 12 dB/octave setting shipped with each ULD-18 for use with the Quad ESL-63s. (I also tried a 60 Hz crossover point carrier, but this muddied up the upper bass and low midrange.) I listened to male announcers on FM radio for starters, and found that a natural bass tone was achieved by setting the Velodyne's level control to about 8:30 (using the settings like a clock face). Further listening to double-bass recordings confirmed that was the most natural setting. Cranking the control higher added unwanted upper-bass colorations.

Listening tests

Listening to the Velodyne for the first time was dramatic. The ULD-18 system came on with a "pop" from the subwoofer indicating that the servo had set itself. I put on David Wilson's new CD, Winds of War and Peace, which begins with the "Liberty Fanfare." The Velodyne remained silent for the first 55 seconds of the CD, but then burst into life as a bass drum joined the orchestra. As I heard the solid, gut-punching bass note, I felt the wood floor flex under my feet! The impact of the floor shock reminded me of the shift caused by a Richter 4.5 earthquake that had hit the New York area 22 months before. Yet there were no unnecessary overtones, no overhang, no disturbance of the midrange or treble sounds, just that big bass note with its clean, well-defined leading edge. All the overtones of the bass drum were there, as I had not heard them before, although I was surprised that the drum could be so closely miked.

Over the next few weeks, I trotted out all the "deep bass" warhorses I had collected over the years. I did all the usual subwoofer tricks—rattled objects in the room, flapped pants legs, heard the air shudder with 20 Hz organ-pedal notes. And yes, I listened to diesel-engine track noise and cannon blasts. But I soon used this new system to listen to music, returning to my favorite pipe-organ music, long ago relegated to the upper shelves. It was a pleasure to finally enjoy these records. I started with the white vinyl, direct-to-disc Virgil Fox recordings of the Fratelli-Rufatti organ in the Garden Grove Community Church. Next came Also Sprach Zarathustra (Time Warp, Telarc CD-80186). The opening 32 Hz note had a rock-solid, locked-in quality without sounding artificial or too airy. The drum crash on Dafos (Reference Recordings, side 2, cut 3), recorded by Keith Johnson, captured the impact of a massive drum falling over on stage. The sound shook my floor but did not break up or cause the amp to clip.

But there was more, and this goes beyond simple subwoofer bone-rattling stunts. What did the ULD-18 do for my system as a whole?

First, the ULD-18 integrated beautifully with the Quad ESL-63s I was using as main speakers. Jim Lee, Vice President of Velodyne, warned that the ULD-18 would "overpower" the Quads with its greater dynamic range and potentially more aggressive character. The electrostats just wouldn't play loud enough to match the ULD-18, he feared. I had worried that the ULD-18's 18" woofer, even with the servo mechanism, would be slower and have a very different sonic fingerprint from the ultrafast, transparent, and recessed ESL-63s. The resulting Velodyne/Quad personality clash would mar both.

Not so. Rather, the integration was seamless and changed the overall character of the system in a synergistic, beneficial direction. The Quads opened up as the soundstage widened and deepened, and imaging took on a solidity that I had never heard before. The Velodyne also improved, for it seemed to speed up, as if the Quads sharpened the leading edge of deep-bass transients. The bass notes were integrated in time and space, and the speed of the electrostats really joined synergistically with the power contained within the bass envelope, helping to define it. The timbre of deep-bass string tone was true. All the while, there was no sense that the music was coming from different loudspeakers in different locations.
The information-enhancing effect was just as evident on sources that contained no 16Hz pulses, just the normal frequency spectrum of music. The bass line of the plucked bass in “Guantanamera,” on The Weavers—Reunion at Carnegie Hall in 1963 (Vanguard VSD-2150) suddenly was there, when it had been totally absent on the Quads. But even more interesting was the fact that, for the first time, I realized that the bass was probably either a washtub bass or a foot tapping, not a formal double bass. The bass line on the jazz piece “Going Home,” from the LA Four CD album of the same name (AI Music Company, Tokyo; East Wind 32JD-10043), was palpably real, because all the overtones were there.

Second, the dynamic range of the Quads was greatly extended. Although this is far from a scientific description, my Levinson ML-7a’s volume control could be pushed from 11 AM to 1PM, which formerly would have guaranteed Quad shutdown. The Quad ESL-63s, though very low in distortion and very fast, tend to be dry and analytic on orchestral music. Mounted on Arcici stands, they gave beautifully accurate but distant portraits of orchestral pieces. With the ULD-18, the Quads finally had balls, becoming punchy and aggressive, but still transparent and very fast. Zubin Mehta’s Le Sacre Du Printemps (Los Angeles Philharmonic, London CS-6664) suddenly had solid, punchy dynamic midrange and fast, trenchant bass that gave a full “goosebump” effect. The dramatic power and hair-raising suddenness of the Synclavier II digital synthesizer in the “Ascent” opening of Telarc’s Time Warp was all there, with a new fury and stunning presence.

Third, the Quad/Velodyne marriage made pipe-organ music enjoyable. As noted earlier, I had given up listening to the “king of instruments” in my system. In churches or concerts, I loved the contrast between the purity and song of the upper flutes contrasted with the shuddering solidity of the pedals. In my room, the upper notes were harsh and bright, particularly with dynamic speakers; the recent renovations brought in new furniture, and the tonal balance softened. Other subwoofers had not moved much air and certainly hadn’t coupled with the room, locking it in and moving me as with the real instrument. Not so with the Velodyne—1 was there!

A good example of the quantum leap in organ-music quality came during a comparison of two organ recordings. The first is an Ormandy vinyl recording of the Saint-Saëns Symphony 3, “The Organ Symphony,” with E. Power Biggs (Columbia ML 6469). This had been my standard record for auditioning subwoofers, because the bass was so easy to hear. On the Velodyne, the 25–40Hz region sounded boost-ed, over-equalized, and as if it had been recorded separately, in a different studio and at a different time. Biggs’ music overpowered the orchestra and was bloated, artificial, and sounded like an out-of-tune synthesizer. The opposite was true of the recent Dorian CD of Jean Guillou playing a transcription of Mussorgsky’s Pictures at an Exhibition (Dorian DOR-9017). The 32’ pedal notes of the Great Kleuker-Seinnmeyer Organ of the Tonhalle in Zürich were reproduced with power and speed. They shook the room, but did not pollute the wonderful sounds of the instrument’s flute and trumpet stops.

Subwoofer comparisons These listening results were suspect—I just couldn’t believe that the ULD-18 had such power, and, at the same time, did not interfere with the midrange. To check, I auditioned two other subwoofer systems in the same area of the room next to the Quads. First came the $4700 Celestion System 6000 (dipole woofers with SL600Si satellites, electronic crossover and equalizer), a system that reached the “B” rank in our April “Recommended Components”; the highest assigned to a subwoofer so far (no subwoofer had made the “A” rank—yet!). JA shipped me the same 6000 DO had used in his marathon subwoofer review, complete with metal spikes! The 6000 is a very solid, heavy, dipole system, and I mated its crossover to a VSP Labs MOS 150Wpc stereo amp via Levinson speaker cable, and sent the high-pass output to either the Quads or the 600Sis. Both Quads and 600Sis were colored by the Celestion crossover unit; this became clear when I coupled the 600Sis with the Velodyne system, the resulting sound being more open and not colored.

How was the bass? Compared with the single ULD-18, the twin 6000s gave “Quality Bass,” to quote DO, which meant well-defined but faint bass notes. No shaking and quaking or floor-flexing here! I even switched off the main amp to make certain the 6000s were playing! Switching from the Velodyne, the overall system gain on the preamp had to be reduced
markedly or the VSP amp clipped and the Celestion 6000s distorted (clunked!) on Songs of War and Peace.

I then tried both Quads and Celestions with another Velodyne product, the ULD-15. The 15" subwoofer produced much more powerful bass than the System 6000, and was equally as fast and powerful on many selections as the '18. The '15 integrated particularly well with the SL600Si, in many ways better than the 6000 system did! But its sonic fingerprint was quite different from the '18's. Hall had explained that the '18's larger enclosure allowed for higher spls at lower distortion because of fewer nonlinearities in compressing the air within its enclosure. In fact, I could hear the '18 less than the '15—in many ways it matched the Quad's own reticent style. While the '18 took on a Quad-like transparency and speed, the ULD-15 was punchy, dynamic, and forward. In effect, the '15 insisted on showing its own personality. The soundstage shrunk slightly, and the depth diminished. I missed the ease and the openness I had heard with the '18. Even though the ULD-18 has a bigger cone, it actually seemed a better match for my planar speaker than the smaller ULD-15.

Conclusions

The ULD-18 works wonderfully with the Quads, as if the two had been designed by the same hand. If you own ESL-63s, I would wager that you have never heard their full potential until you have heard them with the Velodyne ULD-18. Is this a specific synergism not to be found with any other speaker? I doubt it, for the Celestion SL600Sis showed the same boost in transparency, openness, and effortlessness when integrated with either Velodyne. One should expect an improvement from most speakers if the troublesome bass region is finessed; all the more true for the Celestion and Quad loudspeakers, known for their bass limitations. The Velodyne is doing what a subwoofer should do: clean up, not muddy, the midrange.

Well, I guess Anthony H. Cordesman was correct. If a loudspeaker really produces deep bass, you'll hear it easily, and not any amount of tweaking will turn a subwoofer with good definition but insufficient quantity into a well-controlled powerhouse. All my former fusing with different amps, different electronic crossovers, and different room positions didn't help as much as just plugging the Velodyne into the system. Yes, room placement was critical, but after an afternoon of moving the 105-pound giant around, it ended up in the same place it started—between and behind the Quads. The ULD-18 achieves "a large-signal extension to 20Hz," the very criterion being reserved by JA for a Class A rating in "Recommended Components," performance that had previously only been found in the price-no-object IRS Betas, WAMMs, IRS V, and Synthesis systems.

I began this review hoping that I would be able to recommend which system, which room, and for which music the audiophile might choose the ULD-18 over the much more economical ULD-15. Would the ULD-18's $800-higher price and 48 extra pounds be justified for larger rooms, which can be a decorator's biggest challenge? The answer is simple: The ULD-18 is justified if you must have the best sonics throughout the entire range of your main speakers, particularly if they are planars or electrostats. The ULD-18's HGS system and motional feedback keep distortion low. This translates into a lack of coloration and superior speed that has no equal in the current add-on subwoofer market, to my mind. For once, an add-on subwoofer actually delivers true subwoofer bass with high quality and high quantity at the same time—the ULD-18 lets your system sing!

VPI HW-19 JR TURNTABLE
AUDIOQUEST PT-5 TONEARM

Gary A. Galo

HW-19 JR: Belt-driven analog turntable. Speeds: 33⅓ and 45rpm. Wow and flutter (DIN 45-507): 0.03%. Rumble (DIN 45-539-B): -79dB. Speed accuracy: 0.05%. Dimensions: 21¼" by 16" by 6". Warranty: 2 years, parts and labor. Price: $600 (East), $625 (West), both prices without arm.

Stereophile, October 1989
My recent binge in the New York City record stores (Tower, J&R, and Record Hunter) would leave me to believe that the LP is all but history, the 78 of the very near future. I visit these New York stores twice each year; every time I do, there are fewer and fewer LPs on display. I spend all of my time in the Classical departments and, to my surprise, this is where the fewest number of LPs seem to be found. This is exactly the opposite of what I would have expected. The pop, rock, and jazz areas (I took a quick peek) contain a greater percentage of LPs than the classical departments, but the decline of the popularity of the LP is still very evident here. By far the greatest number of classical LPs can be found at the downtown Tower store, but over half of these are historical recordings and most are vocal reissues (which is fine with me: a major portion of my collection falls into these categories).

Despite this trend, which I now welcome given the sound of today's best CD players and software—I realize that this viewpoint is still at odds with those of our Editor and Publisher —there are as many high-priced turntables available as I can ever recall. Two reasons can account for this. First, there is still great demand in the high-end audio community for analog playback equipment, as the CD has yet to convince many listeners. Second, many music lovers, myself included, have large collections of LPs; we continue to desire the best possible playback equipment for them.

The VPI HW-19 JR is that manufacturer's lowest-priced turntable, and at first glance you may wonder just what it is that costs $600.
This turntable is a model of simplicity, so simple that it lacks even a suspension. The HW-19 JR is extremely well constructed, however, with obvious attention paid to minimizing vibration and resonance. The working part of the turntable consists of a large, dense 1/8" thick particle-board laminate. The bearing well is mounted in the center of this assembly, and a second hole has been drilled to accommodate the tonearm. This arrangement allows extremely rigid coupling between tonearm and platter.

The above assembly sits inside a base consisting of a hardwood frame and a 3/4" particle-board support. Isolating the turntable assembly from the base are four Sorbothane feet, which are placed in the four corners of the particle-board laminate. The base is supported by four large rubber feet which are molded around bolts. The four bolts screw into "T"-nuts, allowing easy leveling of the turntable.

The motor is shock-mounted in a steel housing fastened to the base of the turntable. The motor shaft protrudes through a hole in the particle-board laminate and is, therefore, double-isolated from the working part of the turntable by a combination of the motor's own shock mounting and the Sorbothane feet. The drive belt has a round cross-section rather than the customary flat shape. VPI claims that the resulting reduction in contact area, when compared with conventional belts, increases the isolation between motor and platter.

VPI's platter is fairly unusual in that it is made of acrylic which, by my measurements, is 1/16" thick. Acrylic is an extremely inert material and is an excellent resistive absorber of vibration. Tapping the VPI platter produces an extremely dead "thud" with no ringing. Among the principal features of the VPI platter is its excellent record-clamping system. VPI has dispensed with the usual mat separating vinyl and platter. Instead, the record contacts the acrylic directly. For this reason, it is necessary to keep the platter extremely clean. I find that the Decca Carbon Fiber record brush, which I use for everyday cleaning of LPs, also works very well on the VPI platter. The carbon fiber brushes from AudioQuest and Radio Shack are good alternatives, since the Decca is no longer readily available in the US. Before I'm castigated for putting Radio Shack in a positive light in these pages, I should mention that their carbon-fiber brush #42-118, a virtual clone of the AudioQuest, sells for $4.95 and works very well.

The acrylic platter contains an indentation for the raised label area of the record as well as a small notch around the circumference of the platter to accommodate the raised outer edge. It's a shame that such accommodations must be made for a phonograph record that should never have been standardized in this fashion. The only reason manufacturers adopted the raised label and edge was to insure that grooves would not contact each other when records were stacked on a changer. From an audiophile point of view, the changer should never have been invented. If it hadn't, we would have been spared the aggravation of sorting out all of our automatic-sequence opera sets for playback on our manual turntables. Most important, a perfectly flat record would simplify platter design. VPI certainly has taken the correct approach, insuring excellent contact between the platter and a record's playing surface.

The VPI HW-19 JR contains one of the best record-clamping systems I've yet encountered. A rubber washer slightly thicker than the label area depression fits over the spindle and sits between record and platter. This raises the record slightly off the platter. The clamp, also made of acrylic, is flat on one side; the other side has a raised edge which is placed against the record label. The clamp is held in place with a large knurled Delrin nut which screws onto the top of the threaded spindle. By tightening the knob, the entire playing surface of the record is forced to contact the platter. This system works especially well with dish-warped records. Even the concave side of a dish-warped disc can be made to contact the platter in all but the most severe cases.

VPI's platter is a one-piece design; there are no separate inner and outer platters as found on many belt-driven turntables. The belt, therefore, encompasses the entire 12" circumference of the platter. VPI uses a high-torque, low-noise AC synchronous motor which operates directly from the 117V power outlet. In common with many high-quality belt-driven turntables, the HW-19 JR contains no servo network to constantly correct platter rotation. As VPI explains in their manual, the constant corrections applied by a servo frequency modulate the audio signal. I believe Linn was the first manufacturer to recognize this problem: I quite agree that it is a problem.
VPI’s bearing system is permanently lubricated with a light-viscosity grease, rather than a more conventional oil. Their reasoning behind this, as explained to me over the phone, is to make motor rotation smoother by the introduction of a very slight resistance, which is provided by the grease. Under no circumstances should the user be tempted to add lubrication of any kind to the bearing system.

VPI’s instruction manual isn’t fancy, but the 14-page reproduction of a dot-matrix printout contains a generally excellent set of instructions for setting up and operating the turntable. Although the manual borders on hand-holding, there is little room for error if the instructions are heeded. The only weakness in the manual is a lack of assistance in mounting the tonearm, sorely needed due to AudioQuest’s poor instructions.

There is one comment in the instructions with which I must take issue. VPI claims that it is not necessary to critically level the HW-19 JR unless the arm manufacturer specifies doing so. Otherwise, leveling by eye is said to be sufficient. It’s true that since the turntable does not have a spring suspension, its own operation will not be drastically affected by leveling. But I can’t think of a single circumstance under which a pivoted tonearm can operate properly if the turntable is not level. In particular, the anti-skate adjustment can’t be accurately set if the tonearm is fighting the laws of gravity. Needless to say, I used a bubble level for leveling the turntable, which the instructions claim is for “fanatics.”

The AudioQuest PT-5 tonearm is a pivoted, medium-mass, straight design which should be compatible with the medium-compliance cartridges preferred by most audiophiles. The arm is well constructed and appears to be very rigid. The arm tube is covered with clear plastic resembling a thick heat-shrink tubing, done, no doubt, to dampen resonances. The headshell is fixed and does not allow azimuth adjustment. Its greatest weakness is the lack of an instruction manual. A single sheet, printed on one side, is all that is supplied with the PT-5, and the information is skimpy at best.

High quality Litz wiring is used in the arm and headshell, but the interconnect is a cheap garden-variety cable fitted with low-grade gold connectors. The documentation fails to include a color-code chart for the cartridge connections, although the standard white/blue, red/green arrangement appears to be used for left and right signal and ground. No template is included for mounting the arm on the turntable, nor is a cartridge-alignment protractor supplied. Fortunately, the HW-19 JR comes pre-drilled to accommodate the arm, and the arm base is already mounted (obviously this is not the case if you purchase the turntable without the AudioQuest arm).

I had one difficulty in setting up the tonearm. The PT-5 tonearm is supplied with a cable whose connector is mounted at a right angle. Unfortunately, the cutout in the VPI’s particle-board laminate turntable is not sufficiently deep to prevent obstruction. To clarify, an indentation has been cut in the underside of the laminate, but the material left was still too thick to allow proper clearance. I was able to insert the connector far enough to make a connection, but it was not seated as far as it should have gone. I questioned VPI about this and was told that the platter could be lowered by turning a brass plug at the base of the bearing well. The brass plug is slotted and can be turned with a dime (there’s not enough room to get a screwdriver in here). So I lowered the arm enough to fully insert the cable, tightened the arm in place, and used the brass plug adjustment to achieve correct VTA. This actually proved to be an easier method for VTA adjustment than fiddling with tonearm height. As VPI pointed out, you could prop the turntable up on two Manhattan phone directories, giving yourself enough room to adjust platter height, and adjust the VTA for best sound while the record is playing.

There is one problem that arose as a result of lowering the platter: the edges of some records now scraped against the plastic cover which hides the motor pulley and belt. This could easily be remedied by shaving $\frac{1}{6}$" off of the cover. Rather than modify VPI’s cover, I decided to conduct the remainder of my evaluations with the cover removed. If I owned this turntable, I’d opt for shaving the cover and VPI should consider altering its size.

The cartridge I used was my Grado Signature

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1 A good, lightweight bubble level should be considered an essential accessory for the LP enthusiast. I can’t count the number of times I have visited hi-fi enthusiasts only to encounter subchassis turntables with platter, plinth, or both sadly tilted up. One system had the plinth so out of true that one of the turntable springs was completely inoperative! No wonder CD is selling so well if even audiophiles don’t take the proper care over turntable set-up.

—JA

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Stereophile, October 1989
10MR, which is normally mounted in my Grado Signature Tonearm. The unshielded Grado was compatible with the VPI turntable in that it did not pick up excessive hum from the VPI motor. With the preamp volume advanced to full rotation, a slight hum was audible, but at normal listening levels it disappeared. I set the tracking force at 1.5 grams and found the optimum antiskate setting to be 1.25 grams, as indicated on the PT-5 tonearm's calibrations. This was an extremely rare case where the proper anti-skate was actually a lower setting than the tracking force. My experiences indicate that most arms require a higher setting than the calibrations would indicate. I use a blank (grooveless) revolving disc to set the anti-skate.

The PT-5 tonearm has no azimuth adjustment and the front of the headshell was not precisely parallel to the surface of the record with the Grado installed. The error was very slight, however. I believe every tonearm, with or without removable headshell, should have some means of adjusting azimuth. You can spend three weeks fiddling with VTA, but if the azimuth is off, the performance is still compromised. Putting spacers on either side of the cartridge is also a compromise since the cartridge is no longer rigidly coupled to the headshell.

AudioQuest supplies a tube of damping material which can, optionally, be added to the tonearm bearing system. A large bearing cover must be unscrewed from the arm, which exposes a small well into which the fluid is inserted. The bearing cover contains a rounded protrusion which contacts the fluid when the cover is replaced. I listened to the arm with and without, and found the sound to be improved with the fluid. Joe Grado built a small amount of resistance (0.025 grams) into the bearing design of his Signature Tonearm, so it would make sense that his cartridges would favor a small amount of damping in other arms as well. I consulted with VPI on this point and they fully agreed with the need for damping material with Grado cartridges. It is worth remembering that Grado cartridges contain no internal damping of the stylus/cantilever assembly.

VPI strongly recommends the use of a power-line conditioner, particularly the VPI Power Line Conditioner, to isolate the motor from noise on the power line. Once again, I agree with VPI. I've measured between 5% and 10% harmonic distortion on the AC line. Several years ago I designed my own stable, low-distortion, outboard electronic speed control for my turntable. My internal oscillator has only 0.4% harmonic distortion, and oscillator drift is a very low 20 ppm/°C. The HW-19 JR was completely compatible with my own speed control, and all of my evaluations were conducted with the turntable powered from this device. Another advantage of using an electronic speed control is that speed changes can be easily accomplished without the need to move the belt from one pulley to the other.

VPI also recommends that the turntable be supported by a wall-mounted shelf. Since the HW-19 JR is a suspensionless turntable, I believe that a wall-mounted shelf is a necessity for proper isolation from acoustic feedback. Sor bothane is an extremely dead, resistive material, but the HW-19 JR is not as well isolated as a typical belt-driven turntable with a three-spring suspension. Tapping on the turntable base or the shelf supporting it produced audible thumps through the loudspeakers, which won't happen with a properly designed three-spring suspension. Since I use a rugged wall-mounted shelf anyway, this proved no problem. My principle reason for building this shelf was to isolate my three-spring turntable from footfalls which otherwise cause groove skipping, but the shelf does further improve isolation for my turntable as well. I conducted my set-up and evaluation of the HW-19 JR using this shelf.

The sound
I conducted my evaluations of the VPI HW-19 JR/PT-5 using a pre-production prototype of Adcom's new GFP-565 preamplifier after using this preamp with my reference turntable so as to familiarize myself with its sound. The GFP-565 contains one of the finest phono preamps I have ever had the pleasure of auditioning, and is extremely revealing of differences in the analog playback system. In keeping with my belief that dustcovers should be placed on turntables only when they're not in use, I conducted all of my listening without it, eliminating any possible pickup of airborne vibrations by the dust cover.

What first impressed me about the VPI HW-19 JR/PT-5 combination was its very quiet background level, not only the inaudible rumble but a reduction in record surface noise as
well. This is a common characteristic of turntables largely free of unwanted resonances. It is also obvious that VPI's platter and clamping system are very effective in resistively absorbing vibration from the record. Surface noise, particularly clicks and pops, excite resonances in vibration-prone turntables (the Dual CS-5000 I reviewed in the November 1988 issue, for example), and LPs will invariably sound noisier on such equipment.

The most impressive aspect of the HW-19 JR's reproduced sound is in the low frequencies. The bass region of this turntable is extremely powerful and dynamic. Try the Fourth Sea Interlude from Britten's *Peter Grimes* on André Previn's British EMI recording (ASD 3514) and you'll see what I mean. The bass drum has excellent extension and impact. Telarc's *Rite of Spring*, conducted by Lorin Maazel (DG 10054), delivered amazingly good impact in the low frequencies, and there's plenty of material on this record for demonstrating such things! Definition in the bass region was a bit loose when compared to my reference turntable, but still very respectable. The organ pedal in *Pines of the Appian Way* on Charles Dutoit's London recording of Respighi's *The Pines of Rome* (London LDR 71091) was reproduced with floor-rattling impact.

I was not initially pleased with the performance of this turntable and arm in the high frequencies, however. In particular, I found the strings in the above-mentioned Britten recording to be rather steely and hard. Other LPs revealed the problem as well, including Dutoit's recordings of *The Pines of Rome* and Ravel's *Daphnis and Chloë* (London LDR 71028). The *Pines of Rome* has a great deal of high-frequency energy, but a top-notch playback system will not reveal any harshness (this is true of the CD as well). The HW-19 JR/PT-5 combination made the strings sound somewhat rough, and the overall tonal balance was brighter than I'm used to from the Grado 10MR. Cymbal crashes in *Pines of the Appian Way* sounded spitty, and the acappella choral section at the beginning of Side 2 of *Daphnis and Chloë* was reproduced with noticeable hardness, particularly the sopranos.

Suspecting a problem with either VTA or the tonearm cable, I lowered both the platter (using the brass plug mentioned above) and the tonearm to allow the cable's connector to be firmly seated in the base of the arm. I then readjusted the VTA, using the brass plug to raise and lower the platter. This resulted in a noticeably improved high end, though still less than ideal. Of course, as mentioned above, I now had to operate the turntable with the motor cover removed. Surprisingly, Leinsdorf's *Ride of the Valkyries* on Sheffield (Lab 7) produced the smoothest highs of all of the discs I played. This rather bright recording often presents problems in this regard. Visual observation convinced me that the VTA I had achieved was no different from before, so I must conclude that the improvement in sound was primarily due to achieving a better electrical connection at the base of the tonearm.

The VPI/AudioQuest combination reproduced a very spacious soundstage on all recordings I auditioned. Its main shortcomings in this area were a rather shortened depth perspective rather than any serious deficiency in width. Side 3 of Solti's recording of Wagner's *Siegfried* is a tremendously spacious recording in the German Decca pre-DMM pressings (6.35252). Just prior to the start of the Forging Scene proper, there is a passage where the sword is being scraped against the anvil. On a first-class playback system the sword is very deep in the soundstage, behind the rest of the orchestra. Played on the VPI/AudioQuest combination, the sword sound effects were shallower than I'm accustomed to, but still plausibly positioned in the back of the orchestra.

Dutoit's *Daphnis and Chloë* provided another excellent test of the three-dimensional capabilities of this turntable. During the transition from the acappella choral passage into the full orchestral section which follows, the solo trumpet and trombone are recorded very deep in the soundstage, close to the back row. Here and elsewhere in this recording, the VPI/AudioQuest combination produced a creditable sense of depth, but fell somewhat short of what I know to be recorded on the disc. My reactions to this turntable's depth perspective were similar on Dutoit's *Pines of Rome* and Maazel's *Rite of Spring*; ie, convincing but short of what I know my Grado 10MR to be capable of in my reference turntable. This turntable's ability to recover ambience information is excellent, and naturally recorded discs never sounded dry.

The VPI/AudioQuest combination exhibited a very fine ability to reproduce inner detail, a

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particularly noteworthy example being the opening of *The Pines of Rome*. Here, the delicate scoring in the woodwinds could be clearly delineated from the rest of the orchestration. Telarc's *Rite of Spring*, though not quite as well articulated as on my reference turntable, lost little of the remarkable clarity I know to exist on this recording. Again, inner lines in the woodwinds were particularly impressive.

The VPI/AudioQuest combination does not excel in the area of dynamics, except in the bass region. Throughout the rest of the spectrum, the dynamics can best be described as moderate. The end of *Pines of the Appian Way*, while still impressive, lacked the rafter-rattling impact normally exhibited by this recording. Similarly, the transients in Sheffield's *Ride of the Valkyries* appeared slightly compressed and "smoothed-over".

**Summary**

The VPI/AudioQuest combination is a solid performer whose strengths are its powerful bass performance, spacious lateral soundstage, very good reproduction of inner detail, and extremely quiet performance. Its weaknesses are moderate dynamics from the midrange to the top of the spectrum, and somewhat shallow depth perspective. Because of the lack of a real suspension for the HW-19 JR, this turntable will perform to its potential only if installed on a wall-mounted shelf or similarly well-isolated platform. If you cannot fulfill this requirement in your installation, then the HW-19 JR may not be your best choice, in which case you should probably consider a turntable with a three-spring suspension.

When conceiving this relatively low-price turntable, VPI obviously had to make a choice: to put the money into the platter and clamping system rather than into a real suspension. Their platter and clamping arrangement are extremely effective, but the full benefit of this design will not be realized unless you can properly isolate the turntable from its surroundings.

After completing my evaluations of the HW-19 JR/PT-5 combination, I received a phone call from AudioQuest offering to send a sample of their Sapphire tonearm cable for evaluation. After a limited audition of this turntable with the new cable, I can safely say that it is an order of magnitude better that the $1.98 piece of wire normally supplied with the PT-5. The harshness left in the high frequencies was minimized and the sound was generally more open, detailed, and dynamic. I had only one evening to spend with the new cable, but I believe it is a worthwhile investment if the maximum performance potential of this analog playback system is to be realized. The Sapphire cable also solves the connection problem cited above, since the connector on this cable is straight rather than at a right angle to the cable.

There is, therefore, no interference between the cable and the working part of the turntable.

My limited experience with the Sapphire cable leads me to conclude that the PT-5 is a much better tonearm than the stock cable would lead you to believe. Indeed, I believe the performance of this entire playback system is compromised by the tonearm cable. The Sapphire cable sells separately for $95. If you wish to hear why you spent the remaining $900, it will be a worthwhile investment.

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**TWO D/A CONVERTERS & ONE TRANSPORT: Robert Harley reviews the British Fidelity Digilog, the Arcam Delta Black Box 2, & the Delta 170 CD Transport**

Arcam Delta Black Box 2 D/A converter with 4x-oversampling, digital filtering, and dual 16-bit DACs. Features: 44.1kHz and 48kHz decoding, polarity-reversal switch, digital-input polarity switch. Inputs/Outputs: Coaxial and optical digital inputs, coaxial input S/PDIF (Sony/Philips Digital Interface), AES/EBU (Audio Engineering Society/European Broadcasting Union) for-
The rapidly evolving world of the late 20th century is the source of much stress. Changes in the status quo, whether wrought by social, political, or technological forces, are often accompanied by anxiety brought on by the struggle to assimilate new patterns of thought. New ideas necessitate abandoning or modifying one's old ideas, thus creating conflict! However, these periods of rapid change can also be exciting, allowing one to chart a course of discovery and growth.

These ideas are particularly relevant to digital audio. The proliferation of digital audio technology in the early 1980s left many people unprepared, especially audio professionals. Analog audio thinking permeated the digital world. Suddenly, people who had worked in analog for decades had to accept a whole new set of precepts antithetically opposed to a lifetime of learning: digital tape copies are sonically identical to the original, cables carrying digital audio make no audible difference, any differences in sound quality between digital media are attributable to analog phenomena (A/Ds, D/As, line sections, etc.).

