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FEBRUARY 1990

VOL. 13 NO. 2

COMING ATTRACTIONS

As you can see from this month's cover, we're pretty proud of our very first CD venture. It should enable you, the reader, to get a better handle on our writers' value judgments, as you'll have access to the very same recordings used in the reviews. But the CD hasn't sapped all our creative energy: the March issue will be stuffed full of goodies.

Larry Greenhill reports on his auditioning of a new sample of a loudspeaker that has been in production for a decade, the Snell Type A/III Improved, while Thomas J. Norton interviews the creative mind currently behind Snell products, Kevin Voecks. *Stereophile's* founder, J. Gordon Holt, continues his odyssey into the world of high-end video with a look at monitors from NAD and Proton, while those who are serious about getting the best from their systems will find Gordon's description of his

own search for the perfect listening room fascinating.

Richard Lehnert turns in a full report on the excellent Enigma Retro reissues of classic freak rock from the Buckley's (Tim and Lord), Captain Beefheart, and the GTO's; Denis Stevens listens to the recorded legacy of Sir Thomas Beecham; Guy Lemcoe lives with the new all-Californian Icon CD player from CAL; Robert Harley has been putting the Tice Titan/Power-Block AC line conditioner through its paces, as well as listening to 1-bit CD players; while John Atkinson will report on the sound of some of the latest minimonitors.

But the big feature in March will be an in-depth report from the Winter CES, held last month in that center of culture, Las Vegas, NV. Guy Lemcoe and Tom Norton will be letting you know about who was doing what, with what, with whom, to whom.

See you next month! —John Atkinson

LP Sales Announcement

Those who want to buy *Stereophile's* first LP, *Poem*, which features flute sonatas by Prokofiev and Reinecke, as well as the rhapsodic title work by Charles Griffes, should note that the address and telephone number for orders have changed from those listed in the

December 1989 issue (there were a number of problems with the company that was servicing LP sales). All orders should now be sent to: *Stereophile* LP Sales, Kable News, P.O. Box 364, Mount Morris, IL 61054. Tel: (800) 435-0715. *Poem* costs \$17.98, including shipping and handling.

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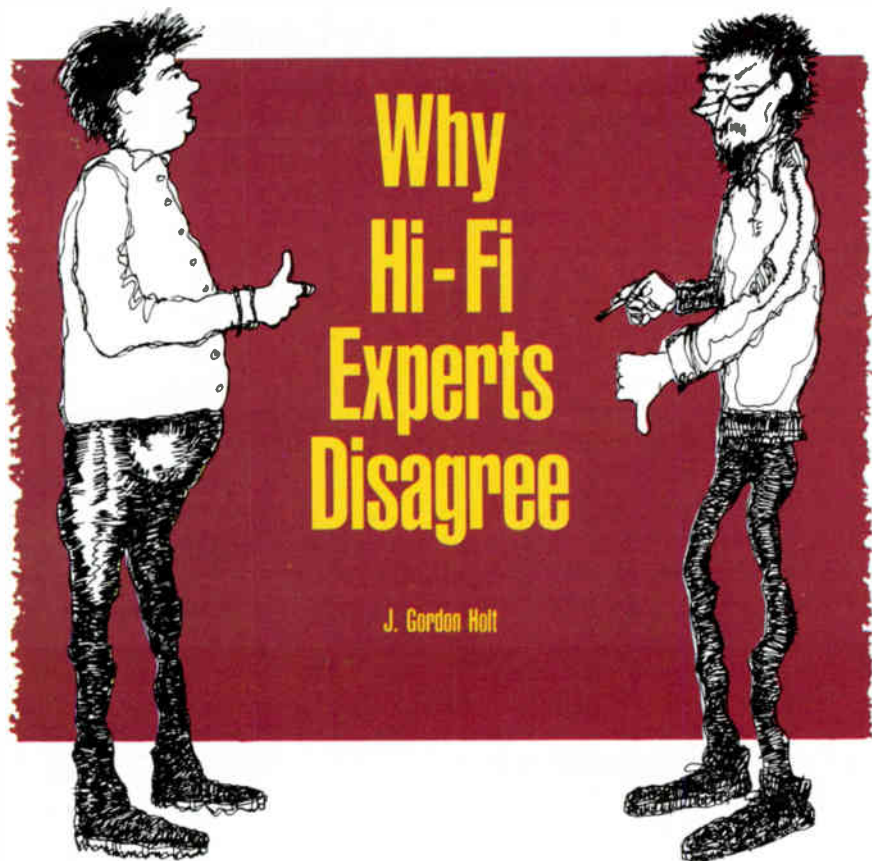
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Why Hi-Fi Experts Disagree

J. Gordon Holt

Dateline: late August 1989. The scene: my palatial office in the Stereophile Tower. Present were the magazine's official technowizard Robert Harley, Circulation Kabuna Michael Harvey, and myself. The subject under discussion was the program for the Stereophile Test CD, launched in this issue, and Bob had been dazzling Michael and myself with a description of the sophisticated signal-processing power offered by the Digidesign Sound Tools music editing system with which he had outfitted his Macintosh IIX computer. (He had to fit it with a 600-megabyte hard-disk drive!) "It'll even do edits as crossfades as well as butt joins," enthused Bob. "Let me tell you about the crossfade I once did when editing a drum solo for a CD master that lasted ten seconds. . ."

We had just decided that the channel-identification tracks would feature the ex-radio announcer voice of the Audio Anarchist, Sam Tellig, with its dark chocolate midrange, and Larry's Basserman dog, Ralph. "But J. Gordon Holt's speaking voice has to be on it, too," I insisted. "We're featuring a number of Gordon's purist recordings," replied Bob. Inspiration struck. "Gottit! Let's record Gordon reading one of his editorial pieces from an early issue of the magazine. We'll use as many different microphones as we can muster, and show that, at least when it comes to recorded sound, there are, in fact, many absolute sounds."

Michael agreed that it was a good idea; Bob agreed to obtain the microphones; Gordon agreed to fly down from Colorado; I started

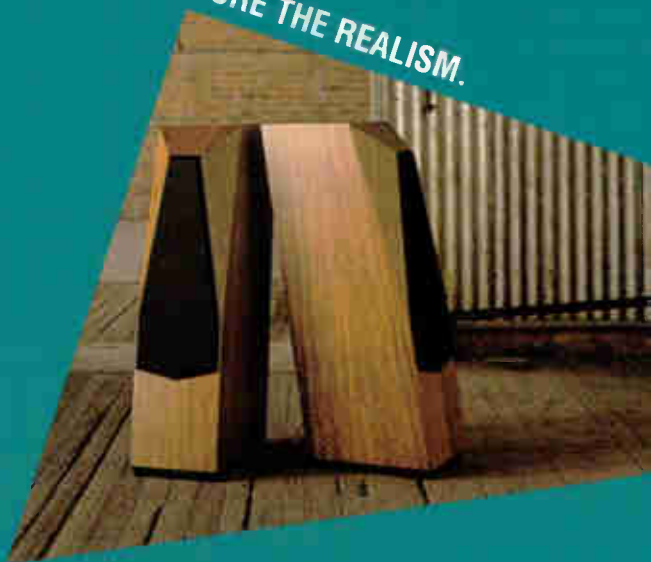


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to plough through Volume I of *Stereophile*! I found nothing suitable in the very first issue, published back in November 1962, the very first "As We See It" column focusing on issues that were too general. But then—"Paydirt!" I cried. Vol. I No. 4, cover-dated March-April 1963, carried the opening salvo in Gordon's campaign against RCA's dreadful "Dyna-groove" trick, which predistorted the signal cut into the groove walls. Though this meant the deleterious effects of cheap cartridges would to some extent be canceled, this would be at the expense of forcing owners of good cartridges to listen to extra distortion. But more importantly, the very first feature in that issue, a succinct but forceful summing-up of Gordon's philosophy of sound reproduction, could have been written today—particularly as its conclusions are illustrated by the music recordings we chose to put on the *Stereophile* CD. It is a measure of Gordon's greatness that this piece was written in 1963!

Gordon was happy to read an edited version for the CD; with no apologies, I reproduce almost the entire text² as this month's "As We See It."

—John Atkinson

The high-fidelity initiate, bewitched, bothered, and thoroughly confused by the staggering selection of components he must choose from, often turns to a high-fidelity expert to assist him in assembling his dream system. The expert may be a local consultant, a dealer, or a magazine that the prospective buyer trusts as a source of accurate, down-to-ear information.

If this seeker of high-fidelity truth is wise, he will consult *one* expert and no more. The more expert opinions he gets, the more confused he will become, because every expert opinion will be different from all other expert opinions.

About the only thing that all high-fidelity experts agree about is that high-fidelity is supposed to be realistic sound reproduction. They may even agree that Marantz amplifiers are pretty good, and that Thorens makes a passable turntable. But try to pin them down about pickups, or other amplifiers, or tuners, or par-

ticularly loudspeakers, and one expert's preference is another one's anathema.

Of course, any expert worth his salt can tell you why there is so much disagreement. The reason? Well, the other experts, although very nice guys, don't *really* know what they're talking about. Oh, they're pretty good *technical* men, mind you, but they don't really have the perceptive ear that's needed for a truly valid *musical* evaluation of reproduced sound.

This is the crux of the matter. Measurements can help to describe a component's performance, but the final criterion for judging reproduced fidelity has always been the ear, and when we start to fall back on subjective judgments, we always end up with a diversity of opinions.

It isn't just that "different people hear things differently." Everybody who hears is responding to a set of pressure variations in the air around him, and if these are the same in the living room as they would be in the concert hall, each listener will hear an absolutely realistic replica of the original sounds, regardless of the idiosyncrasies of his own hearing. His ears may have a few response peaks and no response at all above 4000cps, but these weirdities will affect his hearing whether he listens to the original or to the reproduction, so they shouldn't affect his evaluation of the reproduced sound. Except for one thing: The listener with non-existent hearing above 4000cps will be oblivious to any system irregularities above that frequency.

The human ear differs in its degree of tolerance to distortion, too. Obviously, the person with high-frequency hearing losses will miss any distortion that is limited to the upper range, but even people with identical hearing acuity vary in their sensitivity to small amounts of distortion that fall within their range of response.

A listener can train his ears to pick out all kinds of details in the reproduced sound—peaks, dips, phase shift, imbalance and the like—but many such trained ears have never heard a live orchestra, so they are hardly qualified to tell you what is and what is not realistic. Also, if they have never heard a system with really low distortion or really smooth response (which many experts have not), they will be oblivious to small amounts of muddiness or roughness that will be quite evident to someone who is accustomed to listening to a truly top-quality system.

¹ Vols. I and II of *Stereophile*, which were large-format rather than digest-sized, are currently out of print, but we are investigating the possibility of reprinting the perfect-bound omnibus editions.

² Most of the final quarter of the article was an appendix to the main theme on different kinds of "expert" and much more specific to its own period. I therefore omitted it and indicated its absence with ellipses (. . .).

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Listeners with identical hearing acuity and identical standards of judgment will usually be highly critical of different aspects of a system's performance. Thus, expert A may be terribly, terribly critical of what happens in the high treble range, expert B may be hypercritical of bass, and expert C may have a Thing about middle-range smoothness or "coloration."

We can see how this might influence their judgment of, say, a loudspeaker system. If it is a bit rough at the top, smooth through the middle range, and bass-shy, expert A won't like it much; it will offend his critical ear for treble. Expert C won't be too crazy about it either, because of the low-end deficiency, but expert B, even while admitting that "the top isn't as smooth as I have heard," and "the low end leaves a little bit to be desired," will just as likely sum it up as "one of the most natural, musical-sounding speakers" he has tested.

They can all hear the speaker's shortcomings, in the sense that the treble peaks and bass thinness will register on their hearing mechanism, but each picks out that aspect of its performance that is of particular concern to him, and tends to judge it mainly on the basis of that aspect.

No equipment critic worth his salt will judge a component solely by one criterion, but it is not at all unusual for an equipment reporter to "slant" his evaluations on the basis of a few things which he considers to be of particular importance. As a matter of fact, it is almost impossible for him to avoid doing this, at least to some extent.

High fidelity may be a science, but it isn't an exact science. There are enough things about it that aren't understood to leave room for a goodly amount of educated opinion. This is one field, though, where one man's opinion is *not* as good as another's.

Many writers of books and articles about high fidelity advise the prospective buyer merely to choose what sounds good to him. Certainly there is no sense in anybody's choosing a music system whose sound he doesn't like, but in a field where definite standards of quality exist, simply liking something does not necessarily mean that it is good, by those standards. A person who likes abstract art, for instance, may be judging it by any number of criteria, but resemblance to the original scene is not one of them. If it were evaluated on the basis of its "fidelity," or resemblance to the orig-

inal scene, it would have to be judged a very poor copy. Similarly, the listener who prefers his sound shrill and brassy is perfectly entitled to his preference, but *he* is not choosing on the basis of fidelity, either.

This raises the question of whether high-fidelity can, or should be, *better* than the real thing. Certainly it can be made to sound richer, or bigger, or more highly detailed in a recording than it ever is in the concert hall, and the net result may actually be more exciting than anything heard at a live performance. The gimmicked recording may even, on occasion, serve the intent of the music better than a concert hall performance, but whether it sounds better or worse than the original, it is not *true* to the original, and thus cannot be considered a high-fidelity reproduction.

Sound recording may eventually become a creative art in its own right, producing musical sounds that bear no relation to any natural sounds. Indeed, some branches of it—pops and so-called electronic music—are already well on their way in that direction. This is *not* high fidelity, though, and there's no sense pretending that it is.

As long as we are concerned with the realistic reproduction of sound, the original sound must stand as the criterion by which the reproduction is judged, and most hi-fi experts agree that this is as it should be. The problem, however, lies in defining this original that is to be duplicated.

For instance, take one symphony orchestra, place it on-stage in one concert hall, and then try listening to it from a) the front row, b) the twentieth row, and c) the fourth row of the second balcony (or peanut gallery). The orchestra will sound quite different from each location, so which of its sounds is the one that best represents the orchestra? Obviously, the sound that is heard from the best seat is the best representation of the orchestral sound, but who is going to claim that *his* preference for a seating location is the only valid preference, and that anyone who prefers to sit elsewhere has bad judgment? Nobody but a dyed-in-the-wool nut will take this attitude.

You may prefer a close seat because you hear more sonic detail from there. Somebody else will prefer a more distant one because the sound blends better farther out in the hall. Another may choose the balcony because, in that particular hall, the brasses or strings, or the

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P H I L I P S A N D D U P O N T O P T I C A L



woodwinds come through more clearly or more richly when heard from a high vantage point. In other words, your best seat is best *for you*, but not necessarily for everyone else.