Recently, however, these principles of digital audio that were accepted without question have come under closer scrutiny. Many people's real-world experiences are in conflict with established science. As a result, a whole set of tenets relearned for the digital age has been called into question. Do optical cables sound different from coaxial cables? Do different optical cables have their own sonic signatures? Do CD transports have audible differences even if it can be proved that their bit streams produce identical data? Until just recently, I would have answered an unhesitating "no" to these questions. Now I'm not so sure. My confidence in established digital audio theory was shaken by the demonstration of JVC's K-2 Interface, described in last month's "Industry Update" column.

This review gives me an opportunity to explore these questions. The three products reviewed represent the first wave of a flood of outboard D/A converters and CD transports. In fact, the Arcam Delta 170 is one of the first examples of an entirely new product category: CD transports. The concept of different CD transports having different sonic qualities is vexing. It is a simple matter to prove that the
bit stream contains identical data from virtually any CD transport (see "Industry Update," Vol.12 No.8). According to Arcam, development of the Delta 170 was spurred by audible differences among transports heard by dealers, customers, and Arcam staff. The possibility that CD transports have their own sonic signatures is intriguing.

On the other hand, outboard D/A converters clearly make sense. CD-player (and DAT) owners can enjoy the improvements offered by the latest technology just by replacing (or upgrading) their D/A converters, provided their players have digital outputs. Digital output ports are becoming increasingly common: in early 1987, just 12 players had digital out, the number rising to 50 by early 1988. Today, the figure is over 100, with 29 also offering optical digital output. Significantly, all three products in this review have optical input or output.

Moreover, physically separating the analog electronics from player servos and digital noise has advantages. The analog section does not "bathe" in the radiated digital noise of the player. Digital noise can still get into the analog electronics if a coaxial cable connects the transport and digital processor: both units share the same ground through the coaxial shield. When the optical cable is used, however, the analog section is also electrically isolated from transport electronics. Owners of machines that use the Philips SAA7220 digital filter chip can easily add a digital-out jack. The schematic is shown in fig.1.

**Fig. 1 Adding a digital out jack to the Philips SAA7220 digital filter chip**

**Arcam Black Box 2**

The Arcam Black Box 2 essentially is an upgrade of the highly successful Black Box reviewed by JA last February (Vol.12 No.2). The newer 2 version includes an optical input and has the ability to decode both 44.1kHz sampling rate (CD) and 48kHz (DAT). Dealers can upgrade a customer's original Black Box to 2 status for $150 by installing the optical input board. Arcam claims that the Black Box 2 can accept the professional AES/EBU digital audio transmission format. Technically this is not correct. The AES/EBU format specifies a balanced line with XLR connectors, which the Black Box 2 does not have. However, the consumer S/PDIF and professional AES/EBU formats are nearly identical: connecting an AES/EBU output to an S/PDIF input works about 80% of the time.

Cosmetically, the unit is very simple: the front panel has only power and phase-invert pushbutton switches. A green LED illuminates to show correct polarity, a red LED indicates phase inversion. The rear panel has an RCA digital input, EIAJ optical digital input, and a data-inversion switch. This data-inversion switch sometimes helps if the processor has problems decoding. The pushbutton switch is usually left in the out position for normal polarity. Two pair of output jacks are provided, labeled "CD Level" (nominal 2V) and "Line Level" (nominal 0.8V). The CD-level jacks output a signal level more typical of a CD player, while the line-level jacks produce a signal that more closely matches the output level of phono sections, tuners, and tape decks. The line-level jacks are especially convenient when switching between sources: there is no jump in sound level when switching to CD.

Inside, the Black Box 2 reveals separate power supplies (even transformers) for digital and analog circuitry, a Philips chip set (TDA1541A dual-DAC and SAA7220P/B filter), high-quality capacitors and metal-film resistors, and discrete transistors in class-AB configuration in the audio signal path, instead of op-amps. Interestingly, the printed circuit board is cut out around the DAC, leaving it connected in just two small areas. To support this isolated section of the board, four Sorbothane pads are mounted beneath the cutaway section.

I was surprised to find a proprietary Arcam chip inside the unit: custom IC fabrication is an expensive proposition. This chip, called an Application Specific Integrated Circuit (ASIC), performs the job of about 25 separate CMOS chips. In addition to reducing the parts count and improving reliability, a single chip reduces the amount of radiated electromagnetic noise.

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Arcam Black Box D/A converter

In general, the Black Box 2's construction is very simple and basic, yet well thought out and executed.

The sound
The system used for evaluating the three components consisted of a PS Audio 5.5 preamp (in Straightwire mode exclusively), Vortex Screen loudspeakers driven by Prodigy OTL tube power amplifiers, and Stax Pro Lambda Signature headphones. Included in the source material was a live recording I had just made as part of an appraisal of the Nakamichi 1000 DAT machine. I recorded acoustic guitar and acoustic bass duets in a church using tube microphones to fully explore the Nakamichi's capabilities (watch for a full report, as well as a review of the 1000, next month). I spent about 12 hours over two days listening to live music in the room and the mic feeds through Stax Pro Lambda Signature headphones. This experience provided an invaluable reference when playing back the DAT master tapes through the Black Box 2 and the Digilog. In addition, I was able to test the inputs of the two decoders at both 44.1kHz and 48kHz sampling rates.

Before listening to any of the converters, I left them turned on for several days. Digital/analog converters are very temperature sensitive, working their best only when warm. Arcam recommends two hours of warmup. Another digital-processor manufacturer advises that their converter needs three days' warmup for optimum performance!

The first thing I noticed about the Black Box 2 was its slightly forward sound on the acoustic guitar I had just recorded. I attributed this more to a slight midrange coloration than to a forward soundstage. Other source material confirmed this impression of a change in tonal character. The midrange had a dry, slightly etched character. Adding to this impression was the reduced sense of depth through the Black Box 2. Flora Purim's vocal on the Chick Corea album _Light as a Feather_ moved more to the front of the soundstage, as did solo instruments, especially Joe Farrell's flute and sax. Although the soundstage was open and quite pleasing, it lacked the three-dimensionality of some other decoders and CD players. However, this did not detract substantially from the listening experience. Laterally, the soundstage was big and open, with a nice sense of air. In general, I found the soundstage one of the Black Box 2's best characteristics.

Treble presentation also leaned toward the forward, while bass had the distinctly opposite character. Playing Harmonia Mundi's _Water Music_ CD (HMU 907010) revealed a slight edge to violins not present in the recording. Cymbals, on a variety of discs, were brighter through the Black Box 2 than, for example, through the Digilog. Bass detail (again using my own acoustic guitar and bass recording) tended to be obscured, the transient of the attack being somewhat muted. Low frequencies somewhat lacked definition, making it harder to clearly hear bass lines.

These criticisms reflect my impressions of the Black Box 2 compared to some stiff competition: live music, mic feeds, and other, excellent decoders. I don't want to appear overly critical: I enjoyed listening to music through the Black Box 2, despite its minor faults. It's not in the same league as some of the better (and more expensive) decoders, but it certainly merits classification as a true audiophile component.

British Fidelity Digilog
After unpacking the Digilog and examining its cabinet, I was surprised to learn that it cost under $1000. The heavy metal chassis and thick (½") machined faceplate seemed to belong to a much more expensive unit. The Digilog's front panel contains a row of four pushbutton switches and corresponding status-indicating LEDs. The user must select the input, whether DAT, CD, or optical. The fourth pushbutton/LED combination reverses absolute signal...
polarity. Two other LEDs appear on the front panel: a deemphasis indicator and an LED marked “LCK” that illuminates to show that the Digilog has locked-up to the incoming data stream. When lock is achieved, a relay click can be heard inside the unit.

Inside, the Digilog’s component quality appeared equally high, with a large ILP toroidal transformer, metal-film resistors, and capacitors marked “Specially made for Musical Fidelity.”

The Digilog’s circuit topology is nearly identical to British Fidelity’s preamplifiers, each stage having its own regulated power supply.

Like the Arcam Black Box 2 (and countless other players and decoders), the Digilog uses the Philips TDA1541A dual D/A converter and SAA7220P/B digital filter chip. The TDA1541 dual-DAC is available in three grades, listed in ascending order of quality: R, A, and SI Crown. This designation, appended to the TDA1541 model number, identifies how well the DAC performs regarding overall linearity. Although they all start out as generic TDA1541s, manufacturing tolerances create performance differences. The DACs are measured and grouped into performance (and price) categories. Antony Michaelson of British Fidelity explained that they chose not to use the more expensive version of the chip because their listening test revealed no sonic differences between them. However, they did select the premium grade SAA7220P/B filter chip. Confusingly, the “B” designated filter chip is superior to the “A” designation, unlike the DAC.

My only complaint about the Digilog’s construction is the flimsiness of the RCA jack mountings. To reduce point-to-point wiring (and cost), all jacks are mounted on the PCB. When plugging in RCA cables, the jacks moved, flexing the circuit board. It’s a shame that such an otherwise well-constructed unit didn’t get good, panel-mounted RCA jacks.

The sound
The Digilog was compared with the Black Box 2, Theta DS Pre, and the just-refined Precision Audio DIVC-880, a modified Philips 880 player I reviewed in Vol.12 No.8. The same playback system and source material was used in evaluating each decoder. Starting with the guitar and bass recording, I heard a more natural tonal balance on the guitar. Through the Digilog, it sounded more like the live mic feeds to which I had grown accustomed. The midrange had a warm, yet uncolored quality that more accurately represented the sound of the real guitar. This neutrality extended to other aspects of the frequency spectrum. Treble was smoother and more laid-back than the Black Box 2, but still had a slightly strident edge when compared with the Theta DS Pre. In contrast with the Black Box 2, bass was taut and controlled, with excellent definition, though not matching the DIVC-880, an area where the Precision Audio player excels. Low-frequency impact was particularly impressive, contributing to the Digilog’s sense of dynamics. Musical climaxes were presented with a sense of power and ease not heard through the Black Box 2 or the DIVC-880.

That brings me to the Digilog’s best characteristic: the ability to reveal subtle detail lost in other CD players and decoders. Playing a CD I engineered of a five-piece, straight-ahead jazz group (recorded live to DAT with tube microphones) was particularly revealing. During the ensemble playing, the saxophone was clearly delineated from the flugelhorn. The breathy quality of the sax, previously obscured by the flugelhorn, suddenly became apparent. I had not been made aware of this before, despite having heard the recording countless times. I had the same experience with another record-
ing I am very familiar with, the previously mentioned Light as a Feather. Subtle percussion effects in the back of the soundstage came to life. However, this increase in clarity was not the result of a shallow soundstage in which all instruments sound close. On the contrary, the soundstage had remarkable depth, though it still fell short of the transparent, see-through quality of the Theta. However, the Digilog's ability to resolve detail and present that detail in its correct spatial perspective, plus its reason-
ably neutral tonal balance, added up to a very enjoyable musical experience.

Incidentally, when I connected a 48kHz S/PDIF signal from a DAT machine to the Digilog's DAT input, I heard a periodic burst of clicks, reminiscent of the sound a decoder makes when it won't lock to the incoming data. It turns out that there is a trim pot (RV1) that adjusts the detection threshold of the incoming pulses. Somehow, the review sample was misaligned, necessitating my adjusting the pot until

### Into the optic?

In a single week this past month, no fewer than six products with fiber-optic inputs or outputs have entered my listening room/test laboratory. This trend is a harbinger of the future as optical technology assumes an ever-increasing role in audio equipment. Since all three products reviewed here feature optical jacks, I thought this would be a good opportunity to provide a short primer on optical transmission of digital audio.

In a piece of copper wire transmitting digital audio, electrons carry the information in the form of pulses from one point to another. Fiber-optic cables, however, transmit information by sending photons through glass (or plastic). Fiber optics offer many advantages over wire: complete immunity from electromagnetic interference, wide bandwidth, no crosstalk, and low propagation delay. Immunity from electromagnetic interference is especially important when the digital signal is unbalanced, as is a CD player output. In addition, fiber-optic connections isolate the grounds of the transmitting and receiving components (a CD player and outboard D/A processor, for example), preventing noise from the player's servos and digital electronics from reaching the analog section. Hum-generating ground loops are also eliminated. A ground loop occurs when connected ground points are at a slightly different voltage (caused by resistance in wire or PCB traces), resulting in a small current flow through the ground. Since there is no electrical connection between grounds with fiber-optic connections, these problems are avoided.

Another advantage of fiber-optic trans-

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**Fig. A**

the clicking stopped. I hope my sample is not representative of the production run; end users should not have to open the case and adjust trim pots.

**Arcam Delta 170 CD transport**

The Delta 170 is based on a Philips single-beam mechanism. Unlike many other Philips-based players, Arcam has completely redesigned the machine, keeping only the basic laser assembly (CDM 1 Mk.2) and Philips data-recovery chips.

![Fig.B](image)

The entire mechanical assembly is mounted on a vibration-isolated and damped subchassis. Compared with a Philips CD 880 transport, the Delta 170 appeared much more solid. For example, the metal supports that anchor the assembly to the chassis are larger and heavier. Arcam has put much thought and effort into this machine.

On the electronics side, the Delta 170 has some interesting design features. These include an optically isolated master clock and dual cable plug are shown in fig.C.

Optical cables do have some limitations, however. They are more prone to damage by sharp bends and kinking than their electronic counterparts. In addition, there must be precise alignment between the cable plug and jack for transmission. Another problem is the difficulty of splicing cables. Optical interconnects carry light so well because of the lack of obstruction in the fiber. Any roughness or discontinuity introduced at a junction may prevent transmission, not to mention the difficulty of working with a strand the size of a human hair. This is why the dummy plug found in optical jacks should remain in place unless a cable is plugged in. The light in an optical cable can also cause eye damage. *Never look into the end of a connected optical cable!*

These few disadvantages, however, are minor compared with optical fiber’s benefits. There is little doubt that as digital audio technology improves and proliferates, fiber-optic transmission will become integral to music recording and reproduction. You may one day regale your amazed grandchildren with stories of the days when electrons carried audio down strands of metal.

—RH
power supplies, each with its own transformer. One supply provides DC to the master oscillator and digital output stages, while the other serves the player servos and microprocessor. Digital output is in S/PDIF format from an RCA jack, or optical EIAJ connector.

Now comes the $64,000 question (or, more precisely, the $1295 question): does all this tweaking make it sound better? My philosophy in approaching this question is much like the American judicial system: CD transports sound the same until proven otherwise. Theoretically, they should sound the same. However, I would be the first to throw theory out the window if my ears told me otherwise. This is demonstrated by my experience with JVC's K-2 Interface, detailed in last month's "Industry Update" and the final paragraph of this review.

First, I listened to the digital outputs of the DIVC-880 and the Arcam Delta 170 decoded by the Digilog. I heard no difference either through speakers or the Stax headphones. Since Arcam's importer, Audio Influx, suggests that the audible benefits of their transport are more apparent through the Theta, I connected the digital outputs of both CD machines to the Theta's two digital inputs. I listened analytically to a variety of music, both familiar and unfamiliar, audiophile and mediocre recordings. Still I heard no difference between the transports. Next, I put on my favorite music and for-

**Fig. 2** Arcam Black Box 2, dithered 1kHz tone at -90.3dB with noise and spuriae

got about critical listening; I just sat back and gauged the emotional impact of what I was hearing. As much as I wanted to hear audible differences, I could detect none. However, I should add that this experience is limited to one individual, under one set of circumstances, with essentially one playback system. I am interested in hearing from readers who have had experience with different CD transports.

**Measurements**

On the test bench, the Arcam Black Box 2 performed better than the Digilog in several respects. Figs. 2 and 3 show the spectral analysis of the Black Box 2's and Digilog's respective outputs when playing the dithered -90dB signal on the CBS test disc. Both units exhibited a slight deviation from linearity, as shown by the amplitude at 1kHz not quite reaching the -90dB level. More revealing, however, is what is present at the output in addition to the signal read from the disc. This test shows the amplitude (vs. frequency) of the signal at the player's output when playing a dithered -90dB, 1kHz sinewave; ideally, only the 1kHz signal should be present. The Black Box 2's small 120Hz peak at -110dB is indicative of a full-wave rectified power supply whose ripple frequency is double the line frequency, while har-
Deemphasis monics can be seen at 2kHz, 3kHz, 5kHz, and 7kHz. Whereas the Arcam's spectrum shown in fig.2 was measured using the Audio Precision set-up with a swept bandpass filter, attempting to measure the same thing with the Digilog resulted in a severe ground loop, the reason for which is still not clear. The spectrum for the Digilog shown in fig.3, therefore, was measured using the Audio Control SA3050A analyzer and can't be compared directly with fig.2. However, it is broadly similar, with harmonics noticeable at 3kHz and 5kHz and the main low-frequency noise component, the 60Hz mains frequency, apparent at approximately -108dB.

Deemphasis errors for the two decoders are shown in figs 4 and 5. The Digilog's deemphasis curve was essentially perfect, while the Black Box 2 exhibited a slight error. In addition, the Black Box 2 featured a slight difference in deemphasis accuracy between left and right channels (note the expanded scale in fig.4).

In the linearity department, the Black Box 2 outperformed the Digilog, the difference at -90dB being -2dB and -3dB respectively. Linearity error is the difference between the actual level recorded on the test disc and the measured output of the player. As the signal level decreases, DACs become less linear. Figs 6 and 7 show the fade to noise with dither track on the CDS test disc. This is a signal whose amplitude varies continuously from -60dB to -120dB over a period of 30 seconds. A perfect DAC (which doesn't exist) would produce a straight line. Another way of looking at linearity is shown in figs.8 and 9. The vertical axis is error, and the horizontal axis is signal level. Since both the Digilog and Black Box 2 use the same grade of the TDA1541 DAC, these differences are probably random. Testing different samples may yield different results.

Conclusion
The Arcam Black Box 2 is a well-designed,
good-sounding decoder. It offers significantly better performance than many CD players' D/A sections at a reasonable price, making it an affordable upgrade. If you don't mind giving up the optical digital input, the original Black Box is an excellent value at $649. Its primary strengths are a wide soundstage and a nice sense of air. However, the midrange coloration and soft bass performance limit its musicality when compared with other (albeit more expensive) digital processors.

The Digilog is certainly a notch above other CD players and decoders in its price range. The fact that I brought out the much more expensive Theta to discover its liabilities speaks highly of it. The Digilog had excellent dynamics, detailed bass articulation, uncolored midrange, spacious soundstage, and ability to resolve detail, but fell short in all these areas when put next to the Theta. My only complaints are the flimsy RCA jack mountings and slightly edgy treble presentation. However, considering the Digilog's $995 price, these caveats are minor. In short, the Digilog does everything very well, without any serious deficiencies. I highly recommend the Digilog as an inexpensive way to greatly improve the sound of your CD player.

As for the Arcam Delta 170, I find it hard to recommend on the basis of sonics since I heard no difference between it and the stock transport. It is, however, very well made, ergonomically satisfying, and has many useful features. I strongly urge you to listen to it yourself and form your own impression. Again, my experience is by no means the final word on the matter.

Now, back to the issue I raised at the beginning of this review: Do optical cables sound different from coaxial cables? Yes. The difference is subtle, but nevertheless there. Bass seemed warmer and rounder. This phenomenon is surprising: how can changing a cable carrying ones and zeros make bass warmer? I never would have believed it possible without hearing it myself under test conditions totally under my control. There is much we don't know about digital audio that should be explored by critical listening, not blind acceptance of textbook theory. I have little doubt that our ideas about digital audio will be very different in ten years, provided we have the intellectual courage to accept new ways of thinking and challenge the status quo.

A NEW REFERENCE IN EQUIPMENT RACKS: THE MERRILL STABLE TABLE

Guy Lemcoe

A floor-standing system designed to hold a turntable, CD player, amplifier, preamp, and other components. Height: 40". Top: 22 1/4" D by 30" W by 3/4" thick. Light- or dark-gray granite top, $60 extra; available in four different colors. Shelves: 15" D by 21" W. Three shelves furnished, two are adjustable. A fourth shelf is available, and matching monoblock amplifier stands cost $180 each. Front opening: 19". Shelf clearance as shipped: 9" top, 8" middle, 10" bottom. Weight: 161 lbs (empty), 350 lbs (filled). Price: $899. In Bubenga, Wenge, Sepeli, Walnut: $999. Approximate number of dealers: 15. Manufacturer: Merrill Audio, 2125 Central Ave., Memphis, TN 38104. Tel: (901) 272-1410.

The day began innocently enough with a phone call from Danny Sandoval at the Stereophile offices. He asked if I would be home to receive an equipment stand John Atkinson had asked me to set up and review.

"Sure, I'll be home all day," I said. "But why don't I just stop by the office and pick it up myself?" I was planning to drop in anyway to see Richard Lehnhert, and thought I could just put the stand in the trunk of my car and be off.

"It's pretty big," said Danny. "It won't fit in your car. It's best if I bring it over in the truck."
my driveway. Danny got out and reached for his dolly. I walked over to the truck to help him and saw a very large shipping carton in the back. It was at that moment I knew I was going to have a lot of fun over the next few days.

Danny and I maneuvered the unwieldy carton out of the truck and into the house. We set the thing in the living room and unpacked it. I suggest you recruit a close friend to assist in the setup of this table. Order a pizza, and, by the time it arrives, you'll have unpacked it and gotten a good idea of how it goes together. Assembly is not complicated, but it is difficult to handle and somewhat awkward. Figure to spend about an hour unpacking and initially setting up this stand. Once assembled, the table looks imposing, possessing a functional beauty found in the best industrial designs. The top is attached to a 3½"-high solid oak skirt which fits solidly over the four heavy-gauge, black, hollow steel legs. It sits on three ball-bearings which decouple it from the main frame.

The height of the table is just right for playing records. I no longer had to stoop over to attend to my record player. The base is also skirted with 5½"-high solid oak. In addition to Walnut, other, more exotic woods are available: Bubenga, Purple Heart, Wenge, Padouk, and Sepeli. You can specify a white, light- or dark-gray granite top. My sample had the white top and it was very attractive. The oak skirting complemented the oak base on my TT; my girlfriend commented on how visually stunning the combination was.

Determine just where you want the table to sit, for it is impractical for one person to move it around once it's in place. Those spikes on the bottoms of the legs really dig into whatever surface they are placed on. (The manufacturer will furnish, upon request, four ¾"-thick steel discs to place under the spikes to prevent damage to wood floors. I had none, so I used stacks of pennies. Three pennies, to be exact: the spikes punctured the top one and dimpled the second.) If you have brick or concrete floors you're in luck. Just fill the counterbalance bin with 50 lbs of dry sand, level the table, and fill the legs with #8 or #9 lead shot. (You'll need four 25lb bags at around $20/bag.) Don't forget to place the ball-bearings under the top and the two shelves. When setup is finished, be careful! If you bump into the table you will bruise yourself. The table will not move.

If you have suspended hardwood floors, your job will be a bit more complicated. Reread the first sentence of the instructions. "The Stable Table will not perform on shaky floors—if your floor shakes when walking across it, no amount of weight will help." They mean it. As I learned, the Stable Table will only exacerbate a problem with shaky floors. To test your floors, place a half-filled glass of water on the table and walk around the room. If your floors are unstable, you will see the water moving in the glass. If the water doesn't move, your floors are OK. My floors failed the test and I spent half a day correcting the situation. Be prepared to do likewise if your floors are like mine. The Stable Table was not designed to compensate for shaky floors. The manufacturer, however, gives explicit instructions on how to stabilize your floors. Follow them and you'll succeed. Ignore them and you'll have a very expensive, very heavy, very wobbly table.

I was not thrilled with the prospect of crawling under the house to jack up the floor joists and put cinderblocks and 2 by 12 planks underneath them—especially since doing so meant slithering along on my belly for 30' to get to the corner of the house beneath the Stable Table. But I donned a dust mask, put on my old clothes, and got to work. It took a total of 8 cinderblocks strategically placed under the 2 by 12s shown in the photograph to shore up my
springy floor. The effort was worth it! I could now walk up to the Stable Table without fear of my footsteps setting off a tsunami of a shockwave, the sonic effects of which were all too audible at the speakers.

Before turning to the "sound" of this component, I would like to pass on a few things I learned while setting it up. First, follow the instructions, especially if you have a TT with an internal suspension system (as I do—a VPI). I found the best placement to be 20" out from the baseboard (for access to the back of my components) with the front of the table facing into the room toward the speakers. This placement put the legs of the table over my floor joists (my joists are on 20½" centers—the legs of the Stable Table are 21" center to center). Placing a glass of water on the leg assembly proved helpful here. I noticed, for instance, a dramatic difference in the amount of vibration in the glass of water when I turned the table 90° so its front was perpendicular to the wall. This orientation put the table's front legs directly over a joist, the rear legs suspended between joists. The water in the glass danced around excitedly. I quickly returned the table to its earlier position. You'll have to experiment with placement to determine the optimum location for this table. That's why you'll need the help of a strong friend.

I would also build or buy tin trays to put in the bottom of the table to hold the sand. Make them 10" W by 14" L by 3½" D; they should just fit in each side of the base (counterbalance). Pour your sand in them and put the bottom shelf (without the ball-bearings) on. It's a lot easier to distribute the sand evenly in the trays than in the plastic garbage bag which the manufacturer recommends.

Use a large funnel to direct the lead shot into the legs. Be careful, and pour slowly. The #8 shot I used is smaller than BBs; there are tens of thousands of them in each bag. If you get careless you'll spend a lot of time picking up little lead balls! Also, for health reasons, remember to wash your hands thoroughly after handling the lead shot.

With the table set up, leveled, and stabilized, grab a refreshing brew from the fridge and finish your pizza. Think about how you'll stack your components in the stand. I found I could put my tuner and cassette deck on the bottom shelf, the CD player on the middle shelf, and my preamp on the top shelf. My TT sits on top of the table. (I place my power amps next to my speakers.) Remember, the shelves are adjustable—just drill new holes for the brackets and support bar—and a fourth shelf is available from Merrill Audio.

As for the "sound" of the Stable Table, it appears to have none. Resonances, vibrations, and acoustic feedback are all effectively eliminated. What this means is that the music is free from any form of smearing, fog, or congestion. Transients ring with a clarity I had not heard before. Their decay is caught naturally, without spurious ringing. They start and stop in a "black" space, devoid of background hash. Inner voices and contrapuntal lines, especially in quiet harpsichord accompaniments, are easier to hear and follow. Resolution of subtle inner detail is improved, bass is tighter and more defined.

Before installing the Stable Table, the latest album by one of my favorite "mood-music" groups, Nightnoise, was almost unlistenable. At the End of the Evening (Windham Hill WH-1076) is an album of lovely, quiet music which conjures up images (for me) of misty dawns in the Pacific Northwest. The album is flawed, however, by bass as foggy-sounding as the image the music tries to convey. At least it sounded that way with the turntable on my old stand. Playing that record on the Stable Table, I could hear and follow the bassline as it supported the music throughout the disc. There is some extremely low bass on this record; to be deprived of its impact is to lose a good por-

1 For those who do drop the little buggers, as I did when filling Celestion SL stands for my speaker reviews in this issue, it's easiest to pick them up from a tile or wooden floor with strips of masking tape.

—JA
tion of the music’s thrust. On the soundtrack of The Mission (Virgin Records 90567-1), the tympani at the beginning of Track 2 on Side 1 takes on a tangible presence: You can hear the skin on the head of the drum. On the next track you can follow, without any problem, the harpsichord obligato beneath the strings. And, when that instrument follows the musical phrase (a single note arising out of the chordal accompaniment), you can hear it clearly, recognizing it as a plucked keyboard instrument. You also will be amazed at the detail in Laurie Anderson’s “Gravity’s Angel,” from Mister Heartbreak (Warner Bros. 25077-1). Bill Laswell’s bass, David Van Tiegham’s percussion, and Laurie’s own Synclavier come across with a clarity and a “see-through” quality which is startling. I had not been aware before of the many layers of sound mixed into this cut. I credit the Stable Table for allowing me to hear this music, not through your usual “clear” window, but through an “open” window.

The sonic benefits I heard after installing the Stable Table were not due to my recent upgrade to a VPI Mk.II fitted with the ET 2 arm, either. I heard the same difference in clarity and lack of grunge on my Systemdek IIX. I feel quite confident the Stable Table will enhance the performance of any TT placed on it. I do not listen to many CDs, but I felt when I did listen to them that I was hearing a cleaner, more focused presentation of the musical experience. Imaging seemed to improve and bass appeared more controlled.

Some of you will no doubt balk at the Stable Table’s price. I was a little shocked. But let’s keep in mind recent prices for other high-end products. The audiophile has $1000/meter cable to choose from, cartridges selling for over a kilobuck, $7000 preamps, $12,000 amps, speaker systems well into five digits, and turntables selling for more than many automobiles. The Stable Table is expensive, but not outrageously so. Have you priced finely crafted, solid-wood furniture lately?

The Lead Balloon, from what I hear, is an excellent product at approximately a third the price of the Stable Table. But it’s a dedicated TT stand. There’s no place to stack your components on a Lead Balloon. And, contrary to popular belief, many audiophiles prefer a neat and tidy listening room. I do. Being able to organize your equipment in an attractive, sturdy manner goes a long way toward satisfying that “Wife Acceptance Factor” so crucial to domestic harmony. When you see for yourself the fine design, the care taken in the construction and finish of this product, I believe you’ll begin to appreciate its cost.

Merrill Audio has been in business for 10 years, offering the audiophile not only their own TT design, but mods to the venerable AR. They maintain a low profile in the press, relying heavily on word of mouth to promote their products. George Merrill has spent a lot of time studying energy incursion into hi-fi systems; the recent introduction of the Stable Table is his attempt to offer an “extremely inert” equipment rack which will “control energy intrusion into the system.” Once properly set up, the Stable Table is indeed “inert.” It not only resists motion caused by external influences, it contributes none of its own, standing in the room like a boulder. I have never seen a more solid table. Any well-heeled audiophile looking for the ultimate statement in a component stand should investigate this product. For those who can afford it, I recommend it highly.

**TWO MINIMONITORS**

John Atkinson reviews the Spica TC-50 and Celestion 3

Spica TC-50: two-way, stand-mounted loudspeaker. Drive-units: 1” soft-dome tweeter, 6.5” pulpcone woofer. Low-frequency alignment: sealed-box with Q=0.78. Crossover frequency: 2kHz. Crossover: high-pass slope, approximately first-order, 6dB/octave; low-pass slope, fourth-order, 24dB/octave, Bessel; both drivers connected with the same polarity. Frequency response: 60Hz–17kHz –3dB. Sensitivity: 84dB/W/m. Nominal impedance: 4 ohms (3.6 ohms minimum at 4kHz). Amplifier requirements: 25–100W. Maximum power handling: 50W continuous, 100W peak. Dimensions: 15.5” (394mm) H by 13” (330mm) W by 11.6” (295mm) D. Recommended stand height: 24”. Weight: 20 lbs (9.07 kg) each. Price: $550/pair in oak or walnut, $600/pair in black. Approximate number of dealers: 120. Manufacturer: Spica, 3425 Bryn Mawr NE, Albuquerque, NM 87107. Tel: (505) 883-6120.

Stereophile, October 1989

"Why does John Atkinson devote so much of his time to loudspeakers selling for under a [sic] $1000?" wrote a correspondent to The Audiophile Network bulletin board in August, there being a clear implication in this question that "more expensive" always equates with "better" when it comes to loudspeakers. While it is true that the best-sounding, most neutral loudspeakers possessing the most extended low-frequency responses are always expensive, in my experience this most definitely does not mean that there is an automatic correlation between price and performance. I have heard many, many expensive loudspeakers whose higher prices merely buy grosser sets of tonal aberrations. For those on modest budgets, provided they have good turntables or CD players, a good pair of under-$1000 loudspeakers, coupled with good amplification, will always give a more musical sound than twice-the-price speakers driven by indifferent amplification and a compromised front end.

End of discussion.

Having spent time in recent issues with relatively expensive speakers, ranging from the $1195/pair Vandersteen 2Ci to the $4000/pair Pioneer TZ-9, with stops along the way at the $1999/pair Celestion SL600Si and the $2500/pair Martin-Logan Sequel II, I thought it appropriate that I should return to my Cheapskate roots by looking at two small, insensitive, sealed boxes featuring limited low-frequency extension that, while epitomizing the adjective "cheap," do have high-end pedigrees.

**Review context**

With small speakers, the first and most important consideration is what stands to use. Often treated as an afterthought, a good pair of stands is fundamental to getting optimum performance from even inexpensive loudspeakers. With my listening chairs placing my ears 36" from the ground, 24"-high stands were appropriate to use with both the Celestions and the Spicas (Spica actually makes a point of reimporting Chicago Speaker Stands Hercules stands), but I used a $300 pair of Celestion SLSi models which were handy! These are single-pillar designs, with steel top and bottom plates. I filled the extruded-aluminum pillar of each with 25 lbs of lead shot, topped up with about another 10 lbs of dry sand. The shot provides mass but not much damping; the sand is much less dense but offers a considerable degree of damping. The result is an absolutely inert, stable speaker platform, particularly when the supplied floor spikes are used. (I continue to be amazed by the sneering attitude adopted by the likes of Julian Hirsch when it comes to spikes and Tiptoes. You'd think any reviewer concerned with his readers' best interests would be keen to promote a philosophy that a) demonstrably cleans up the sound of just about any speaker when that speaker or its stand has to sit on a carpeted floor, and b) costs so little. Nevertheless, without surprise I continue to read such statements as: "We have never found that 'spiking' offers any audible benefits and we didn't find any with these speakers." Doesn't Julian remind you of the classic definition of a cynic—someone who knows the price of everything but the value of nothing?)

The speakers were coupled to the stands with small blobs of EZ-Tak, a not-very-reactive damping compound, and each pair was carefully positioned for the best sound. In the case of the Spicas this was some 4' from the rear wall (which is faced with books and LPs) and 5.5' from the side walls (also faced with bookshelves). The Celestions benefited from a con-

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1. Yes, I know these cost more than the 35 and a significant fraction of the price of the TC-50s. But as with my choice of amplification, I wanted to hear these cheapies at their best. Celestion offers a less expensive 24" single-pillar stand, the LS24, which is intended specifically for use with the 3.

2. And what is it with this "we" business? Is JH a schizophrenic? Or just habitually devoted to the royal we? (Actually, back in the UK, we used to refer to the "royal we" as something passed by the Queen—oops, there goes my knighthood.)

siderably closer rear-wall placement, ending up just inches away. Both pairs were toed-in to the listening seat. The amplification was hardly likely to be typical of the components with which either speaker is likely to be used, consisting of a pair of Mark Levinson No.20.5s driven by a Mark Levinson No.26 preamp and a No.25 phono preamp, but, hey, do you really want me to suffer while I'm gathering the material for these reviews? Have a heart! Speaker cable was Madrigal CPC, interconnects for the main system were 1m lengths of AudioQuest LiveWire Lapis, and 15' lengths of Madrigal balanced HPC connected pre- and power amplifiers. Source components consisted of a 1975-vintage Revox A77 to play my own and others' 15ips master tapes, a Linn Sondek/Ekos/Troika setup sitting on a Sound Organisation table to play LPs, and the CAL Tempest SE two-box CD player.

**Spica TC-50: $550/pair**

Extremely familiar to *Stereophile* readers since they were first written about in the magazine by Anthony H. Cordesman back in 1984 (Vol.7 No.2), the TC-50s last appeared in these pages when Martin Colloms reviewed a pair in Vol.11 No.1. Since then, this diminutive loudspeaker has been slightly revised, as well as suffering a price increase, so I thought it would be useful to give a listen to the latest version.

Quickly to recap the basics, the TC-50 uses an unusual triangular enclosure, with just the side panels finished in veneer. Electrical connection is via closely spaced, knurled mounting posts carried on a small panel on the speaker's rear. Clearance around the posts is minimal, meaning that heavy-duty, stiff speaker cables are easiest connected with banana plugs, which some might feel to be a slight source of degradation when compared with a good lug connection. The tweeter is a version of the venerable French Audax 1" fabric-dome unit, while the woofer is a 6.5" paper-cone unit, heavily doped by Spica and again sourced from the Audax company. Both drivers are mounted on the sloping face and surrounded by a ¼"-thick felt blanket. The crossover was optimized by computer and consists of a unique combination of a quasi-first-order high-pass slope, and a fourth-order Bessel-response low-pass slope, with both drivers connected with the same polarity. Together with the time-alignment conferred by the sloping baffle, this is said by the speaker's designer, John Bau, to confer a linear amplitude *and* phase response on the loudspeaker.4

Changes compared with earlier TC-50s are the addition of a bracing rod between the baffleboard and the cabinet rear, a revised crossover, a redesigned felt blanket, and improved drive-units. The result is said to be increased sensitivity and power handling, improved imaging, and a more extended top end, now reaching 16.5kHz rather than the original's 14kHz.

Owners of older TC-50s can have their speakers updated by the factory for $250/pair—phone Spica before shipping the speakers in their original packing to get an RMA number. The speakers are completely disassembled, rebuilt with new drive-units, and tested. Spica will extend the original warranty for five years from the date of revision.

**The sound:** The Spica manual is both well-written and accurate regarding how to get the best sound from a pair of TC-50s. It goes into some detail on where to place the speakers in the room, particularly emphasizing the need to allow the speakers to run-in for at least eight hours and the necessity to listen to the speakers on the correct vertical axis. Regarding the warm-up, I left the TC-50s repeating Kraftwerk's *Electric Cafe* album while I spent one more day (one of many) at the office trying to

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integrate all the comments from Stereophile's team of dedicated reviewers — hi guys, hope you got home from Santa Fe okay — into this month's "Recommended Components" listing. Even then it was apparent throughout the first week's listening that the midbass was still becoming looser and the overall balance warmer with every record I put on.

Regarding the listening axis, I found it to be at least as sensitive as Spica says, differences in listening height of 1" noticeably affecting the upper treble balance. To get the optimum frequency and phase response intended by John Bau, it is essential that your ears be on a level with a point halfway up the enclosure; ie, with your ears level with the top of the woofer cone. If the combination of your listening chair and stands results in a listening axis any different from this, the speakers must be tilted up or down accordingly. Listening even slightly below this axis results in a depressed HF balance, very noticeable on recorded spoken voice; if you listen any higher, the speaker's top octaves become both increasingly disparate from the rest of the treble and exaggerated in level. A boost above 8kHz or so will not be perceived as "brightness" per se, but adds a lispiness to sibilants and almost a whistle to recorded hiss that makes the TC-50 sound very thin. If you were to walk into a room where a pair were playing and listen standing up, as you might at a show, you would come away with a very poor idea of the speaker's true tonal balance. I am sure that it was this off-axis emphasis of the high treble that led the venerable J. Gordon Holt (in whose ears we trust) to characterize the TC-50s as having rather a "cold," analytical balance. Even on the optimum axis, there was still a slight top-octave boost audible that made hi-hat cymbal just a little too sniffany in tonal color.

The speakers must also be toed-in to fire straight at the listening position, the result otherwise being a prematurely rolled-off treble and a lack of vitality to the sound. Image precision also suffers. Ah, image precision . . .

There is a fundamental test of a pair of speakers' ability to produce a well-defined image that owes nothing to any real musical event, whether acoustic, electrical, classical, rock, or jazz. For a while forget about "soundstaging," image depth, and other such subjec-

tive buzzwords. All you need do is play monaural pink noise through both speakers simultaneously — many test CDs have a suitable track, the only important point being that the output from both speakers be identical — and listen carefully to where the phantom image of that mono noise seems to come from. All you need to know is that a perfect pair of loudspeakers would produce an infinitely thin point of noise, with every frequency component of that noise positioned at the same place in space. Real, rather than perfect, speakers will depart from that paradigm in two ways: first, that phantom image will acquire size; second, at some frequencies the sound will appear to come from somewhere else altogether, the image often "splashing" to the sides, or even behind you if one of the speakers has a drive-unit inadvertently wired with the wrong polarity. Careful adjustment of speaker and listening position, making sure that there are no acoustic obstacles to the sides of the speakers, should minimize any such image splashing.

If your speakers can produce a narrow mono image at all frequencies, then they will allow your ears to accurately decode the information present in two-channel recordings and synthesize a stereo image, a soundstage between and behind the loudspeakers — maybe even above them! Contrariwise, if your speakers are unable to produce this narrow mono phantom image at all, then no matter how spacious the sound on music recordings, that spaciousness will be an added function of the hardware, not anything intrinsic in the recording — it will be inaccurate, and even pleasant inaccuracy is not what this magazine is about!

This is about the most fundamental test of the imaging ability typical of a pair of loudspeakers — there's nowhere to hide. If a pair of speakers can perform well on this test, then every soundsource in a recording will appear to come from its correct position in space; there will be no spatial distortion. And that applies to all the ambience and reverberation captured on the recording. If these are also correctly positioned in space, then the ear/brain will create the appropriate image depth — if you hear what appears to be the direct sound from a soundsource and a coherently reproduced reverberant soundfield associated with that direct sound, then you can't help but hear that soundsource as being further away.

The best speakers in this respect I have heard

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5 in Vol.9 No.5, p.111.
in my current listening room are the Rogers LS3/5a, Celestion SL700, and Martin-Logan Sequel II, all of which are more expensive, two considerably so, than the Spicas. I have also heard the $4000/pair Quad ESL-63s give a similarly tightly defined central image from a mono source. Yet the budget-priced TC-50s join that select group, from the midrange up producing a tightly defined, narrow central image. Only in the lower midrange did the mono image spread appreciably, and nothing I could do with the speakers' position would change it. I can only assume it is due to colorations in this region specific to each individual loudspeaker. But it didn't prevent the pair of TC-50s throwing a well-defined soundstage with impressive depth. The crowd noises at the beginning of Pat Metheny's As Falls Wichita, So Falls Wichita Falls (ECM 1190), for example, appeared to be coming from behind the rear wall of my listening room. And on the cassette copy of the Stereophile flute and piano recording (see the ad in this issue), the images of the musicians had—here comes that phrase again—a palpable presence. In the words of the Anarchist, there was a lot of "there" there. And that "there" was spatially accurate. On my recording of Anna-Maria Stanczyk playing Chopin on the original HPN/RR Test CD, many speakers seem to reproduce this single-point-mic—captured track as either rather diffuse, or in fat mono. On the Spicas, as on LS3/5a's, you can hear quite unambiguously that the Steinway soundboard extends from just left of center to about halfway toward the right speaker, just as I had intended it to when I made the recording. And around the piano image, you can hear the acoustic of the hall gently stroked into vibration to produce a dome of surrounding reverberant ambience.

This delicacy at achieving spatial resolution was not achieved at the expense of a live feel to the sound, there being a suitable immediacy overall. Whether this is due to the time coherency of the sound, or HF detail in the relatively neutral lower treble slightly pointed by the added energy in the room in the top octave—mellow these Spicas aren't—is open to debate. Nevertheless, while not approaching the transparency of, say, the Sequel II or Vandersteen 2Ci, to name very disparate designs that both perform well in this area, there were lacks both of confusion and of "grain," as it were, in the upper midrange and lower treble that helped the music to communicate very effectively. "Psychokiller," from the live Talking Heads album Stop Making Sense (Sire 9 25186-2), if lacking in ultimate loudness, was almost as intensely dynamic as I can remember. (Mission 780 Argonauts hold the prize here.) The only real restriction on dynamics seems to be due to the TC-50's lower treble hardening as the sound pressure level reached the high 90s.

Lower down in frequency, I was surprised to discover that the mids were rather more colored than I expected, a slightly woody texture overlaying the tonalities of instruments in this region and thrusting instrumental images with a lot of energy in this region forward toward the listener. The lower registers of my piano recording, for example, sounded nearer the mic than the upper, when, of course, the opposite was actually the case. (This anomaly is also due to the fact that, in absolute terms, the presence region was a little laid-back.) Coupled with the rather lispy HF, this coloration is perhaps the only indication that you are listening to a $550/pair of loudspeakers rather than a $1500/pair.

Finally, as might be expected from such a small enclosure, the low bass was restricted in weight. However, definition was good in this region, and a slightly overdamped character noticeable when the speakers were first plugged in, which made the sound too thin, too small, was significantly ameliorated over the first two weeks of listening.

Measurement: Fig.1 shows the way in which the TC-50's impedance changes in amplitude (solid line) and phase (dotted line) from 10Hz to 50kHz. Although it drops to a hair under 4 ohms in the low bass, lower midband, and mid-treble, the speaker shouldn't present any drive problems. It would be unwise, however, to connect more than one pair in parallel with a typical low-powered receiver. The single LF
resonant peak due to the woofer tuning can be seen at 65Hz.

The spatially averaged in-room response is shown in fig. 2. Note the rather overdamped bass, with the response starting to drop around 125Hz. The slow rate of roll-out typical of a well-damped sealed-box alignment, however, results in there still being appreciable output in-room at 40Hz. Measured in the nearfield, the -6dB point was also a reasonably low 39Hz.

Other points of interest about the room-averaged curve, which is overall very smooth, are the slight excess of energy in the lower midrange, which correlates with my feeling that the speaker has a somewhat "cupped-hands" signature, and the peak in the high treble, again audible but this time as a slightly lispy quality to sibilants. Above the treble peak, the HF drops off rapidly.

The individual spectra taken to make up fig.2

Loudspeaker measurements

A measurement regime that I intend to become the standard operating procedure for all loudspeaker reviews published in the magazine is comprised as follows:

First, the test speaker's impedance amplitude and phase are examined with the magazine's Audio Precision Model One test set-up. Then, a series of response measurements follows:

I have found the following in-room frequency-response measurement to correlate pretty well with a loudspeaker's sonic signature because it includes a measure of the integration between the speaker's direct sound and the way in which it excites the room's reverberant field. Nine sets of six averaged measurements are taken independently for left and right loudspeakers, at a distance of just over 2m in a window 72" wide and varying from 27" to 45" high. The response shown is the average of these 18 measurements, weighted slightly toward the sound heard at the listening position. This spatial averaging is intended to minimize the effect of low-frequency room standing-wave problems (below 500Hz or so) on the measurement; the individual measured spectra also give an idea of the off-axis behavior of the speaker under test.

I then use a B&K microphone and a Heath/Zenith 8-bit storage oscilloscope to look at the loudspeaker's time-domain behavior, specifically its response on the listening axis to a unidirectional pulse approximately 25μs wide repeated every two seconds or so, both over a 5ms time window (when the sampling frequency is 100kHz) and over a 10ms window. (Due to the sampling frequency halving to 50kHz for this latter measurement, I use a steep-slope low-pass filter above the audio band to reduce the level of any aliasing.) While always interesting, an impulse response is inherently hard to interpret. However, as it contains all the information required to construct the speaker's anechoic frequency response—anechoic because, if the reviewer takes appropriate care, all that will have been captured within that 5ms or 10ms window will be the direct sound of the speaker without any effects due to the listening room—carrying out a mathematical operation termed the Discrete-time Fast Fourier Transform. Discrete FFT for short, will give that anechoic response. (For those familiar with this technique, to ensure that the beginning and end of the impulse response captured can be joined together to represent a continuous repetitive waveform, the data are windowed with a Hamming function. Each sample being multiplied by a coefficient equal to approximately 0.5 x (1−cosine 2π1 x 512), where t varies from 0 to 511. This smoothly reduces the level to zero at the beginning and end of the window.)

This sounds too good to be true—rather than an expensive and physically large anechoic chamber to measure the frequency response of a speaker, all you need is a microphone, a storage 'scope, and a PC—but I must point out that it does have several drawbacks. First is that the FFT is limited at low frequencies to a fundamental frequency equal to the inverse of the measurement window. Thus, if the impulse response was captured over a 5ms window, the lowest frequency measured will be 1/5ms = 200Hz. Worse, the resolution will also be 200Hz, i.e., while looking at the high frequencies with what in effect is a narrow-band spectrum analyzer with bands spaced
show that for a listener more than 50° off the optimum horizontal axis, a significant suckout develops between 2 and 5kHz. It is essential, therefore, for the TC-50s to be toed-in toward the listening seat if the sound is not to lack presence and sound rather peaky in the highs.

Turning to the time behavior of the speaker on the optimum listening axis, it can be seen from the impulse response (fig. 3, which has a 0.5ms/division horizontal scale) that nearly all the energy arrives within a very short time period. The tweeter output starts to rise just to the right of the central crosshatching, but note that three small divisions earlier, 150µs, the start of the woofer output can be seen in the same direction, confirming the time alignment of the two drivers. Some 1.2ms after the initial pulse, a small reflection can just be made out, as can what is probably another 1ms later. As there was nothing in the room near the speaker that

200Hz apart is no problem, it becomes a distinctly clumsy, almost deaf analyzer in the midband. It would miss entirely a 100Hz-wide, 10dB-high peak positioned at 500Hz, for example. Increasing the time window to 10ms will lower the lower limit to 100Hz and double the resolving power at the expense of halving the overall measurement bandwidth. Unfortunately, with the exception of a huge room with the speaker sitting on a high pole, as this time window is increased in length any further, you start to capture room reflections and echoes in the impulse response and thus destroy the anechoic nature of the measurement. (Those with quick minds will point out that a 10ms window is bound to include the first reflection of the pulse emitted by the loudspeaker from the floor between it and the mic. Yes, you're right, but with the aid of the comforter from my bed, I damp it out of existence.)

However—I love starting a paragraph with the word "however"—this method does give a lot of information about the behavior of the speaker from about 500Hz upward, both regarding amplitude and phase. (My thanks to Delaware Acoustics Ralph Gonzalez for writing a QuickBasic program complementary to my FFT program to unwrap the time it takes the soundwave emitted by the loudspeaker to reach the measuring microphone from the computed phase response.) In fact, it gives too much information in the treble: as well as including audible aspects of performance, such as tonal balance aberrations and resonant peaks, it also includes interference effects which will be specific to that particular microphone position and will not have any effect on the perceived sound. For the reviews in this issue onward, therefore, I decided to adopt a procedure broadly similar to an idea described by Canadian engineer Floyd Toole in one of his excellent papers on loudspeaker assessment. 2

Rather than measure the equivalent anechoic amplitude response at one point in space, I capture five impulse responses over a ±15° lateral arc at the same distance from the speaker, all at the same height. Having computed the equivalent amplitude responses, these are then averaged. In this manner, some accuracy in measuring the way in which the speaker's output changes with direction is sacrificed, but the upside is that peaks and dips due to specific microphone positions will tend to cancel out, leaving a measurement that accurately reflects the spectrum of the first-arrival sounds at the listener's ears.

Finally, as all this technomanipulation still ignores the speaker's response below the lower midrange, I carry out a nearfield measurement to assess the speaker's intrinsic bass extension, using a swept sinewave with the measuring microphone almost touching the woofer dustcap for sealed-box models. For ported models, this ignores the contribution from the port. so I repeat the nearfield measurement on the reflex port and then try to marry the cone and port outputs using the difference in their radiating areas as some kind of fudge factor.

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1 My friend Ivor Humphreys, Technical Editor at Gramophone magazine, once challenged Ken Kessler and me to start a review with the word "However". We both failed. (If you've already reached for your pen to write me that it's easy, a condition of the challenge was that "However" had to be followed by a comma.)

would provide such closely spaced reflections, I can only assume that even with the heavy damping of the front baffle provided by the felt blanket, these are reflections of the tweeter output from the baffle edge.

Looking at the FFT analysis of the impulse response, averaged across the ±15° horizontal window (fig.4), which represents the anechoic response of the TC-50 measured with 100Hz resolution, it can be seen that this pretty much agrees with the in-room measured response in fig.2. Again the slight midrange dominance to the balance can be noted, as can the excess of energy in the top octave. That the TC-50 treble balance is extremely dependent on listening axis can be seen in fig.5, which is the FFT response of the speaker taken with the microphone perpendicular to the baffle directly on the tweeter axis. Not only did the impulse response (not shown) now show that the outputs of the two drivers were no longer time-coincident, but the tweeter peak is significantly raised in amplitude, and left isolated by a lack of energy in the octave below. No wonder the TC-50 sounds so thin and aggressive in the treble to a standing listener.

**Fig. 2** Spica TC-50, 1/3-octave, spatially averaged, in-room response

**Fig. 3** Spica TC-50, impulse response (5ms window)

**Fig. 4** Spica TC-50, FFT anechoic response, averaged across 30° lateral window

**Fig. 5** Spica TC-50, FFT anechoic response on tweeter axis perpendicular to baffle, averaged across 30° lateral window

**Conclusion:** It is a couple of years since I last heard a pair of the original Spica TC-50s under critical circumstances, so any comparisons between old and revised versions would be invidious. However, the Spica TC-50 remains a musical bargain when treated on its own terms. Good stands must be used, room placement is critical, and the listener must take great care that he or she sits on the speaker's optimum axis if the sound is not to become thin and peaky in the treble. But then, even given the speaker's lack of low-bass weight, the result will be true high-end sound, excellent soundstaging and presentation of detail being coupled with a musical tonal balance and a taut upper bass. Highly recommended.

**Celestion 3: $250/pair**

With the exception of Infinity's Infinitesimal from the early '80s, the short-lived AR-1M, and Koss's various permutations on their "Dynamite" design, it seems a peculiar European obsession to try to make tiny loudspeakers capable of genuine hi-fi performance. England, in particular, has led the world in these Lilliputian designs.

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6 I don't consider the Bose Roommate to have hi-fi pretensions.
tian endeavors, with first the venerable LS3/5a redefining what a speaker should produce in terms of imaging accuracy, then the Linn Kan showing that this performance needn't be at the expense of dynamics and musical feel. The various generations of the Wharfedale Diamond showed that small and cheap didn't necessarily mean "unmusical." Then, at the 1989 Las Vegas CES, Celestion raised the stakes by introducing a speaker intended to sell for just $250/pair that nevertheless featured a metal-dome tweeter!

The Celestion 3 uses a 1" titanium-dome HF unit with a narrow surround to cover the two audio octaves from 5kHz on up. This is constructed on a rectangular plastic plate that bolts to the baffle, with three narrow, horizontal strips providing a degree of protection. Covering what in effect is the remaining 6½ octaves is a conventional-looking paper-cone unit, again constructed on a rectangular plastic plate. A large half-roll surround suggests some serious excursion capability; bass alignment is sealed-box.

The crossover consists of four elements—a ferrite-cored inductor in series with the woofer to roll out the highs, and a second-order shunt air-cored coil/series capacitor network in the tweeter feed, with a series resistor used to lower the HF unit's sensitivity—all glued to the rear of the plastic terminal plate. On one of the review pair, the woofer inductor had broken free of its glue patch and was hanging suspended by its lead-out wires—not a recipe for long-term reliability. The terminal posts themselves are of reasonable quality for such an inexpensive design, with a hex profile and enough room around them to fit stiff cables. (The internal wiring, however, is all small-gauge.) As is usual with British speakers, the posts are spaced too far apart to take dual banana plugs.

The enclosure is constructed from %" fiberboard, loosely filled with acrylic fiber, with the sides, top, and bottom wrapped in a walnut-grain vinyl material. Some attention needs to be paid by Celestion to the 3's packaging. Rather than expanded polyurethane foam, the speakers are protected by thin cardboard corner pieces, which is perhaps expecting a bit much, one of the review pair having suffered cosmetic damage to two of its rear corners. The structural integrity of the enclosure was not compromised, however. The grille is a polyurethane space frame covered with black fabric that plugs into slots at the top and bottom of the front baffle. All things considered—for example, at a retail price of $125 each, the resources available to the designer will be minimal—the standard of construction is reasonable.

The sound: With the speakers out in the room on the 24" stands in the same positions where the Spicas had sounded reasonably rich, the sound of the 3s was unmusically thin—it was hard to believe that there was any bass reproduction at all. The 3 is definitely a loudspeaker needing all the help it can get in the lows, and I ended up with them 3" away from the rear wall. (This is also a big plus point, in my opinion, as those restricted to a loudspeaker budget of $250/pair will undoubtedly have small rooms where a pair of speakers out in the room will represent an imposition.) In their terse but comprehensive manual, Celestion recommends a minimum spacing of 2", but warns against placing the speakers too close to the side walls, 24" being the absolute minimum. Having settled on optimum sitting and then broken the speakers in for a day with the appropriate Kraftwerk album—an album recorded
by machines, it seems only fitting that I not be in the room when it was playing—I sat down to some intensive listening.

Well, the 3 is still a small loudspeaker, there still being no low bass to speak of. However, the rear-wall placement does usefully bring up the upper bass—electric bass and double bass now both purring appropriately—at the expense of adding a slight chestiness to male speaking voice. Low-frequency definition was still quite good, however, with bass instruments sounding quite “fast.”

The exact listening axis and degree of toe-in proved quite critical. Sitting so that you can see the cabinet top, the midrange sounds too hollow. With the listener directly on the tweeter axis, the presence region becomes a little too lively, but when the speakers were facing straight ahead, the extreme HF sounds a little depressed, imaging specificity suffers, and a hardness in the lower treble is accentuated. Ultimately, I found the sound to be best integrated across the upper midrange and treble when the speakers were toed-in a little, but not all the way to the listening position.

Taken overall, the sound was quite musical, with a smooth, sweet upper treble that made violins sound reasonably natural for such a low-priced speaker. Image depth and lateral precision were compromised to an extent by the close rear-wall placement, but the sound still had an attractive “open” quality with a good sense of “air” and space. I must say that, as much as I thought the Wharfedale Diamond III was a good performer at the price (see Vol.12 No.2, p.122), it is outclassed by this Celestion in the quality and quantity of its treble. Dynamics were good, provided the music didn’t feature high levels of low bass—the organ-pedal introduction to Also Sprach Zarathustra lent the orchestral sound rather a stifled quality—and drums came over with good impact, playing reasonably loud without too much of a sense of strain.

Coloration levels were higher than is usual with speakers costing two to three times the price of the Celestion 3, but were actually good at this price, being less obtrusive than the Diamond’s. The midrange had a similar character to the Spicas, though to a considerably more noticeable degree, in that it sounded “cardboardy.” This endowed cellos, tom-toms, and male voice, for example, with a rather “woody” signature but lent the overall balance more of an “aww” quality compared with the twice-the-price Spicas. There was a refreshing freedom from any sibilance emphasis, though some voices, particularly when closely miked, took on an added grittiness. Perhaps of more importance was a liveliness above the top of the treble staff, in the 800–1300Hz region, which threw some piano notes forward from the image (though not to anything like the extent that occurs with speakers like the Spectrum 208B), added a hard, rather confused quality to the sounds of treble instruments like the oboe, and made naturally recorded trumpet sound too squeaky.

Measurement: The Celestion 3’s impedance phase (dotted line) and magnitude (solid line) are shown in fig.6. The peak in the bass due to the woofer’s sealed-box loading reaches a maximum of 46 ohms at 72Hz. Overall, putting its low sensitivity to one side, the 3 will be easy to drive, the impedance only dropping below 8 ohms in the upper bass and mid-treble. The slight wrinkle seen at 250Hz is probably a cabinet effect, the cabinet sidewalls feeling very lively in the entire 200–400Hz region with a very strong resonant mode obvious at 310Hz. It’s harder to say, however, what the kink in both magnitude and phase responses at approximately 1200Hz represents. Perhaps it is the fundamental tweeter resonance superimposed on the rise in impedance due to the second-order high-pass filter, but as a response peak appears at the same frequency on both the in-room and FFT measurements and could be heard, it may be a woofer artifact after all.

Moving on to the spatially averaged, in-room response (fig. 7), this was taken with the 3s out in the room rather than up against the rear wall where the serious auditioning was done. Although rolling off early in the upper bass, the rate of roll-out, as with the Spica, is gentle com-

\[\text{Fig. 6 Celestion 3, impedance magnitude and phase (2 ohms/vertical div.)}\]
pared with typical reflex designs. Assessed in the nearfield, the -6dB point is a reasonably low 45Hz, which better correlates with the subjective extension when the speaker is placed against the rear wall.

Fig. 7 shows some liveliness in the midrange, particularly, as mentioned above, in the 1250Hz region, but then with a remarkably even response trend throughout the treble, apart from a slight energy lack in the crossover region due to suckouts in this area developing both above and below the optimum axis. (The individual measurements taken to compile fig.7 reveal excellent pair-matching for such an inexpensive loudspeaker.)

The impulse response on the tweeter axis in fig.8 (0.5ms/division) is not particularly time-coherent and reveals the tweeter and woofer to be connected with opposite polarity. It is overlaid with ultrasonic ringing from the metal-dome tweeter. If you are worried by this ringing, as the resonance is of high Q, though excited by transients, it will not be excited by music with a normal spectral content. (As a rule of thumb, a resonance needs to be hit with its own frequency for a sustained number of cycles equal to its Q for the ringing to develop to its maximum. A resonance at 1kHz with a Q of 1000 therefore needs to be excited for 100 cycles—i.e., one second—to be fully excited. In addition, the higher the Q, the more critical it is that the exciting signal have the same frequency as the resonance if it is to make it ring at all. This is why low-Q resonances typical of loudspeaker enclosures are so pernicious. They will be excited continually by music that has content anywhere near their resonant frequency and will add a continual background of subjective “mud.” High-Q resonances, typical of metal-dome tweeters, will ring at their ultrasonic frequency on transients, but it is debatable whether that produces audible effects downband.)

Looking at the FFT-derived anechoic response of the 3 (fig.9), this was plotted with 200Hz resolution to get sufficient bandwidth to reveal the frequency of the primary tweeter resonance, which can be seen to produce a peak almost 10dB high at 25.6kHz. I suspect that the slight peak at 21.1kHz is a measurement artifact rather than a real attribute of the speaker, due to aliasing between the main resonance and the ‘scope’s sampling frequency. Upon reflection, however, the actual frequencies are not quite right, so the matter remains in doubt. The response is a little ragged in the upper region of the tweeter’s passband, with a narrow suckout apparent on all axes centered on 9kHz. Repeating the FFT analysis with a 100Hz bandwidth reveals quite a narrow on-axis peak centered on 1370Hz only hinted at in fig.9, this increasing in height below the listening axis. In fact, putting the Celestion 3s on high shelves or stands is not to be recommended, as both treble and midrange then appear to become significantly lumpy.