Where does this leave us? Well, it leaves us on slightly less firm ground when it comes to judging the original sound. There *is* an out here, though. If a system reproduces a recording the way it was intended to sound—that is, if it makes distant miking sound distant and close miking sound as close as it actually was—then we can justifiably say that the system is reproducing this aspect of the recording with fidelity. If the other aspects of the sound—frequency range, instrumental timbres and so on—come through as they were recorded, then the reproduction is a high-fidelity one.

In other words, as far as the reproducing system is concerned, it is fidelity to the recording that counts, rather than fidelity to the original sound. In order to judge how accurately the system is reproducing the recording, it is necessary to know precisely how the recording was made, and how the recording microphones affected the sound (which they always do to some extent). These, though, are the things that are almost impossible to find out about commercial recordings, which is why equipment testers who are really serious about their calling make their own recordings, using the best microphones and recorders they can lay their hands on, and use these recordings for judging the playback equipment they are testing.

A tape that is recorded through microphones of known characteristics, and is then played back through a carefully calibrated professional-quality tape recorder, will provide the most dependable audio signal source available for listening tests. The reproduction will never sound exactly like the original, because no living room has the same acoustics as a concert hall, but orchestral timbres should sound natural, the full frequency range of the orchestra should be there in proper balance, and the sound will be clean enough to reproduce without muddiness on a system that is free from distortion.

Discs cut from such a tape, under carefully controlled conditions, can provide a pretty good test for pickups and preamps, too, but there is less certainty about the sound of a disc, because too many variables—processing problems and playback styli, to name but two—can

affect the way it will reproduce.

It is entirely possible to assemble a very fine-sounding system from components that are intrinsically third-rate, by balancing one component's colorations against those of another. But replace any of these components with one that is actually superior, in that it introduces *less* coloration than the "standard" unit, and the system will sound worse than it did before. Much the same thing can happen if a mediocre loudspeaker, which was effectively masking distortion that was being fed to it, is replaced by one with wider range and better transient response. The better speaker, revealing all the sonic flaws that the other one obscured, will sound *worse* than the mediocre speaker.

This is how many experts get themselves into trouble. They assemble components that compensate for one another's deficiencies, with the result that each time they substitute a new one for comparison purposes, their judgments of it are valid only insofar as that component is related to the rest of their own particular system . . .

The best source of information about equipment is someone who 1) attends concerts fairly regularly, 2) uses good master tapes of his own making for listening tests, 3) has the equipment and the know-how to check measurements against subjective reactions, 4) has frequent access to new components, preferably on the service bench, and 5) has the good judgment to know that his taste in sound may not be the same as yours.

This seems like a tall order, but there are many such experts to be found in the better hi-fi shops and behind the pages of some hi-fi publications (such as *The Stereophile*, of course).

The best that any expert can do is to lead you to components that are intrinsically excellent. You will still have to make up your own mind about such matters as cost and appearance and flexibility, and you should try out a few different loudspeakers in your home to find out which ones suit your acoustical environment and your taste in reproduced sound. The expert cannot, and will not if he has any sense, choose *the* component for you, because your ear *is* the final judge in the last analysis. If *no* combination of really good components sounds good to you, then you probably don't really want high fidelity, and can forget all about the expert opinions. They don't agree anyway. **S**





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PHILIPS

LETTERS

We regret that resources not permit us to reply individually to letters, particularly those requesting advice about particular equipment purchases. Were we to do this, a significant service charge would have to be assessed—and we don't have time to do it anyway! Although all are read and noted, only those of general interest are selected for publication.

However, . . .

Editor:

Enjoyed the footnote at the bottom of p.167 (October '89 issue) regarding Ivor Humphrey's challenge to you and Ken Kessler to start a review with "However,"

We thought about it in the office for a minute or two, and came up with:

"However, and whenever, you travel the motorways of Great Britain, you can't help avoiding blah blah blah . . ."

Kind regards,

John Bamford

Hi-Fi Choice, London, England

Grunddddddge

Editor:

For long I have cringed every time I encountered the word "grunge" in the otherwise hallowed pages of *'phile* (as you might put it), but have hesitated to criticize lest I appear a member of the nitpicking fringe. However, meeting it thrice in the space of an inch and a quarter in Vol.12 No.12 has caused me to lunge for my typewriter and take the plunge, knowing that I can't avoid an astrindgent tone but hoping to suppress my more pundgent language.

I realize that "grunge" is a neologism, but it corresponds with all English analogues involving the sequence *nge*; "grunge" is, to put it charitably, strandge. If even *TAS* can get it right, shouldn't you feel challenged to do the same?

After all, you can accumulate the money saved by omitting those d's, pool it with that saved by copious use of apostrophes (as in 'table), and every ten years or so treat the staff to dinner, or at least lunch (sorry: the virus is, er, virulent).

William H. Burke

Kalamazoo, MI

I took up this very point with LA and JA not long after I began copy-editing this magazine. "Look," sez I, "here in Merriam-Webster's Ninth New Collegiate Dictionary, Stereophile's official reference, it's spelled without a 'd'. What gives?" From his elevation of eminence, LA sez, "I know. It just looks even grundgier with a 'd'." Thus spake Archibaldra. —RL

Van the Man

Editor:

Richard Lehnert's review of Van Morrison's *Avalon Sunset* in the December issue was one of the best reviews I have read in years. Although I do not consider myself a religious person, the beauty of Van's vision cannot be denied. Your opening sentence summed up what I have had trouble expressing about his lyrics. Thank you for codifying my thoughts about one of my favorite performers.

Glynn Wilson

Cleveland, OH

Offensive and careless?

Editor:

I have been a subscriber to *Stereophile* for some time now and have enjoyed reading the contents of your publication with pleasure and enlightenment. One of the things I like best about *Stereophile* is the careful review of products and statements, in general, of audiophile products.

The comments by Sam Tellig in the October 1989 issue (Vol.12 No.10) make an offensive and careless exception to this policy in his text where he raps the "Kludges" all-in-one CD players: "Magnavoxes turned into \$1200 wonders by the addition of \$60 or so worth of parts, an hour's labor, and a favorable review in *Stereophile* or *TAS*." His footnote 2 on p.65 is even more offensive.

I have been the contented owner of two Euphonic Technology CD players, the newest one having recently been returned from Michael Goldfield's "miracle lab," and while I cannot attest to the cost of parts or labor, there is no question in my mind that I have received full value for what I purchased in terms of the tremendous improvement of sound. I realize that Tellig did not single out any company, but I am sure others who are modifying basic CD players (Mod Squad, etc.) would be equally offended by his statements. I have never questioned what parts have been put into these players; I have judged them only on the basis of the sound quality. I am purchasing techni-

cal skills to enhance the musical experience.

Robert F. Crosby
New Haven, CT

Angry and disappointed

Editor:

I must admit that at this late date I am extremely angry and disappointed, yet by no means am I surprised at your lack of ethics. It is to be expected of the Fourth Estate: He who yells loudest, etc.

I am, of course, referring to the letter from Andrew Hefley that you printed about six months ago, in which I was accused, abused, and generally defiled by innuendo, lies, distortions, and half-truths. I sent you a rebuttal letter intended to defend myself, which you have not published and therefore ignored. This, in and of itself, is the total evidence of your prejudice. Obviously the audio public at large might gather that since no reply was forthcoming from me, the statements made about me must be true.

Please rest assured, however, that some day down the road, you might just need or want something from me and, under any possible situation that might arise, I will nicely and miraculously have a "long memory."

Ethically yours,
James Bongiorno
Santa Barbara, CA

As this is the first letter I have received from Mr. Bongiorno concerning Andrew Hefley's account of the demise of the original GAS company ("Letters," May 1989, p.35), I can only assume that the earlier letter to Stereophile he mentions went astray. My apologies if this was the case.

—JA

Venting his frustration

Editor:

When I wrote my letter to *Stereophile* (Vol.12 No.11), I was venting my frustrations, primarily because the Sony Corp., after I had bought two Discman portable CD players, 1) screwed an underage kid out of at least \$750 or more, and 2) the bastards got away with fraud—when they should have been sued out of business. But understand this: I can understand Sony ripping off the American public (after all, I was stupid enough to buy two Sony Discmen!), but this John Atkinson, who replied to my letter, *he* is the real criminal!

The very *idea* of not suing a company that blatantly defrauds their customers, breaks,

explicitly and implicitly, the warrantee of merchantability, and worse still, recommends repeating the same mistake in much the same way as the toadies from Sony did when they called me about my first letter, is beyond distasteful; it is downright sickening—Mr. Atkinson, are you sure you are not being paid off by Sony on the side?

It turns my stomach to hear that an investment of over \$750—the two CD players—is compared to "an inexpensive watch or camera." JA, what the bloody hell do you call an expensive watch or camera? It might be nice to watch you slaving away at minimum wage for your audio and video equipment, only to get rid of them because no one had the guts to stand up and do something!!!

Richard Myers

Ohio State University

This letter was accompanied by an instruction not to change one word. Readers may recall a couple of letters that appeared last November concerning an apparently limited lifetime for two of Sony's earlier portable CD players, the D5 and D7S. I informed Sony that I was going to publish these letters in order that they could reply in "Manufacturers' Comments," and added a conjectural note based on my own experience that the cost of the skilled labor needed to repair such high-tech components was out of proportion to their retail price, just as it is with similarly priced cameras and watches. "Spend \$150 to repair a \$200 Discman? You might as well buy a new one" was the gist of my comment that so upset Mr. Myers. It seemed, and still does seem, a fair, if unfortunately accurate, statement. My D7S is still sitting in my desk drawer, terminally afflicted with laser skip.

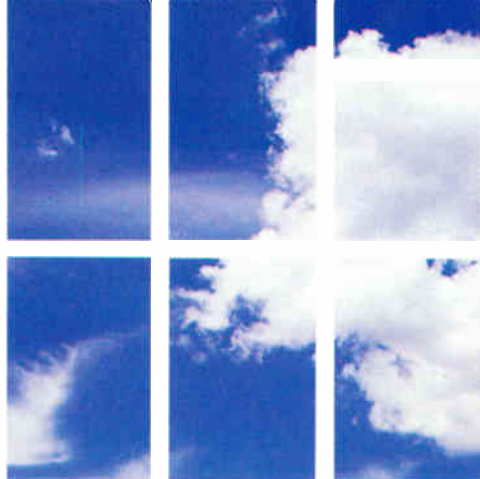
—JA

Semantic ambience

Editor:

I apologize to Mr. Katz for the couthless manner in which I pointed out in my letter last April (Vol.12 No.4 p.15) what I feel to be his gaffe about ambience extraction as expressed in "Extraction vs Generation" (Vol.11 No.11), for I see now where he is coming from. I believe what we have here is a confusion of terminology.

The type of ambience-recovery technique described by Madsen, wherein the two front channels are merely delayed and fed to side speakers, is "a very effective *psychoacoustic*



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ambience extraction device," but it does not physically separate-out the ambience signal. Instead, "your ear/brain computer performs the task" of extracting it. "In contrast, a (true) ambience extraction device may also utilize a delay, but it works differently." True "ambience extraction detects the natural reverberation or ambience present in two channel material, and then sends it to" the surround speakers. In this arrangement, the delay "causes us to ignore much of the (front-channel) material emanating from the surround speakers." The latter is what I had in mind when referring to ambience extraction. However, I will grant Mr. Katz his assertion that the former can also be called ambience extraction, since that is effectively what it accomplishes.

Why all the quotes in the preceding paragraph? They were lifted directly from an article that was copyrighted in 1983 by, guess who? Mr. Katz himself.

I rest my case.

J. Gordon Holt
Boulder, CO

Genius bashing?

Editor:

I have never cared for the "genius" bashing that writers for *Stereophile* joyfully indulge themselves in. Cracks about Matthew Polk or Bob Carver have never made me think less of Matthew Polk or Bob Carver (after all, as an adult I'll form my own opinion of these men based on personal experience with their products), but it does make me think less of *Stereophile*. And wasn't someone thinking how it would appear when, after years of viciously slurring Bob Carver in the pages of your magazine, you had the gall to praise interaural crosstalk cancellation (and specifically his Sonic Hologram) in Bill Sommerwerck's article concerning the system of the future?

Gary F. Phillips
Chicago, IL

Hirsch bashing?

Editor:

Many of us are familiar with Julian Hirsch's "non-reviews" of audio equipment, for the most part only verifying the test specifications already provided by the manufacturer. We are also familiar with his apparent inability to hear significant differences among most similar components, be they speakers, CD players, amplifiers, whatever—he tells us so himself. So much for Mr. Hirsch's hearing ability.

To his credit, however, Mr. Hirsch does not stoop to using his reviews as a platform for bashing the staff of competing publications, as does John Atkinson. Mr. Hirsch is more of a gentleman, I guess. He also does not waste his readers' time bemoaning his having to "suffer" through preparing reviews of inexpensive loudspeakers and having to "pamper" himself by using an \$11,500 pair of Levinson No.20.5s to review a \$550 pair of Spica TC-50s or a \$250 pair of Celestion 3s (Vol.12 No.10).

Perhaps Mr. Atkinson should keep his petty, snide, elitist comments to himself, leave the writing to those who can focus on the equipment under review, and concentrate instead on getting *Stereophile* to its subscribers *before the end* of the month for which it is published.

Do your job, Mr. Atkinson. Keep your unkind, ungentlemanly remarks to yourself. Leave the mudslinging to more appropriate forums and get your magazine out on time for a change.

William T. Webb
Hockessin, DE

*"Genius bashing?" "Viciously slurring. . . " "Unkind, ungentlemanly remarks?" "Mudslinging?" "Petty, snide, elitist, comments?" "I find these two letters interesting in that neither writer seems to have read what was actually written. To take Mr. Webb's accusations first, far from slinging mud at Mr. Hirsch, I thought I was making a serious critical point that deserved a public airing. Mr. Hirsch, whom I believe to be a serious-minded, intelligent man, has taken up the mantle of cold-water-pouring rationality when faced with the increasing influence of the US high-end community (and by that I don't mean just *Stereophile's* influence). He has many times implied in print that to spend large sums of money on bi-fi components is irrational, being a waste of his readers' resources on the grounds of diminishing subjective returns; ie, even if there are differences, they're not worth the cost.*

In the matter of spikes (or Tiptoes) for loudspeakers and their stands, Mr. Hirsch strongly feels (according to his writing) that there is no reason to even try them. However, though the improvement in sound quality that they offer might be thought small by some, as the price for that improvement is also small—spikes are even supplied free of charge with many stands or loudspeakers, including the Monitor Audios mentioned in the Stereo Review report

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from which I quoted—they must be considered worthwhile in Mr. Hirsch's own value system. If not, then surely some other factor must affect Mr. Hirsch's value judgments. That factor, I would suggest, is a belief system that rejects every suggestion that emanates from the US high end, even those that time and experience prove to be worthwhile. And with such a belief system in operation, how can Mr. Hirsch's claim to rationality, to be the cold, clear voice of bi-fi reason, be rationally justified?