**Conclusion:** Should Stereophile’s readers be
considering a speaker as inexpensive as the Celestion 3? It depends on their individual needs. A pair of good stands will add at least $100 to the price, which starts to put the 3s' price nearer that of such floor-standing bargains as the $495/pair Magnepan SMGas. The little Maggies will go louder than the 3s, with lower levels of midband coloration. However, they do need considerably more room to breathe than the Celestions, and can't be placed near a rear wall. For someone on a restricted budget, with a small listening room, therefore, a pair of 3s on good stands will mate well with inexpensive electronics (provided that these don't have too dry or bright a treble) to produce what, while not scaling high-end heights, will almost always be a musical sound, without significant failings.

MAGNUM DYNALAB FT-11 FM TUNER

Don Scott


Magnum Dynalab's first tuner was introduced four years ago and was reviewed in Vol.8 No.4 (with an update in Vol.10 No.3). The FT-101 has been improved over the years and is available in standard and professional form (PRO-101). An additional upscale model, the Etude, is now available and will be reviewed shortly. The FT-11 evolved two years ago as a scaled-down version of the FT-101. It also has been improved to a point where it rivals the performance of the original FT-101. Cosmetics have also been enhanced on all models. Face plates for the FT-101 are available in black or silver 19" rack or 17½" black. (The Etude is also available in a 24kt gold faceplate.) The FT-11, however, is available with black or silver 17" faceplates. All cases are black. Upgrades on older FT-101s are available from the factory. No upgrade has been announced for early FT-11s; however, Magnum Dynalab is most cooperative in answering and correcting technical matters.1

The no-nonsense front panel contains, from left to right, power on-off, separate mute and stereo switches, three presets with miniature tuning ports next to each, and a medium-sized tuning knob. A fast-acting RF signal meter, green 3–4 digit frequency display, red stereo indicator, and a center-tune meter show operating conditions. The sparse rear panel has basic RCA audio outs and 75-ohm antenna in. Interior construction is just OK, not as classy as the exterior.

Circuitry

Many parts make good FM...not always. Frequently, as with other audio components, simple circuits produce the lowest distortion. Gutless wonders such as the digital Marantz ST551 (Vol.9 No.3) and the Hitachi HPT-120AV (under review) are among the best sonic performers auditioned. The analog FT-11 is likewise very

1 A service tip for FT-11 owners: erratic operation and frequency drift is usually caused by contact resistance build-up on the three preset switches. Periodic cleaning with Radio Shack 64-2320 TV tuner spray seems to solve the problem. 2 It worries me that all such cleaner sprays appear to be Freon- or another chlorofluorocarbon-based. If any reader knows of an environmentally safe (and nonpoisonous) electrical cleaner, I would like to hear from him or her. —JA

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basic, but apparently adequate for good reception parameters including sensitivity and selectivity, while the two models mentioned above have RF limitations. Magnum Dynalab has stuck with its family of low-parts-count circuits, tweaking them for increased selectivity, fidelity, and stability.

**RF performance**

The FT-11 is a single IF bandwidth tuner. This means a compromise must be made between what bandwidth will yield best fidelity and reasonable selectivity. The compromise 15dB adjacent-channel design criteria chosen have these advantages: With a directional antenna, there will be few adjacent stations that cannot be received, SCA birdsies are further attenuated because the SCA signal is out on the edges of a station, and radiation from non-radio sources —computers, electronic typewriters, etc.— is less likely to cause interference. The only disadvantage of the somewhat narrow IF bandwidth is a slight loss of fidelity and stereo separation on a few of the best strong stations (and perhaps slightly higher levels of distortion with heavily modulated RF signals — Ed). In reality, these instances are rare.

Sensitivity in mono is typical, 1.8µV/10dBf, and is a shade better at mid-dial frequencies. Stereo sensitivity is enhanced by a signal-strength-dependent high-blend. Blend starts at 39µV/37dBf and slides to full mono at 10µV/25.2dBf. There is a slight noise area at approximately 20µV/31.2dBf, but for the most part the loss of stereo separation vs noise is another good compromise. Ultimate stereo separation is 50dB. Most importantly, this tuner maintains 40dB stereo at 30µV/34.75dBf and 28dBf at 25µV/33.2dBf, with little increase in noise or noticeable collapse of subjective stereo image with fading signals. I still favor simple on-off high-blends — or, better yet, a multiple-position blend as found on the old McIntosh MR78 — because they work on strong, noisy cable FM signals as well. No trace of images or false signals were noted with strong signal input.

**Audio quality**

Much of what is heard from this tuner is limited by the RF section. THD readings were 0.1– 0.2%, which isn’t really poor. The lowest distortion I have measured is from a tweaked Luxman T-117 (Vol.11 No.2, $600)—0.05% at 1kHz. Note: in factory alignment, distortion was not that low. The FT-11 has a slight tubbiness near 1kHz that tends to mask voice detail. This quality is not present in the company’s FT-101, which I believe uses similar audio output circuitry and is more airy. Bass response, however, is exceptionally robust and deep. Treble response is not dull, but not as extended or detailed as heard via the tweaked reference T-117. In A/B comparisons, delicate brush sounds were not there or somewhat muffled on the FT-11. However, overall sound quality vs the total number of stations the FT-11 receives without noise means most purchasers won’t be disappointed.

**Conclusion**

Analog or digital? Both have advantages/disadvantages over the other and achieve the same end: audio. As a rule, analog tuners allow exact tuning and digital tuners do not. The exceptions are the H/K Citation 23 (Vol.10 No.8, $649), the ADS T2 (Vol.8 No.1, $539), and the Marantz ST-54 (Vol.8 No.7 as ST-74, $319, under reevaluation), which provide variable fine-tuning on a digital tuner. The Marantz has fine-tuning memory on presets. And generally, the best digital tuners have 5–10dB improved S/N over their analog counterparts (JVC FX-1100BK, now FX1010TN, Vol.12 No.4, $470). Although not widely used, narrow digital filters can be incorporated to remove unwanted 19, 38, and 67kHz interference without affecting high-frequency response (NEC T-710BU, Vol.11 No.10, $299). While it may appear I favor digital, my analog reference Sansui TU-9900 is no slouch.

Where does the analog FT-11 fit into this coin flipping? It’s a borderline Class B/C tuner, and not up to the more costly FT-101, PRO-, or Etude; nor should it be. It is a competitive product in the $400–$600 range. If it did not have an effective sliding high-blend and enough added selectivity to aid separating stations, it would be just another tuner, but as it does, it is recommended. If you can live with less selectivity and still want topnotch sound, the Arcam Alpha 2 (Vol.12 No.7, $329), and the Bogen TP-100 (Vol.9 No.3, $199 from Fordum Radio, (800) 645-9418) are good choices. If more than 12–15dB adjacent-channel selectivity is needed, the Denon TU-800 (Vol.11 No.5, $475), the Onkyo T-9090II (Vol.11 No.5, $750), the H/K Citation 23, as well as Magnum Dynalab’s more costly tuners, should be considered.

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Martin-Logan Sequel II loudspeaker

It was in early August, on a Sunday afternoon, that I got my first listen to the Sequels. Remarkable transparency, lightening-quick transients, and lots of low-level detail, were some of my immediate observations. You should know that the venue was JA's listening room, and the occasion was the Stereophile writers confab, where we compiled the "Recommended Components" listing that appears in this issue. There was a significant slice of the magazine's writers on hand, including guru JGH (in whose ears we trust). To a man, a consensus developed that there was something terribly wrong with the Sequel's lower registers. A common complaint was the lack of instrumental body, the range affected, as reported by JA in his review in the August issue, being from the lower mids through the upper bass. The resultant tonal balance was strange indeed. Keep in mind that the mid- and deep-bass registers, at least in the range from 40–80Hz, were quite strong. The floor was being energized easily, for example, with organ music. This combination of deep- and midbass energy, together with a suckout in the upper bass and lower mids, gave the bass registers a hollow or disembodied feeling.

When JA offered me the Sequels for a listen, 1 quickly accepted because I wanted to try an experiment. JA had already speculated about the possibility that the drivers were incorrectly phased. He had found the woofer and electrostat panel wired in-phase, which runs counter to the common practice of connecting second-order (12dB/octave) high- and low-pass sections out of phase. At the crossover point, such complementary filters produce responses that are 180° out of phase, so that an in-phase connection of the drivers will produce a suckout around the crossover frequency. Simply put, I wanted to reverse the phasing of the drivers and compare the sound of the in-phase connection to that of the out-of-phase! This is easy to accomplish because of the bi-wire provision. The first step, and an important one, is to remove the jumpers from the two pairs of binding posts. Parallel two "go" legs and two "return" legs of speaker cable at each amp output. Connect the stat panel while observing the correct polarity. Now reverse the polarity at the woofer inputs, so that "red" connects to "black," and vice versa. This will assure that the stat panel and woofer will be connected out-of-phase.

The first order of business, however, was to clarify Martin-Logan's intentions in this matter. I discussed this whole subject with Gayle Sanders over a number of phone conversations. According to Gayle, the drivers are to be connected in phase; the speakers are QC-checked in this regard. I was sent a wiring diagram for the drivers. Sure enough, both the stat panel and the woofer were connected per factory specifications. I also checked the woofer polarity using a battery. The woofer pushed and sucked in concert with the proper polarity. At this point, there could be no doubt left that the review pair were wired in-phase, as intended by Martin-Logan.

The big surprise was just how big an improvement was brought about with the out-of-phase woofer connection; clearly a night-and-day difference! The tonal balance was much more satisfying. The whole bass character still sounded distinctly lean. But most importantly, the big suckout—an octave on either side of the crossover frequency—vanished. I spent a couple of hours convincing myself that the lower mids and upper bass were reasonably acceptable now. The integration between the drivers was that much better, although again the Sequels still lacked soul-satisfying body. Double-bass was obviously being reproduced with a noticeable degree of anemia, but timbrally much more naturally than before.

Next, I undertook a series of measurements in an attempt to shed some more light on the problem at hand. It turned out that the inter-

1 Readers may feel that I missed a trick in my review by not investigating the sound with the woofer polarity reversed. In fact, the instant I discovered the in-phase connection of the drivers, the idea did occur to me but I abandoned it when I was reassured that this was how the Sequel was meant to sound. I don't regard redesign of a product, even if it features what the reviewer regards as a serious design anomaly, as a primary part of his or her responsibility. Note that, regarding the implications of Dick's conclusions, my listening room is reasonably small—20' by 15'—and at the listening seat, the direct sound from the speakers predominates.

—JA
ference pattern between the drivers was a sensitive function of vertical height off the floor and, of course, room location. Take a look at figs 1 and 2. These measurements were taken at 1 meter on-axis at a height of 30” off the floor. As you can see, the in-phase connection actually measures to have more upper-bass energy. However, as the microphone approaches typical listening heights, the situation changes. At a height of 43” off the floor, still at 1 meter on-axis, figs 3 and 4 show a dramatic difference between the two connections. Note the large suckout obtained with the in-phase connection (fig 3) between about 125 and 3000Hz. Near the listening seat (about 8’ away and slightly off axis) and 38” off the floor (figs 5 and 6), the difference between the two connections is not that dramatic, but still clearly in favor of the out-of-phase connection. Martin-Logan’s measurements at about 3 meters away and 42” off the floor in a fairly reverberant room actually show, according to Gayle, a 2dB reduction in output in the range from 100-400Hz with the out-of-phase connection. The key to this puzzle may lie in the type of listening seat and room the Sequels are used with. For near-field listening or even in a far-field listening environment in a well-damped room, the out-of-phase connection appears to be the best. In a reverberant room and far-field listening conditions, where the sound energy at the listening seat is at least 50% indirect, the in-phase connection may be preferred.

The bottom line is that you should let your ears be the final arbiters in the matter, and not be afraid to experiment. Why go to this much trouble? Because above about 500Hz, the Sequel’s level of performance is nothing short of Class A. Its levels of transparency, spatial cohesiveness and resolution, and transient control are simply astonishing. I have not lived with these speakers very long, but they just swept me away — quickly and decisively. I’d have to go back to the Alan Hill helium plasma tweeter to find a driver that bettered the Sequel in terms of treble performance.

Let it be known that in my opinion, with the proviso of an out-of-phase connection and the understanding that one needs to be tolerant of bass anemia, and that the driving amp must be capable of handling the 1.5 ohm or so impedances in the treble — see fig. 7, which shows both amplitude and phase — the $2500/pair Sequel II is a strong Class B contender. I would opt for the Sequel over most of the mini-monitors out there — even over the venerable Quad US Monitors.

I write this after having spent some time at
LA's house listening to the IRS Betas. These tweaked Betas sounded as good as I've ever heard Betas sound, and in many respects their sound was impressive, highlighted by an effortless feel and an authoritative quality. Yet, for me, the Betas failed to break the transcendental barrier—they failed to give me a satisfying illusion of live music. The Sequels are not as tonally accurate, but they sure as hell weave a better illusion.

—Dick Olsher

Marantz ST-54 AM/FM tuner

The Marantz CD-94 CD player has become fairly popular in the best systems. For those interested in FM, there is a stunning, matching ST-54 tuner. Actually, the same basic tuner was reviewed four years ago in Vol.8 No.7 as the ST-74. The surface differences between the two tuners are that the latter has no remote control or timer-event recording provisions. Cosmetics have been enhanced by availability in black or gold at $319, with hand-rubbed rosewood end panels an additional $80. The gold/end-panel combination, in my opinion, makes this tuner top-dog in the appearance camp.

My original evaluation of the ST-74 was "...butter-and-marmalade appearance and AM performance, but dry-toast FM." Retesting indicates the marmalade is slightly sweeter and the toast is moister. In fact, this is one of the most sensitive tuners manufactured, at least in mono, and is as quiet as the $600 Luxman T-117 on the weakest stations (1.7µV/9.81dBf). Usable stereo sensitivity is 10µV/25.2dBf, limited by the muting threshold. 50dB stereo quieting is identical to the original measurement, 30µV/34.74dBf—a 15% cut above average. SCA rejection is 48dB, up 10dB, and stereo separation is increased from 48dB to 53dB. All other parameters remained unchanged. AM reception is muddy but sensitive, 200µV/m is the usual 300µV/m.1

Basically, this is a good tuner and value; but there are some qualifications and limitations: FM adjacent-channel selectivity is only 8dB in Narrow mode. This limits the tuner to alternate-channel reception only unless both stations are weak. The tuner includes 10kHz-step fine-tuning (~40 to +50kHz) which will aid in separating stations in rare instances. It is more useful for exact-tuning cable FM. This feature can be put into memory along with Wide/Narrow on any of the 16 FM presets. Also on the negative side, there is no blend or other weak stereo signal reduction, although it has—as indicated—good naked stereo quieting. The ST-54 has only a 300-ohm antenna input, and a matching balun probably will be needed. A professional product, which this claims to be, should have a threaded F-type 75-ohm connector for the US market.

Audio Quality: While on the professional theme, I expect more of the companion tuner of the CD-94 than normal because of its association with a dominant species. The older review gave the Marantz product a "mediocre" sound rating—"neither good nor poor." The latest version gets the same rating, but I must qualify this statement: after about three weeks' burn-in, the ST-54 is sounding 10% sweeter and crisper, and it is possible a tweak alignment would further improve audio quality.2

Therefore, it is my conclusion that the ST-54 is 100% in looks and 60% of the caliber of the CD-94's sound quality, and will serve well in most systems where a slightly above average tuner is needed. Perhaps this is all that can be expected for the price. I would like to see Marantz build a modern tuner that would put the fabled 10B to shame and be a true companion to the CD-94.

—Don Scott

Precision Audio DIVC-800 CD player

In my review of the Philips CD880 and two modified versions of it, the Precision Audio DIVC-880 and Barclay Bordeaux (Vol.12 No.8), I noted a forward, edgy treble presentation.

1 Further improvement can be made by peaking the AM antenna near 1500kHz. The trimmer designated CA02 and circled in red, is located near the right rear of the main circuit board.

2 A perfectly aligned tuner will appear exactly center-tuned on stations not closely spaced without the aid of the fine-tuning control, which can be used to determine this. Also, the tuner will not chatter on weak stereo stations if the detector and muting level are set correctly, and it will sound open and clean in the Wide mode.

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through the Precision Audio player. Other aspects of its performance—soundstage, detail, and particularly bass control—were impressive, but the high-end tizz detracted from the musical experience. After reading my review and listening to the returned review sample, Jon Schleisner of Precision Audio agreed with my assessment of his player.

After exploring the possible causes of this HF hardness, it occurred to him that a modification Precision Audio had made to the now-discontinued Magnavox CDB-472 (turning it into the Precision Audio DIVC-472) had also been made to the Philips CD880 as a matter of course without actually listening to its effects. This modification involved the addition of 1 μF film capacitors to the two Most Significant Bits (MSBs) of the DAC. The addition of these caps was said to improve bass and low-frequency punch on the Magnavox 472. Precision Audio subsequently learned that when these caps were added to the Philips CD880, they added a measure of HF harshness. Precision Audio removed the caps and claimed a much smoother HF presentation. In addition, a modification I performed at PA's request (a resistor and capacitor in parallel with the input to PA's analog board) was removed. They then returned the player to me and asked me to give it another listen.

The same system used in the first evaluation was again connected, but substituting a PS Audio 5.5 preamp in Straightwire mode instead of a Threshold FET 10. The Threshold's line section is sufficiently transparent that comparisons using a passive preamp are valid. This time, I did not have the Barclay Bordeaux for comparison, which I preferred over the DIVC-880 in my review, but the Arcam Black Box 2 and British Fidelity Digilog digital processors were available. I connected the analog outputs of the DIVC-880 and Digilog to the PS Audio's CD and tuner inputs respectively, and the digital output of the DIVC-880 into the Digilog. Comparison could thus be made by turning the preamp's input selector switch.

With the same CDs used for the original review, I immediately noticed that the Precision Audio's high frequencies were much softer. Cymbals lost the "spitty," forward sound and were presented more in their proper perspective in the soundstage, taking on a sense of air around them. Listening fatigue was greatly reduced. This change was certainly welcome, since I liked other aspects of the DIVC's performance, especially bass definition and punch, which the latest circuit changes didn't seem to affect.

Comparing the DIVC-880 to the Digilog, with which I had become familiar during the review in this issue, was interesting. The PA player had a sweeter top end than the Digilog, but was not quite as detailed. Midrange tended to be slightly smoother and laid-back through the DIVC-880. The Digilog had a deeper and more open soundstage, with instruments having greater space around them. Dynamics and bass reproduction were excellent through both units, making it difficult to chose between them in this area.

The latest version of the DIVC-880 is much better than the first sample I heard, and now merits Class B status in "Recommended Components." It is commendable that Precision Audio was willing to investigate the cause of my initial criticisms. These latest circuit changes have been incorporated into all DIVC-880s currently produced. In addition, Precision Audio will update existing DIVC-880 players at no charge, provided the customer pays for shipping.

—Robert Harley
The Studio 1 speaker is an unprecedented addition to the range of TDL transmission-line speakers, easily accommodated within the domestic environment. The TDL Studio 1 is a smaller, more affordable speaker that occupies no more floor space than a conventional speaker placed on a stand; yet its bass performance extends through the bottom octaves with the ease and authority for which the transmission-line is renowned. Similarly, the treble employs the same metal dome tweeter technology as in the professional TDL Reference Standard transmission-line speaker. Providing an aural illusion of a far larger sound source, the TDL Studio 1 places within reach, an authentic transmission-line speaker.
Two events, quite implausibly linked on the surface, impel me to write this survey. One is my hearing the reissue of Stokowski's live performance of the Mahler 8, made with what was in 1950 called the New York Philharmonic Symphony Orchestra (Music and Arts CD-280). I had read about this performance for some time, and had looked forward to hearing it. I was not disappointed.

The other, background event was my reading Norman Mailer's *The Deer Park*, a novel from the 1950s, a great dinosaur of a book with the lusts of a potentate and social conscience to match. Its story concerns one Charles Francis Eitel, an accomplished, middle-aged film director. Eitel serves as an archetype of a kind of 20th-century artist, and perhaps of Mailer specifically, in his obsessiveness, narcissism, and tendency to control those around him. His tragedy involves his failure of courage to accomplish two things: to find love with an erratic young woman whom he is incapable of treating as an equal, and to make a visionary film about a tragic modern hero. In the end Eitel succumbs to his writer's block and mid-life crisis. He panders favor with his studio by naming names to a fictionalized House Un-American Activities Committee and allows his vision to be debased into a manipulative, patchwork movie, with happy ending over a background of angel-choir muzak.

Parallels with Mahler's artistic life are apparent. Mahler's conversion from Jew to Catholic, though reflecting mystical tendencies within his makeup, was prompted by careerism. To Jews raised against a background of pogroms, this must have been as despicable an act of capitulation as Eitel's. Mahler's difficult relationships with women, and specifically with his wife Alma, have been well-recorded; he was for most of his life unable to treat them as anything more than archetypal virgins and sinners.
Bryston’s Model 10B Electronic Crossover combines ideal signal-handling with an enormously flexible control function. Simple, direct front-panel switches allow any crossover curve to be set instantly, and the signal purity is always maintained.

The Model 10B features independently selectable crossover points for high-pass and low-pass, in case the speaker installation requires slightly overlapped, (or slightly staggered), response curves for the drivers. You can also independently select crossover slope, from 6, 12, or 18dB/Oct., where one driver requires faster cutoff than another in the same system.

The Bryston 10B Crossover uses NO integrated circuits in the signal path. All internal buffer and amplification stages are Bryston’s exceedingly linear and superbly quiet discrete op-amp circuitry. This means the signal is always maintained as “Audiophile Quality”, with stability and freedom from noise and distortion unapproached in normal equipment.

From the point of view of adaptability, flexibility and signal integrity, the Bryston 10B Electronic Crossover system is the ideal choice for the widest range of multi-way speaker installations.
Finally, Mahler’s life was punctuated by periods of artistic blockage, one most intense of which spanned the two years before he composed his Eighth Symphony.

This unlikely juxtaposition caused certain connections which made the symphony, previously baffling to me, more clear. The work assumes a color of repressed desperation: religious desperation in the first-movement *Veni, creator spiritus*, which fixes in marble tropes the youthful overreaching of Symphony 2; desperation at Mahler’s inability to understand Alma, or any complex woman, as reflected in his choice of the “Virgin, Mother, Queen” text from Goethe for his second movement; and most important, desperation woven in the fabric of the symphony, its failure to cover the chasm between the two towers of Mahler’s philosophy, the Christian mysticism of the first movement and the Romantic, secular humanism of the second. Contrary to frequent opinion, Mahler 8 emerges as a highly flawed piece of art and a reflection of crisis.

Which suggests opportunities for interpretation not fundamentally different from the other symphonies. It has often been said that Mahler wrote this symphony to be no more than an expression of faith for a public occasion, and that the conductor dares tread beyond this at considerable peril. But the Eighth is so metaphorically asymmetric, so laden with unwitting Freudian confession, as to defy the organic or dramatic integration attainable in, say, a performance of Symphonies 6 or 9. The successful interpreter must grab onto, even go over the top with, some aspect of the symphony, in order to communicate past its faults.

For example, the strength of the Stokowski performance is in its immediate dramatic sense and operatic—almost cinematic—scope. Stretching the analogy with Mailer’s *Deer Park*: although director Eitel settles for making a formula movie rather than the tragedy of his dream, Mailer does describe the finished product as a fine piece of popular craft. Stokowski makes this of his Eighth, and more besides. He shapes the first moment with all the profound accessibility of one of Frank Capra’s films. The old church hymn becomes an ebullient universalist extravaganza, bighearted and indulgent. Stokowski pulls off the second movement as successfully as I’ve heard—a minimum of psychobabble, just an unbroken line of story. The climax is at an unexpected point, in the interactions of the three penitent women. They commune in song with ease and confidence, enjoying a tradition in vocal training which regretfully exists no more.

Choral singing is good, faltering only toward the end, massed voices becoming audibly tired and the boy choristers consistently flat. (This was, after all, a live recording.) Stokowski presides throughout as the natural-born band leader he was, master of popularization without pandering, with his uncanny ability to merge each word, each instrumental note, into the long dramatic line. Despite the shortcomings of a 39-year-old recording, this is the most consistently satisfactory performance of Mahler 8 I know, and a powerful argument for preferring a live recording of the work. It deserves to be known as widely as the famous Bruno Walter/Kathleen Ferrier *Das Lied von der Erde* of about the same vintage.

(Music and Arts has done its accustomed superior, hands-off job in transferring this to CD. They include as unlikely but fine accompaniment Stokowski recordings of Ravel’s *Rapsodie espagnole* and Debussy’s *Three Nocturnes*, made live with the Leipzig Gewandhaus in 1959.)

Less than enraptured with Stokowski’s cinematic conception? Consider then Jascha Horenstein’s 1959 LSO recording, again live, this time on two LPs from Music and Arts’s allied Discorcp label (No.203). The symphony’s large formal structure is of utmost concern here. Horenstein’s reading is astringent and interior where Stokowski’s is indulgent and extraver, the first movement an Age of Anxiety application of Old Church asceticism. As with Stokowski, the interaction among solo singers is operatic, though carrying an edgy sensuality. Horenstein’s interpretation will win few friends among those who learned the Eighth at the knee of Solti’s warm CSO reading, because Horenstein holds back so much emotion for so long. When he does let go, the final “Alles Vergängliche” is apocalyptic, closing decisively the structural circle with the first movement. Once you get beneath the flinty surface of Horenstein’s performance, the symphony’s structure animates as less scattered and epi-

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1 The Stokowski CDs include as notes a fine, gently feminist essay by Tanya Buchdahl exploring how Mahler’s skewed ideas of the feminine affect his art. The essay appeared earlier in a Discorcp/Horenstein performance of Mahler 8, discussed below.

Stereophile, October 1989
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sodic; by comparison Bernstein sounds histri-onic, Tennstedt pious, Inbal obvious, Kubelik toothless.

Alas—sound is wretched, from a low-fidelity radio transcription disc. The accompanying work is Horenstein’s 1929 recording of Mahler’s Kindertotenlieder, with baritone Heinrich Rehkemper and the Berlin Opera Orchestra.

So much for historical, live recordings; they seem to me best at arguing for the Eighth’s effectiveness, but most listeners will rightly prefer modern stereo. Bernstein’s 1968 version with the LSO (CBS M31-42199) was the first in stereo. It remains exciting today, perhaps the only studio performance to capture some of the improvisational thrill of Stokowski and Horenstein live. The singing is impassioned, almost as dramatic as on the Stokowski. Bernstein, as in practically all of his Mahler, refuses to let the listener off benignly: the opening music of the second movement reveals danger in the primordial wilderness. There are wild animals out there, real killers. One thing Bernstein’s performance is not is what one fine critic said it to be: a “cataclysmic curve of sound.” It is simply too episodic for this description, the oppressively close-miked recording suffering from studio-itis and choppy editing.

Kubelik’s performance with the Bavarian RSO came a few years after Bernstein’s. Its value is fine ensemble singing, especially among the boy angels. Its weakness is its sweetness-and-light conception, too much like Charles Eitel’s movie taken unironically. Kubelik’s Eighth lacks backbone and climax, and ultimately meaning. One of its few moments to make me take notice was—amusingly—Doctor Marianus’s phrase “Plötzlich mildert sich die Glut,/Wenn du uns befriedest” (“Passions at once subsise/When thou dost pacify us”). The only thing finally recommending the Kubelik is that it is fast enough to fit on one CD (DG 419 433-2).

Three later studio recordings are of minor concern. Ozawa/BSO (Phillips 410 607-2) is crass, and sonically even worse than Bernstein’s.2 Neumann/Czech PO (Supraphon C37-7307/08) is sleepy-time, straining credibility by spanning 75 minutes without letting a solitary idea rear its ugly head. Haitink/Concertgebouw (Phillips 420 543-2) explores lots of ideas, perhaps too many, in his thoughtful but overly refined performance.

Solti’s Chicago SO recording (London 414 493-2) has been the reference for over 15 years, and justifiably so; his positive bear-hug of a performance has been, in its straightforward devotion to the work as a cause for occasion, a fine introduction for a generation of listeners. It remains a magnificent achievement in recorded sound. Two recent stereo recordings have, however, surpassed Solti’s. Tennstedt’s with the LPO (Angel CDCB-47625) has won the most hearts. Tennstedt is unusual in finding the Eighth one of Mahler’s best symphonies, on a par with 6 and 9; his result just brims with this conviction, and rather less superimposed interpretation than the other great recordings. His broad first movement is well-nigh perfect, the fervor of singing more than making up for occasional coarseness. He takes that aspect of the second movement usually cited as its weakness—its length—lengthens it yet more, and makes that a strength. The result is pastoral at the surface, a timeless, Parsifal-like rite in deeper devotional aspect.

The other recent recording, Inbal’s with the Frankfurt RSO (Denon CO 1564/65), has drawn much praise in this magazine. It is surely one of the most satisfying recordings of a large orchestra-plus-chorus ever made, and I think the best made digitally. One stumbles to realize that the three choruses, huge orchestra, and organ were captured so well with what was basically a single-point microphone system.

As a performance, Inbal’s has sweep and ardor. The conductor is at his best when treating the devotional, public aspect of the work; his “Ven, creator spiritus” really embodies the Holy Spirit. As with Tennstedt, Inbal leaves no doubt as to the majesty of the work; but as not always with Tennstedt, you can hear the unashamed zeal on the lips of every singer, especially when the closing pages are considered in isolation. It is the in-between—the body of Goethe’s drama—where things are less persuasive. There appears Mahler’s rift between ideational first movement and Romantic second, made more apparent in a performance where so few angles of idiosyncratic interpretation are surveyed. The problem is inherent to the composer’s treatment of the Goethe; an allegory, it shares with every other allegory (Divine Comedy, Faerie Queene, Paradise Lost, even

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2 I don’t know if this has now been remastered, but the original release suffered considerably from old-fashioned clipping on climaxes.

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Stereophile, October 1989
"The increased resolution, transient response, ambience recovery and presentation, enhanced bass response, and dynamic range are something you simply have to experience to believe."

Audio Magazine
June, 1988

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something philosophically complex beneath the surface, a context which Inbal does not explore. This is why Bernstein can consider the work's primal psychological conflicts, Tennstedt a kind of post-Wagnerian ritual, Stokowski a Universalistic movie-plot. Each interpretation emerges less perfect than Inbal's, but better, because each makes more visceral sense of the complete work.

Will there ever be an interpretation of this messy work to do justice to all its aspirations? Such a performance would come at the hands of one as primitive in his artistic conception of women as Mahler and his literary sometimes-analog Mailer. (Probably means that interpreter must be male.) That person must have as brilliant an intellect, and occasionally be as wayward in the self-knowledge to apply that intellect. Orthodox lifelong Catholics need not apply; only a convert or vicarious celebrant could affirm faith so hysterically. I look forward to Bernstein's impending revisit to this symphony, due out this year on DG. He certainly has the intellectual qualifications, he is no Catholic; and as to the other, psychological preconditions, his suitability as a Freudian test-case is almost ridiculously well-documented.
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MOODY BLUES: Days of Future Passed
MFSL UDCD 512. Derek Varnals, eng.; Hugh Mendil, prod. AAD. TT: 41:38

STEELY DAN: Aja

ELTON JOHN: Madman Across the Water
MFSL UDCD 516. AAD. 45:21

PINK FLOYD: Meddle

CAT STEVENS: Tea for the Tillerman
MFSL UDCD 519. Paul Samwell-Smith. prod. AAD. TT: 36:47

MOBILE Fidelity Sound Lab is emphatically a survivor of the audiophile wars. Chartered a decade ago to remaster LPs for the newly reborn audiophile market, MFSL has grown from provider of sound-effects records into a medium-sized firm doing international business along several lines of the listener market. (Sounds like a Silicon Valley success story.) The company, previously dependent on sales of half-speed mastered vinyl records, seems to have weathered the painful market shift to CD and emerged stronger.

One linchpin of this successful transition has been the company’s re-releases of recordings in a format it calls Ultradisc; CDs with a reflective coating made from gold rather than the usual aluminum. Costing upward of $20, these have sold especially well to the yuppie hi-mid-fi market. This year MFSL has issued a small torrent of these high-end CDs, mostly reissues of major LP releases of the 1970s. Here are reviews of five reissues from that series; most prove, like earlier Ultradiscs, to be superior to standard CD versions and competitive with the original releases on vinyl.

**Steely Dan: Aja.** By this late 1977 juncture in Steely Dan’s history, the band’s dominant personality, Donald Fagen, had come to hard terms with his malaise of being a New Yorker exiled to Los Angeles. This accommodation resembles a pact made with the devil, but the result is some of the band’s best, most focused music. There is a black beauty and mercenary perfection to these tunes. Evocations from earlier albums of anger, nostalgia, and bitter romanticism now yield to cold-eyed, wise-cracking cynicism (“Black Cow,” “Peg”) and to the joyless mechanics of near-pornography (“I Got the News,” “Josie”). Technique dominates throughout. A most incisive tale of the unidealistic decade is the most perfect song on this album, “Home at Last,” a reworking of Homer’s Odysseyus myth, where Penelope, icon of love and repose, is rejected by her husband for the most swinish of non-reasons.

The Ultradisc CD’s extra clarity reinforces the studio necromancy intrinsic to the music’s meaning. This clarity is achieved with little of the analytical irritation found in most digital discs. The original ABC vinyl disc is hardly more euphonic in sound, and far less detailed.

**Elton John: Madman Across the Water.** The gold-disc treatment imparts a clarity not
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unlike on *Aja*, but here the effect is not enjoyable. The string-section overdub intrudes; what seemed subtle on LP becomes annoying: indolent effects for Elton's indolent music. You can hear throughout just how primitive a multi-mono soundstage was created for this record in 1971, and just how dull each track became after multiple reworkings in the studio.

Odd point: The relative positions of Elton's voice and musical instruments sound different between the Ultradisc and my MCA LP. On the CD, the voice is recessed and phasey; on LP, more forward and solid. Absolute phase reversal changes nothing. Perhaps different mastering was used.

**Pink Floyd: Meddle.** I maintain that Pink Floyd did not achieve their apogee until *Dark Side of the Moon*, much as Steely Dan did not until *Aja*. Each record reveals a band so disillusioned with human beings as to be compelled to a cybernetic solution: utilize the de-humanizing ethos of the decade, supplanting the human element in the music with use of technology to ironic polemical effect. (Such a solution had been tried before in literature: years before in William Burroughs's *Naked Lunch* and *The Ticket that Exploded*; really codified as recently as 1973 in Thomas Pynchon's *Gravity's Rainbow*, where silicon-based macromolecules derived from Third Reich technology replace the biochemistry of carbon.) Pink Floyd was to perfect this musical androidism with *Dark Side*; but with the release of *Meddle* in 1971, the band was at a clumsy in-between stage, anticipating that perfection, but still reflecting the narcotized hippie universalism of earlier records. Thus David Gilmour's guitar on "Pillow of a Dream" is an almost benign precursor of the ideological weapon it was to become on *Dark Side*. That's the intellectual analysis. What may be lost in this discussion is that "Echoes," the CD's extended piece at 23:31, cuts a riveting if slightly lumbering groove. Save for Frank Zappa's "Gumbo Variations," I struggle to think of a rock track with a better one-chord jam.

The Ultradisc CD has subjectively more bass than the standard Capitol CD, and a less continuous, more pinpoint soundstage. It brings comprehensibility to injected voices and random noises. Both CDs are less big and exciting than the old EMI/Harvest LP. The real version to buy, however, is the Mobile Fidelity LP (Yes, they're selling LPs again!) It is the most effective at filling the room with Pink Floyd's message. MFSL's vinyl record is more etched and edgy than the Harvest LP, but without the Harvest's smeary quality. It is far less irritating than either CD, and also more coherent than the Capitol CD.

**Cat Stevens: Tea for the Tillerman.** Generic, egocentric production by a 1970s singer/songwriter. The overall effect is the incredibly present, front-and-center Cat voice; slightly behind are enormous Cat guitars, backed up by the occasional instrumental track emitting from right or left channel.

In a recording like this, production comes ahead of substance and clarity becomes everything. The gold CD is clearer than the current A&M LP. Instrumental tracks sound more separate and coherent (though hearing more clearly the raw, metallic approximation of violin on "Sad Lisa" is no pleasure). The Ultradisc reveals the haze and sibilance in Stevens's voice, which must have been in the source recording, muddled away in the LP issues.

That's the technical assessment. Artistically, this is execrable work. It may have seemed harmless in 1970: the drippy sexism of "Wild World"; the shallow generational dialog of "Father and Son"; the banality of the entire enterprise, and lack of any shred of humor or irony. Hindsight uncovers Stevens as an ineffective nerd romantic with a minuscule ego and smaller intellect. One understands why he took refuge behind the excuse of a perfectly good religion, and used that religion as justification for his sideline threats on Salman Rushdie and anyone else who threatens him because they attack his tidy views, and because they're greater humans.

**Moody Blues: Days of Future Passed.** Here's one not from the '70s, but released in 1967. In retrospect the record isn't nearly as bad as I once thought it was. One simply has to forget any notion the band may have had of achieving a grand intersection between pop and classical music. The music becomes fun when considered instead on the level of pop classics, in inspiration no greater than Leroy Anderson (but without his craftsmanship).

The CD is much clearer and bigger-sounding than my original Deram LP. It reveals an arbitrary studio-induced soundstage; but allowing for this, the soundstage is rock-solid and very deep, the string sound rich. (After all, these were Decca engineers at work.) The LP is more addled in perspective and less convincing in timbre. Only on "Nights in White Satin" is the CD not preferable, presumably because its transparency reveals the bloodsucking result of too much reddubbing.

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1 This concentration on Stevens may have to do with his recording style. According to an ex-associate of mine, Alan Eden, who played drums on a number of Cat Stevens recordings, unlike conventional sessions, where the 'star' overdubs his or her contributions on prerecorded rhythm-section tracks, these sessions would be upside-down in that even the drums would be overdubbed on previously recorded Cat Stevens guitar tracks.

—JA
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Itzhak Perlman has mastered the technical tortures of this music beyond any question. His pure physical dexterity almost defies belief; his playing here is immaculately clean and precise. It is impossible to avoid that word: awesome.

With no apparent effort, he skips through the bogie-infested staves of the Partita 2 Ciaccona and the Fuga of Sonata 3. Those 26 minutes alone—out of 143 total—are enough to place this recording in the top rank. But what’s truly remarkable is that even in the technical perfection of the Ciaccona, Perlman makes us forget the technique because his interpretation (remember, the real work) is so magnificently moving, imparting an ineffable nobility and dignity to the notes.

Even in comparatively “easy” sections, Perlman has the power to mesmerize us, as in the subdued, thoughtful opening movement of Sonata 2 or in the gracefully floating rhythms of the Andante from the same work.

This is, as they say, a tour de force. Unfortunately, it is force which puts a tiny blemish on this rose. Perlman’s is a strong-armed traversal of these works, and the raw power he employs in them gives them something of a homogeneous character. Combine that with a recorded glare in the upper registers, and these discs can become fatiguing.

The sound quality does Perlman no favors. It is very—perhaps overly—clear, with lots of air surrounding the instrument. But the hall sounds as though it were a cathedral that resonates with every note played on the higher (a and e) strings. At times, it sounds almost as if Perlman is struggling to project the current note or phrase over the dying reverberations of the previous one. The result is an antiseptic, synthetic sound that does not capture the bite of attacks and removes us from the intimacy appropriate to these works. Perlman’s tone, naturally more clear, pure, and projecting than most, is too much string and not enough soundboard as presented here.

Not all of the discs’ shortcomings lie with the recording job. In a few places, Perlman’s speed and facility border on glitness, and changes in dynamics sometimes result only in softer or louder music, without adding expression. This is an extraverted reading, on the whole, and sometimes lacks the subtleties of phrasing that can make the music emotionally overpowering. Let me add, though, that this is true only in comparison to the very finest of performances, such as that of Nathan Milstein.

Milstein’s version (DG 20709047, LP) exudes an unflagging sense of kinship with the music. His technique is superb, though not the equal of Perlman’s. Every phrase exhibits profound thoughtfulness with no loss of spontaneity. Every note seems shaped, turned, and considered in the context of the immediate passage and the entire work. For instance, in the series of ascending passages that precede the doublet figure of the Sonata 1 Presto, Milstein creates anticipation by subtly varying the rhythms before exploding in release with the doublet itself. Perlman rushes straight through to the end. Also, Milstein’s cadences combine just the
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details, indeed, but telling of the "real work"
Milstein attends to throughout his magnificent
performance. And I would take the closer, more
intimate 1975 DG sound of Klaus Hiemann
over EMI's any day.

But where does Perlman's effort finally stand? I have praised it and criticized it! Well,
it's just too stunning a display to be without.
If it falls short of Milstein's in its interpretation,
the angels also fall short of God. My complaints
come nowhere near prevailing over my abun-
dant admiration for both the "difficult part" and
the "real work" of Perlman's recording.
—Robert Hesson

P.D.Q. BACH: 1712 Overture & Other Musical
Assaults
Professor Peter Schickele, conductor, narrator, pianist,
devious instrumentalist, intellectual guide; The Greater
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conductor
Telarc CD-80210 (CD only). Michael Bishop, eng.; Robert
Woods, prod. DDD. TT: 63:12

Of all the composers about whom a music
critic might find himself obliged to write, surely
P.D.Q. Bach (1807—1742) is one. A composer
who borrowed more tunes from other com-
posers than ever did Ives—and who did not return
them; a master of orchestration who
invented even more new orchestral voices than
did Harry Partch—the left-handed former flute;
the Hardt, the slide windbreaker—yet whose
unique instruments still gather dust nearly two
centuries after his timely death; a committed
oenophile whose unmarked grave continues
to grow the best wine grapes in the entire Wein-
am Rhein area; about such a man the mere
critic must bring all of his faculties, learning,
and wisdom to bear with a diamond-cutter's
skill, leaving behind such bourgeois affecta-
tions as boredom, embarrassment, and mere
good taste.

P.D.Q. Bach, the 22nd of J.S. Bach's 21 children,
though at first hearing seeming to have
inherited all of his father's musical aspirations
and none of his talent, at second hearing (if any)
seems to have been marching to several differ-
ent drummers at once. Take the 1712 Overture—
please. Though predating Tchaikovsky's 1812
by nearly a century, and from which we now
know that nervous Russian "borrowed" whole
pages, some of P.D.Q.'s rhythms and humorous
little fillips, though nestled in a properly post-
modern neo-baroque quasi-classical faux
Romantic aspic, sound disturbingly present-
day. The solemn hymnifying of "Yankee Doodle," the humorous "Marseillaise," and the omi-
nous "Pop Goes the Weasel" do make one
think, all of musicalologist Prof. Peter Schick-
ele's mountains of research to the contrary, that
one is hearing the works of a contemporary
composer who might be held accountable. Alas, P.D.Q. Bach is beyond our grasp.

"Capriccio La Pucelle de New Orleans,"
though of profound compositional inconse-
quence—just another little baroque ditty—
does prove that the roots of ragtime music go
considerably farther back than any previous
musicalologist has suspected. Prof. Schickele
can be justly proud of his work. Unfortunately,
this first and only recording of the piece is
somewhat marred by the L.A. recording site,
a studio owned by a direct descendant of
P.D.Q., one Burt Bach. Burt seems destined to
the same lack of success in his own time as his
illustrious predecessor suffered in his, how-
ever; the tape is plagued by sirens, trains, cars,
planes, gunshots, and thunderstorms (these
interruptions are themselves, however, won-
derfully recorded). One can hear the baroque
ensemble playing faintly in the background;
I'm sure they did a fine job.

The Prelude to P.D.Q.'s barely begun opera
Einstein on the Fritz should take some of the
stuffing out of Philip Glass's many Ralph Laur-
ent shirts, proving that the third, fifth, and sev-
enth major intervals were invented sometime
before the 1970s. And a good thing, too. Ein-
stein is reminiscent of nothing so much as the
prelude to Wagner's Rheingold married to
"Three Blind Mice" and passages from Bach's
own father's own Well-Tempered Clavier's
own first movement's own beginning. What
can one say? Again, long passages of this work
reappeared much later in Glass's soundtrack
to Koyaanisqatsi, which we now know is actu-
ally a garbled version of the words in this pre-
lude, which, in the absence of a libretto, sound
something like "Coy Hotsy-Totsy." Basso
snorers from the audience of this apparently
live—at least asleep—recording are quite evi-
dent in the quieter passages.1

Schickele's own Bach Portrait begins with
curiously Coplandesque agrarian pomp, then
music from the Brandenburgs, Air on a G
String, with more Ivesian quotes from "Camp-
town Races," Appalachian Spring, "Swanee
River," and "I'm an Old Cowhand," all favorites
of J.S. Bach, Schickele assures us. The musica-
ologist narrates throughout, reading portions
of letters by Bach (mostly complaints about
money) and ending by "dee-dee-dah-deeing"
"Jesu, Joy of Man's Desiring." Snares, kettles,
and ceremonial brass bring the tribute to a
close that seems all too late.

There is so much more here—the playful

1 Though it may seem that PDQ Bach has been unfairly sin-
gled out by other composers for melodic thievery, he hasn't
been; certainly, he stole enough from them.
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“Minuet Militaire,” with its parade-band count-offs and quaint infantry maneuvers; and PDQ’s only ballet, *The Preachers of Crimebeus, “In One Selfless Act,”* with its solo passages for mournful trombone, haunting lasso d’amore, puckish slide whistle, and triumphant foghorn—but I fear I can lavish no more space on this best-forgotten composer who accomplished so little, yet who drank so much. We can only be grateful that Prof. Schickele, who has devoted his life to the study of the music of PDQ. Bach, has shown such herculean restraint in releasing only the best of those fragments of a life ill-spent.

The GHAOSP plays as well as can be expected, and what can one say about Walter Bruno? Unfortunately, this disc sports the best sound any of PDQ’s music has received; be warned that every note is audible, every attempt at sonority fully fleshed. The bass drum sounds as if looming up from the cellar, as in most Telarc, and the brass are distant, the entire sound over-honeyed. Don’t miss this one, if you can.

—Richard Lehner

**BARBER: Symphony 2**

*Also: Music for a scene from Shelley; Overture to The School for Scandal, First Essay; Adagio for Strings Andrew Schenck, New Zealand Symphony Orchestra Stradivari SCD 8012 (CD only). Geoffrey Eyles, eng.; Michael Fine, prod. DDD. TT: 66:22*

Andrew Schenck, conductor and annotator of this issue, argues a case for the Second Symphony despite the fact that Barber himself wished to consign it to the ashes some 20 years after it had been premiered, to great critical acclaim, by Koussevitzky and the BSO. The work began life in answer to a commission by the US Air Force during WW II for a work descriptive of air combat and carrying a brave, patriotic message. If Barber felt his symphony failed in that respect, it is interesting that it does, nevertheless, appear to have reference outside of itself. That strong lyrical vein that has made his haunting Adagio for Strings so beloved is as much in evidence here, but this is at all times tempered by an ominous tone of disquiet. Shades of Walton and Bernstein, among others, enrich his textures and harmonies, and while Schenck’s orchestra is not always equal to the technical demands asked of it, it succeeds in highlighting the best qualities of this work and giving a cohesive overview. Furthermore, it is the only recording of this work in the *Schwann* catalog, and as a work that deserves to be heard, critical judgments should not impose a barrier to its wider appreciation.

More eclectic still are the earlier works: the Overture to *A School for Scandal* (1933) sprinkles in beautifully scored, if rambling, balletic guise; Dukas’ *Sorcerer’s Apprentice* springs readily to mind. *Essay 1 for Orchestra* (1937) develops a Prokofievian skittishness tempered by Brucknerian motifs. (The orchestra is weakest here, and an unpleasant edit further offends.)

A straightforward performance of the Adagio sums up the quality of performance for most of this disc: not the most wholesome string sound, nor the most beautiful, but adequate.

This is not a recording that would normally be recommended: the strings generally lack body—although there is reasonable depth to the woodwind and brass—and the overall sound is tinny. It would easily tire the ear if it weren’t for the fact these works are so worthy of a hearing.

—Barbara Jahn

**BEETHOVEN: Symphony 3**

Frans Brüggen, Orchestra of the 18th Century Philips 422 052-2 (CD only). Dick van Schuppen, eng.; Gerd Berg, prod. DDD. TT: 49:16

This period-instrument “Eroica” will surely shock those familiar with the score, not only because of the bright, tart sonorities of Frans Brüggen’s orchestra, but because of the many unorthodox traits in the reading itself.

Certainly the major (and possibly only) virtue of this performance is its sound, which is aptly lean and transparent, with exceptionally well-defined textures and detail. Still, the vibratoless strings occasionally seem too nasal and astringent, and the raspy horns in the Trio of the third movement sound downright ugly. But what most works against this presentation is Brüggen’s failure to see the music whole, especially in its outer movements, where the pulse and rhythm are so unsteady; the tempo is so varied that Beethoven’s grand organic structures crumble into a series of disconnected episodes. If a conductor of one of our traditional modern orchestras were to employ the manipulations that Brüggen favors, he would be roundly condemned for lack of discipline and taste. And if he were to lead the Funeral March at the absurdly fast tempo Brüggen adopts, he might be pilloried for gross insensitivity to the music’s prevailing ethos.

What I am suggesting is that the growing fascination with period instruments has directed attention away from the lack of real musicality and historical perspective in many such presentations. Great art, of course, whatever its genre, defies a single “authentic” interpretation. But it demands responsiveness to balance, coherence, and integrity, the kind of response evident in the great recorded “Eroicas” of Toscanini, Szell, Kleiber, Karajan, Bernstein (his DG version), and Wand, among others—the kind of response woefully lack-

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ing in Brüggen's reading. A first-movement repeat is observed, and the sound (qua sound) is excellent, but in this case it hardly matters.

—Mortimer H. Frank

DVORÁK: Legends
Wyneke Jordans, Leo van Doeselaar, piano four hands Ercetera KTC 1032 (CD only). Klaas A. Posthume, prod. DDD; TT: 39:28

Contrary to the more upbeat moods of the Slavonic Dances, also first written for piano duet, the ten Legends of 1881 are more contemplative, even introverted in character. Conceived just after the Sixth Symphony and also later orchestrated by Dvorák, they are less brilliant but immensely enjoyable miniature tone poems, lasting from between 2½ to 6½ minutes each. I presume that the performers are a husband-and-wife team (together, they have also recorded Ravel and Satie; he alone has recorded organ music by both Händel and W.F. Bach, all these for the same label). Their ensemble is excellent, with a lovely lift to the rhythms and a most pleasing lyrical sensibility. The piano sound, remarkably full-bodied but perhaps just a little too prominent in the bass, gives the impression of semi-close miking in a small concert hall that features a particularly warm ambience. I have not heard the only competing disc, an Arion CD by the duo team of Christian Ivaldi and Noël Lee, but I notice that the latter provide a filler, whereas the present disc, containing solely the Legends, is slightly shy of 40 minutes' duration. Still, a most enjoyable 40 minutes!

—Igor Kipnis

MENDELSSOHN: Symphony 4; Overture & Incidental music to A Midsummer Night’s Dream

As I had looked forward to reviewing this disc with a deal of excitement — this orchestra is one of the most revered of the period-instrument bands on the circuit at the moment — disappointment registered with even greater impact than it might normally have done. In short, if this performance had been given by a modern orchestra under Mackerras, it would have had very little to commend it. So what has gone wrong?

It is entirely a matter of insensitivity on Mackerras’s part, producing a hard-driven, brusque approach that may subconsciously (but quite wrongly) have been dictated by the potential timbre of these instruments, with scant consideration for the inherent delicacy and beauty of Mendelssohn’s writing. Speeds are rather fast; the symphony’s Salterello is really too fast but goes nowhere, the MSND’s Scherzo has no lift and serves to highlight corners where the woodwinds (particularly clarinets) struggle uneasily. But this version restores the original balance of Mendelssohn’s score by using these lighter-toned and -powered instruments, thus revealing and newly coloring textures rarely heard. Mackerras, too, has selected some lesser-known movements from the incidental music.

If you want to give it a try, you’ll find little difference between CD and LP sound. But the former is slightly more raw-edged and has a smidgen more definition than the LP, on which the orchestra is at a more agreeable distance, creating a more natural effect. —Barbara Jahn

MONTECLAIR: Cantatas
Les Arts Florissants; William Christie, dir. Harmonia Mundi HMC 901280 (CD only). Michel Bernard, prod. Raymond Buttin, Caroline Recurt, engs. DDD; TT: 75:36

There is perhaps no musical language that is at once so elegant and so seductive as that of the French Baroque, nor are you likely to find a more pleasant set of examples of that style than those on this generously filled recording. Michel Pignolet de Monteclair was not an innovator, as was Lully a generation before, but he was both accomplished and musically inventive, as this selection of cantatas in both French and Italianate fashions amply demonstrates. It is true enough that the music of this period was both florid and mannered, but it had a quality which, for want of a better term, we call charm. Like a play by Congreve, these works are, within their limited range, quite perfect.

There are two very familiar themes here: the death of Dido, Queen of Carthage, was almost an obsession with late Renaissance and Baroque writers, and you will certainly have recognized “Pyramus and Thisbe” as having been parodied to death by Shakespeare a hundred years earlier. It doesn’t matter. There is so much life in this music that the overtold tales delight us once again, like a familiar motif in a fairy tale. For myself, I cannot think of a more enjoyable way to pass an evening.

In the case of this recording, my pleasure in the music was enormously enhanced by the quality of the performance. No one handles this repertoire better than Christie and his ensemble, and in this instance, the singers absolutely surpass themselves. I would like especially to throw my bouquet at Agnes Mellon, whose performance in the Dido cantata is absolutely ravishing, but none of the others fall very far short of the standard she sets. The instrumentalists (two violins, flute, theorbo, bass viol, led by Christie at the harpsichord) support the vocalists perfectly, and play their solo sections
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The sonics of this disc are up to the usual standards of Harmonia Mundi, France, which is to say very fine indeed. Voices have strong presence without excessive closeness, and instrumental character is well-preserved with a good sense of the surrounding space. I noticed in particular the accuracy of reproduction of the lower courses of the theorbo as the performer plucks out the bass line. There is a sort of “plumpness” to the sound of this overgrown lute that is conveyed extremely well; one of those sit-up-and-listen moments that audiophiles love. And as M. de Montecclair says, “C'est toujours la saison d'aimer.” (“It is always the season to love.”) Those who listen carefully to this recording will know what he meant.

—Les Berkley

\textbf{MOZART: Piano Concertos 22 & 23}

Malcolm Bilson, fortepiano; John Eliot Gardiner, English Baroque Soloists

Archiv 422 593-2 (CD only). Karl-August Naegler, eng.; Dr. Andreas Holtschneider, prod. DDD. TT: 59:47

Archiv has had much to celebrate of late: its 40th anniversary, for a start, which happily coincided with the completion of its five-year project to record all the Mozart piano concertos with Malcolm Bilson, on fortepiano, in collaboration with John Eliot Gardiner and his authentic instrument band, The English Baroque Soloists.

This recording of K.482 (22) must surely prove the validity of such a project: it has much virtuosic wind writing, and I doubt that it has ever been heard with such clarity and in such immaculate balance with the soloist as here. This is true dialog, not protagonist adversarial! There is so much joyful playing, too, realized by the deftness and dexterity of these light-toned instruments.

K.488 (23) is equally revelatory. The purposeful tempi of the outer movements are a shock, initially, but with instruments that can handle these speeds without ever sounding hurried, the effect is entirely convincing. And the fragility of the fortepiano's sustaining power makes the expressive poetry of the Adagio all the more poignant. Bilson ornaments with great sensitivity throughout, never overplaying his hand, in fact underplaying it in this movement to telling effect.

All this would be wasted in anything but the excellent recording achieved here. Once again, the use of period instruments not only serves as an historically pertinent record, but also shows us what we have been missing aurally in many a modern performance. For those who find authenticity hard to swallow, I can only argue that it provides the most natural and wholesome nourishment. Give it a try—you might like it.

—Barbara Jahn

\textbf{MOZART: Threec Masses}


Helen Donath, soprano; Annette Markert, alto; Uwe Heilmann, tenor; Andreas Schmidt, bass; Rundfunkchor Leipzig, Rundfunk Sinfonie Orchester Leipzig; Herbert Kegel


These are young works; all were composed before Mozart's 20th birthday. But as we know, there's never any reason to apologize or make excuses for this composer; these three works are no exceptions.

The most interesting of the three is, oddly enough, the earliest, K.65, completed when little Wolfgang was 13. It's only 15 minutes long, but is a brave, fascinating work. The opening "Kyrie eleison"—just those two words, sung once—is severely devotional and brings to mind the religious works of J. S. Bach. Thereafter the work is pure Mozart, with an oddly rhythmic "Et vitam venturi saeculi," composed on a short downward melody, and an exquisite bell-like motif in the opening of the "Sanctus." The work is too brief to have any effect other than one of curiosity, but it's a perfect miniature.

The \textit{Missa Trinitatis} is the best-known work recorded here. It's a rich, at times severe work, scored without any solo singing, but with a full regimen of strings, kettledrums, and trumpets, the last splendidly used in the "et resurrexit." The middle mass, K.140, is a work which doesn't really satisfy, but it does have a lovely "Credo" and "Benedictus," in which the soloists are well used.

The chorus sings in slightly accented Latin—"Misereereee" and "Quoniam," for instance—albeit beautifully and with spirit. Helen Donath is a lovely soprano soloist; the others are not up to her level. Herbert Kegel leads a "modern" (rather than "period") performance and, while I wished throughout for a somewhat lighter hand, I really have few complaints. In all, recommended—a handsome disc, sonically up to Philips' best standards.

—Robert Levine

\textbf{RACHMANINOV: Piano Concerto 1; Rhapsody on a Theme of Paganini}

Mikhail Pletnev, piano; Libor Pesek, Philharmonia Orchestra

Virgin Classics VC 90724-1 (LP), -2 (CD). Mike Clements, eng.; Andrew Keener, prod. DDD. TT: 50:37

Pletnev, born in the Soviet Union in 1957 and a student of, among other teachers, Jakov Flier, won the First Prize and a gold medal at the 1978 Tchaikovsky Competition in Moscow. In the notes to this release, the annotator, Robert Lay-
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ton, compares the pianist to Horowitz and Rachmaninoff, which is perhaps an unfair comparison. Pletnev does indeed have fabulous fingers, although, at least to judge from a somewhat distant piano pickup, he doesn’t fully exhibit the range of colors of his illustrious Russian predecessors. But, make no mistake, this is very powerful playing, even if the tone is not especially warm. I was definitely impressed by Pletnev’s rendition of the concerto (if you want to be bowled over, try the first-movement cadenza, then the soulfully played Andante middle movement for an entirely different aspect). The Rhapsody, so often recorded and available in so many excellent versions, is, if anything, even more stunning. Here, again, excitement mingles with poetic sensibility, a really sensational performance that I will play with pleasure for any music-minded visitor to my home as an example of a really top-rate performance. The orchestra and director, too, must be praised, for they are at one with this most impressive pianist. Any complaints? Perhaps slightly closer microphoning might have added a little more vividness in the detail, for the sound picture is as though heard from the back of the hall. Tracks, incidentally, are provided for all the variations, in addition, obviously, to the individual movements of the concerto.

Igor Kipnis

**VERDI: Hymn of the Nations; La Forza del Destino Overture**

Jan Peerce, tenor; Westminster College Choir (Hymn), NBC Symphony, Arturo Toscanini

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Readers may be familiar with the documentary film Toscanini the Maestro, issued by Video Arts International. Parts of this video are culled from a concert film which Toscanini made in 1943 for the Office of War Information to commemorate the fall of Mussolini, and to bolster the morale of troops as well as civilians for the grueling duration of WW II. Toscanini the Maestro features portions of the Forza Overture, though the music is overlaid by narration, and not heard in its entirety. As an appendix, The M contains what is implied to be the complete performance of Hymn of the Nations. For those familiar with previously available pirate versions, audio or video, it is a revelation in terms of picture and sound quality, but it is not quite complete.

In view of the circumstances surrounding the revival of Verdi’s period curio, Toscanini updated it by adding arrangements of his own of the Soviet anthem “The Internationale,” and “The Star-Spangled Banner,” and did so with great skill in terms of the Verdi idiom. When the War was over, somebody out there—or in there—became so embarrassed at the Soviet anthem that it was excised from the film with a very smooth edit. You’d hardly know it was ever there. For all the merits of the VAI film, which contains fascinating interviews, anecdotes, and even Toscanini family home movies, the real spirit of the time of Hymn of the Nations is missing from an otherwise admirable restoration.

Perhaps it’s glasnost, or a kinder, gentler nation, which has given rise to this bit of perestroika by the Library of Congress. Whatever, the LOC has restored the entire original film, and has made it available by mail order. Only one thing has been added: a brief videotaped introduction by Burgess Meredith, who announced the two selections and narrated the original film’s own documentary intermission feature. It should be emphasized that there is no spoken commentary of any kind during the performances of either work.

The restoration is as good as any I have seen for a film of this period. The black-and-white photography is rich in shading, finely detailed, and beautifully transferred to video. Each work was filmed and recorded in notorious Studio 8H, but the sound bears only a faint resemblance to the overbright, blarey sound of so many of the RCA recordings of Toscanini/NBC. Although the sound is mono, and lacks the big-hall resonance which audiophiles value so highly, it does present a believable impression of a large orchestra and chorus at full cry, and does so at no strain of ears or credibility. It is balanced well enough to lend hope that future Toscanini RCA CD reissues will be restored with commendable honesty and skill.

To see as well as hear these performances is to experience, somewhat vicariously, what we miss in today’s concert life. Notice the riveting and unvaried attention to Toscanini from each and every member of the orchestra. Notice the uniform sitting posture of every string player, not to mention the uniformity of bowing, not merely of up-bow and down-bow, but of length, wrist, forearm, upper arm, and shoulder positions. Most importantly—of attitude. Where do we see that today?

Who would perform the Forza overture today with such emotional investment, let alone the Hymn, essentially a corny piece, laid thick with patriotic sentiment? Reflect upon the times: the conductor in exile, with an orchestra created expressly for him. The orchestra comprised of other exiled musicians as well as the children of immigrants. Jan Peerce, in magnificent, powerful voice, celebrated in his
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profession, who, had his parents remained in Eastern Europe, may have ended up as nothing more than a grim statistic.