(Incidentally, Mr. Webb, putting aside your feelings about my use of Mark Levinson amplification, did you feel that at the end of the review you had a better handle on the sound of the two loudspeakers? That were you to audition either the Spicas or the Celestions, you would both hear what I heard and be better able to make a satisfying purchase? If so, then does it matter that the amplifiers I chose to use cost so much and the speakers so little?)

Regarding Mr. Phillips's more general accusations, again I see no merit in them. Readers' letters (and the Anarchist's column) aside, Stereophile has specifically written about Mr. Polk or Mr. Carver in terms of comments concerning their companies' products and their sound quality, discussion of the design philosophies behind those products, and, in the case of Mr. Carver, straight reporting about our writers' encounters with the man (as in this issue). The fact that the two men have been proclaimed as having design talents of genius proportion, either by other writers or by their own companies' public-relations staffs, has no bearing on our opinion of their products either way. If those opinions are ultimately critical, then, as with the case of Carver's Amazing Loudspeaker in this issue, it is because the relevant writer found significant fault with the sound of the product, not that he felt like a spot of "joyful genius-bashing." There is therefore no conflict when another of the magazine's writers expresses respect for Bob Carver's undoubtedly innovative image-enhancement circuitry

If a product is found wanting, however, then doesn't it seem logical, even essential, to question the "genius" label adopted by its designer? Mr. Phillips certainly feels Stereophile to be impertinent in this respect; such "impertinence" comes with the territory, Mr. Phillips. Sorry.

—JA

Real guts

Editor:

One of the things I enjoy most about *Stereophile* is the "Letters" column. The free exchange of ideas that you allow, controversial though they may be, is so much more interesting than the "ask-a-stupid-question-get-a-simplistic-answer" format that so many other magazines follow.

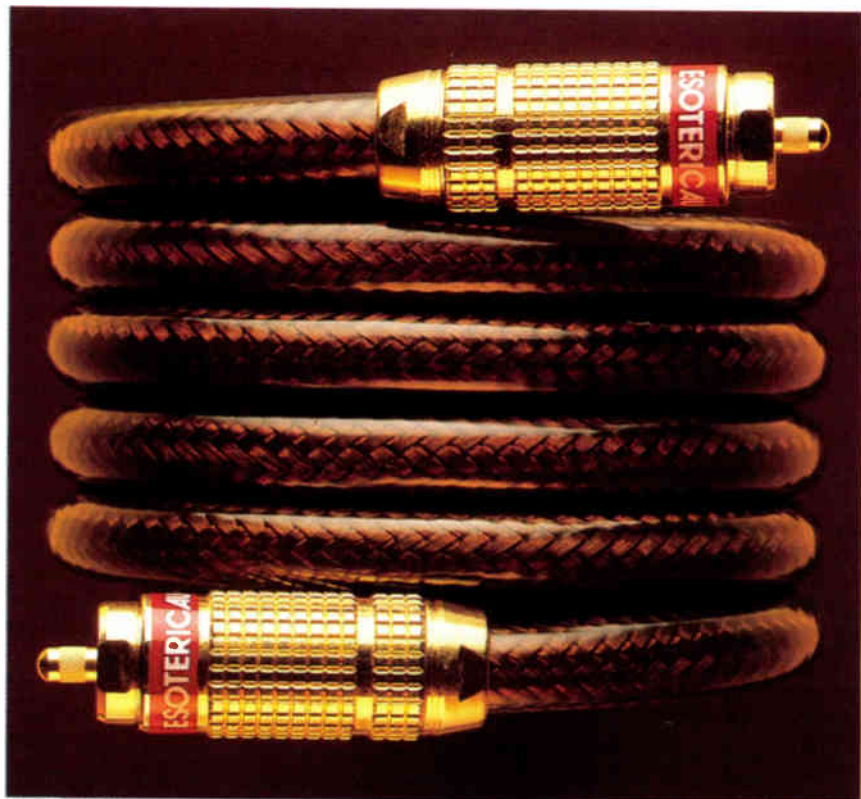
I particularly appreciate that you publish letters in which you are insulted. It takes real guts to allow yourself to be called an idiot in print. I admire this. I think it shows real journalistic integrity. It also makes entertaining reading.

I must admit that I, like some of your insulting readers, had no idea what you were talking about when I first began reading your magazine. After all, a background of *Stereo Review* does not well prepare one for your type of commentary. Many of your comments can be difficult for the uninitiated to decipher. "Grain?" "Grundge?" What does this mean? Is there grain in my receiver? If so, wouldn't a "100% whole-grain receiver" be more healthful? It would, at least, be cholesterol-free!

Although I harbored deep suspicions that many of your reviewers were subject to auditory hallucinations, I refrained from making comments of this type (in public, at least) until I could gather more information. I decided to experiment by buying some moderately priced speaker cable, instead of the zip cord I had been using. I really didn't think it would work, since *science* says that there is no basis for it, and we all know that *science* is never wrong. Anyway, *Stereo Review* said speaker cables don't matter—they wouldn't lie to me, would they?

To my astonishment, the better cable tremendously improved the sound of my system. It seems that your reviewers are on to something after all! I then tried better interconnect cables—they worked, too! In fact, so far *everything* you recommend seems to work. I still don't know what the scientific explanation for this is, but I have to admit that it really happens (either that, or we're *all* suffering from auditory hallucinations!).

Finally, I wanted to comment on Larry Archibald's "Buy Cheap Speakers" article in the October issue. I think the reason that so many of your readers own expensive speakers and cheap electronics is because *that's exactly what the "low-end" stereo magazines recommend!* They insist that all electronics are the



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same, and only speakers make a difference. I'm sure that most of your readers, like myself, started out with the "low-end" magazines, and only graduated to *Stereophile* as the years progressed. However, by then it was too late; we'd already bought the expensive speakers, and we're stuck with them. Our only choice now is to upgrade our electronics to match. Too bad I didn't read Larry Archibald's article a few years ago!

Thank you for an entertaining and informative magazine! . . . **Lawrence Dworin**
Royal Oak, MI

A power trip

Editor:

Is this a power trip, or what? You folks at *Stereophile* sit around judging hi-fi equipment while the manufacturers bite their nails, hoping for a good review. You may reply that you're merely making suggestions as to which components warrant listeners' attention, but I'm afraid you have a lot more clout than that. I believe many people value your opinions as gospel, that manufacturers fear (and sometimes loathe) you, and that some (but not all) listeners who happen to own a system where all the components appear in the Class A section of the "Recommended Components" list truly believe they have reached Audio Snob Nirvana. Snobbism isn't new to art, and since building fine music systems is a crafty sort of an art, snobbism runs rampant here. Much of it has to with resale value, since many people who collect art don't know (or care) a thing about art, just its investment potential. Your reviews affect investment potential and snob appeal, yet they are educational and thought-provoking. I highly value your reviews, but I take them with a ton of salt.

After all, is it not audio *taste* that we are talking about? How many times have *Stereophile* writers disagreed with each other over perfectly good sound systems? How many times have I seen the lament that not even a \$50,000+ audio system can accurately reproduce the sound of just a single violin? With that in mind, it seems ludicrous for hi-fi enthusiasts to look down their noses at "mid-fi" systems. In the end, it's *all* lo-fi, and just a matter of how much you want to spend for it. It's like choosing between McDonald's and Brennan's. How much you spend has nothing to do with the resulting bowel movement.

In light of the above, how can you sit in judgment? Well, you judge the same way most critics do. I find very few critics offer their views in an objective, fair way in any field—food, music, theater, movies, gallery art, whatever. And *Stereophile*, I'm afraid, is no different, and in many cases it appears worse. You folks are attempting to judge the accuracy of sound reproduction, when in fact there is only *musicality*. Yes, I know you use the "M" word many times in your reviews, but it seems you judge components on a rigid, hierarchical scale that only reflects one man's opinion. (Of course, this little diatribe is just *my* opinion!)

All I ask for is a little more objectivity, even though *Stereophile* prides itself on subjectivity. There's nothing wrong with subjectivity in criticism as long as it is tempered with objectivity. Masters of this form of fairness in criticism are the respected Gene Siskel and Roger Ebert, with their popular TV show. They let potential moviegoers know about the disparity between valid opinions regarding the same show. Even this is not perfect. I have attended many bad movies that got a "two thumbs up" rating. *Stereophile* occasionally does display fair criticism, though, like the dual review by KC and RS on the NoNoise process (Vol.11 No.12). Some of the Follow-Up reviews appear to be attempts at fairness, but I think they're ineffective, as some Follow-Ups don't happen until three to nine months have passed! By that time, it's old news, unless some recent development occurs in manufacturing. However, I will give you credit for letting the manufacturers have their say in the back pages.

Paul Taylor
New Orleans, LA

No video please

Editor:

I believe *Stereophile* is in the best position of all the mags to evaluate low-, mid-, and high-end equipment. . . . My only criticisms are two-fold: 1) leave the video stuff for the video mags. If I want video I will read video mags. 2) When you do a review on products such as subwoofers, please review the products in mind in one issue; don't spread it over six months. For example, review the Velodyne, MK, Janis, Celestion, etc. in one issue.

Lastly, if anyone should want to start an audiophile society in the Dallas/Ft. Worth area, contact me at (817) 468-5811. High end is alive and

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well at *Stereophile* and in Texas.

Vernon Neal
Arlington, TX

Our direction

Editor:

Thank you for sharing your conversation with the direction *Stereophile* is headed ("As We All See It," November 1989). Be assured that at least one reader is pleased with that direction, for the most part . . . Give us credit for enough intelligence to skip over the parts of reviews that fail to interest us.

Continue to demystify! Audio is fun, exhilarating, at times paradoxical, but *not* magic. The silly notion that publishing graphs of equipment performance will take away the mystery is, I suppose, akin to the one that analysis of Beethoven's use of Neapolitan Sixths and diminished sevenths in the "Appassionata" Sonata somehow precludes appreciation of the emotional content. That same Beethoven completed hundreds of tedious counterpoint exercises for Haydn and his other teachers. Similarly, the designer of that wonderful vacuum-tube amplifier had to know how to plot the load line and calculate the voltage gain—otherwise it would have taken him about 20 years to come up with a working model. This contemporary, New Age concept that art and science are mutually exclusive would have baffled Leonardo Da Vinci, Johann Kepler, and the members of the Minzler Society for Scientific Music—the most famous of whom was Johann Sebastian Bach.

David Ligouri
Albany, NY

I agree that mystery obscures knowledge and that knowledge doesn't preclude emotion. But a small voice reminds me of Mark Twain's observation that learning the river's shoals and currents, in order to be able to navigate it, diminished the Mississippi's mystery.—JA

Our sniping?

Editor:

The sniping at *TAS* by your writers does not make you look good. You've lowered yourselves to the same stupid name-calling chauvinistic reaction that HP uses. Just because he is a child doesn't mean you have to be one as well. What you fail to realize is that his magazine is considerably more entertaining, informative, and readable than yours, despite all the hype on both sides.

A word to the reader who has the hum with the Grado and Linn: If you ask for it, Grado will make you a shielded cartridge at no additional cost; that will take care of the hum nicely. I got mine through the Audio Advisor after talking with the Grado people on the phone.

Edward E. Davis
Upper Montclair, NJ

Oh really?

Editor:

Why is it that, among audiophile journals, *The Absolute Sound* seems to be the more authoritative and trustworthy? I know it's an opinion, a perception only. Yet a casual poll among local enthusiasts points toward a greater trust in *TAS*'s than in *Stereophile*'s comments on the sound of audio components. (Someone just said, "Of all the mags, *TAS* still seems to be the more credible.")

May I venture a guess? It's that Sea Cliff "magnifying glass"—that IRS Reference that HP has installed at Sea Cliff. Think about this. Why would I take Lewis Lipnick's word on the sound of the Levinson No. 23 when he evaluated it on a pair of B&W Matrix 801s and on CD players while Harry Pearson evaluated it through the Goldmund Reference and the IRS Reference? The 801 is in the Class A category in *Stereophile*; then where would the IRS Reference or the WAMM belong—Class AA? (*à la* Moncrieff). My wish is to see a contender system at Santa Fe—one that audiophiles around the world can acknowledge comfortably as a "world reference." There are many other advantages for this installation—I'm sure you can think what use that system can be put to. Evaluation of the world's greatest recordings, past, present, and future; a reference to which your other reviewers can periodically attune their ears to besides live sound at concert halls.

Yip Mang Meng
Singapore

From the sublime . . .

Editor:

You guys sound like a flock of squabbling hens in your aptly dubbed "A Babel, A Babble." Can't you make your minds up to what direction you want the magazine to take? And the constant backbiting. Oh, I know, *The Absolute Sound* has wiped your nose on occasion. But by p.45 out of a 258-page issue of the November 1989 *Stereophile*, a number of pinheaded remarks

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about Harry Pearson, Mike Fremmer, John Nork, *The Absolute Sound*, et al, were made by your staff and in letters to the editor. Really, you have nothing substantial to fill your pages with? "Pope of Sea Cliff?" What's this, "Hate Harry Pearson Month?"

Look, HP hardly needs me to defend him, yet some of your comments do deserve a view of "things as they are." For one, to suggest that *TAS* staff toe a singular, HP-directed sentiment is baseless speculation. To infer that internal dissent is stifled or nonexistent is to blatantly ignore the historical and continuing intercommentary between reviewers and the "Further Thoughts" summation that follows earlier comment. (By the way, *TAS*, and not *Stereophile*, evolved the concept of in-house reviewer intercommentary.) And two, Harry's footnotes rarely, if ever, undermine the reviewer's credibility. These I should think are terse, informative, and entertaining, and certainly excusable in the context given: to correct or focus the reviewer's observations.

Seemingly, your forum ass-kicks Harry out of green-envied petulance. Your staff's ignorant utterances transparently confuse fact with opinion. They attack the *only* critic who has successfully and consistently illustrated the complexity of auditory phenomena and the best achieved in high-end sound. No one else comes close, and you know that. And if HP is as pompous as some of you'd like to think, then first check your own closet to see who's free of sin. Besides, who are you to judge? You can't even get your editorial act together!

From your conference, it is obviously, astoundingly, redundantly, and embarrassingly clear that today's *Stereophile* has no focus. Worse, it breaks the eleventh commandment of publishing: "*Thou shalt not bore.*" One can suffer through *Stereophile* and come out knowing less than when one began. Unlike what we observe with *Stereophile*'s hapless state of confusion, HP proves that a "form" of direction and guidance *is* possible (and desirable) for both the magazine's staff and its readership.

For example, "technofreakism" is kept to reasonable levels. The inappropriate inclusion of incomplete and inadequate measurement (of the kind we see in *Stereophile*) presented as "fact" will surely fail to impress the knowledgeable, and just as surely confuse those who are not. Moreover, the stress on the use of measurement for correlating the audible is misleading

(*vide* the frequency-response curves of cartridges with rising high ends which clearly do not sound "bright"). You do, in fact, know that the resolution of the best measurement gear is too coarse for the purpose and is likely to remain so for the near future. Don't you? Rather than to fantasize, "If we wished hard enough, we'd be able to measure what we hear," *TAS*'s clear and accurate commentary illuminates what its readers *will* hear. Consumers, as you yourself have pointed out, want guidance on what to expect from their expensive components. They don't listen to graphs! Besides, in its attempt to understand, *The Absolute Sound* has also published measurements by Martin Colloms, Richard Marsh, Bascom King, and Anthony Cordesman. I trust these names ring a bell. Not surprisingly, these efforts only proved the waste of ink and the reviewers' time. In sum, *TAS*'s mission to report the *sound* of components and records in an accurate and consistent manner has been successfully accomplished. . . and (sorry if I ruffle your feathers) to a higher literary standard than yours.

More. You've reported that *Stereophile*'s distribution has outpaced *TAS*'s. True. Because *Stereophile* has persistently covered the mid-fi markets, it ought to have this wider appeal. . . and it does. Likewise, Sansui's sales surpass Goldmund's; and Ford's that of Ferrari's. While the pyramid is wide in the middle, it is even wider at the base. And so, not surprisingly, *Stereo Review*'s subscription list is even larger than *Stereophile*'s (granted that *SR* covers mostly imported, mass-produced appliances). The lowest common denominator always wins. In contrast to *Stereophile*, *TAS* is expressly aimed at the High End. Obviously, the pyramid is narrower at the top. It is, however, unlikely that any one publication can properly cover both the mid-fi and high-end arenas. While *Stereophile* has brought mid-fi awareness to the masses, obviously it has not properly covered the high end. On the other hand, *TAS* is not likely to get deeply involved in mid-fi, simply because it will not dilute its coverage of what is important to its readers.

As for which has the best writers, *Stereophile* or *TAS* (is this now becoming a contest?), isn't it interesting that former *TAS*, *Audio*, and *Stereophile* contributor Cordesman returned to *TAS* specifically because he wished to identify with *bi-*, rather than *mid-fi*? Curiously, at the time of his departure, Cordesman had the

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highest following of the *Stereophile* crew. So *Stereophile's* stand that it has the best may be specious. Or should I remind you of *TAS's* Pulitzer Prize winner, authors of reference books, and its PhDs? Anyhow, let the readers decide. . . But seriously, this is not a contest between two apples, but rather—if a contest it has become—between a passion fruit and a potato.

And this brings me to the crux of the comparison. The fact is that, just like *Stereo Review*, *Stereophile* is a *bottom-line*-oriented business. Conversely, *TAS* celebrates the art of sound reproduction and the glory of music. Proof? Well, *TAS* was not profitable for many years and Harry, I might add, never sold out. Sorry fellows, but *Stereophile* and *TAS* are not two of the same species. Perhaps not even from the same place. Indeed, your Lewis Lipnick was right (for once) when he offered that if you want to learn what the high end is all about, then go to New York. I'll say. (To be precise, *Sea Cliff*, New York.)

And funny, unlike your "Audio Cheapskate," HP discovered some 20 years ago that mid-fi just doesn't cut the mustard. And again (unlike Sam Tellig, who so recently discovered the same), HP is castigated for not compromising higher standards by those who will not, cannot, or are unable to listen—or to hear. Here I speak of, for example, your own Peter "What did I do with my graph?" Mitchell. By the way, Mitchell's comment about *TAS's* "incompetent" reviewers "speculating" about the sound of components is just as richly presented as the graphs he listens to.

Which leaves us with a puzzle. According to GAG and his "students," *TAS* treats its readers with "contempt." One might rethink this assumption if he considers that *Stereophile*, whose overriding criterion is its circulation figures, is the one—and not *TAS*—that treats its readers with disrespect and scorn.

Andrew G. Benjamin
No address given

. . . to the sensible?

Editor:

As I watched Harry Pearson bear-hug J. Gordon Holt and hand him the first High-End "Lifetime Achievement" Award at *TAS's* 15th anniversary party, I said to myself, "Maybe the infantile name-calling going on in both magazines will finally stop." After reading the tran-

script of your staff pow-wow in the November 1989 issue, I guess I was being overly optimistic, naïve, or both.

I didn't realize the depth of the problem at *Stereophile*. J. Gordon Holt began the meeting on an exquisitely focused note: "*Stereophile* is obviously in the driver's seat. . . As to where it's going, I'm not at all certain about that." He goes on to suggest that the magazine exercise leadership rather than just reporting what's going on.

Instead of taking Holt's cue and engaging in a serious discussion of what the magazine's founder had correctly identified as *Stereophile's* biggest weakness and how to overcome it, your staff indulged itself mostly in invidious name-calling with the emphasis on irrelevant (and untrue) buzzwords and labels.

Peter Mitchell set the negative agenda by dumping collectively on *The Absolute Sound's* reviewers. They are "incompetent" technically, he charged, to speculate about what they hear. Anyone involved in high-end audio who unreservedly embraced first-generation CD sound and its technology as uncritically as Mitchell did should think twice before calling others "incompetent."

Does Mitchell mean to include the learned Professor of Mathematics Dr. Robert E. Greene? Or the esteemed Tony Cordesman, a former *Stereophile* reviewer? Or Richard Marsh? Whom does he mean? He doesn't say because he is dealing in labels, not truths or relevant criticisms. Defining oneself by stereotyping is a negative, anti-intellectual tactic. From it springs unpleasantnesses like racism.

Lewis Lipnick's ignorant crack about *TAS* writers having "to toe the party line" to get published and to avoid being ridiculed by the magazine's editor is ugly. Worse yet, it flies in the face of truth. Harry Pearson has *never* censored me, or, to my knowledge, any other writer. HP does, however, demand quality. Lipnick apparently doesn't understand that there is a similarity of aesthetic viewpoints among *TAS* writers and that this aesthetic is based on adherence to the sound of the real thing. Precisely the opposite is true at *Stereophile*, where there seems to be a lack of guiding principles about the nature of sound reproduction. The distinction between editing and censorship is obviously lost on Lipnick, and in the case of the transcript in question, I'm afraid on *Stereophile's* editor as well.

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As editor's footnotes are unacceptable to Lipnick because of Pearson's pithy pronouncements, so the wild canard repeated (but I don't think believed) by *Stereophile's* editor that *TAS* speaks with one voice (HP's) is to me. How can a magazine that has a policy of printing comments from differing reviewers speak with one voice? This is the same magazine that encourages its contributors and readers to air their differences of opinion in its very own pages. Makes you wonder if you guys really read *TAS*.

What's most telling about the name-calling is the religious and mystical symbolism in so much of it. Dick Olsher refers to Harry Pearson as "the Pope of Sea Cliff," surely as offensive to Catholics as it is to HP. Gary Galo adds the phrase "the mystics on Long Island." Strong stuff coming from a writer for a magazine that advocates the "goose bump" factor as an aid in evaluating equipment—a factor I happen to think has some validity—but then I write for the magazine that takes "the astrological approach," according to Galo. Subtle. But what is he talking about?

And where did all this religious imagery come from? There's nothing particularly religious at all about the contents of *The Absolute Sound*. And certainly nothing occult.

What mystifies your staff, and what underlies most of their resentment, since *Stereophile* is in the driver's seat, is why *The Absolute Sound* is still setting the pace for the industry and giving it direction toward more musical-sounding gear? That's what all the name-calling is about, and nothing more.

The Absolute Sound is still by far the more influential of the two journals. Gordon Holt's opening remarks were a brilliant way of getting the discussion on to what to do about that. Instead, your staff aired its ignorance. There's much to criticize about *TAS*, but instead of hitting us between the eyes, your writers shot themselves in the foot.

Ending on a brighter note for your newer readers, as a long-time subscriber to both *Stereophile* and *The Absolute Sound*, I can confidently state that *Stereophile* does a better job of reviewing equipment than it does magazines. Perhaps not much so, but better.

Michael Fremer

The Absolute Sound, Seacliff, NY

I don't intend to respond to Mr. Benjamin's letter (the same Andrew Benjamin who, I believe,

*is a TAS contributor). The only substantive point he makes is to accuse this magazine of lèse-majesté. I plead guilty. But before examining the specifics of Mr. Fremer's letter, let me digress slightly. In the three and a half years since I took the editorial helm at this magazine, my technical competence and ethical standards and those of *Stereophile's* reviewers, *Stereophile's* publisher's business practices, *Stereophile's* published circulation figures, and the role of *Stereophile* vis-à-vis the other publications and its involvement in promoting hi-fi shows, have all been critically examined at length by other high-end magazines, by *TAS* in particular, but also by The Audio Critic, International Audio Review, and The Boston Audio Society Speaker. Even CD Review's publisher Wayne Green leapt into the act last summer. That is their right, of course. The First Amendment guarantees everyone in the US the right to his or her published opinion (something I heartily approve of). Yet all through this flak, I have remembered the advice given me by a wise old journalist: "Never respond in print," he said, "never give them the satisfaction of you giving their specious criticism credibility by taking it seriously. Just be happy they spelled your name right."*

*Mr. Fremer talks about "infantile name-calling going on in both magazines," yet from when I joined this magazine I have not written one negative word in *Stereophile* about any other magazine. Yet the general perception of what is actually very one-sided name-calling seems to be that *Stereophile* is as guilty as the others. Is "truth" that which is true, or that which is perceived to be true? It appears to be the latter in this instance.*

*Which brings me to last November's "As We All See It." The transcript was intended to be an opportunity for *Stereophile's* editorial philosophy—indeed it has one—to emerge, phantom-like, from behind the general dialog. I thought that it had, which makes me smile at Mr. Fremer's assumption that the magazine has any kind of problem. (For a less subtle exposition of the philosophical basis behind our equipment reports, our "guiding principles," as it were, turn to J. Gordon Holt's "As We See It" starting on p. 5.)*

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the US. Without sacrificing the principles upon which J. Gordon Holt founded it in 1962. Without acting in a cynical or unethical manner. Without "selling out." I had thought, therefore, that its position in the high end's "driver's seat," acknowledged by both J. Gordon Holt and Michael Fremer, would justify some candid discussion of where we had been and where we were going.

Whenever you gather together a number of intelligent, highly opinionated, and creative people, not everything said will be polite, diplomatic, or inoffensive. Such would probably be the case if you gathered together the staff of any magazine where the contributors care passionately about their subject. Even TAS. Such was the case at the Stereophile writers' conference, but as I intended the transcript to be a true reflection of what was said—unlike Mr. Fremer (or Mr. Marks below), I do not hold with censorship to make life more comfortable—everything that was said appeared in print. Including the specific criticisms of TAS by Peter Mitchell, Lewis Lipnick, and Gary Galo. As you will have gathered, I personally wouldn't have expressed those criticisms in print. But as my writers felt strongly enough to go on record in that way, I saw my editorial responsibility to be to ensure that their opinions appeared in these pages as accurately expressed as possible, just as with any other interview, review, or feature that is published by this magazine.

What worries me is that sensation-mongers will seize on what was a very small percentage of the overall conversation and ignore the far more important points made. Them's the breaks, I suppose.

A specific point made by Mr. Fremer to which I will respond concerns his denial that TAS "speaks with one voice." In TAS No. 57, Harry Pearson felt obliged to join the debate that has been running in Stereophile over the apparent dichotomy between "accuracy" and "musicality" with the following words: "That Stereo-review-ophile (I like that) 'feels' so, [that there is an apparent dichotomy] shows just how sorely missed is some sort of editorial leadership and a guiding concept about what sound should be. The magazine these days reminds me of what happens in a classroom when all 35 children babble at once." I think it a fair implication to deduce from this statement that if the leading creative force at TAS feels a focus

of criticism and a major weakness of Stereophile to be that it appears to speak with many voices, he must feel the opposite to be true of his own magazine: ie, that it speaks with one voice, and should do so.

To be fair, the last three years or so have seen an apparent loosening-up of such attitudes at TAS, and the presence of such writers as Mr. Fremer, Sid Marks, Frank Doris, and Richard Marsh (as well as the excellent John Nork) in its pages do render this implication less valid than I believe it used to be. But as anyone in the publishing business will no doubt be aware, a magazine's image has considerable momentum—its readers' general perception may lag behind reality by two or three years. If Stereophile were suddenly to change editorial direction completely, it would probably be at least six issues down the road before people in general began to realize that things had changed. I know this to be the case from my experience when I joined this magazine. For the first six months or so, until I could find domestic writers in tune with Stereophile's ethos, I had to commission more reviews and articles from English writers than, strictly speaking, I would have liked. By mid-1987, this temporary reliance on imported talent was over, yet if you reread the "Letters" columns in those issues, you will note that this didn't become a public issue until the end of 1987 and the beginning of 1988, and only tapered off a few months ago. In the matter of The Absolute Sound's "technical incompetence" and "speaking with one voice," I am sure that Mr. Fremer is correct in that things are different now. But my writers couldn't help but respond to TAS's overall momentum, with the inevitable time lag.

Regarding Yip Mang Meng's letter about Stereophile's not owning an IRS V-based reference system having a negative effect on the authority with which we speak: If we wanted an IRS V, or a WAMM for that matter, we would buy it. We don't; we haven't.

This point reveals a major philosophical difference between the two magazines, one that actually sufficiently differentiates them that they cannot really be considered to directly compete. (At least in that I agree with Mr. Benjamin.) The thrust of the reviews in TAS seems, to my eyes at least, to be concerned with the best, the ultimate, yes, the absolute sound, without any compromise, financial or other-

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Stereophile, Vol. 12. No. 10. Oct. 1989

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wise! Stereophile's *philosophy*, however, one that dates from its founding, is to relate the performance of all components to that accessible to the magazine's readers. (Again, see JGH's essay starting on p. 5.) I intend this magazine's writers to try to discuss the musical and technical performance of products in contexts that will be more familiar and thus more meaningful than an ivory-tower "reference" available only to a lucky few.

Consider Yip Mang Meng's example of the way in which the Mark Levinson No. 23 was reviewed in the two journals: You're not comfortable with Lewis's use of the B&W 801 Matrix speaker to form a value judgment? That's fine by Lewis and me: there are many dealers (in the US at least, and probably in the entire world) where you can audition exactly that combination of amp and speaker. Listen for yourself. But if you want to bear the No. 23 with the IRS V? Putting aside such events as the Stereophile bi-fi shows (which we promote to give you just this opportunity), you will probably have to travel to Lyric Hi-Fi in New York or The Audible Difference in Palo Alto—even if you live in Singapore. Listen for yourself? The intention here is, I am sure, that you have to take such review opinions as received wisdom.