Notice Toscanini. —Richard Schneider

VIVALDI: Gloria, R. 589
J.S. BACH: Magnificat, S. 243
Dawn Upshaw, Penelope Jensen, sopranos; Marietta Simpson, mezzo; David Gordon, tenor; William Stone, baritone; Atlanta Symphony Orchestra & Chamber Chorus; Robert Shaw
Telarc CD-80194 (CD only). James Mallinson, prod.; Jack Renner, eng. DDD. TT: 56:16

One doesn’t expect to encounter anything but “authentic” readings of these works anymore, and when we do we’re somewhat suspicious. Our ears, at least for new releases, have been retrained. That said, these biggish performances are not at all anachronistic—they’re stylistically light and airy, tempi keep well within the new old purists’ guidelines, and vocal lines are embellished tastefully. In fact, these 56 minutes, with one gripe or two, are a real delight.

Robert Shaw continues to bask in sound, and Telarc and his chorus and chamber orchestra do him proud. There is no real interpretation here: it’s not a very pious reading, nor is it operatic or controversial. It’s just lovely.

Best of the soloists is the wonderful Dawn Upshaw. This young soprano sings with great purity and expressivity; her totally unaffected manner is a treat. Penelope Jensen, with less to do, is also excellent. Marietta Simpson is an intelligent singer without a very impressive sound; nonetheless, she makes a positive mark. The men are not up to the level of their female colleagues, both treating the music as if it were Verdi or Puccini, and aspiring their runs.

As mentioned above, the chorus and chamber orchestra are in peak form, and the recorded sound is superb. My favorite coupling of these works on CD remains Michel Corboz’s (Erato ECD-55002), but this set is definitely in the running.

—Robert Levine

WAGNER: Das Liebesverbot
Heinz Indahl, Friedrich; Kurt Equiluz, Luzio; Anton Dermota, Claudio; Hilde Zadek, Isabella; Christiane Sorell, Marianne; Ludwig Welter, Brighella; Chorus & Orchestra of Radio Austria; Robert Heger
Also: Heinz Indahl singing arias from Lobengrin, Der Fliegende Holländer, Die Meistersinger von Nürnberg, Siegfried, and Parsifal
Melodram 27052 (2 mono CDs only). Recorded in 1962. AAD. TT: 2:26:18

Wagner’s longest work is not the 4-hour Parsifal, the 4½-hour Meistersinger, or even the 15-hour Ring. No, it’s the 3-hour Das Liebesverbot, mercifully cut here to a little over 2 hours. What can one say about an opera that Wagner himself, in uncharacteristically accurate self-appraisal, called “atrocious, abominable, nauseating”? Ah, it is all those things and more.

Wagner’s desperate attempt to compose an Italian comic opera went awry at his first step of choosing Shakespeare’s dark, brooding, barely comic Measure for Measure as source material. But he never looked back, promptly forgetting everything he’d learned a few years before during the composition of the quite charming Die Feen, and borrowing wholecloth musical and stylistic languages wholly foreign to him. True, there is some embryonic use of chromaticism, particularly in Friedrich’s forbidding theme; the music of “Salve Regina,” the first of many Wagner reworkings of the Dresden Amen, eventually wound up in Tannhäuser; and Isabella’s over-ornamented dramatic aria “Kennst du das Lied” hints at the Wagner to come. But even 1, a dyed-in-the-wool though hardly perfect Wagnerite, would greet with unalloyed dread the prospect of again sitting through Das Liebesverbot’s overbusy orchestra and endless choruses yammering away like a Gilbert & Sullivan Operetta from Hell.

In brief, the King of Sicily (the opera takes place in Palermo) has left town, leaving his bluestocking deputy Friedrich in charge. Friedrich, a born-again of severest stripe, immediately outlaws drinking, dancing, whoring, and anything else that’s fun. He arrests a handsome, wellborn young rake, Claudio, and is about to execute him as an earnest of his intent, when the rake’s sister, Isabella, a novice in a nunnery, pleads for his life. Friedrich, of course, immediately falls in love with her, promising not to behead her brother if he can bed her. Shock, dismay, a light bulb over Isabella’s head: just so happens her best friend Marianne is Friedrich’s ditched wife. Despite Friedrich’s new moral martial law, a carnival springs up (don’t ask me why)—revelry, confusion, subterfuge, masks—Friedrich takes the disguised Marianne to some dark place for a rogering, thinking her Isabella. Everyone gets married. Makes the Ring seem a study in naturalism.

Needless to say, the opera has been seldom recorded. I saw a student recording in a Bayreuth shop in ’74, this one was bootlegged some years ago, and Edward Downes conducted an all-British cast in, God help us, a complete, cassette-only version for Pantheon, still in print. The Pantheon is recommended for completists, Wagner scholars, and masochists only. The present recording is far superior, cuts and all, with some remarkable

2 Of course, you’ve all heard the story, which I’ve just now fabricated, of the Texaco Opera Quiz broadcast that offered, as first prize, an abridged recording of Das Liebesverbot. Second prize was the complete recording.
More than just a pretty faceplate

High fidelity has a new home in Santa Barbara. For the first time there is a salon dedicated to state-of-the-art music reproduction located within reach of Ventura, Santa Maria, and San Luis Obispo. Ironically, that salon is the new, 35-year old AudioVision.

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voices: Heinz Imdahl as Friedrich seems to have endless reserves of vocal power, somewhere between Hans Hotter and George London in their primes. He throws himself into the thankless role with more heart than most could have mustered, with appropriately dark pomposity. Bass Ludwig Welter, as Brighella, is almost as good, his voice stanching as a primordial teutonic oak, and cooly playful in the one brief Donizetti-ish ditty you’d want to hear again, the duet “Dieses kleine Schelmenameuge.” Hilde Zadek’s Isabella, though getting off to a matronly start, quickly loosens up with a large, liquid range and quite a bit of heart. Anton Dermota is heroic as the unheroic Claudio (Claudio thinks Isabella’s hymn for his own life isn’t such a bad trade), though the voice was showing signs of strain even then. Really, the vocal gilding of this operatic nettle is far more than the work deserves, a work which, bad as it sounds today, probably sounded even worse in the late 1830s, when the works of which it is so shamelessly derivative were still in the repertoire.

This bootleg was taken off the air, as far as I can tell, a tape of a concert performance (there is no stage noise). Robert Hegerwhips up a good bit of excitement, though the nattering staccato prestissimo overture is understandably loose. Sound is decent bootleg live mono, with fairly even frequency response, considering. But even the Pantheon cassette sounds better.

Melodram rounds out the second CD with Imdahl holding forth on fivearias from ‘60s stage productions of maturer Wagner works, conducted by Kellberth, Gierstor, Kempe, and Sebastian; the results are mixed. Powerful but wobbly as Telramund, uncertain as the Holländer, too dark, almost too big for Cechs, but impressive as the Wanderer and Amfortas. Imdahl, from these bits and pieces, seems almost right for each role, but difficult to cast.

If you must have the complete Liebesverbot, the Pantheon is the only choice. If you want a performance, slashed though it might be, that sounds as if the work was taken seriously by very talented musicians, get this one. Consider yourself warned.

—Richard Lehnaert

Classical Collections

J.S. BACH: Partita No. 2, BWV 1004
KREISLER: Recitativo & Scherzo, Op. 6
YSAÝE: Sonatas, Op. 27 No. 2
Arturo Delmoni, violin

This recording ought to come with a pedigree.

In fact, the first spread of the CD booklet practically is a pedigree. This is blueblood audiophile all the way. People listed as being involved, one way or another, include Tim de Paravicini, Jason Bloom (Apogee Acoustics sponsored the recording), Bill Lewis, Dr. Sao Win, and, oh yes, St. Anthony.

It’s almost enough to make you forget the artist, Arturo Delmoni, who has his own pedigree of teachers: Dorothy DeLay, Nathan Milstein, Jascha Heifetz, and Josep Gingold. But forget the artist is one thing you will definitely not do once you lay your ears on this extraordinary release.


But what about the music that this purebred hardware was assembled to serve?

Arturo Delmoni’s previous recording, Songs My Mother Taught Me (North Star/MFSL; see my review in Vol. 11 No. 8), consisted of comparatively lightweight encore pieces and displayed tastefully brilliant musicianship. Here, listen to Delmoni’s Bach after hearing Perlman’s technical alchemy or Milstein’s soulful depth-sounding, and you may come away underwhelmed. Listen again. Delmoni is sneaky. His playing is subdued, almost reticent, but you start to notice small inflections, phrases you almost don’t recognize because you’ve never heard them played quite this way before. What sounds at first like a straight, literal reading becomes ingeniously imaginative once you are attuned to Delmoni’s nearly self-effacing understatement. This is a superb unselfconscious interpretation, with penetrating insight. Delmoni’s Bach is extremely fluid, with perhaps a touch of Romantic legato, but it’s impossible to escape its seductive warmth, patience, and intelligence. And it’s enormously refreshing to hear the famous Chaconne nurtured by technical restraint and filled with constant subtle surprises.

Delmoni should also be praised for including the Ysaÿe sonata. This fascinating piece starts with a rather innocuous little melody that leads to four movements of ruminations on “Dies irae.” Here again, there is an almost stoic absence of showmanship. The intricate passagework, full of multi-stops and polyphonic textures, is a test of technical skill, and Delmoni navigates it with convincing grace. It is a superb
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performance. The more familiar Recitativo and Scherzo by Kreisler is equally well handled, with an especially noteworthy sense of mystery in the harmonic passage.

But one of the best things about Delmoni’s outstanding performance is that it seems to get better as the system you’re listening on improves.

On my own system (see Vol. 11 No. 6), I wasn’t especially enthusiastic about the sound, undoubtedly due to my manically high expectations. It was somewhat dry, with the direct sound of the violin curiously detached from the hall ambience. There was some veiling and bloat, plus a pinched quality and lack of natural violin brilliance. All these characteristics were less obvious on the LP version. It was an exceptionally good sound, don’t get me wrong, but I was expecting even more.

So I called Bill Gibson at House of Stereo here in Jacksonville and asked if I could get a second opinion on one of his shop systems. After all, this wasn’t a typical recording, and it was monitored on a system radically different from my own. Passing up the Quads, Levinsons, etc., we listened on a fairly modest setup consisting of all-Adcom electronics (CD player, 555 preamp, 555 power amp) and Magnepan’s new $980 1.4s connected by Monster Powerline 2.

Well, there it was—a violin, a damn-near real violin. The brilliant, feathery sheen was there. The instrument and its environment were one, in an astonishingly tangible, three-dimensional perspective. Not a hint of the dryness I had heard at home. And the image height soared. It’s almost scary to think what this might sound like on a true killer system.

Delmoni’s performance alone makes this disc an easy recommendation. The performances of engineer Kavichandran Alexander, Tim de Paravicini, and the host of contributors make it a must. The next time you drain your wallet on new gear, this recording will put your conscience to rest. It’s worth it.

—Robert Hesson

MADRIGALS AND WEDDING SONGS FOR DIANA
Emma Kirkby, soprano; David Thomas, bass; The Consort of Musicke Madrigal and Instrumental Ensemble, Anthony Rooley, cond.
Hyperion CD A66019 (CD only). Martin Compton, prod.; Tony Faulkner, eng. DDD. TT: 56:48

This is a precious—I use the word advisedly—release, no doubt for specialists. It contains some 20 songs from the Elizabethan era (and a bit thereafter), and each has as its theme the Goddess Diana—which is one way Elizabeth I was identified by her court. I only wish I liked it as much as I admired it.

I know from listening to hour upon hour of Elizabethan music that this recording presents the music as it should be performed: authenticity, sincerity, and scholarship are all in place. Some well-known composers are featured—Thomas Campion, Thomas Weelkes, John Dowland—as well as some lesser-known: John Coprario, Thomas Lupo, Michael East. The program is ambitious, and Anthony Rooley leads his 10 instrumentalists and 12 madrigalists in tonally alluring readings. But there’s a strange bloodlessness to it all which practically makes it sound like a flawless imitation of what it actually is.

The opening “All creatures now are merry-minded,” by John Bennet, sung by the whole group, comes across as precisely what one thinks of when one thinks of Elizabethan madrigals—light, airy, delicate, and a bit wispy—and this wispiness remains an issue throughout. David Thomas, in his solos, reminded me that I’ve always wished that his voice were a bit weightier—he occasionally sounds as if he’s about to disappear into the ether. Others don’t agree, and the tone as such is handsome. (But he does bore me to death in Dowland’s epic, 9½-minute “Welcome, black night.” Where there should be mystery we get odd, yawning vowels.) Emma Kirkby continues her reign as queen of the early-music crowd (isn’t it time she broke out of the mold and tried the Siegfried Brünhilde, like Nellie Melba?), singing with achingly pure line and great intelligence. I’ve heard her gutsier, however, and prefer that approach to the tiptoeing she does here. It may just be that close to an hour of this music was never supposed to be heard all at once. Then again, the listener has the choice of shortening the program to suit his own tastes.

Hyperion’s sound is properly cool, clean, and well-defined for this anything-but-hot-blooded collection, and the full texts and notes on source material are welcome. A good 57 minutes, if it doesn’t lull you into submission; and it would be hard to deny its beauty or fault its presentation.

—Robert Levine

**Show Music**

**FINIAN’S RAINBOW:** 1960 Broadway Revival Cast
Max Meth, cond. Burton Lane, music; E.Y. Harburg, lyrics RCA 1057-2-RG, Ernest Oelrich, eng.; Bob Bollard, prod. TT: 43:35

**DAMN YANKEES:** Original Broadway Cast

**SHENANDOAH:** Original Broadway Cast
Gary Geld, music; Peter Udell, lyrics RCA 3763-2-RG, Frank Laico, eng.; Gary Geld, Peter Udell, Philip Rose, prods. TT: 51:16

All above: CD only. Paul Goodman, remastering eng.; Didier C. Deutsch, remastering prod. AAD.

Stereophile, October 1989 207
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Under its new BMG Classics management, RCA is showing what to me is a most welcome commitment to musical theater recordings. The commitment is evident both in the recording of new shows—even relatively unsuccessful ones, 

eg, Chess—and the CD re-release of six show recordings from the late ’40s to the ’70s. (The list includes, in addition to the ones reviewed here, Peter Pan, Brigadoon, and Starting Here, Starting Now.) In the case of the fairly recent recordings, the CD transfers were done more-or-less straight, ie, without manipulation in the digital domain; in the case of the older recordings, digital remastering included an attempt at noise reduction, but, as the jacket notes state, “radical methods” of noise reduction (read “NoNoise”) have not been used, so that the full-frequency content of the original recording would be preserved. At times, the extreme top sounds slightly filtered (my preference would have been to let ’er rip, noise and all), but the effect is rather subtle, and, arguably, the reduction in audible noise represents a reasonable tradeoff. Producer Didier C. Deutsch (no relation) has written some informative liner notes; he and remastering engineer Paul Goodman are to be congratulated for the care they’ve taken with these recordings.

Of the trio reviewed here, Finian’s Rainbow is the one certifiable classic: rave reviews and a long run in its original 1947 incarnation, subjected to a big-budget (if rather inept) movie treatment, often revived in summer and community theater, although, interestingly, a planned 1989 NYC Opera revival was abandoned, apparently because it was felt that the show’s handling of race relations, originally intended as an attack on bigotry, would not mesh with contemporary sensibilities. The RCA recording is of the 1960 Broadway revival, and stars Jeanne Carson (no, not Johnny’s ex), Biff McGuire, Bobby Bowes, and Howard Morris. I find Jeanne Carson’s straitlaced singing preferable to Ella Logan’s more mannered efforts on the original cast album, and Biff McGuire’s Woody is very well sung, with a most attractive “smile” in the voice. The show is chock-full of wonderful songs (“How Are Things in Glocca Morra?” “Look to the Rainbow,” “That Great Come-and-Get-It Day,” “Old Devil Moon,” “When I’m Not Near the Girl I Love”), and features some of “Yip” Harburg’s most clever lyrics. (No hack with a rhyming dictionary is likely to come up with lines like “My heart’s in a pickle/It’s constantly fickle/And not too partic’l I fear.”) The CD includes the Finale, which was omitted from the original LP. In the usual staging, this involves Sharon and the entire cast turning to the audience as they sing “May we meet in Glocca Morra, one fine day.” Great stuff!

If Finian’s Rainbow is a classic, then Damn Yankees is perhaps a “near-classic” known variously as “the baseball musical,” or “the Faust musical,” it is of course both. Like Rainbow, it was turned into a movie (which was actually pretty good), but has not been revived on Broadway. (There was a highly successful revival last year at Toronto’s Royal Alexandra Theater.) It’s really a piece of ’50s Americana, dated in a very charming way. The show has a lively, attractive score, with some fairly well-known songs (“Hein,” “Whatever Lola Wants,” “Two Lost Souls”). It’s all performed with great panache by Gwen Verdon, Stephen Douglas, Ray Walston (pre-Uncle Martin), and, in a very small role, Jean Stapleton (pre-Edith Bunker). The CD transfer retains most of the forthright brightness of the original, with some gain in clarity.

*Shenandoah*, based on the 1965 Jimmy Stewart movie about a family’s attempts to cope with the impact of the Civil War, is not nearly a classic, but it had a very healthy run on Broadway, and won two of six Tony nominations. Touted as a “traditional musical,” with “echoes of Rodgers & Hammerstein,” the show tries to walk the narrow line between the sentimental and the maudlin. With the help of its strong cast, led by John Collum, it almost succeeds, but, as my colleague Max Precio notes in his *Show Music* review, some of the songs are a bit too “preachy.” I should also add that numbers like “The Pickers Are Comin’” and “It’s a Boy” have lyrics that are more than faintly sexist. If all these reservations haven’t turned you off buying this recording, you would be rewarded with a score that’s consistently tuneful, at times quite beautiful (eg, “Violets and Silverbells”), and lovers of close-harmony singing will be delighted with numbers like “Why Am I Me?” and “Freedom.” You may even find the show rather touching in its preachy, sexist way. The sound is the best of this group.

—Robert Deutsch

**SOUTH PACIFIC: 1988 London Cast**

Alan Bence, cond. Richard Rodgers, music; Oscar Hammerstein II, lyrics

**BRIGADOON: 1988 London Cast**

Stuart Calvert, cond. Frederick Loewe, music; Alan Jay Lerner, lyrics
First Night Cast 16 (LP), CD16 (CD). John Timperley, eng.; Chris Walker, prod. AAA/ADD. TT: 48:56

The British love affair with the American musical continues. These recordings from First

3 If you’re a musical theater fan, you should consider *Show Music* indispensable reading. It’s published quarterly, 515 for four issues, available from $800 Pebble Beach Blvd., Las Vegas, NV 89108.
After silence, that which comes nearest to expressing the inexpressive is music.

—Aldous Huxley
Night, a small company making a big name for itself in musical theater circles, feature casts of the full-scale revivals of these classic shows currently playing in London. Of the two, South Pacific has always been the one that’s more of a “star vehicle,” and it gets more of a star treatment here, too. The part of Nellie Forbush, originated by Mary Martin, is played by Gemma Craven, whom I first encountered in the British TV version of She Loves Me, telecast on PBS in 1979. (Incidentally, this is the best television version of a musical I’ve ever seen. PBS, how about a rerun?) Initially a “legit” soprano, she has developed the “belt” part of her voice, and has been very successful in shows like They’re Playing Our Song. She is a good singer and a charming performer; her Nellie Forbush has both perkinsness and vulnerability. (Some who have played the role, eg, Bonnie Franklin, have plenty of the former but not much of the latter.) Her first number, “Cock-Eyed Optimist,” sounds a bit shaky (they should have done another take), but she gets it all together for an exuberant “I’m Gonna Wash . . .” and “Wonderful Guy.” She manages a reasonable American accent, certainly better than Kiri Te Kanawa in the recent CBS recording, even if her “dance” does veer toward “d-ah-nce.”

Casting Emile Belcourt as Emile de Becque must have been impossible to resist: he has the same ethnic background and first name as the character, he looks the part, and he is, like Ezio Pinza (the role’s originator), a former opera singer. Unfortunately, years of singing Wagner have ravaged his voice, and he has difficulty maintaining the lyrical sweep of “Some Enchanted Evening.” Also, the part is written for a bass, and Belcourt, like Carreras in the CBS recording, is a tenor. (What do producers have against basses, anyway?) Other parts are very well taken. Andrew C. Wadsworth (Lieutenant Cable) contributes a stylish “Younger Than Springtime,” and Bertice Reading is an outstanding Bloody Mary. (Listening to Sarah Vaughan’s “Bali Hai” on CBS after having listened to Reading’s version reveals the former to be even more of a travesty.) Musically, things are a bit rough-and-ready rather than subtle, but the recording has the feel of a theatrical performance. Sound quality on the LP is pretty good (with just a bit of the ol’ digital harshness), but my review copy has quite a lot of surface noise. The CD, of course, doesn’t suffer from this problem, and otherwise sounds very similar.

I’m not familiar with any of the performers in Brigadoon (and the liner notes provide no information on them), but they are a competent, if not particularly outstanding, lot. The Fiona of Jacinta Mulcahy is the most consistently enjoyable of the cast; except for the occasional wayward high note, she sings with the sort of sweetness and purity that Shirley Jones patented some time ago; judging by some recent TV appearances, the patent has not lapsed. Robert Meadmore (Tommy) has a basically pleasant voice that loses focus when he puts pressure on it. To get around this problem, they have him sing songs like “There But For You Go I” in a close-up “nightclub” style that is not really idiomatic. The rest of the cast performs with the proper theatrical flair, and musical director Stuart Calvert keeps things going at a sprightly pace. One advantage of having a British cast is that the Scottish accents are plausible, even authentic. (All right, the two American characters occasionally sound as if they’re from New-York-on-the-Thames, but you can’t have everything.) The recording contains more of the score than the other available versions, including the wedding music featuring a bagpipe that set our Cairn Terrier howling (some sort of genetic memory, I guess), but is not as complete as it could have been (“Jeanne Is Packing Up” is missing). The analog mastering has provided sound that is open and dynamic, in both CD and LP formats.

One indicator of the success of any new recording of a beloved show is whether it produces a predominant response of “it’s not as good as the original,” or whether it makes you fall in love with the show all over again. My response in both of these cases is definitely the latter. True, the original Broadway cast recording of South Pacific (now available on CD, CBS CK-32604, remastered in clear mono rather than that awful pseudo-stereo of the previous LP version), is still the one to have if you must restrict yourself to a single recording of the show (pity!), but the First Night recording has virtues of its own. RCA has recently remastered the original Brigadoon for CD (1001-2-RG), with reasonable success considering the sound quality of the 1947 source, and there’s a wonderful studio recording featuring Shirley Jones, Jack Cassidy, Susan Johnson, and Frank Porretta (CSP COS-2540E) that I hope CBS will consider for CD remastering. The First Night recording has the best sound, and, whatever one’s reservations about casting, allows this show to work its magic once again.

—Robert Deutsch

Jazz

EITHER/ORCHESTRA: Radium

Tom Halter, John Carlson, trumpets, flugelhorns; Russell Jewell, Curtis Hasselbring, trombones; Robb Rawlings, alto sax; Russ Gershon, tenor, soprano saxes; Charlie Kohlhass, baritone sax; Kenny Freundlich, piano, DX7;
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I've had the pleasure of seeing this Cambridge, Mass.-based group perform, and neither the LP nor the CD (even with its better range and overall heightened clarity, and its two bonus cuts, Charles Mingus's "Moanin" and bandleader Russ Gershon's "Insomnia") does this modern big band justice.

Like the legendary Sun Ra, Gershon and company have a sense of the big picture: they sound contemporary; they sound historical; they are original but can interpret. Finally, they possess that most important of ingredients — they swing.

While Radium gives us a sense of this band's depth and ability to intelligently arrange their own tunes ("Born in a Suitcase," "Hard to Know," "Insomnia") and others ("Moanin," Ann Ronnell's standard, "Willow Weep For Me," and Roscoe Mitchell's "Odwallah"), the recorded versions don't hold a candle to hearing them live.

That's not to say the session's not worth preserving. These guys possess a sense of the absurd and a sense that all music's somehow related. They're also witty, have a sense of humor, and don't take themselves too seriously (just say their names several times). Never is their humor more evident than during Hasselbring's trombone and Robb Rawlings' alto solos that serve, respectively, as the bridge between Monk's "Nutty" and the head to Bobby Gentry's "Ode to Billie Joe." These endearing qualities lead to one hellacious ensemble.

In the tradition of Mingus, this is a no-holds-barred affair, a set on the brink of chaos rescued and pointed in the right direction at just the right moment. The 11 members may not be the best, most seasoned players around, but, ultimately, they are all good players. In fact, they're very good players.

Gershon's sultry sax heats up his "Hard to Know" while John Dirac's tasteful guitar in back of muted horns gives this selection and presentation a Jaki-Byard-and-the-Apollo-Stompers feel, with humor and wit.

The Either/Orchestra has a ways to go, but they're legitimate, and they've carved out a niche somewhere between Ra and Mingus and, say, Charlie Persip's Superband.—Jon W. Poses

CHRISTOPHER HOLYDAY: Christopher Hollyday
Hollyday, alto sax; Wallace Roney, trumpet; Cedar Walton, piano; David Williams, acoustic bass; Billy Higgins, drums

Well, well, well, isn't this a breath of fresh, but classic "Blue Note" air. Christopher Hollyday, a self-acknowledged Jackie McLean fiend and student, not to mention admirer, has put together an album (his fourth; first for a major) that sings, that is filled with entertaining, engaging, challenging passages that swing.

He can, indeed, translate McLean's very special alto voice—a kind of angular, hard-edged, bittersweet tone. This, of course, works. Frankly, I don't know of many other McLean disciples; I certainly can't remember anyone else recording so many McLean compositions in one set. The CD contains four: two, "Little Melonae" and "Blues Inn," appear as the "extra" CD tracks; the two appearing in both formats, "Appointment in Ghana" and "Omega," open the LP's side one.

I give Hollyday credit: while obvious homage is paid to one of jazz's under-noticed players, as well as attempts to incorporate others' work into his repertoire, he's still attempting to develop and hone his own sound. There's Bird's "Blomdido," Diz's "Bebop," as well as the Gershwin bros. "Embraceable You." However, just as importantly—and it surely doesn't hurt—the young whiz kid from Boston, who's had a good deal of fanfare from the time he was a teen right up to the present, assembled not only a topnotch quintet but also the quintessential unit for such a date. You couldn't ask for better company; after all, pianist Cedar Walton, bassist David Williams, and drummer Billy Higgins helped create the mid-'60s stuff. The fivesome is rounded out by one of the quality present-day voices, hard-bop trumpeter Wallace Roney, on loan from Tony Williams. It's a crisp unit; soundwise, there is little difference between LP and CD.

Put it all together: musicians, choice of material, tempo, and pace, and it's one real nice set.

McLean's "Omega" is delivered in highly soulful and intriguing rhythmic fashion, reminiscent of Freddie Hubbard's classic, "Hub-tones." Of particular note here is the staunch work of bassist Williams. Another high point occurs during the Mack Gordon/Harry Warren ballad "This is Always." Hollyday not only reminds us of McLean here, but also of the way McLean and Dexter Gordon used to interact on their series of now-out-of-print sessions (recorded live in Denmark at Monmartre, July 1973, for Steeplechase/Inner City). Tone-wise, Hollyday emulates McLean; phrasing-wise, it smacks of Dex's distinct airy pauses. As good as the first of the set's two ballads is, "Embraceable You," anchored by Walton's sensitive solo
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and Higgins’s brush work, thrills.

In fact, I don’t know when I’ve heard Walton sound peachier and more energetic; sometimes, he has a tendency to dog it. As for Higgins, nobody can touch his straight-ahead cymbal work.

No doubt McLean knows of Hollyday; no doubt he has to feel very good about Hollyday.

—Jon W. Poses

**WYNTON MARASIL S Sextet: The Majesty of the Blues**

Marsalis, trumpet; Wes Anderson, alto sax; Todd Williams, tenor & soprano sax; Marcus Roberts, piano; Reginald Veal, bass; Herlin Riley, drums. With Michael White, clarinet; Danny Barker, banjo; Teddy Riley, trumpet; Freddie Lonzo, trombone; Rev. Jeremiah Wright, Jr., sermon

*Columbia OC 45091 (LP), CK 45091 (CD). Tim Geelan, eng.; Steve Epstein, prod. DDA/DDD. TT: 60:01*

**BRANFORD MARASIL S: Trio Jeepy**

Branford Marsalis, tenor sax; Milton Hinton, Delbert Felix, bass; Jeff Watts, drums

*Columbia CX 2 44199 (2 LPs), CK 44199 (CD)*

Ben Rizzi, eng.; Delfeayo Marsalis, prod. DDA/DDD. TT: 82:56, 73:44

**MARCUS ROBERTS: The Truth Is Spoken Here**

Marcus Roberts, piano; Wynton Marsalis, trumpet; Charlie Rouse, Todd Williams, tenor sax; Reginald Veal, bass; Elvin Jones, drums

*Nobus/RCA 3051-1-N (LP), 3051-2-N (CD). Patrick Smith, eng.; Delfeayo Marsalis, prod. DDA/DDD. TT: 53:23*

Marsalis Bros. & Assoc. are moving in different directions together. The differences are that in *The Majesty of the Blues*, Wynton ostentatiously (of course) returns to his New Orleans roots, expanding his band to include banjo, clarinet, trombone, and a second trumpet, while in *Trio Jeepy* Branford strips his band down to sax, bass, and drums for a loose, relaxed blowing session the like of which we seldom hear from this new jazz generation. And Marcus Roberts’s *The Truth Is Spoken Here*, with two thirds of Wynton’s current sextet, could have been recorded 20, even 30 years ago. What all three share are their enlistments of older jazz masters: 80-year-old New Orleans banjo-player Danny Barker and 64-year-old trumpet-choral Teddy Riley for Wynton, 78-year-old bassist Milt Hinton for Branford, and Elvin Jones and the late Charlie Rouse (this was his last session) for Roberts.

The older men play very differently in their respective guest roles. The least memorable is Barker, whose plinkety Dixieland banjo style is of more historical than musical interest; he sounds lost, while Riley blares hot without apology. “Judge” Hinton and Rouse perform steadying roles in Branford’s and Roberts’s groups, playing simple, unsurprising lines and straight melody with full, seemingly inevitable conviction. But Elvin Jones is a downright cattleprod, swinging hard, ruthless, and randy at all times.

Let’s face it: critics love Wynton Marsalis, whether or not they enjoy, respect, or understand his music. Spewing out so much jazz dogma, making so many public pronouncements, Marsalis gives the poor writer something to chew on, and few reviewers feel pity as they shoot him down. This time around, after almost single-handedly resuscitating acoustic jazz, as a perceived musical form, from the sloughs of fusion, Marsalis for some reason thinks that jazz is just about dead, or at least believes that most people think so.

So Wynton’s hour-long opus contains 53 minutes of slow, funereal music built upon this central conceit. It’s short on pyrotechnics and complexity, as great a contrast to last year’s *Live at Blues Alley*—or anything else he’s done—as you could find (he goes on record in the copious liner notes as saying he’ll probably never play as he did on *Blues Alley* again—too bad).

I don’t think anyone would pass a blind listening test with this one. The title cut is a slow, roiling, gimpy-legged blues with a snarling, evilly laughing trumpet, a loose, rattling rhythm section, deferential saxes, and an impotent piano.