—JA

Mahler, Jew and Christian

Editor:

You owe an obligation to your readers and your magazine to rein in writers who wander out of their depth, to say nothing of gratuitously offending. I refer, of course, to Kevin Conklin's October 1989 "Building a Library" feature on Mahler's Eighth Symphony. Were it not so offensive, this piece would be laughable either as music criticism or writing.

Who the hell is Kevin Conklin to presume in the first instance to adequate knowledge, and

then to be qualified to pass judgment upon the spiritual life of Mahler, or anyone else for that matter? Nazi Germany circulated a reference book for radio station use, listing all composers and performers by Aryan or non-Aryan origin. Perhaps Mr. Conklin keeps one next to his *Grove's*. The world waits breathlessly for Mr. Conklin's considered evaluations of Felix Mendelssohn and Fritz Kreisler, the genuineness of their conversions, and the moral opprobrium to be attached thereto by right-thinking people between sips of Chardonnay. For a twerp who writes as poorly as Conklin to term *anything* Mahler did as "despicable" brings to mind Samuel Pepys's quip about a dog walking on its hind legs.

Apart from the Mahler issue, Conklin apparently accepts the fallacy that Christianity and Judaism are polar opposites and, of necessity, mutually hostile. On the contrary, orthodox Christians, like it or not, are obligated to accept, with John, that "salvation comes from the Jews" (4:22). No one can defend the terrible state of the historical record, but I wish to point out that one properly speaks of Christians having failed in this regard by falling short of the ideals they profess. No such excuse can be made for Nazis: the extermination of world Jewry was at the center of their program, even before the Wansee conference.

How remarkable then that Conklin calls Mahler's conversion to Roman Catholicism "despicable," but in the more than ten years I have been reading *Stereophile*, I cannot recall mention of any of the following indisputable historical facts: 1) Herbert von Karajan was a Nazi; 2) He consistently lied about when he joined the Nazi party, variously claiming to have joined as much as six years later than he in fact did; and 3) On his first several attempts the Allied Occupation tribunals denied de-Nazification status to von Karajan because of his record. My personal opinion is that the de-Nazification eventually wrangled for von Karajan (so he could pull a state-subsidized paycheck) was as inherently suspect as Ford's pardon of Nixon. Or more so. But look how far Waldheim got, and he couldn't carry a tune in a bucket.

But my dispute is not really with Mr. Conklin; that his benchmark for integrity is a novel, by Mailer at that, shows he obviously is beyond help. Editors, however, are given red pencils along with their paychecks, and should use

1 Where the IRS V actually rates in the pantheon of perfection is unclear to me. Having not heard the IRS V except at shows, I have no real opinion of its sound, other than to note that it did not sound like the real thing. I *did* hear its predecessor, the IRS III, at Sea Cliff. The III did two things better than any other speaker system I had ever heard, even the WAMM: attempt to reproduce the scale of live orchestral music, and produce real-life levels of low-frequency energy. It did throw a wide, deep soundstage, but it was actually no better in this respect than a number of other superb loudspeakers. But impressed as I was with these sonic aspects, the sound considered as music left me rather unmoved (though not totally untouched). And the treble region had problems similar to those of the IRS Beta. Frankly, I regard the thought of being able to "periodically attune my ears" to such a reference with some apprehension.

—JA

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them. Would *Stereophile* print a review asserting that Sammy Davis, Jr.'s or Elizabeth Taylor's adoption of a faith other than their fathers' was a despicable act? How about a Roman Catholic adopting Judaism? Of course not, simply because there is an obvious double standard at work.

I suggest the following exercise may be useful in the future: Any time a writer submits a piece with a gratuitous swipe at an unpopular belief system, be it Islam, Jehovah's Witness, Assemblies of God, Unification Church, or Roman Catholicism, at all relevant points substitute the words "Jew" or "Black." Mr. Conklin's statement at p.185 then would read "Jews need not apply" or "Blacks need not apply," and its true worth would be plain for all to see. Try the following statements on for size: "Blacks cannot give persuasive interpretations of Messiaen." "Jews will never understand *Gerontius*." There now. Doesn't that make it clear? This is *not* a matter of "censorship." Censorship is when the Governor of New Mexico tells you what you can or can't print. But for an editor to print whatever insensitive or racist trash a writer sends in is not a noble defense of First Amendment values; it is an abdication of moral responsibility.

John Marks

Providence, RI

Pepys? Dr. Samuel Johnson, I think. —RL
I do not accept that Judaism and Christianity are polar opposites, nor mutually hostile.² Such is my fortune and Mr. Marks's at living in a pluralistic society. Mabler was not so lucky, living in a society more highly polarized in matters of faith. I did not call his act of conversion "despicable," but saw that perception as perhaps natural to Jews who had suffered for generations at the hands of Christians.

Let me relate an analogous situation from American history. I spent eight years of my boyhood in Georgia during the 1960s. It was a place and time of great stress and polarization. One phenomenon I saw there was the adoption by blacks of a deferential manner to get ahead in a racist society. Their situation was difficult and ambiguous: was this a necessary survival technique, or a slackening of the

struggle in the interest of careerism? Older generations thought the former; the next, more militant generation thought the latter. Both views have some truth.

The literature bears out that Mabler had a long fascination with Christian mysticism, but it also tells us that his actual conversion immediately preceded his appointment as conductor of the Vienna Court Opera, indeed was a precondition to placate Cosima Wagner and the Vienna Musical Mafia. One need not descend to the exaggerated level of, say, the tasteless conversion scene in Ken Russell's film biography of Mabler to understand the feelings and issues that conversion evokes.

I kept my own feelings about Mabler's conversion out of my essay because they did not bear directly upon it. Those feelings are not particularly extreme: I suspect that had Mabler been born 30 years later, perhaps escaping the Holocaust by moving to Palestine or the New World, he might not have been compelled to convert for even spiritual reasons. By 1930 he would have had access to the renaissance of Jewish mysticism opened up by Buber and others. Impossible to prove, but this certainly could have slaked his mystical thirst.

*On the uncomfortable matter of speaking ill of the recently dead: Mr. Marks's points concerning Karajan are well-recorded in the serious musical press, at least on this side of the Atlantic. I cannot speak for *Stereophile*, having written for the magazine only two years. The reason I haven't commented on the matter can be explained by my general aversion to Karajan's conducting: I just don't wish to spend enough time listening to him to write a review. I also agree with Mr. Marks's analysis of Karajan's history. There is another point worthy of mention: I recall from the Letters section of *Fanfare* some years ago a raging and ongoing controversy over Karajan's wartime record. One person—whether contributor or correspondent I forget—asserted that in the early Third Reich years Karajan divorced his first wife, who happened to be fractionally Jewish by Nazi accounting, in order to advance his career. If this can be confirmed, it would seem the most damning evidence of all.*

Mr. Marks's low opinions of my writing ability and my decidedly offbeat interpretation of Mabler 8 reflect his true feelings and are, as such, legitimate. His libelous attacks

² I can recommend Hugh Schonfield's *The Passover Plot* (Bantam 1979, Element Books 1985) as a useful starting point for those interested in visualizing the birth of Christianity within a Jewish context. For a more controversial but nevertheless vivid account, see the relevant chapters in *Holy Blood, Holy Cross* by Michael Baigent, Richard Leigh, and Henry Lincoln (Dell 1983). —JA



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are not, and moreover miss the mark. I see nothing in his analysis to address the major points of the essay, which I feel centers more on Man-Woman than Jew-Christian as the central crisis of the symphony. As to its devotional crisis: if we are to treat as anything but archaeology many works by Bach, Haydn, Mozart, Bruckner, Mahler, Bloch, Messiaen—for that matter late John Coltrane and the modern minimalist composers—we cannot do so in a devotionally neutral manner. Listen to Eugen Jochum conduct Bruckner, then listen to Karajan; tell me the difference. Leonard Bernstein has described the essential Jewishness of much of Mahler's music, presumably without recourse to the Nazi Cliff Notes Mr. Marks assumes inhabit my bookshelf.

My one regret is my flippant statement that "Orthodox Catholics need not apply." I wish I'd put it differently, but stand by the underlying point about the zeal of the converted.

In the future, I should hope that this reader's letters address the ideas at hand, rather than latch onto this or that choice of phrase as a departure-point for going ballistic on his personal hobby horses. We all now know that he is a very smart man, listens and reads a lot, writes well, and shares with Samuel Pepys a tendency to dyspepsia. —Kevin Conklin

The Waveform *redux*

Editor:

"John, you poor sap, you've gone and done it now. Keith and I *told* you to keep your big mouth shut and your feet as far away from it as possible, but did you listen?" I think to myself as I read Larry Archibald's Waveform review in the November '89 issue.

So John Ötvös said, "Yup, that's what they sound like," after some preliminary setup maneuvers, and then cranked up that totally exhausting organ stuff on the Dorian CD, rather than let the fine tuning continue. I see from his second footnote that Larry Archibald was literally driven out of his home by the volume level John chose to impress him with.

I could easily imagine the scenario in which John warned of possible sonic problems, as the review mentioned, "though he didn't realize that's what he was doing." Nice going, John. Terrorize the reviewer, pester and mislead the reviewer. Tell him inadequately set-up Waveforms sound just great. Give him nonsensical input on the unique properties and technical

aspects of the speaker. Brag a lot while you're at it. That should really help.

Well, since I see my name in print associated with the Ötvös wonders, I think some explanatory response is in order. Like, how did Absolute get mixed up in this, for instance.

But first, to guess at an answer to the question of Waveform's long-term viability as a company, I think it would be safe to bet on the availability of, say, replacement tweeters for a long time. If the next few years don't seem to offer broadened dealerships and rave reviews, neither have the past years in which the Waveforms have been offered. John Ötvös is a talented woodworker and cabinetmaker, and can continue to support the Waveform company with his activities in that field, as well as Waveform's Canadian sales.

I became aware of Waveform speakers when they were displayed at the June CES in 1986. I remember thinking they looked too beautiful to sound good. They also looked very, very expensive, in elegantly fluted black cherrywood with ebony and gold inlay and silk grillecloth. I asked the price and was told "twenty-two." Delighted that such impressive-looking speakers could be produced at such a reasonable retail price, I enquired further: "Yes, the inlay there is gold, and here (removing silk cover, exposing a dismayingly JBL-ish woofer) you can see the gold-plated screws." Gold screws!! That one just about broke me up.

I was used to associating good, honest, functional engineering with homely-looking hi-fi. I also was firmly convinced from all my experience in audio that the only speaker for me was one with no cabinet and no conventional drivers. Only planar speakers had ever sounded truly revealing to me, and I had always been uncomfortably aware of cabinet resonances when listening to "box" speakers. The Waveforms looked even worse when I counted the drivers and realized I was seeing a four-way design. Experience had left me very partial to minimalist crossovers, preferably two-way or less. And there was that big old nasty-looking woofer. I figured there was no way that thing could get out of its own way fast enough for it to sound like anything but mud.

Since I am the kind of person who is occasionally nice to small children and cripples, I didn't share these thoughts with the poor, doomed, intense man who was showing the speakers, but smiled politely and asked a few



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more questions, and murmured something about how affordable they would seem to the right someone—someone more *aesthetically* minded than our audiophile close-your-eyes-and-listen-to-it type of client—at \$2200 a pair. “No,” John said. “Twenty-two *thousand* a pair.” I left the room in a hurry.

Many months later John came visiting. He had driven from Canada in this huge truck with these great big crates in it. We talked about whether it was worth unpacking the speakers (all 225 lbs. of them, each!) and setting them up for a listen. He let me know that he could now produce them for a mere \$19,000 a pair, or less if he direct-distributed to dealers. (Again, this is the hand-carved, 2"-thick black cherry version, which is truly wonderful to behold.) I'm thorough. A completist. And I had recently been humbled in my opinions by Dave Wilson's WATT speakers, those amazing little monitors that let so much detail through mere cones, out of an enclosure so sonically inert the speakers do a disappearing act if you set them up just right.

So we set the Waveforms up, fed them the beefiest Rowlands we could find, and John started playing things. . .

I pause to note that Absolute Audio has a huge entry area/front room, open to a two-story ceiling. We had the speakers maybe 5–8' apart, nowhere near a side wall, with just an acoustic baffle behind them. Listeners could back off over 20' to experience a “long throw” focus if desired. Experimentation with angling gave us different focusing distances, though they showed a definite tendency to image best with the listener at the apex of a rather acute triangle. Once they were optimally set up, they also demonstrated stability at non-central listening positions. Detailed, frequency-correct information appeared to “turn the corner” when a listener moved completely out of their line of fire. I could stand well off to the right or left of the speakers and still feel I had a good grasp of everything that was going on except stereo image.

I was impressed by the bass, too. All set to hear soggy-pillow-go-thud, I put on my real tough test passages. I heard ominously deep, room-pressuring, floor-trembling bass, without a hint of cabinet or of woofer out of control!

The overall sound was sweeping, full, detailed, airy, true, and compelling—all that good

stuff. I called Neil and told him he had to come and hear these. The potential for greatness was clearly there, I felt.

There was this one problem, however. I explained as best I could to John that the big difficulty Waveform had to overcome was John Ötvös. He didn't understand my subtler attempts to tell him not to verbalize as strongly to Neil, or as persistently as he had to me. So I made it clearer by telling him he had succeeded in giving me a headache. *Not* the speakers! The talk. My only similar experience was with a proselytizing missionary who would not go away.

It takes a tremendous effort to get past John, to ignore the negativity one feels after an afternoon's chat, and to totally disregard his advice concerning speaker setup (he's a cabinet maker, for crying out loud—he doesn't know technical stuff, can't make subtle sonic distinctions, and was never meant to interact with people). But *if* one can do it, and (I suspect) *if* one has a terribly large room, and all the appropriate amplification, truly great sound can be had for one's trouble.

John's “paternal” relationship to the Waveforms nearly kept us from discovering their full potential. We were more fortunate than methodical in getting good sound relatively quickly, but it took days—*without* John hanging around, and a tremendous amount of patient tweaking—to get the speakers to sound their best. In the course of this process we discerned a fairly random relationship between John's advice on setup and sonic results as we perceived them.

He seemed much more interested in hauling out demo disc after impressive demo disc to play at ungodly loud levels, with the crossover's bass setting way too high, to the point where we would just be utterly drained.

After Neil had gotten a good listen to the Waveforms he was so impressed he made a tentative offer to distribute them in the US, via California Audio Labs, which was eventually turned down for economic reasons.

We bought that pair of speakers from John for Absolute Audio and to use as one of the reference speakers in designing the sound of the CAL Tempest, Aria, and Tercet.

We proudly displayed them in the store, asking price \$17,000 a pair, and waited patiently for John to get himself some recognition from other dealers and the press. And we waited for

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There is indeed a world of difference between conventional D/A processors and the Decoding Computers by Wadia.