“Hickory Dickory Dock” is an inside-out waltz with plenty of humor from WM and Williams; it’s followed by a three-tune, 35-minute suite, “The New Orleans Function,” which all too directly tackles the jazz-is-dead myth. “The Death of Jazz” is even more funereal than the title tune, but for the first time on record we get to hear Wynton wail, the trumpet itself merely a mouthpiece for a piece of the man’s soul. Everyone laments here, bells to the sky, as much rage as tears in the playing, especially from Freddie Lonzo.

Then, God help us, there follows a 16-minute sermon (“Premature Autopsies”) on the “death of jazz” (whatever that is) by Chief Marsalis Propagandist, Apologist, and Liner Notist Stanley Crouch, who has lost all credibility with his endless Wynton-pimping. It’s read by the stentorian Rev. Jeremiah Wright, Jr.; I guarantee, if you sit through it once, you never will again. This sermon sans congregation is full of the Latinate polysyllabics against which traditional Black American speech and music have always set themselves. Besides, no one who buys this record believes for one minute that jazz is dead. The band plays a deadmatch under Wright all too deferentially, stopping altogether at one point to become Crouch/Wright’s amen corner.

But it all ends in blessed relief, in the up-tempo, pure polyphonic Dixieland “Oh, But On the Third Day (Happy Feet Blues),” a second-line Hallelujah, the band swinging out
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Stereophile, October 1989
fully—it's great to hear all those horns on a Wynton album. Teddy Riley blister through a solo that makes your lips hurt.

This is a good, surprising album, but I can't help feeling that Marsalis spends too much time trying to preach, and not enough listening to himself. *The Majesty of the Blues* is almost ruined by Crouch's sermon, but try reversing the leads in one of your loudspeaker cables and see if it doesn't drop right out. The CD has a bit more air, but only a bit. The recording itself is not very good—Marcus Roberts's piano is almost lost at far right, and Todd Williams sounds as if he's playing through a mailing tube. I don't mention the young members of the sextet because they don't do a hell of a lot here, restrained as they are by Wynton's album conception and their own limitations (I saw them in Santa Fe a year or so ago, for a definitely unfirsey set).  

*Trio Jeepy* ("Jeepy" is Branford's nickname), recorded a week after *Majesty,* is a stone joy, a woodshedding album you'll enjoy hearing 20 years from now. Branford, always more relaxed—always *better*—than his brother, really unbuttons it here. He plays with his back to the mike, walks blowing around the Astoria studio, jokes with Hinton and Watts, shouts "Crescent City!"; honks and squeaks, and sounds like he's having the time of his life. Hinton, almost 80 but looking 55, slaps, plucks, swings, and wheezes, and Jeff "Tain" Watts sounds like a multi-armed god brachiating through forests of percussive possibility. It swings.

*Jeepy* is as different as could be from Branford's last album: while *Random Abstract* was a carefully constructed Major Effort, and was in many ways the better, more impressive piece of work, *Jeepy* beats hard with the offhand, in-the-moment, improvisational heart of jazz. Lots of standards and first takes here: "Nearness of You," "Makin' Whoopee," "Stardust," and "Three Little Words" (the attack of which will blow your tweeter). There's straight-ahead swinging—something Wynton avoids or can't do—on "UMMG," and the totally improvised "Gutbucket Steeppy" is a slow blues so full of sex and whimsy that it made me nod my head and reach for something stronger than Lite.

Branford does Sonny again in Rollins's own "Doxy," played like two bands intersecting (neat trick with a trio) until just before the end, when melody and straight time appear for the first time. Fascinating drumming through-out, though producer Delfeayo Marsalis's candid notes (read 'em—he writes like a black Tom Wolfe) gleefully point out that Tain is lost through most of it. Easy swinging on "Whoopee," and "Stardust" (on LP only) is the emotional heart of the album, a slow, intense smolder of a ballad. I've never heard it played slower, though I *did* hear Branford say on a recent radio interview that he wants to play more and more slow tunes. Good—he's built for it.

Ornette Coleman's "Peace" is the most seriously approached composition, its near-atonal melody like ice-cold water after the steamy torchwork preceding. Debert Felix replaces Hinton on this and the other out-there tunes, "Doxy" and "Random Abstract," calling little attention to himself (he's miked much farther back than Hinton). That last tune, which titled Branford's last album but did not appear on it, is mostly endless Coltrane arpeggios, with a volcanic Watts solo building up mountains of hot notes and—enough! Just buy the damn thing. It's great. LP and CD are so close as makes no difference, but the LP has the extra cut for a change, the absolutely essential "Stardust." Accept no substitute.

*The Truth Is Spoken Here,* as a first solo album, and despite all the hoopla it's gathered, doesn't quite fulfill the promise Marcus Roberts has shown in his four years with Wynton Marsalis—just listen to his furious playing on almost any tune on last year's *Live at Blues Alley,* and you'll get more life, intelligence, and guts than almost anything here. But there's a tautness and density on *Truth* that goes missing on the new Marsalis brothers' albums. *Truth* is a less self-conscious effort than either of those, and its serenity pays off immediately: Wynton's playing on the leadoff "Arrival" is simply the best I've heard from him, sounding much like the Miles Davis of *Milestones* (my highest trumpet compliment)—smart, serious, deeply felt, no fat. "Maurella," a lonely ballad lovingly introduced by fellow Wynton bandmember Todd Williams, features Roberts soloing with awesome technique and the clarity of mountain well-water.

"Country By Choice" was Charlie Rouse's last session. It's on this cut, with Monk's former tenorman blowing tough and muscular, that Roberts shows his own debt to Monk, his angular chords descending triumphant against the beat. There's also a Ninja of a drum solo here, Elvin Jones running on all four, turning the tune into a samba at the end. The title cut is a slow blues—lots of *that* going around these days—bassist Reginald Veal (also of Wynton's band) walking through like Mike Tyson on tip-toes. Rouse and Roberts play lazily on Elling-
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Stereophile, October 1989
ton's "In A Mellow Tone," à la Ahmad Jamal, and "Nothin' But the Blues" is nothin' but: relaxed, unpretentious, Marsalis shining more than Roberts.

This is a surprisingly low-key album by a pianist capable of much more; Roberts would almost disappear on his own debut album were it not for the two solo-piano spots, Monk's "Blue Monk" and Ellington's "Single Petal of a Rose." The first is in stride style, which almost cancels out Monk's original syncopations, but "Petal" is a lovely pastoral meditation, sounding like Gershwin crossed with Copland. Unfortunately, the piano is as wide as your listening room (as is Jones's drumkit on other cuts). Marcus Roberts is no Wynton Marsalis, no idiosyncratic determinedly stamping everything as his own as he starts out, gimmicks or no. Roberts seems bent on making this a band record first, his record second. Still, "Arrival" is as perfect a jazz performance as I've heard in a long time. The Truth Is Spoken Here is a fine start, but sit tight: I can't believe Roberts hasn't got more up his sleeve.

Richard Lehnert

THE CULT: Sonic Temple
Sire/Reprise 9 25871-1 (LP), 25871-2 (CD). Bob Rock, prod.; Mike Fraser, Chris Taylor, engs. AAA/AAD. TT: 57:09

"We will keep evolving," says Ian Astbury, lead singer of British rock band The Cult. "We won't be scared to try new ideas. We don't want to succumb to the beast." The best new idea Astbury has had since the '87 album Electric is trimming the band's name back from "Southern Death Cult," so he'd better call for air support. It looks like the beast is back.

Nevertheless, there's something strangely compulsive about this woeful compilation of everyone else's early rock, punk, blues, and metal riffing. From Astbury's first line, "Hot damn, mercy ma'am," you find yourself beating time with your dancing feet. It's like watching Morton Downey Jr.—you hate yourself, but you just can't stop. The similarity to pornography doesn't end there, either. "A lot of what I write about," Astbury says, "is man's search for his inner self and the interrelationships between that and more blatant themes such as original sin, violence, drinking, and sex." Friends, this attempt to dress these steamy little sketches in the clothes of moral philosophy is simply a cloaking device. Who's jamming with? "Fire Woman" ("Smoke she is a rising...dancing like a cat on a hot tin shack, Lord have mercy, C'mon little sister, shake it") is hardly a serious Robert Maplethorpe-style examination of one's own relationship to eroticism. It ain't art, it ain't philosophy, it's cheap thrills and lazy songwriting. The Cult's work bears as much relationship to true insight artistically rendered as UK tis-and-bum comedian Benny Hill to Monty Python.

Sometimes, though, you can't eat just one. The Cult gets a lot of airplay, and "Fire Woman" is proving popular on the charts where Joe and Jenni College party down. This is partly because The Cult is nowhere near as offensive as such true headbangers as The Ramones, say, or The Contortions; this group plays it popular and mimics prettified stylists like Queen's Freddy Mercury ("American Horse"). Their licks also play it safe: derivations from Led Zeppelin and Deep Purple by way of White Snake ("Sweet Soul Sister"), plus Iggy to help out with vocals on "New York City." But wait—The Cult wants you to know they're sensitive guys. "Edie (Ciao Baby)" reprises Edie Brickell and the New Bohemians; this year not one but two have harked a further minute of fame onto the grave of the untimely-departed Warhol superstar Edie Sedgwick. "Soul Asylum" explores the heavy questions. "Who would break a butterfly on a wheel?" asks Ian. "Not me, my little child."

On the performance and production fronts, there are no bad marks apart from the band's total failure to further the form at all. If you weren't born a Jimmy Page or Ritchie Blackmore—that is, brilliant, and the first to develop a style—the tenets of aesthetic philosophy say you owe it to your art to try to improve it. Respected metal monsters like Def Leppard, Metallica, and Celtic Frost were all guys who went for the burn and turned in extra credit.

On the aural front, Sonic Temple's CD sound is warmer than you would expect from a standard rock production. On one hand, that sounds pretty good, but on the other, it frequently melts the multi-mic'd instrument parts into soup. Astbury has lots of vocal tricks and good control, so it's too bad he only really shines against a simple background of lead guitar and rhythm peeked out on drums. With lyrics like these, however, who cares if they get lost in the sludge? I'd feel a lot better if I thought Sonic Temple were meant to be funny.

Beth Jacques

K.D. LANG: Absolute Torch and Twang

This one, and especially Lang's previous album, Shadowland: The Owen Bradley Sessions, bring up that question no one ever seems to ask: Was Patsy Cline really a country singer?
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I don't think so—she always sounded like a nightclub crooner to me, a belter of torch songs. Just because the rhythm section goes clippety-clop and the lyrics talk about booze, bars, divorce, and cigarettes and you drop a “g” or two doesn't make you a country singer. But then, nobody asked me. I guess it's enough that Cline, Bradley, and Lang have all thought so. It's no secret in the biz that K.D. Lang's got a bad Patsy Cline fixation; good lord, dragging Owen Bradley out of retirement, as she did for Shadowland, to whip up another batch of those syrupy "Nashville Sound" string arrangements that country music is just now recovering from, after 30 years, and laying into it with her smooth, silky, heavy, powerful voice—remind you of anybody?—I mean, why?

Sorry, I'm one of those unpleasant people who think that Owen Bradley, Billy Sherrill, and Roy Acuff just about destroyed country music for a while, turning hardy perennials into corded hothouse flowers and giving "hillbilly music" a bad name.

Fact is, and bile aside, I'm not too sure Lang doesn't do it better than Cline; Absolute Torch and Twang is a lot easier to take than Shadowland. Folks, if you ain't heard her, she's got one monster of a voice with a huge range, and she can use it. Lang wraps her lips around a lyric like an allie suckin' on a bottle of Thunderbird, and she'll surprise you every time with her off-the-wall harmonies.

And this album'll tell you something Shadowland never could: this woman is writing different kinds of tunes than you'll find in the rest of the urban industry called Country Music ("'Opryland" my ass). Try "Wallflower Waltz": "are you getting scared my dear / are you getting scared / to shly compliment the mirror / to balance the compared / then falls one solitary tear / oh, to be the stared / and stumble with the inflicted faults / while stepping the wallflower waltz." Jane Siberry? No, a country singer, and sounding like one, too. Not every one of those lines works perfectly when sung, but most do; impressive for a country tune, or what's come to pass for one. Lang's tunes are all medium-tempo; she depends on other writers for the more splickety licks.

Musically, we get state-of-the-art country playing here. But the production's so squeaky-clean, Lyle Lovett—like, it sounds as if the master tapes were soaked in Clorox for a week. And the playing is almost too perfectly balanced—always interesting enough to fill the spaces, but never once taking your attention away from the singer, even in the breaks. Far as I'm concerned, any album concerning itself with "absolute twang" has got to have Richard Bennett on twang guitar, but this one doesn't. Absolute torch is just fine on "It's Me" and "Trail of Broken Hearts."

There's tight western swing here, too (isn't that where Patsy started?), in "Full Moon Full of Love." And "Walkin' In and Out of Your Arms" is a humdinger: exciting, time shifting between 3 and 4 (this is country?), with mounting choruses. Vocals on the CD are harsh, though otherwise the CD seems veiled and distant. I'd buy the LP.

Try her out, this gutsy woman from Alberta, Canada, this Rickie Lee Jones of country music, this voice rich as a churnfull of butter, this singer who sounds a lot more country than Patsy Cline.

—Richard Lehnert

**TANITA TIKARAM: ancient heart**

Reprise 25839-1 (LP), -2 (CD). Peter Van Hooke, Rod Argent, prods. AAD/ADD. TT: 45:45

Tanita (not Anita) Tikaram (pronounced Tick-aram) is 19 years old. She's the daughter of parents who were brought up in Fiji and Malaya, with "bis & bobs of Indian and Chinese" in the mix as well. Tanita was born in West Germany, lived in England for a short while, then back to West Germany and, at age 12, to England. She wrote some pop songs in her early teens, even won a newspaper competition. She also wanted to become involved in "serious theatre." I'm telling you this because it's apparent in her music. All these influences show.

There's some rock, some folk (heavy influences from the likes of Tom Waits, Leonard Cohen, and Joni Mitchell), and lots of theater (there's even some Kurt Weill/Lotte Lenya in there). The style she and her deep, resonant, throaty voice have carved out lies somewhere between spoken word and song, with some Lou Reed (though not as obvious a rip-off as Suzanne Vega) and Laura Nyro mixed in for good measure. This woman has a wonderful voice. Plus, she's selected her music well. Unlike the Debbie Gibson/Tiffany pop hits of the US, Tanita's music has a lot more depth.

Standout cuts are the folk-country rocker "Good Tradition" to start the album, and the bluesy "He Likes The Sun," both showcases for her sound. "Twist in My Sobriety" is the big "hit" cut from the album, with some far-eastern influences (listen to the oboe). It's made a big splash on the British charts, and on Billboard's "Album Rock" (FM radio) and "Modern Rock" (college radio) charts as well. Good video, too.

You might recognize at least one of the producers (ex-Argent and -Zombies). There's a little too much production on some cuts for my taste (horns, strings, etc.)—not needed at all. "Twist in My Sobriety" is successful because of its sparseness. At least the pro-
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Stereophile, October 1989
It was intersession, the winter of '69/'70, and hopeful I was in Boston visiting Stephanie, who wanted to just be friends. So her roommate Sue said, "Hey, there's this guy playing at the Tufts University Chapel."

Well, anything but moon around that Aliston apartment. So off went Sue and I into the January Boston winter, so cold I actually frostbit my lungs running to catch the trolley. We rattled along on the MTA, first the Green Line, then a bus to Harvard Square, another bus to Medford. Got there in time, along with 30 or 40 other frozen longhaired. This young preppy comes out—real short hair, already receding—whangs his guitar a couple times, whips his head back and forth, starts contorting body and face like a Joe Cocker in Izod, and, in a high, tight voice white as Wonderbread, a Neil Young from Country Day School, he comes out with the funniest songs I've ever heard.

Yep, he played us "Dead Skunk," his first and last Top 10 hit, two years before it was recorded; 'cept, back in that little chapel, it was a slow, dirge-like singalong with all of us swaying, belting it out. By the end of the evening, this wild and crazy boy had broken into the little room behind the altar, and, wearing a High Anglican cassock, was passing out the Host and the Wine to a congregation already high on alternative sacraments.

LWIII's self-titled first album came out a few months later, with songs about prep school, black people, and Cambridge's run-down Central Square. (I was just back there—it doesn't look any better.) This one's his twelfth, the fourth since he dried out some (Wainwright's concerts in the mid-'70s were funny/sad, the guy obviously in pain), and one of the best of his career.

There are songs here about the lack of videos for the album (in hillbilly style), changes in his life since a bit of local London telly fame (he's lived there for the last few years), exes who haven't done so well, failing to read his lover's mind, solo parenting ("Me and All the Other Mothers"), his own misogyny, advice on how to visit and be visited by relatives, and the coldest day in English history. Wainwright avoids pretense, pomp, self-pity, and self-serving like a case of AIDS; the endlessly dry, sharp humor is almost always at his own expense. He leads us into his own minor popstardom so we can laugh at it with him in "Harry's Wall," talking of all the little things that have changed—his 8 by 10 on his drycleaner's wall, formerly snooty bar hostesses smiling warmly, an endless litany of "Aren't you what's—his—name? I saw you on TV."

He's the kind of writer, of prose, poetry, or song, who feels most disenfranchised by psychology, which seems to have coopted most of personality's motives, mystery, and romance. The title tune innocently catalogs all the reigning foolishnesses of therapy, challenged only by Wainwright's mocking voice;

But maybe I should just reprint some more of his lyrics, like these, from "Bill of Goods": "Common knowledge has it, easy never does it; We gave each other such a hard time, but it sure was fun, or was it? An adventure or disaster, kinda sweet or sort of sour—nothing's that important when it takes more than half an hour."

And there's always at least one heartbreaker. A few years ago it was "April Fool's Day Morn"; here it's "Thanksgiving Day," about a family reunion, the kids just trying to get through it without killing their parents, praying their mixed and selfish prayers: "Bless this food to our use though communication's useless; Don't let me drink too much wine, Lord, you know how I get ruthless," and "If I argue with a loved one, Lord, please make me the winner."

Even within a single song, Wainwright's trickster voice whips back and forth from wheedling little spoiled boy to backwoods clod to damn fool to friendly neighborhood whiny psychotic. And his phrasing is unique—try "Nice Guys"—and the lyrics bring that shock of recognition: "I love to see that look on your face when all of your feelings get hurt; let's face it, you like it when I treat you like dirt."

Richard Thompson appears, as he has on Wainwright's last few albums, and the accompaniment is sparse, mostly acoustic, and tight, former Pentanglest Danny Thompson adding acoustic bass here and there. The recording is hardly natural, but it's inoffensive. LP and CD are, as is more and more often the case, barely distinguishable.

In these days of ever more prefabricated, pretentious, and fatuous popstars, we all need records like this. Good medicine.

—Richard Lehnert
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Stereophile, October 1989
**MANUFACTURERS' COMMENTS**

**Adcom GCD-575 reliability**

Editor:

At the outset, I would like to express my disappointment and regret that *Stereophile*’s "open-forum" policy with respect to its "Letters" (to the Editor) column consciously rejects many of the journalistic responsibility safeguards which are observed by other reputable national magazines.

Specifically, regarding the publication of scurrilous and disparaging letters, it is our position that *Stereophile* has both a moral and legal responsibility to scrupulously investigate for veracity any accusations made in its pages which may be defamatory in nature. No, we’re not talking about limiting honest discussion or controversy, far from it — this is what sells magazines. We refer only to the time-honored obligation of American journalists to check on allegations which may be malicious in intent. For example, some time ago *Stereophile* printed a letter from a disgruntled competitor of ours who, stung by a negative review, complained that our amplifier wasn’t really as good as his. Shortly thereafter, *Stereophile* published a letter from a retailer of these same products, whom we had earlier rejected as an Adcom dealer, (posing as a bona-fide consumer) which continued the negative diatribe. While we thought it best at the time not to respond in print, we did point out to *Stereophile* that it had been "suckered" at least twice into printing a competitor’s slander. It’s our feeling that *Stereophile* and its readers would be better served by a Letters to the Editor policy which adheres more closely, for example, to that of *Time* magazine than to that of the Supermarket press. Ultimately, *Stereophile* will probably be guided by its readers’ reaction to the fairness of your present policies in this regard. I sincerely hope they let you know about it.

You probably already know that it’s our policy to check each and every Adcom product for every function prior to shipment. While we take scrupulous care to avoid shipping a potentially defective product, a CD player is a complex electro-mechanical device, and rough handling in transit can occasionally cause misalignment. Such problems are, of course, less likely in amps and preamps, for example. In such an unforeseen event, Adcom and/or its authorized dealers stand ready to immediately rectify any difficulty which a consumer may experience.

Our basic consumer relations attitude is that we want no dissatisfied customers, and will do whatever is reasonably within our power to satisfy even the most critical of "Stereophiles."

In the present instance of the letter from Mr. Dennis L. Chase which you have elected to publish elsewhere in this issue, we want to call your attention to the fact that the reckless allegations contained therein are totally unsupported with respect to claims about the "operational life span" and "failure rate" of the GCD-575, this being information he has no way of knowing anything about. What’s worse, he knows that he doesn’t know anything about it, and this is where the malicious intent comes in. In fact, the percentage of GCD-575s which we have had to service is, to the best of our knowledge, well below the industry average for such products; and in fact most service performed was for shipping-related malfunctions. Our present service turnaround time is less than a week and, since we have no complaints on record from Mr. Chase concerning his replacement, we presume he too is satisfied.

Our preliminary investigation into the matter discloses that Mr. Chase obtained his first GCD-575 on 12/16/88. He called the dealer two days later to complain that it wouldn’t track all his discs (it seems possible that he was using Monster CD Rings at the time, which *will* interfere with the correct operation of this machine). The dealer thought at the time that the problem might relate to a few of his discs, and not the player. About a month later, he called again to say that the problem was getting worse. On 3/12/89, Mr. Chase brought the player into the store. They plugged it in and verified that it wouldn’t play *any* discs. Not suspecting any mischief afoot, and anxious to satisfy a "dissatisfied customer," they replaced this unit on the spot with a new one.

Subsequently, the dealer returned to us the
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unit they had exchanged for Mr. Chase as "defective." On examination, we discovered that prior to reaching us, the unit had been disassembled and the internal spindle which supports and spins the disc had been forced down into the support plate (a photo of the spindle in its correct position is enclosed). We tried to duplicate this damage in drop tests, with no success in a drop from any plausible height. While we have no way of being sure when and by whom the unit was internally devastated, this was virtually a unique experience in the history of our company. Even our forgiving and underworked service technicians (not unlike the fabled Maytag repairmen) have never seen a returned player in such an incredible state of disrepair, other than one which was run over by the wheels of a truck.

Notwithstanding all of this, Mr. Chase received a brand-new machine at no additional charge. My conclusion is that we are by far the more offended party.

Finally, to put the whole subject in clearer perspective, I am attaching more than a hundred comments [See Adcom ad in this issue — Ed.] recently received by us from GCD-575 owners (many of them Stereophile readers), whose names and addresses may not, of course, be published without their written consent. More than 98% of the purchasers of this product who have commented in writing on their warranty registrations have responded with enthusiasm and compliments. This would be consistent with Stereophile's readership survey, wherein the overwhelming majority of readers who owned Adcom products said they would buy Adcom again. Moreover, many of the enclosed responses we received indicated that they thought Stereophile was right on the money in their recommendation of several Adcom products.

Since I feel that we have been falsely and wrongly disparaged by Mr. Chase's letter and Stereophile's publication of it, I trust that you will allocate us somewhat more than the 'equal time' we require to respond and mitigate the damages to our reputation.

Should your sense of fair play not stretch into such economic magnanimity, we would be willing to pay normal rates for whatever additional space our response requires, so long as it appears in the same issue as the disparagement.

Newton A. Chanin
President, Adcom

"Manufacturers' Comments" is intended to be the place in the magazine where manufacturers and distributors have the freedom to say what they like about the review or the mention of their products, something that applies equally to Mr. Chanin as it did to his "disgruntled competitor" (actually, Richard Schram of Parasound in Vol.11 No.1, p.199). I don't normally respond, therefore. However, I do feel that a short note is in order in this case explaining when and why I decide it appropriate to publish letters of complaint about a specific manufacturer's products.

Basically, as Mr. Chanin points out, I intend the "Letters" section of the magazine to be an open forum where Stereophile's readers can say whatever they feel, provided that it is neither libelous nor slanderous. (When it comes to readers' opinions of the magazine and its writers, I even disregard these two modifiers.) I realize, of course, that this does make the magazine vulnerable regarding the publication of apparently honest but actually malicious letters, and I try to minimize that danger by disregarding specific complaints when I receive just one letter on the subject, particularly if it runs counter to our own experience of the product. But when we receive more than one letter, or when we receive a letter where the writer's experience ties in with our own, I feel it fair to publish it. In this specific case, I felt that Mr. Chase was asking a fair question: whether his experience of the GCD-575, coupled with those that Lewis Lipnick and I had reported in print, had been typical. As it seems to turn out, it was not typical, which as far as I am concerned, makes the exercise worthwhile.

—JA

Sony CDP-X7ESD CD player

Editor:
Thank you very much for The Audio Anarchist's evaluation of the Sony CDP-X7ESD CD player.

In reviewing Sam Tellig's comments, it was most interesting to note that he considered our other ES Series models, notably the CDP-508 and 608ESD, among those units that provide the X7 with "some real competition." In point of fact, we at Sony believe that it is this overall consistency in design and technology that truly makes the entire ES Series such a standout from the crowd. This is most evident when one compares the Sony ES players against the
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—Arnis Balgalvis, Stereophile, November 1988

See full review: The Absolute Sound, May/June 1989

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Stereophile, October 1989
vast group of somewhat "flimsy" and "clunky" machines that share a rather common OEM source of supply.

As to the overall sonic characteristics of the CDP-X7 in particular, despite its outstanding "dynamics," Sam noted that the "sibilants were not so crisply articulated" as with some out-board D/A converters that sell for two to four times the CDP-X7's price.

Yet conversely, Sam felt the purchase of a CDP-X7 was difficult to justify, since it offered only "a little sonic improvement" over the CDP-608ESD, which retails for half the price. Hmm . . .

As I said, we found his review quite interesting. Michael Lyons
Product Planning Manager
Sony High Fidelity Products

**Acoustat Spectra 22/SPW-1**

Editor:
I would like to thank Dick Olsher and *Stereophile* for a comprehensive review of the Acoustat Spectra 22/SPW-1 speaker system. Mr. Olsher's Class B recommendation was particularly gratifying.

Although Mr. Olsher's review was very accurate, I feel some explanation concerning the high-pass filter on our 2123 interface is needed. Activation of the high-pass filter switch inserts a first-order filter (not second-order) in front of the step-up transformer. However, due to the interaction of the transformer with the filter, the slope does indeed approach 12dB/octave below the crossover point.

As for the question that Mr. Olsher's comment posed—"Lord only knows how many divisions the Rockford Corporation is comprised of"—the Rockford Corporation is comprised of six domestic audio-related divisions: Rockford Fosgate, Rockford Carboneau, Rockford Pro, Perfect Interface, Hafler, and Acoustat.

Each division is managed and operated as an individual company, governed by a corporate philosophy which encourages an inter-divisional cross-flow of ideas. In fact, as alluded to by Mr. Olsher, it was the combined efforts of Spiro Iraclianos (Carboneau Division), Andy Szabo (Hafler/Acoustat Division), and Jim Strickland (Acutstat Division) that were responsible for the Spectra 22/SPW-1 system design. The synergy created by this cross-flow is the "Rockford edge" in both product design and manufacturing.

This fall, Acoustat will introduce the Spectra 11. This affordable hybrid design is the result of another combined effort (Iraclianos/Szabo/Strickland) which proves that $1+1=3$.

Jeff Peters
Marketing Director, Rockford Corporation

**Velodyne ULD-18 subwoofer**

Editor:
Thank you for taking the time to review our product.

Surviving as a small American manufacturer in today's marketplace presents a formidable challenge.

Our goal at Velodyne has always been to offer audiophile products at prices within the reach of all enthusiasts.

Our heartfelt thanks go to Stereophile for recognizing our efforts, and our results, with such enthusiasm. David Hall
President, Velodyne Acoustics

**VPI HW-19 Jr. turntable**

Editor:
One pleasure of being in the audio industry is seeing one's efforts recognized. As Gary Galo's review points out, the HW-19 Jr. turntable provides near-state-of-the-art performance at a less-than-state-of-the-art price. I'd like to thank Mr. Galo for his time and painstaking review.

However, before any Stereophile readers go out and buy an HW-19 Jr., there are a few things they might enjoy reading about the Jr. and turntable performance in general.

First of all, the HW-19 Jr. can be upgraded into a full HW-19 Mk.III by obtaining a new chassis, platter, springs, and dust cover. This lets a budget-conscious audiophile get outstanding performance now—and even better sound later on, as finances permit. Upgrading the HW-19 Jr. to an HW-19 Mk.III involves replacing the Sorbothane dampers with tuned springs—four of them. While there are many fine turntables which use a three-point sprung suspension, VPI turntables all use a four-point system. Simply stated, I have found that a four-point suspension is easier to adjust, provides better feedback isolation, and provides, overall, a more stable platform for the arm and platter.

The HW-19 Jr. sent to Stereophile was one of the first ones shipped. Since then, AudioQuest has modified the PT-5 tonearm. Mr. Galo's difficulty with the arm cable's plug has been fixed.

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cartridge interactions, it doesn't hurt to go over it once more. An arm's mass, rigidity, and damping affect the performance of the cartridge mounted in it. In an ideal world, the arm and cartridge would be made as a single, integrated unit. As it is, arms are designed for a range of cartridges of particular mass and cantilever compliance and damping. Conversely, cartridges are made for arms of a particular mass, rigidity, and damping. With forethought (and luck), a good arm/cartridge match can be made.

The AudioQuest PT-5 has been designed to work well with a wide range of cartridges and is particularly outstanding with damped-cantilever, medium-output moving-coils. It is not, unfortunately, a sterling match for the Grado Signature 10MR.

Because the HW-19 Jr. is so neutral (it has essentially no sound of its own), it was easy to hear the effects of the mismatch between the 10MR and the PT-5—distortion in the higher frequencies and a reduction in depth and dynamics.

The Grado has an undamped cantilever and requires an arm than can dissipate the energy put into it by the cartridge. Even with added pivot damping, the AudioQuest arm does not deal gracefully with the 10MR, which is outside of the PT-5's design parameters. Indeed, I would go so far as to say that, in order to get good sound, there is ordinarily no need to spend the extra $75 for a special cable when the arm and cartridge are suited to each other.

This ought not to be taken as a criticism of either the arm or cartridge. The PT-5 is capable of excellent performance, and the Grado Signature 10MR, in the right arm, is one of the best cartridges around.

While on the subject of arms, it should be noted that the HW-19 Jr. gives great results with other arms as well. In fact, some owners are using arms which cost half again as much as the Jr.'s price! Potential buyers should know that the HW-19 Jr. is also available with the Sumiko Premier MMT tonearm. The price of the Jr. is the same with either the PT-5 or the Premier.

There are a couple of other things I should mention.

Wall mounting is usually preferred for the Jr., but it performs very well when placed on or in cabinets or stands that rest on a solid floor. The unusual amount of feedback noted in the review may well have resulted from the arm/cartridge mismatch, where an undamped cantilever proved to be extra-sensitive to feedback.

Well, enough from me. Go and listen to some good music.

Harry Weisfeld  
President, VPI Industries

AudioQuest PT-5 tonearm

Editor:

It is always nice to receive a good review of one of our products; I very much appreciate the positive attention. However, as usual, I have a few points to make.

Since AudioQuest makes several Sorbothane products, including shock-absorbing feet, I need to clarify the application of Sorbothane in the VPI Jr. Contrary to Mr. Galo's comments, the VPI Jr. does have a suspension. The Sorbothane employed does a remarkable job of damping and isolating while keeping costs to a minimum. Mr. Galo is certainly correct in pointing out that the suspension is not perfect. However, he also acknowledges that the suspension on his reference 'table is subject to other types of environmental interaction that do not plague the VPI Jr. What is remarkable is how much of the superb quality of the VPI Jr. has been kept in the Jr., while greatly reducing the price.

I agree that the instructions provided with the AQ PT-5 are minimal. We strongly feel that the arm should be set up by a dealer. In this case the arm base is already mounted by VPI, saving most of the work. The instructions include all the information necessary for someone familiar with tonearm setup. The only consumer who should mount and set up any tonearm is one who would not require further instructions.

I am horrified every time I encounter experts displaying a complete lack of comprehension of skating and the need for anti-skating. The conventional way to reduce tracking-angle error in a pivoted arm is to offset the headshell and employ overhang. This system works fairly well to reduce tracking-angle error over most of the playing surface of a record. However, the vector of force caused by the record's drag on the stylus is tangential to the groove and is not in line with the line between the stylus and the pivot. This causes a skating force which requires anti-skate compensation. This skating force is absolutely proportional to the drag of the record against the stylus. If a grooveless record is used, there will be very little drag and very little anti-skating will be required. It is not

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surprising that Mr. Galo arrived at a low anti-skate setting when using this method. If Mr. Galo intends listening to music instead of grooveless records, he will need a different setting! By the way, grooveless records are perfect for setting up linear-tracking arms.

I agree that azimuth can be an important adjustment. I would like to be able to offer this adjustment on the PT-5. However, the PT-5 has been designed to be the best arm for a fairly low price. Only a little more money would allow us to make an arm with azimuth adjustability, however with mechanical rigidity. It would require noticeably more money to provide this adjustment without compromising the arm’s other good points. Maybe a PT-6 should exist?

Finally, the subject closest to my heart—the tonearm cable supplied with the PT-5. The right-angle connector on this cable no longer interferes with the 'table's armboard. This almost-prototype sample of the 'table did not include the normal adjustment that prevents this problem. A lot of verbiage for a problem that died nine months ago.

I also do not like the cable we supply with the arm; however, I only wish it was $1.98! This cable costs us many times that figure. While it is not an audiophile-grade cable, its plugs are perfectly fine. The fact that they are molded in plastic instead of having fancy machined metal around them is not a problem! I would be much happier if we could get away with only selling the PT-5+, which at $425 includes the $95 AudioQuest Sapphire tonearm cable. However, when consumers and dealers compare the prices of arms, the subject of cables is forgotten. Since other arms are sold with “bad” cable, we need to offer the PT-5 with a similar “bad” cable. We agree that it is penny-wise and pound-foolish to buy the PT-5 instead of a PT-5+, but we have to be somewhat responsive to the market, so we make both available. The Sapphire tonearm set is $95 if bought separately, but only $75 if bought with the arm, since that saves us from having to produce the standard cable.

William E. Low
AudioQuest

Arcam Black Box 2 D/A converter
Arcam Delta 170 CD transport

Editor:
Robert Harley’s exploration of new frontiers
in digital audio is refreshing. We are reminded of all those great "Undersea World of Jacques Cousteau" TV specials. Like Cousteau, Mr. Harley takes *Stereophile* where few publications dare venture.

His assessment of the Arcam Black Box 2's sound against the absolute of his own recent live DAT recordings is revealing. Most of our listening is done to find audible improvement of medium- to low-priced CD players ($350- $800). There the Black Box excels. Our listening sessions, at home and with dealers, also tell us that the Black Box coupled with the Arcam Delta 170 transport gives stiff competition to audiophile players costing up to twice as much.

We admit that audible differences between the Delta 170 transport and high-quality, single-beam, stand-alone players are on the cutting edge of subtlety. Our success showing differences in the field, in less than ideal conditions, has us convinced of their existence. Turning off the 170's display can help make its qualities more noticeable. We've also found the biggest improvements when playing the Delta 170 against triple-beam players produced in Asia.

Unlike most equipment comparisons, the differences heard between the 170 transport and CD players are hard to pin down or label. We've been in blind A/B situations with three to four listeners, where all involved get a bit frustrated trying to label what they hear. "Oh, who cares, it just sounds better," is a typical comment. Therefore, we agree heartily with your advice to the consumer: the prospective buyer should listen for himself.

The same applies to the optical vs electrical connector dilemma. You have clearly pointed out the significance of optically isolating outboard D/A converters from the feeding transport. To us, the supplied optical interconnect on the Delta 170/Black Box combination sounds almost tube-like, with a minuscule drop in dynamic impact compared to the electrical interconnect. Optical connectors have a side benefit. They isolate the sensitive integrated circuits in the D/A converter from high-voltage static zaps, sometimes given by humans when they touch their CD players/transport.

Our feedback from consumers, dealers, and sales representatives confirms his stated importance of warm-up time. This is especially important when the DAC and digital filter chips are brand new. Experience tells us that the units tend to sound smoother and less edgy after
a few days' break-in. We even think this phenomenon is more audible with the SI Crown DAC chip he discussed.  

Michael Zeugin  
President, Audio Influx Corporation

Merrill Audio Stable Table
Editor:  
We have just received your review of our Merrill Stable Table. The crew at Merrill Audio broke into a spontaneous party.  

George Merrill  
Merrill Audio

Precision Audio DIVC-880
Editor:  
Thank you Robert Harley for taking the time to take another listen to our DIVC-880 in its current form. Though we were upset and discouraged at Bob's reaction to our original submission, some reflection and lab testing with other units convinced us he was correct (cough medicine rarely tastes good). The Philips CD880 is going to be replaced by the CD80 in November, according to Philips's sales department. We will be doing CD80s when they become available. Also, various Japanese machines appear to be equivalent or even superior candidates for our upgrade.

Sources for these units will be clear by the time this is published. Finally, we are still intent on introducing a Digital Processor Box (though the time frame is unclear). The Digital Processor will be produced concurrently with the upgrades. I suspect our last Manufacturer's Comment did not make this clear.

Jon Schleisner  
Precision Audio

B&W 801 Matrix Series 2
Editor:  
The 801 was designed to be a professional monitor producing excellent sound even at high orchestral levels, but at the same time, and often most importantly, being a highly reliable working tool for the engineer. Production costs of a recording session with some of the great classical conductors, soloists, and well-known orchestras can cost thousands of dollars for every hour wasted in trying to repair or exchange damaged equipment. It must be a tribute to the success of our 801 and its design when you realize how many companies across the world use 801s in their studios or on location. Decca and their associated labels alone have recorded many tens of thousands of hours with 801s as their standard monitors. Speakers used as monitors on location usually travel thousands of miles from session to session and have to stand up to some pretty rough treatment. Let's not forget thousands of happy owners of 801s who so far had to live with such a terribly restraining quality of sound coming from those speakers. This is at least the impression I get having read the comments from the land of sheep. Make no mistake, we are delighted that someone has found ways to improve our Matrix 801 Series 2, and I confess that certain compromises in the audiophile sense have been made in the design for the sake of cost-effectiveness and reliability. I don't spend my entire leisure time in the local pub, and often after we put our cows to bed (sheep don't sleep terribly well over here since they dislike the distortion delivered by our 801), I spend my time worrying about where to draw the line between commercial compromise and commercial necessity.

So, dear Tom, you are not on your own out there in the cold and lonely battlefield, continuously fighting both the demanding bad world and your own ego, doing things better by telling the rest of the world to get lost.

The original 801 was fitted with a battery-operated APOC, which had the advantage of drawing no current from the amplifier whatsoever, and also acted as a total protection against sudden overload. The problem with this was that the current drain was so low that batteries would typically last for two years, by which time the customer thought they would last forever and gave up checking them from time to time. Inevitably, shortly after the battery had expired, a gross overload would occur, demolishing the drive-units. Also, it was a problem to have to get up and press the reset button during tape-spooling operations, etc. . .

It was therefore decided to make the circuit audio-powered, making it totally maintenance-free; this proved very effective and reliable over the years.

In audiophile terms, however, it is clearly an acoustic advantage to remove any unnecessary components and contacts. The advantage of retaining the circuit, however, is that you can play at high levels with peace of mind, knowing that if you do go "over the top," you only have to turn the volume down to restore everything, without having the expense and delay of re-
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enough placing it directly have AR late to wiring package saliva tuned involve is to minimize the APOC (over here you have to put mains plugs on yourself, with a 1 in 6 possibility of success!), but the problem can easily be resolved by removing the wire links soldered into the board immediately next to the screw terminal block where the biwiring links are located. This will totally isolate the two halves of the circuit, but will mean that the LED will only light when the midrange/tweeter protect is activated; the actual operation of the cutout remains unchanged.

As far as the acoustic coupling on the board is concerned, it would be advantageous to eliminate this totally, but this would certainly involve separate boards and increased cost, and bear in mind that the system has been fine-tuned with this board layout to the satisfaction of a great many listeners. Besides, warm skunk saliva is nothing to a Real Ale enthusiast.

Tom, maybe you could be so kind as to send me one of your enhancement manuals in order for me to reproduce your measured results under our laboratory conditions.

Who knows whether there will be a Matrix 801 NCC! with a no-compromise price tag?

Steve Roe, Development Director B&W Loudspeakers England

AR ES-1/AudioQuest PT-5 package

Editor:
Thank you again for your review of the AR ES-1 turntable, AudioQuest PT-5 tonearm, and AudioQuest Ruby cartridge. In a footnote at the bottom of the first page you indicate our package price for all items is $684.90. This is an error. Our package price for the AR ES-1 turntable with AudioQuest PT-5 tonearm and aluminum armboard is $684.90. The AudioQuest Ruby moving-coil cartridge is $199.95 extra.

Wayne Schuurman, President Audio Advisor, Inc.

Spica TC-50 loudspeaker

Editor:
About the only chance we equipment designers get to be really picky (apart from the design process itself) is when we have an opportunity to respond to reviews of our creations. Like a doting parent hovering protectively near our children, we want, of course, everyone to love our baby, and even the slightestest of gestures pointing toward a possible imperfection starts us sneering critically in self-defense. An overdramatization, perhaps, but true to a degree in us all.

Happily, your review of our updated TC-50 left me little to pick at, given John Atkinson’s way of finding and articulating in a most pleasant way the relative strengths of a piece of audio equipment. But, since these opportunities don’t come along often, I must take advantage of it.

The TC-50 may have “suffered,” in his view, a price increase, but I might point out that it was introduced in 1983 at $450/pair, and we were able to hold that price until we updated it almost a year ago. How that for bucking inflation?

I like his trick of using pink noise to (ideally) create a dimensionless mono image between the speakers. Very handy for speaker placement as well, I would imagine.

The artifact out at a little less than 2.5 milliseconds in his impulse response plot cannot be due to reflections from the baffle edge; all baffle reflections would occur within the first millisecond, due to its small dimensions. It is the first “rise” of the “bulge” that shows in his frequency-response plot in the lower mids, as any frequency-response anomaly will show itself as ripples in the time domain. I suspect that the eight bits of resolution in his sampling scope was insufficient to resolve it clearly.

I am happy to see that measurements will be a regular part of Stereophile’s loudspeaker reviews. It has always been an uneasy matter for me to send off a pair of speakers for review by someone who has never laid hands on the caliber of tools that every speaker designer of any merit uses extensively. Fortunately, John Atkinson is familiar with them. Subjective experience and signal analysis are equally valid and necessary in both the design and review process. Welcome to the dance.

John Bau
President, Spica
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Cowen Commons, Rt 347
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2790 Erie Blvd E.
West Babylon
Audio Visions
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White Plains
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Stereophile, October 1989

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Stereophile, October 1989
THE ADCOM
GCD-575 CD player:
consumer comments

S.M., New York, NY
"GREAT!"

B.F., Houston, TX
"You have an excellent company. I admire Adcom."

H.W., Silver Spring, MD Stereophile reader
"What took you guys so long? I'm like a kid in a candy store. Keep up the good work."

G.W.C., Springfield, IL
"I am very pleased with the performance of this product and I plan to continue to supplement my equipment with your products."

R.W.C., Glen Allen, VA
"I can't believe the price of this unit. It compares to CD players listing at $1400. A great product—Thanks."

R.S.D., Sunland, CA
"I like my unit very much!"

R.R.W., Gainesville, FL
"Beautiful sound and great features!!"

L.C., Riverside, CA
"Very nice sound quality."

T.C., Corvallis, OR
"Excellent product!!"

T.E., Klamath Falls, OR
"I am very happy with the performance, price & value of all 3 of my Adcom components. I am the envy of all my friends with this equipment!!"

D.M.C., Bradenton, FL
"I will probably upgrade my current receiver to Adcom components. Probably the GFA-555 amp or GFA-545, the GTP-500 preamp. I think Adcom is fantastic equipment. Keep up the great work!!"

J.M.L., New Fairfield, CT Stereophile reader
"When I finally got down to it and the Sony CDP-500 ESD & listened to both, yours sounded warmer & I didn't get tired of listening to it as with Sony. Plus your V. Campos was helpful technically."

K.L., Lane, PA
"I think Adcom components are a very good value & they have a high-quality finish. Styling is straightforward but unique. I'm sold!!"

J.K.F., Lexington, KY Stereophile reader
"Very best sound for $ in any CD player—first unit to play CDs with detail and low-level ambient field."

D.E., Jacksonville, FL
"Initial impressions very favorable. Much more extended in frequency extremes & dynamic range. Soundstage very smooth—more analog-sounding, warm...Class A circuitry is very noticeable. Thank you."

K.Z., Bloomington, IN
"Excellent sound and nice features."

D.S., Cockeysville, MD
"I bought this product because I have been so happy with Adcom products."

I Elkins Road, East Brunswick, NJ 08816 U.S.A. (201) 390-1130 Distributed in Canada by PRO ACOUSTICS INC. Pointe Claire, Quebec H9R 4X5
M.E., Des Moines, IA
"Sounds great!"

T.B.C., Clifton Park, NY
"Excellent!"

M.R., Salem, OR
"Superb value. Seems critic's statements on shock resistance/mistack problems to be overrated. Drawer mechanism does seem cheap though minor gripe—it sounds great!"

M.R., Lake Mary, FL
"The GCD - 575 has the best headphone amp/volume control of any player on the market..."

S.A.L., E. Peoria, IL
"Natural sound. No glare in highs. Great stereo image & depth. Looks good, buttons light up.

D.S., Rancho Cordova, CA
"LOVE YOUR EQUIPMENT!"

R.A.S., Ridgewood, NJ
"Purchased due to favorable mention in Stereophile."

C.B.B., Eugene, OR
"Great unit!"

T.P.Y., Santa Rosa, CA
"The sound is clean, crisp and smooth as silk. I love my equipment."

T.S.J., Colorado Springs, CO
"I am extremely pleased with the performance and quality of all the Adcom equipment I have purchased."

M.S.R., Salem, OR
"Great sound, very clear and well-defined. Good soundstaging. Blows away my old 2x oversampling single DAC player."

J.C.R., Philippi, WV
"I have owned Adcom equipment for approximately 2 yrs. I have been very pleased with the performance and durability. I will never change to another brand. Thanks for building such great equipment."

A.A.E., Stuttgart, WG
"Excellent sound quality."

W.T., Kilmarnock, UK
"Excellent sound! Great value for money! I will take these components back to Britain and use them for many years to come."

F.J.S., Doylestown, PA
"Stereophile reader
"You make great products for the price. I can't afford most of the other high-end gear that others sell..."

K.B.C., Flushing, NY
"I'm quite amazed by the natural sound it produces. It positively gets rid of the metallic characteristics that most CD players possess. Keep up the good work!"

T.G., Warrensburg, MO
"Very nice CD player. (Good to have high-voltage output.) A variable volume control on remote would be a nice improvement."

J.A.E., Cary, NC
"No other machine offers a comparable price/performance ratio. Final decision was between the Adcom and Denon 3520 at $1500. I bought your unit because it performed better."

P.G., Birmingham, AL
"I have finally obtained my goal—all Adcom electronics. The system sounds excellent with my Thiel speakers. I can't thank Adcom enough."

F.C., Glenham, NY
"Stereophile reader
"To date I have recommended this unit to two of my friends. We all are very pleased to have a quality product at a price that is as high as we can go but lower than high end."

C.J.C., A.P.O., NY
"I'm very happy with the other Adcom components that I own, and was also happy with the reviews that your GCD - 575 received."

A.T.P., Loring AFB, MN
"Stereophile reader
"The sound from the Adcom combination and the small speakers is beyond my expectations. I hope to replace my CD player with the GCD - 575 at a later date."

P.J.H., Zanesville, OH
"Excellent-sounding machine."

L.M.R., Mount Vernon, NY
"This product comes highly recommended by my dealer. If it gives as much pleasure to me as my other Adcom gear, I can say no more."

E.R., Port Jefferson, NY
"Very natural sound. Best I've heard."

C.N., Pasadena, CA
"Stereophile reader
"Best-value CD player under $1000."
T.S., San Antonio, TX  
"Stereophile reader
"I sold a Surround Decoder EQ/Analyzer and my old CD player for this. After one day I can already emphatically state that it was worthwhile!"

L.C., Redmond, WA  
"Sounds great! Satisfied."

S.K., Vail, CO  
"GREAT!"

J.S.W., Davenport, IA  
"Very impressed with all of my Adcom equipment."

J.D., Trenton, NJ  
"Stereophile reader
"Excellent product."

Y.U.K., Holland, PA  
"Great-looking machine. Sounds great. Could work on vibration damping though."

M.K.G., Bedford, NY  
"The Stereo Review analysis of the power amp & CD player were key to choice of Adcom over NAD."

P.M., Belle Harbor, NY  
"Excellent."

L.B., Wayne, NJ  
"Excellent."

R.R.E., New York, NY  
"SUPER!"

J.R.M., Rio Piedras, PR  
"Excellent."

J.A., Miami, FL  
"Stereophile reader
"Great resolution, detailed and very clear."

E.A.M., Raleigh, NC  
"Wonderful sound, quality, looks and warranty!"

D.K., Tampa, FL  
"Enjoy the quality, sound & design."

F.M.H., Miami, FL  
"Best CD player in any price range! Out-performs all other players by far. I couldn’t be happier. I cringe at the thought of owning an entire Adcom system (with excitement, of course!)."

D.I., Decatur, IL  
"Sounds great."

E.V.B., San Francisco, CA  
"Purchased based on proven quality of current Adcom amp, preamp, & cartridge."

M.L.C., Bedford Twp., MI  
"I’m very pleased with Adcom’s products. Excellent quality at a great value. I’m very happy I found out about your company. Now I can listen to music the way it should be heard."

E.S., Arlington Hts., IL  
"Stereophile reader
"This stuff is unbelievable! You guys are the greatest!"

R.R.F., Manchester, CT  
"You can hear the difference between the 575 and my old Sony disc player and I like the sound. Soundfield is much larger and more detailed."

T.A.T., Lowell, MA  
"Stereophile reader
"I really enjoy your components and now your CD player. It’s outstanding, well worth the upgrade."

J.K.I., Mission Viejo, CA  
"Your products are truly a joy to listen to. The sound is incredible!!!"

D.S., Kiel, WI  
"GREAT, SOUNDS PERFECT."

R.E.D., Milltown, NJ  
"Perfect appearance and performance. Very satisfied! A finely engineered product that does what it should do, at all times, and sounds superb!"

B.G.W., Menonville, MI  
"God have mercy on the competition…Why would anybody buy anything else?"

A.F.B., Corvallis, OR  
"Reproduction of top 2 octaves of piano keyboard is beautiful. Most other CD players sound awful. AF/PC makes no difference."

B.S., Houston, TX  
"Stereophile reader
"Nice features, good package, sounds good."

T.S., R. Palos Verdes, CA  
"I looked a lot for my first CD—I gathered that specs like 20-bit 8x-0.5 don’t mean as much as the public is led to believe. The Adcom CD sounds most analog to me—chose it for its warmth."

D.A.S., Long Beach, CA  
"Stereophile reader
"Had to return 1st model due to malfunction. Performance better than previous Sony 910. Excellent clarity. AFPC is pleasant surprise. Wish remote control had time button."

G.F., Dearborn Hts., MI  
"Much better sounding than my Sony player…"
T.W., Pensacola, FL  
"So far I like it. Especially like styling and layout. Clean without annoying lights and knobs."

G.S.B., Tulsa, OK  
"I like the AFPC feature and price performance."

I.R., R. Palos Verdes, CA  
"Very pleased with performance."

S.D., Corvallis, OR  
"Don’t raise any of your prices."

N.K., San Jose, CA  
"I’m glad you came out with a ‘white’ system."

J.A.G., Niles, OH  
"Although I much prefer analog to digital sound, it is hard to find records these days. Having said that, I found the 575 to be as close to analog as I could find without spending over $1000. Good job!"

G.J.F., saline, MI  
"Very pleased with previously purchased Adcom products. Appreciate quality components without features that do not add value."

G.H.E., Earlsville, VA  
"Solid construction, good fit & finish."

L.L., Cambridge, MA  
"Best-sounding CD player ever heard."

M.K., Belleville, IL  
"This component sounded better than Denon & Yamaha."

D.T., Omaha, NE  
"Excellent unit, definitely better than my GCD-200. Suggestions: 1) positive polarity should be with LED off; 2) switch added to turn off time display."

C.M., Potomac, MD  
"Soon to switch to Adcom preamp/amp. Thanks for insulated cable—a real plus! Very impressed with isolation of musical instruments."

T.R.W., Brookeville, MD  
"A significant improvement..."

W.C., Jersey, NJ  
"I compared your product to the new Denon 1520 CD player and I chose yours because it consistently gave a better sound at higher frequencies. The sound was ‘crisper’!

J.M., Amarillo, TX  
"All Adcom equipment has a high performance-to-price ratio. Sounds like music; is innovative."

P.G.J., Salem, OR  
"It sounded great in the dealer’s demo room."

L.R.L., Birmingham, AL  
"If you could add direct access on the machine itself, the player would be complete. As is, the GCD-575 has a big edge on the competition."

J.R.J., Aurora, CO  
"Performance, feel, look is great. I’m not happy, however, with its resistance to vibration and skipping. Many models, in fact all others I’ve used, are much better with resistance... only complaint."

H.R.F., West Hills, CA  
"Your products sound great. Keep up the great work...

R.C., Nashville, TN  
"I’m so far very impressed with its solid feeling, quality and precision—haven’t got system all together yet. Seems very nice."

D.K.J., Rowlett, TX  
"Much improvement in sonics over the JVC (too harsh—particularly in the highs). Wish all recordings were as high-quality as Telarc!!"

S.L.Q., Oneonta, NY  
"I’ve been told there is no difference in CD players.— Wait till they catch wind of this one. Thanks."

K.R.D., New Berlin, IL  
"Excellent performance at reasonable price."

J.F., N. Miami Beach, FL  
"I like the quality of your equipment as well as the sound of them. Keep your standards of quality and performance."

R.T.W., Salem, OR  
"Very pleased."

D.H., Chicago, IL  
"Sounds very good, deeper soundstages."

R.S.T., Fort Worth, TX  
"The CD player is very simplistic. High-quality aluminum frame with ‘real’ glass display window. Good work, keep up the high-quality workmanship."
J.F.S., Nashville, TN
“I’m starting right now to save enough ‘habit’ money to upgrade to Adcom GFP-555 & GPA-545. Please don’t raise prices until you next hear from me. Thanks!”

S.L., Eden, NY Stereophile reader
“Smother, less ‘grit,’ dynamics.”

P.M., Rochester, NY
“Appearance & ease of operation were also important in our decision to buy this CD player.”

W.L., Laguna Beach, CA
“I am very pleased with the sonic & aesthetic performance of all my Adcom components.”

L.B., San Anselmo, CA Stereophile reader
“Excellent! Variable outputs and polarity switch greatly improve sound.”

D.A., Jersey City, NJ
“Had not heard as much about Adcom CD compared to Denon or NAD.—But hearing it convinced me.”

D.D., West Peterboro, NH
“I put off purchasing new equipment for 9 years because nothing out there was worth the money! THEN CAME ADCOM!!!”

R.J.G., Clearfield, PA
“I’m very pleased with the unit—one of the best I have heard.”

J.N., Stony Brook, NY
“Your separates drive all the speakers well. Your CD player is a nice addition (very clear).”

N.F., Schenectady, NY Stereophile reader
“In one word, ‘unforgettable!’ ”

B.J.C., El Cajon, CA
“Very pleased with work done on my preamp. Problem with it, and you squared it away with no hassles. Thank you.”

S.K.F., Miami, FL
“Awesome piece of equipment.”

L.F., Chicago, IL Stereophile reader
“All of your products are great and I plan to research your product line further.”

C.C.P., San Diego, CA
“Contrary to reviewers’ comments regarding ergonomics, it’s easy to use and looks great.”

M.P., Horicon, WI
“Sounds incredible!”

P.A., Asheville, NC
“Extremely impressed!”

D.A.J., New Canaan, CT
“The white component finish is really nice.”

D.H., Willsoboro, NY
“Adcom amp/preamp/tuner also very good.”

S.R.C., Anchorage, AK Stereophile reader
“Your products are far superior to any others in the same price range.”

T.J., St. Paul, MN
“I like your stuff.”

J.C., Manchester, NH Stereophile reader
“I bought this player for the reasons that it does a lot of things well for the price—what do I know. It looks nice, white, with simple, refined look—not busy with buttons, lights, etc.

D.E.E., Colleyville, TX
“Great reviews/feature/performance.”

L.P., New York, NY Stereophile reader
“Very pleased with sound of player. Compares favorably with my SOTA/Premier MMT/Accuphase MC Combo.”

D.H., Hampton, NH
“I’m delighted with the sound, looks, and value of your equipment.”

R.W.H., Grand Rapids, MI Stereophile reader
“Excellent machine. Excellent sound.”

J.K.C., Cary, NC Stereophile reader
“Sounds great.”

G.D.S., Sycamore, IL Stereophile reader
“The sound, definition, & soundstaging are truly magnificent!”

P.K., Scottsdale, AZ
“Works & sounds great!”

C.B.R., New York, NY
“Good value as usual.”

D.S., Lancaster, CA
“BEAUTIFUL MACHINE.”

R.K.L., Riverside, CA
“NICE UNIT!”
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SOTA ELECTRONIC FLYWHEEL, $195; Target Iso/Bases, 2 large, $75 each; 2 small, $55 each; Electrocompanion Pre-1 w/new EC-1 circuit, $895; DB Systems photo EQ kit, $15. (512) 695-9763 eves./wends.

AUDIO-TECHNICA OC-9, sealed, $350; Rappaport class A amp with Rappaport Crossover, $650; SOTA Panaramas, new, $850; AudioQuest high output, 20 hrs. use, $250. OBO. Wanted: Polk cable. Richard, (509) 747-5512.

CONRAD-JOHNSON PV8, $1349; Sony ES 650, $599; Fosgate 360211, $749; Counterpoint SA2, $699; SA3.1, $729; Grado B8X, $99; Celestion SL600, $1199; MIT Shotgun, 2 meters, $399; 15', $875; Thiel O4A, $1599. (714) 861-4830.


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— Gramophone

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— The Washington Times

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The Stereophile, October 1989

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The Stars

Though it’s Stereophile’s most popular single feature, “Recommended Components” has many problems. The biggest is that you readers use it—but then, if I didn’t want that, why would I publish it? More accurately, problems come from uncritical use, as if only products that “make” “Recommended Components” are worth buying. Alternatively, it’s concluded that products which drop out have somehow been consigned to an outer darkness.

Even hedging RC with every warning we can, many people look only to it for buying advice. The commercial importance of “Recommended Components” has gotten so great that now manufacturers are calling us ahead of its publication to see whether they’re in, to see if they can get a product to us in time for inclusion! (Rest assured, manufacturers don’t see the listing before you do; they are alerted that a component may be included somewhere, but only so we can verify the price and see if the product is still made!)

This is not to say we don’t stand behind our recommendations—far from it. The problem is that “Recommended Components” just scratches the surface. I could easily put together an assemblage of Class B components (not to mention Class C or D) that you couldn’t stand to hear, just because all their tendencies went in the same direction. So much depends on setup, your room, and the music you like—choosing good components only gets you halfway there. This is one reason why good dealers are worth their 40 points of margin. If they can take a pile of acrylic, plastic, steel, aluminum, silicon, and diamond, and turn it into music, this is not insignificant!

Equally strong exceptions occur in the realm of products not recommended. One product is in, another out. Frequently it hinges on an unresolvable dispute over sound quality, or just a few bad experiences a contributor has had—a question of three out of five breaking instead of just two out of five—or a particularly fussy system-matching characteristic. This is not arbitrary, but we are finnicky. We try to include all worthy candidates, while avoiding anything that might lead you and your money astray.

And look at the products unreviewed! Amplifiers from Rowland, Audio Research, Threshold, not to mention the more mid-fi companies; uncounted CD players from Yamaha, Sony, Denon, etc.—all somewhat different, some jewels, much trash; hundreds of speakers, some good; possibly significant inexpensive turntables; cables that no one could review, even working full time; whole categories we don’t cover, such as cassette decks or high-quality car stereos. Yet much of what you will buy, and probably most of what you already own, is made up of just this kind of stuff that we, in our only-too-human inadequacy, can say nothing about.

When it’s all finished I figure you’ll just do the best you can with the best we’ve been able to provide. But be cautious: Read the original review! Listen for yourself! Listen to your dealer’s advice! Listen to what your friends say! Follow Sam Tellig’s advice and pretend you bought the product—see how it sits in your imagination over time! Listen again!

As an hors d’oeuvre (or a dessert, depending on when you read “Final Word”), here are a few private recommendations. These are products I don’t think you can go wrong with within their price ranges (and usually far above), unless your karma clashes with theirs: the Versa Dynamics 2.0; the Well-Tempered Turntable; the Rega tonearm; the Grado ZTE+1; the van den Hul MC-One; the Ortofon MC 3000; the Thiel 1.2; the Magnepan 2.5; the Vandersteen 2Ci; the Spica TC-50; the Mirage M-1; the Mark Levinson No.26; the Vendetta Research SCP-2A (most outright stunning component, along with the Versa Dynamics, I’ve heard); The Mod Squad Line Drive Deluxe; the Levinson 20.5; the VTL 300; a 1970 or ’71 Mercedes Benz 300SEL 6.3.; the Kimber Kable 4AG (but the price is ridiculous); the CAL Tempest II. As you can see, most of these for-sure products are expensive, but some are not (the Mercedes costs only $14,000 or so)—and it goes really fast). And not only are they all really good, but you could use any of the above with any of the others and get good sound.

Now that I’ve done it, I’d like to see the other Stereophile writers put out their list of “can’t lose” components. Sure, they’ll all be different, but you’ll not only hear about more equipment, you’ll know more about the reviewers.

—Larry Archibald

Stereophile, October 1989
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