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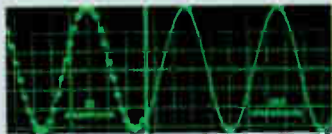
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The Wadia Digital 2000 Decoding Computer



The photo on the left shows Wadia's internal circuitry. The two large red modules are proprietary 18-bit transversal, multiport DACs. They have been called "BOSS DACs" in the press. This is in sharp contrast to finger-nail sized off-the-shelf commercial DACs, that cannot handle 2.8-million conversions per second (64X oversampling), nor can they produce the dynamic Wadia Sound!



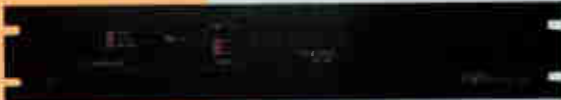
4X VS. 64X OVERSAMPLING. The left trace is the DAC output of a 4X oversampled CD player. The signal is an 8 KHz sine wave. Notice that there are 22 steps per cycle. The right-hand trace is the output of the Wadia DAC utilizing 64X oversampling. Notice the smoothness due to the fact that there are 353 steps per 8 KHz cycle.

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The Wadia DigiMaster Decoding Computer



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buyers. Though people were very impressed with the sound, the few who could have afforded them were not willing to buy something no one had ever heard of.

We had originally hoped John could get the speaker the reviews and dealer network it needed to establish itself, as well as making a less expensive version available so that dealers would have something they could actually sell. The latter came through, at least. But we heard distressing news from key dealers all over the country. Seems John personally alienated a whole lot of audio's foremost retailers. I don't know if he actually told one of them he couldn't hear, but that's the way it was put to me.

Eventually we took the Waveforms home. We decided to offer the public what it seemed to want, and put Infinity IRS Betas in the store in their place.

We still love the Waveforms, although they sounded better in the immensity of the store environment. They can sound lovely even at low levels, and produce no strain over prolonged listening, even at concert levels, provided the crossover is adjusted for what John would consider lean bass.

Our speakers may be a slightly different beast from the review samples, now that I think about it. There could have been differences introduced in the intervening time. And yes, it might be nice if he'd have a first-rate engineer redesign that crossover.

And some day we hope, if it's not too late, John hires a very diplomatic sort of marketing guy to tiptoe back to all those high-end dealers and give the Waveforms their chance to fly.

Evelyn Sinclair

Absolute Audio, Orange County, CA

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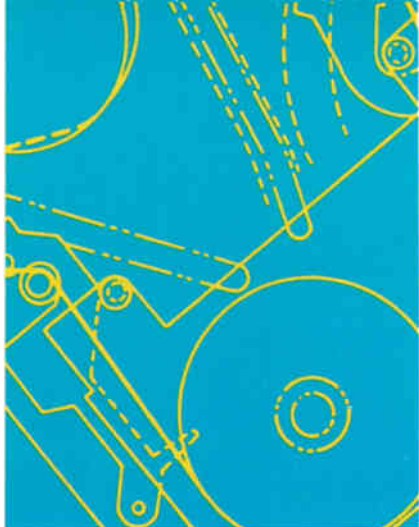
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UPDATE



US: Peter W. Mitchell **A bright blue LED at last?**

Most LEDs (light-emitting diodes) produce light at relatively long wavelengths, in the red or infrared. LEDs can also be doped to generate green light, and one type of bipolar LED glows either red or green depending on the direction of current flow through it. (With alternating current it looks yellow.) But LED development ground to a halt a decade ago when nobody could devise an LED that would produce short-wavelength blue light. A lot of money has been riding on this quest; with red, green, and blue LEDs of comparable brightness, TV manufacturers could produce the flat hang-on-the-wall sets that have been just out of reach for 40 years. Every year somebody announces the development of a blue LED, only to find that it can't be mass-produced or is too dim to be useful.

According to news stories out of Japan, the wait may be over. A research project jointly sponsored by several companies claims to have achieved a bright blue LED that not only will serve in wall-hanging TVs, but also will triple the data capacity of CDs by allowing the pits to be made much smaller. (In the present Red Book standard for CDs, the pit size and track pitch are based on the minimum spot size that can be produced with an infrared laser of 0.76 micrometer wavelength.) New CDs designed for the shorter wavelength of blue light could hold over a gigabyte of computer data. In audio terms, that could mean four-channel sound with no loss of playing time, or half-size mini-CDs with hour-long playing times, or a new

coding system with higher sampling rates and 20-bit words. In any case, it would take several years to develop a new CD format and agree upon standards for it. The present CD standard is just that, a standard, and is likely to be with us for at least another decade.

THX comes home

If you're a movie-sound buff, you probably have heard of THX. It's not a product but a listing of recommended components, a set of procedures for installation and calibration, and periodic tests to ensure that movie theaters that claim THX certification actually live up to precisely defined standards for sound level, distortion, frequency response, Dolby-Surround decoding, and freedom from background noise. The intent is to ensure that movie audiences hear, within reasonable limits, the same sound that the mixing engineers heard when the soundtrack was assembled. In theaters without such standards the sound may be painfully loud or too soft, harsh-sounding or dull, or portions of the dialog and sound effects may simply be buried under other noise.

THX is the work of Tomlinson Holman, who designed hi-fi electronics for Advent and Apt during the 1970s and has been the technical director at Lucasfilm for the past decade. Lucasfilm, the producer of the Star Wars and Indiana Jones pictures, is also the home of two service companies, Sprocket Systems and Industrial Light & Magic, which provide state-of-the-art soundtrack engineering and special visual effects for films produced elsewhere.

In the course of listening to many film soundtracks, both in full-size theaters and in studio control rooms, Holman became aware of a disparity that may also apply to the reproduction of movie sound at home. In a nutshell, soundtracks that sound correctly balanced in a large theater seem bright and harsh when heard in a small room. Holman confirmed his subjective impression by installing microphones in a dummy head and measuring their responses to speaker-generated pink noise in large theaters, small theaters, and control rooms. The pink noise arriving at the eardrums of the dummy head contained a clear excess of treble energy in small rooms.

This may help to explain why Shure "contoured" the sound of its Home Theater Reference system, producing a dull, dark sound that Bill Sommerwerck disliked (November 1989).

It also confirms the common impression among videophiles that the dialog in many movie soundtracks, heard at home via laserdisc and Dolby Pro Logic decoding, is much brighter than a real-life speaking voice and sometimes verges on harshness. (Unfortunately, some soundtracks also sound harsh in the theater!) Using the response curves measured with the dummy head, Holman designed a small-room correction circuit that removes excess brightness from film soundtracks for home playback.

When I discussed the challenge of ambience reproduction last September, I emphasized the importance of "diffusion"—dispersing the rear-channel sound about the listening area rather than aiming the tweeters at your ear canals. Holman came up with a simple and clever solution for Dolby-Surround speakers that works especially well in narrow rooms to ensure that surround speakers can be mounted on the side walls without becoming audible as discrete sound sources. The surround speakers are dipoles, mounted on the side walls but firing to the front and rear. Since the listener at the center of the room is in the side-null of the speakers' radiation pattern, most of the surround sound reflects off the walls before it gets to you.

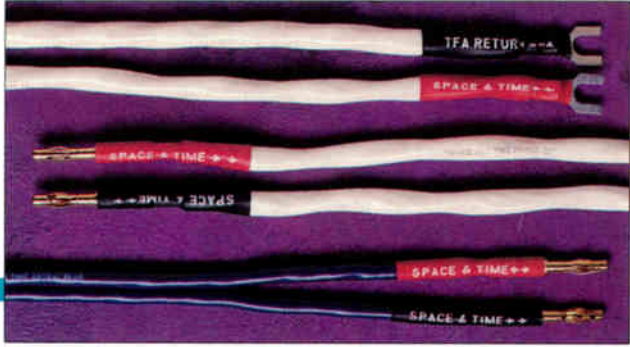
Holman has designed a complete "home THX" system that includes Dolby Pro Logic decoding, the small-room brightness-correction circuit, and dipole surround speakers. Its aim, as with the theater version of THX, is to provide playback that accurately reflects what the engineers heard when they mixed the soundtrack. Rather than manufacturing the system itself, Lucasfilm is licensing the design to other manufacturers. The first manufacturer to acquire a Home THX license was Technics/Panasonic. Incidentally, while it wasn't designed for the purpose, Holman's brightness-correction circuit works remarkably well with many CDs to produce a tonal balance resembling what I hear in a typical concert-hall seat.

The microphone problem

As audiophiles, we devote a great deal of attention to selecting equipment that faithfully reproduces the true sound of music. For the December issue, Guy Lemcoe listened to several amplifiers and found that the two lowest-cost models were a bit brighter than other, more costly amps. But in order to form that judgment he first had to select a handful of

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carefully made reference recordings. Switching to a typical CBS or DG disc would have produced a much brighter and edgier sound than any amplifier.

That shouldn't happen. The budget for a typical major-label recording is over \$20,000, and the cost of the equipment in a recording studio approaches a million dollars. Slight brightness may be excused in a \$500 amplifier, but faithful reproduction should be the norm in high-priced professional recording gear. Sadly, it is not. Some of the worst colorations occur at the very beginning of the record/playback process—in the microphones.

The simple fact is that, as high-fidelity transducers, most microphones stink. Of the hundred-odd models in general use, only a handful are as tonally neutral as, say, a midprice phono cartridge. Broadly speaking, professional recording microphones are as variable in their sound as \$500 loudspeakers. *Stereophile's* new Test CD includes a dramatic illustration of this.

The pro recording industry has a curiously ambivalent attitude about this situation. On one hand, it's no secret that every brand and model of microphone has its own characteristic sound—a built-in, unchangeable tone-control curve. Studio engineers choose specific mikes because their tonal colorations complement or flatter the instruments being recorded: a crisp-sounding mike for guitar, a mellower mike for horns, etc. Studios typically stock two dozen different mikes, with sonic flavors for every taste. And multitrack consoles have a 3- or 4-band equalizer on each input that further alters (or may even partially compensate for) the microphone's tone color, until the result pleases the producer's ear.

On the other hand, the industry treats the erratic response of microphones as an embarrassing secret. If you're looking for published information about microphone accuracy, you won't find it. Manufacturers provide only crude graphs of mike response, and comparative reviews of microphone performance are virtually nonexistent. In this respect, pro-audio magazines are very different from their consumer hi-fi counterparts.

Consumer magazines, including this one, devote a lot of space to product reviews that attempt to identify the most accurate or most natural-sounding equipment. Pro-audio magazines sometimes review tape recorders, ampli-

fiers, signal processors, and monitor speakers; but reviews of microphones are scarce and unrevealing. The only competent microphone tests I've ever seen were in *Studio Sound* (from England's Link House, publisher of *Hi-Fi News & Record Review*), but they covered only a fraction of the field.

The official excuse for this reviewing void is that pro-audio magazines mainly serve pop music and multitrack studios, where microphones are used to modify sound as well as to detect it. Since mikes are chosen by ear for most jobs and are further equalized anyway, information about accuracy is not a high priority. Manufacturers frequently lend mikes to studios for evaluation, knowing that a studio may buy a dozen of a model it likes, but such loans aren't as widely available to a freelance recordist who needs only a stereo pair. So if you want to make musically authentic recordings and are looking for a tonally neutral microphone, you may be left with word-of-mouth reputation as your only guide.

Or you can learn by trial and error. I began recording symphony orchestras and choruses 18 years ago, using Beyer mikes marketed by Advent. Advent's low-noise mike preamp was excellent, and the company claimed to have researched the microphone market extensively, so I bought the Beyer/Advent mikes on faith. A recording of a five-piece jazz combo turned out OK; it lacked low-end weight but was otherwise satisfying. But when I tried to capture a full symphony orchestra in a large hall the recording had weak bass, no top-end sheen, and a badly colored midrange.

Further experience confirmed that the Beyer/Advent mike was fine for recording solos or small groups at a distance of only a few feet, but was a bad choice for large ensembles in reverberant spaces. Like three-fourths of all the microphones in the world, it had a "cardioid" (heart-shaped) directional pattern that was designed to reject sound arriving from the rear. Vents along the side of a cardioid mike allow sound waves to reach the back of the diaphragm as well as the front, and the mike responds to the resulting difference in sound pressure—a difference that depends on both the direction and the wavelength of the arriving sound.

This directional dependence is what people want (or think they want) from a cardioid mike. But the directional pattern varies with wave-

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length; consequently, the microphone's frequency response depends on the direction of the arriving sound. The sad result is that most cardioid mikes are inaccurate in every direction except the front. Of course the frontal (on-axis) response is the only measurement you ever see in print, and it is impressively flat in a few designs. But in most cardioid mikes, including many high-priced models, the off-axis response is far from flat, and any recordings that include off-axis sounds are unavoidably colored.

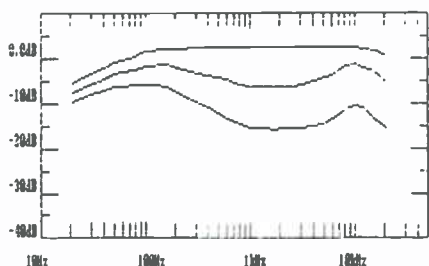


Fig.1

Most cardioid mikes are designed for maximum rear rejection at voice frequencies, to minimize feedback in sound-reinforcement applications (speeches, sermons, rock concerts). Fig.1 illustrates the result of this approach. For rear-arriving sound (180° off-axis), at midrange frequencies the front and back waves nearly cancel, reducing the response to about -20 dB. But at lower and higher frequencies the rejection is less effective (*ie*, the front and back waves don't cancel as well), so the off-axis response rises. The response rolls off in the top octave (where the wavelengths are smaller than the diaphragm) and also at low frequencies (see below). The resulting 180° curve is swaybacked in the midrange, with peaks in the midbass and mid-treble. Similar effects are seen to a lesser degree at other off-axis angles.

Note: This is an idealized case, assuming perfectly flat on-axis response above 100Hz. In many cardioids the off-axis treble peak is not the simple hump shown in the graph, but a ragged series of narrow peaks and valleys. Real mikes also have resonant peaks and other irregularities that add to the off-axis problems shown here; some are caused by the grilles and windscreens that protect the diaphragm from careless users.

The bass response of any cardioid mike varies with distance: the closer the source, the

stronger the low end. Typically, the bass response is flattest at a distance of about 20"; closer distances produce a big bass peak, and larger distances yield a bass rolloff. This "proximity effect" generates a boomy bass emphasis when vocalists hold a cardioid mike close to the mouth; but when the same cardioids are used to record a large source like a pipe organ or symphony orchestra, the low end is thin.

What happens when you put a pair of cardioid mikes on a stand in front of an orchestra, either with their noses crossed inward at a 90° angle (for coincident one-point stereo), or splayed outward with a 110° angle between them (for ORTF stereo)? Since the mikes are aimed at the left and right edges of the orchestra, those sections are captured fairly well in their respective channels. But the middle of the group is 45 – 55° off-axis for each mike, where their response is less accurate.

Worse, the right-channel mike, aimed at the right end of the orchestra, also "hears" the violins 90 – 110° off-axis to its left. At that angle the sensitivity of a cardioid is down only 6 – 9 dB at midrange frequencies, and its response is peaked in the midbass and treble. So while each half of the orchestra is recorded correctly by its corresponding mike, it is also recorded by the opposite-channel mike a few dB lower, with lumpy bass and edgy treble.

Stereo imaging is also compromised by the "leakage" of left-stage sound into the right mike, and vice versa. The poor separation causes the recorded image to be narrower than the true angular width of the stage. Since the off-axis response (and therefore the separation) varies with frequency, instrumental fundamentals and overtones may not appear at the same place in the image. And the hall's reverberation, arriving at each mike from the back and sides, is highly colored by the mike's off-axis response.

One of the first recordings I made in Boston Symphony Hall a decade ago featured the Verdi *Requiem* with a large chorus on risers behind the orchestra. The stage is so deep that the chorus wouldn't be captured well by the main mikes hanging above Row C, so I added a stereo pair of cardioid accent mikes on a tall stand above the back of the orchestra. The chorus came out OK, but all the instruments at the back of the orchestra (brasses, tympani, and woodwinds, 90 – 130° off-axis and 12 – $15'$ away) "leaked" into the chorus mikes. Their sound was severely colored. I hear similar

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problems in many store-bought recordings.

My old Beyer/Advent mikes were not expensive, and they had dynamic transducers; so in addition to the limitations of the cardioid pattern they also had mechanical resonances and obvious colorations. I expected great things when I got a chance to record with ribbon mikes (which were smoother but had other faults) and later with expensive, top-quality condenser microphones. So it was doubly disappointing to discover that many condenser mikes have edgy, strident, off-axis sound. Condensers are wonderfully smooth and uncolored in the midbass and midrange, but in the treble most models have peaks on-axis as well as off. A handful of cardioid condensers have splendidly neutral response over a broad range of angles, but thanks to the pro-audio industry's reluctance to publish microphone tests, that accomplishment has not been widely known or imitated.

I've gone on at length about cardioid mikes because they outsell all other types combined, and because they are so often used in situations where a different pattern would deliver better sound. For many years, engineers in the US, Germany, and Japan have habitually regarded the cardioid as the "normal" mike for every situation.

In England, they know better; at any rate they used to. The classic Blumlein single-point stereo mike, named "Stereosonic" by EMI/Angel in the early years of the two-channel era, was a pair of figure-eight microphones crossed at right angles. I don't know if Blumlein planned it this way, but the single-diaphragm figure-eight is the only microphone whose polar pattern is the same at all frequencies—and therefore the only mike whose frequency response is the same in all directions. If it's flat on-axis it is equally flat off-axis, allowing instruments to be recorded across a broad stage without off-axis coloration. And since the leakage of cross-stage sound into the opposite channel doesn't vary with frequency, imaging is exact. In principle, a Blumlein figure-eight pair is the most nearly ideal system for recording natural sound.

But the ideal isn't always realized in practice. Early Blumlein recordings used ribbon mikes with a rolled-off top, lumpy bass, and intrusive preamp noise. Newer recordings often use multi-pattern mikes in which the desired pattern (figure-eight in this case) is synthesized by

combining the outputs of two diaphragms in a matrix circuit. Engineers love multi-pattern mikes because you can switch from cardioid to figure-eight to omni just by turning a knob. But despite high prices (upward of \$1500/pair), multi-pattern mikes are compromise designs whose responses are less accurate than equivalent single-pattern mikes. And, like cardioids, they have a low-end rolloff.

Why is the single-diaphragm figure-eight a well-kept secret? Thanks to the BBC, it's a standard product in England, but elsewhere there has been virtually no market for it, and little incentive for non-British manufacturers to produce it. Figure-eight mikes were available to British recordists at several price levels, but they were seldom exported. I've never seen a figure-eight mike in an American pro-audio store or mail-order catalog except at the very highest price level.

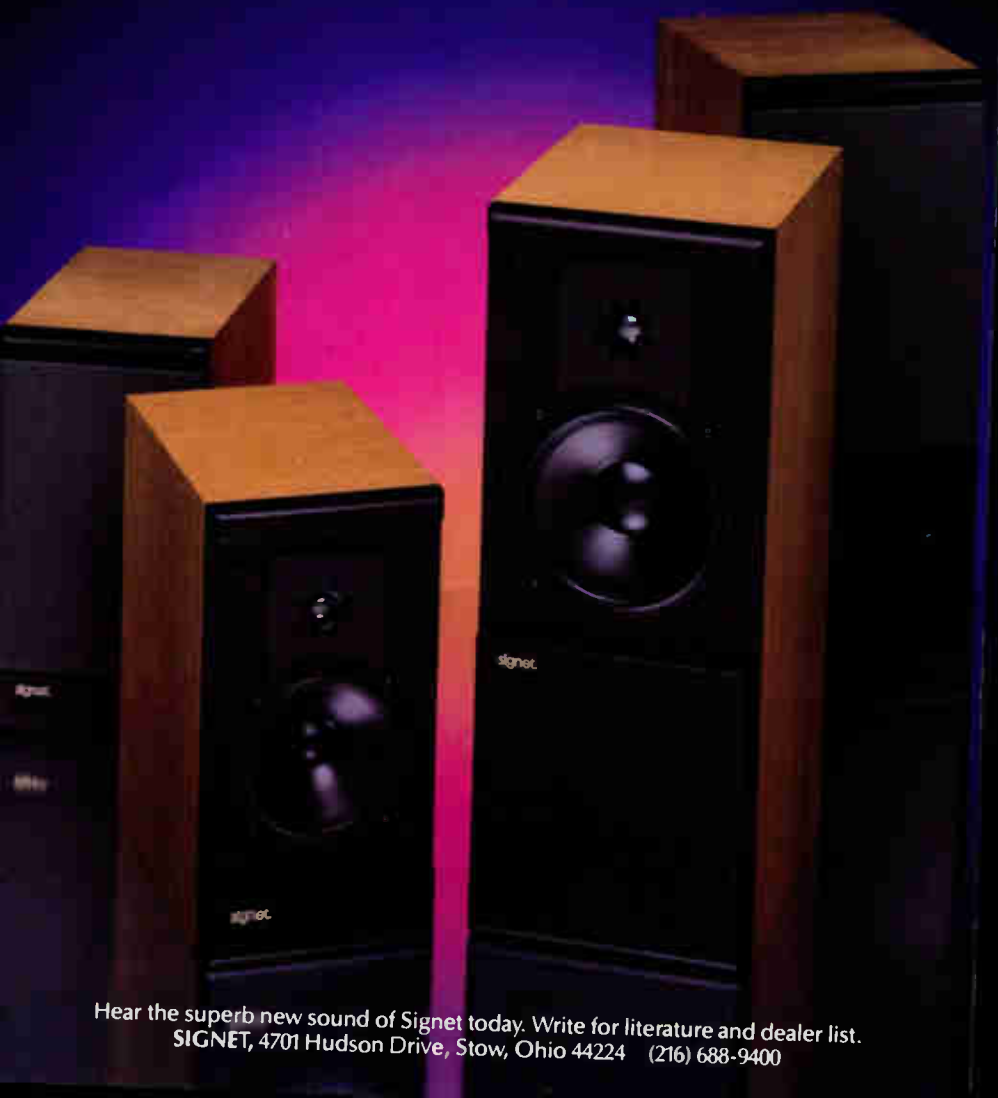
So it's no accident that American recordists, both semi-amateurs like myself and professionals from John Eargle (Delos) and Jack Renner (Telarc) to the Boston Symphony Transcription Trust, favor omnidirectional microphones. As did the leading engineers of the previous generation: the early Mercury "Living Presence" stereo discs and Lewis Layton's marvelous Reiner/Chicago recordings for RCA were made with two or three omni mikes.

The single-diaphragm omni, like the figure-eight, is in many ways an ideal mike. Its bass response is naturally flat, regardless of price. (An omni is a pressure transducer, so in principle its response could extend to DC.) And its midrange is inherently neutral, unless compromised by diaphragm resonances or a badly designed housing. Being omnidirectional, it has no off-axis coloration problems; frequency response is substantially the same in all directions. And you don't have to spend a fortune to make musically authentic recordings; using electret technology, manufacturers can produce mikes with all of these virtues for less than \$50.

But nothing is ever perfect or simple. At high frequencies, where the wavelengths of sound are smaller than the diaphragm, omni mikes cease to be omnidirectional; a pressure build-up at the front of the mike causes the on-axis response to rise in the top octave. If the manufacturer restores flat on-axis response by rolling off the top, then the off-axis response is dulled and recorded ambience loses some of its "air."



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The imaging of spaced-omni recordings is not to everyone's taste. (Perhaps one of these days JA and I should discuss the pros and cons of Blumlein *vs* spaced-omni miking in print.) And the positioning of omnis is critical in both distance and height. A few inches closer than the optimum distance, the sound seems dry and unblended. Move them a foot or two back in a reverberant hall and you may lose detail in a cloud of ambience. Omnis often exaggerate the front-to-back depth of the orchestra; but moving them up or away may yield a flat image in which the strings at the front of the orchestra are swamped by the tympani and brass at the back.

A decade ago, annoyed by the scarcity of published information about microphone response, Brad Meyer and I made some measurements ourselves. I was curious about how the off-axis response of microphones affects their recording of hall ambience, so in addition to conventional measurements we used a reverberant chamber to determine each mike's response to a random-incidence soundfield. We measured mikes of various types (condenser, electret, ribbon, dynamic) and patterns (cardioid, hypercardioid, omni). The data confirmed what we suspected from our musical recordings but had never seen in print. The cardioid and hypercardioid mikes were mediocre on-axis and worse off-axis; the ribbon mikes had problems at both high and low frequencies; the omnis weren't omni above 8kHz; but except for the top octave, the omnis were basically neutral at every price level. We found an omni electret mike retailing for only \$16 that measured and sounded more neutral than some high-priced cardioid and hypercardioid designs. (It's no longer available; cardioids are easier to sell.)

Unfortunately our results were published only in a Boston newspaper; national magazines weren't interested. But that doesn't matter now, because similar measurements of professional recording microphones were presented at the recent New York convention of the Audio Engineering Society by Sean Olive and Floyd Toole of Canada's National Research Council. I actually shouted with joy when I saw the listing of this paper in the convention program, and it should be required reading for anyone interested in the sound of commercial recordings. (Send \$5 to the AES, 60 East 42nd St., New York, NY 10165, and request Preprint

2837.) JA's "Update" column for January discussed this paper in detail.

Lest you suppose that the problems I've been describing occur only in the run-of-the-mill Shure microphones used in PA systems, I quote from Olive and Toole's paper: "This study concentrated on microphones which are widely used, especially those that have been praised by users for their accuracy. . . They form the basis for recordings that appear on some of the most popular and most respected record labels in the world. In audiophile terms, some of these are the 'high end' microphones used in recordings by which other audio components are judged."

If this essay has sounded like a tirade, it's because I have been frustrated for so long by the official secrecy about microphone response. I'm enormously relieved that the truth is now out in the open for all to see. Toole's earlier studies, correlating loudspeaker measurements with subjective sound quality, have earned him a reputation for unbiased research and careful methodology, as well as election to an AES vice-presidency. So with the publication of his newest paper, recordists who yearn for tonally neutral microphones have gained respect and some measure of official endorsement. Perhaps microphone manufacturers will feel encouraged to devote more attention to accuracy and less to selling mikes as artistic sound-painting tools.

Another AES paper demonstrated that even recording engineers who specialize in pop music are interested in microphones that promise musically authentic sound or accurate spatial perspective. Case in point: a new miking system that was invented by Michael Billingsley (an independent engineer based in Vermont) and was turned into an industrial product by Bruce Bartlett at Crown International. Called the Stereo Ambient Sampling System (SASS), its theory and practical applications are described in three AES preprints (2788, 2791, and 2870). Conceptually, it could be described as a combination of ORTF miking and dummy-head binaural recording.

The ORTF mike array, devised by the French broadcasting system, has always impressed me as providing a nice compromise between the precision of Blumlein miking and the three-dimensional ambience of the spaced-omni method. ORTF employs hypercardioid mikes at an angle of 110°, spaced 7" apart (the width of the human head). In practice, however,

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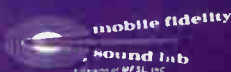
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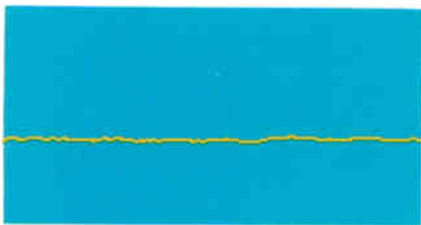


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ORTF recordings often suffer from the off-axis colorations of the hypercardioid mikes.

The Billingsley/Crown SASS array promises ORTF-like imaging without the drawbacks of hypercardioids. It uses omni microphone capsules with their attendant advantages of extended bass, neutral midrange, and freedom from off-axis coloration; yet its head-related construction provides the precise and stable imaging of quasi-coincident miking. The SASS actually is a head-sized (but not head-shaped) block of plastic and foam weighing about one pound, with diagonal panels in which omni microphones are mounted. One version is pre-cut to accept Bruel & Kjaer 4003 or 4006 omnidirectional mikes, which produce exquisite sound but, like most omnis, have an off-axis rolloff in the top octave. A second version of SASS comes with Crown PZM (pressure-zone microphones with electret transducers) installed; reportedly these are not quite as refined sonically as the B&K mikes, but have uniform highs across the entire frontal hemisphere.

The SASS is priced in the \$600–\$800 range—a bit high for amateur recordists but a lot lower than a pair of multi-pattern condenser mikes that may produce less accurate sound. If you're handy with tools you could put together a low-cost homebrew version of SASS based on the diagrams in the preprints, for use with store-bought PZMs or regular omni mikes. I haven't recorded with a SASS in a concert hall yet, but hope to do so soon. This is an exciting time to be in high-end audio.



UK: Ken Kessler

The Winter Consumer Electronics Show in Las Vegas looms as I write, and with it comes the promise of new products; for British makes, it invariably means a flood of new loudspeakers. Fortunately, Monitor Audio is in an inventive mood, so their new Studio 10 transcends the "two drivers in a box" stigma by boasting some new technology.

Mention Monitor Audio to any British hi-fi enthusiast and I can guarantee that he or she will mention "metal-dome tweeters" in the first sentence. Lord knows that Monitor Audio's Mo Iqbal uses those three words at every opportunity, even when you're talking about food, music, or the weather. If only because it will relieve us of the monotony of hearing yet again his metal-dome-tweeter spiel, we welcome the arrival of the Studio 10 with its metal-cone bass driver.

No, the Studio 10 is not the first speaker to sport a metal woofer, and it has some serious competition from Acoustic Energy as far as all-metal drivers are concerned. What makes the Studio 10's 170mm woofer a different proposition is that it's formed using the stamping techniques associated with polypropylene woofers. Pressed out of a single sheet of aluminium alloy, the Studio 10's bass cone is said to offer absolutely consistent thickness from the center to the outside edges, producing more predictable behavior and an utterly controllable breakup mode well above the crossover point. Additionally, the cone is anodized on both sides to give a ceramic coating for greater stiffness, durability, and scratch resistance. As it weighs only 5 grams, the cone is light as well as stiff. The result is a fast, tight sound with reasonable extension, from a ported, all-Mediterranean enclosure roughly the size of a Celestion SL600.

The woofer, like the tweeter, uses a vented coil former for better cooling. The zero-tolerance precision of the forming of the hole in the center of the cone means that fixing it to the voice-coil assembly creates what is virtually a perfect fit; this, too, aids in thermal transfer. As such, the speaker can be driven hard, and Monitor—which doesn't provide protection circuitry—feels confident enough in recommending the use of amplifiers rated up to 200W RMS.

Having lived with a pair of Studio 10s for a month, I can tell you that this just might be Mo Iqbal's finest moment. Although the speaker is costly—this mini will compete with other high-end minis like the SL600 and the Sonus Faber Electa—it does for people with small rooms what the Celestion 3 does for people with small bank balances. Its most impressive trait is the wonderful top-to-bottom consistency, but to experience this you must employ a serious amplifier, rock-solid stands, and bi-wiring. Bass weight is adequate rather

than ample, but the actual bass quality is so good that you won't really mind the loss of a few Hertz except on truly colossal works. Add to it Mo's promise that he'll finish them to order in any real wood veneer you can name (pearwood, white ash, ebony, zebra, balsa, petrified, *ad infinitum*), and you can predict that this one will be a real winner.

At the other end of the price spectrum are two new models from Acoustic Research, who, although American, have long possessed an Anglo-American image. A decade ago, AR ruled the UK budget sector with a classic called the AR18. In addition to offering a big sound for a small outlay, the paper-coned '18 worked well with budget amplifiers, studios loved them as monitors, and tweaks found out that they could be transformed quite easily with minor mods like rewiring. Enter the Red Box II, a revamp of the '18. Essentially the same speaker, the Red Box II employs a slightly larger, more rigid enclosure for deeper bass, lower cabinet resonance, and higher sensitivity. Although AR's UK spokesman states that the product is aimed at the studio and professional sector, there's no doubt that shallow-pocketed audiophiles after a big sound will soon rediscover its traditional virtues. Like the smaller Red Box, also a two-way with minimalist crossover (just two components on the tweeter), the Red Box II has zingy "lifestyle" packaging (a red cardboard easy-to-carry carton) and a heavy-metal flash of a badge. And if you're wondering where the name came from, don't think *glasnost*: AR sponsored rock band Simply Red's recent UK tour.

A&R Cambridge, not to be confused with Villchur's legacy (although it always will be), has launched a new, affordable speaker to complete the Alpha system lineup. Designed to mate perfectly with a package consisting of the Alpha CD player, Alpha 2 amplifier, and the matching tuner, is the two-way Alpha loudspeaker. The speaker adheres to the standard British recipe of a 200mm polypropylene-coned mid/bass driver and a 25mm soft-dome tweeter housed in a 20-liter cabinet measuring 265mm (10.4") W by 262mm (10.3") D by 460mm (18.1") H. Unlike the Acoustic Research models, the Alpha employs a more complex, six-element crossover, but the rest of the specs suggest a speaker that will be easy to drive. In addition to offering high sensitivity, an inert, solid enclosure, and manageable dimensions,



Monitor Audio Studio 10

the Alpha also scores in that it has a "modern" look, with or without the grilles in place.

Other speakers which may or may not be ready for CES include all-new models from Musical Fidelity (along with revised versions of existing speakers) and the final production version of the long-awaited ATC "small" monitor (to compete with the Studio 10, the SL600, *et al*). (ATC speakers are now distributed in the US by Joseph Magee Audio Engineering, 4124 Vinton Avenue, Culver City, CA 90232. Tel: (213) 558-4208.) Meanwhile, KEF will show their interesting budget subwoofer system and the new 105/3, and Celestion their fascinating ribbon hybrids, both of which were launched at the Hi-Fi Show in September.

Another new product I've been using recently (and which should have its US debut at CES) is the new BB100 line-level integrated tube amplifier from British Built Audiophile Products. This is the first model to be released by Bill Beard's new company (he left Beard Audio in mid-1989), the prototype having been prepared in record time for its September UK debut. I thought the piece sounded wonderful even under show conditions; after living with it in my own system, I think we might be

looking at the birth of a legend.

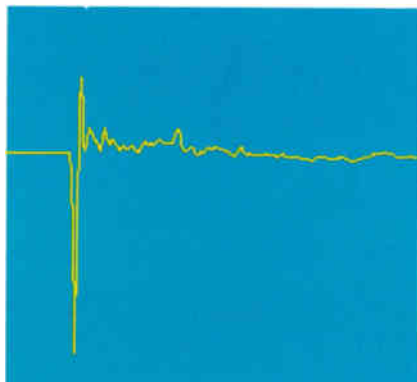
Although the BB100 is a departure from the "separates" tradition associated with Beard-branded products (which will continue to be manufactured under new management), the BB100 adheres to a policy which Bill established over a decade ago. For starters, the thing is big, gold-plated, over-engineered, and underpriced. Had I not been told the price prior to reviewing it, I would have guessed a retail double the UK tag of £995 (\$1600). Even after it suffers the penalties of shipping, customs fees, and a distributor's margin, it should remain good value in the US, especially as it has no direct competitors. Unless, that is, you can name another all-tube line-level integrated amplifier with six inputs, 18 tubes, and dual-mono construction.

Initially, I anticipated medium-power performance and minor compromises because of the convenience of single-chassis construction. The first thing you learn is that the BB100—safe with just under 3 ohms—will drive speakers with gargantuan appetites. I had no trouble filling a 7'-square room to uncomfortable levels with a variety of speakers, most of which would sound brash well before the onset of clipping. The sound is big and sweet, with tube virtues and none of the inconvenience.

Bill Beard, you see, has a hang-up about the reverse technofear which prevents many audiophiles from accepting tube equipment as a viable and desirable alternative to solid-state electronics. His long experience has taught him that no matter how easy you make the biasing arrangements and however wonderful the tubes, there will always be customers worried about either or both. To eliminate such worries, he's designed the BB100 to employ a mix of grid and cathode biasing, which means that the amps are set at the factory and are self-adjusting. He's devised an LED warning system to indicate potential tube failures, and he's fitted pairs of common, inexpensive "workhorse" tubes which the user can replace without fear of mismatches. The tube lineup consists of ECC81s, ECC82s, and EL84s, all of which are cheap'n'cheerful and readily available from any tube supplier.

So is the BB100 an "everyman" amplifier? Probably not, because it's large, needs plenty of ventilation, and the "steam punk" styling—reminiscent of the neo-Jules Verne world of such SF writers as Blaylock and Jeter—will not

appeal to those weaned on slim black boxes from the Orient. On the other hand, anyone who has ever succumbed to the temptation of switching out the lights just to see what the system looks like when the only illumination is hi-fi-generated will fall in love with the warm glow of one-and-a-half dozen incandescent cylinders. That added bit of self-indulgence may have nothing whatsoever to do with sound quality, but I must confess to smiling every time I looked at the BB100 in a darkened room.



The Netherlands: Peter van Willenswaard

There is a strange row going on in the Netherlands. The two parties concerned are Philips of Eindhoven and a small recording studio in Leiden, owned by a hitherto unknown (in the hi-fi world) Norbert Veel. Mr. Veel (pronounced "vail") claims to have come across an until-now overlooked aspect of digital recordings that would be the decisive factor as to the harshness in loud passages and the lack of ambience experienced by many hi-fi circles.

Mr. Veel is an audio fanatic who can't sit still once an intriguing idea catches him. He and a technician he has been working with for the last 12 years have built a circuit into a black box to correct for said overlooked error and found that it worked. This technician has been a full-time employee of Philips for about four years, and although the first idea had been to publish their findings, they had a hunch that it might be wiser to take Philips's house rules into consideration and, as their theory had to some extent sprung from a partly Philips-owned brain, they decided to give Philips the first opportunity. A rendezvous was fixed by the

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end of August last, but before the company allowed the black box to be demonstrated, a juridical battle took place. Philips claimed to share the rights on the gadget as one of their employees was involved, but Veel and the technician made up a contract referring to their long technical relationship and forbidding any information to be passed on to a third party. The preliminary resulted in a contract between Veel and Philips: both promised to do their utmost to arrive at a definitive decision within two months' time, and if negotiations would be successful neither would disclose the contents of the box for the coming year. Then the Philips people listened, but they didn't come to a conclusion right there.

Norbert Veel emphasizes that he never promised Philips that he wouldn't go on using it in his studio ("Look, I have a business to run and it gives me better sound with digital equipment, so . . ."), nor that he wouldn't demonstrate it to whoever wanted to hear it. Next thing that happened was that the newspapers got wind of it. Headlines like "CD Not Perfect?" illustrated journalists' ignorance of the matter¹ and caused unnecessary commotion among the general public (for whom the acquisition of a CD player has meant a considerable improvement in comparison to their flimsy rack-system turntables). Meanwhile, a second Philips team, including a few PolyGram people, visited Veel in his studio in Leiden for some more listening. The two-month period was about to end, but all Veel knew was that Philips considered a six-week prolongation. As I write this (third week of November '89), no progress has been made bar a plan for a third listening session, to be held at PolyGram.

The contents of the black box will probably remain a mystery for some time, but Veel is free to say what it does *not* do: it contains no equalization or filter of any kind, and doesn't offer a further suppression of out-of-band spuriae. The box is inserted in the analog link between CD player and (pre-)amplifier, so it doesn't do anything to digital functions inside the CD player. But Veel claims to be able to perform the same "correction" in the digital domain, should that be necessary. It is sensitive only to signals that have undergone an A/D-D/A conversion somewhere along the line, and thus is said to

be beneficent for digitally recorded LPs and FM radio via digital links as well. The sound quality of signals that have remained analog throughout is not affected by the box at all. Veel says that in the implementation of digital audio one principle artifact has been overlooked, one which results in intermodulation products in the human hearing system, not in distortion products that can be measured at the output of, say, a CD player. The box therefore performs a correction with a psychoacoustical influence. But according to Veel, sometimes it happens that in a recording studio an "error" is made leading to a CD that no longer needs the correction of the box; on the contrary, the box would make that CD sound worse instead of better. An example is Jessye Norman singing Strauss's *Four Last Songs* in the Philips Classics series.

I have had a short exposure to the box's effects in the Studio in Leiden, and I must say it took away a lot of harshness in most CDs, along with a net improvement in air and ambience, while it deteriorated the Jessye Norman recording. The box had a bypass switch, so everything was heard via the same cables. My temporary conclusion is that this mysterious little box deserves serious attention. What it does is unprecedented; Norbert Veel could be on to something. A further remark would be that, if it does what it is said to do, its first application should be in all studios in order to avoid the necessity of another subcode bit (similar to the existing preemphasis bit) indicating whether a CD needs Veel-treatment by the CD player or not.

What will become of it is difficult to say. On the one hand there is the Philips stance as mentioned above, on the other Veel wants at least recognition for his work and money if Philips is going to use it. The fact that Veel has not applied for a patent means he cannot disclose to Philips what it is about, only demonstrate it. It's unlikely, though, that Philips (which as far as I can see very rarely buys technical knowledge from outside anyway) could be persuaded to buy an unseen technique. Veel has another complicating condition: he wants a written promise from Philips that they will use it if they buy it, in order to prevent his mind-child's silent death. The situation seems to be a draw. But given the public commotion, it's unlikely that nothing at all would happen. Read me next month.

¹ Where were they seven years ago when CD was introduced? Remember those early-generation machines? Most of them were horrible to trained ears.

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Milan—famous for her specialties, the Alfa car that bears the same name, the fog, the cotoletta (*à la* Milanese, of course), the ugliest dome (not a tweeter, the cathedral) in Europe, the best opera orchestra (La Scala, and maybe not just in Europe), Leonardo's wonderful painting in the Cenacolo which wants to die, which was expected to die, but everyone with a strange Catholic mentality wants to live—during the last week of October, Milan was, for four days, Europe's high-end capital. The second incarnation of the Top Audio Show has been more successful than any expectation. More than 29 distributors and manufacturers exhibited hundreds of high-end brands at the Quark Hotel and—judging from the long lines at every listening room—the public seems to have accepted the show's secession from SIM (once the biggest consumer show in Europe), which to judge from September 1989, showed that while it may not be dead, it is quite sick. In general, the quality of Top Audio's listening rooms and the care dedicated to the installations were really better than in Paris. But Paris has an older, consolidated tradition and a better place for the show.

Anyway, I'm very satisfied with the final results, especially in terms of the growing interest of people for this market. Of course, I got a lot of criticism by saying:

1) How is it possible that brands like **Infinity** were not able to take part because the organization was not able to find a suitable place for a pair of IRS Betas? (This is not the only example, just the most clamorous.)

2) The High End Manufacturers and Distributors Association (Apaf) absolutely *must* change their fascistic statutes. Just think of this kind of Catch 22: If you are associated with Apaf, you can show at Top Audio. If you want to show at Top Audio you have to join Apaf, but you can't join Apaf if you don't show at Top Audio. Anyway, if you join Apaf you will have one vote in the assembly, while the associate founders have three. It's clear that no one wants to join the Apaf to be a no-account minority. Also: If your name is "Association for High Fidelity," your function cannot be merely to organize a show; if that's your name, you can't exclude press, public, musicians, etc., from the association.

3) How is it possible to let speakers like the **Martin-Logans** sound so bad? If the room is



Sonus Faber's Amator Drive preamplifier

not good for that kind of speaker (it wasn't), give it to another speaker: the same distributor carries brands like Spendor, Hales, JWP, etc., with fewer room-matching problems. Why show the best when the best becomes the worst? No sense, no advertising (especially for me, for I had previously written that they were absolutely first-class). I asked the same question of Magneplanar's (IV B), Synthesis's (Reference), and Mirage's (M1) distributors.

Applause to Altra Fedeltà of Bologna, who exhibited the smallest, most musical, most listenable equipment of the show: a **Micro-mega** CD player, an **Ion Obelisk I** integrated amplifier, and a pair of **Triangle** Minimum loudspeakers. The result was delicious. I was astounded by the dynamics and the coherence of the little French speaker (I'm very familiar with the very British-looking but not so British-built Obelisk I, one of my very favorite integrated amps)—the Minimum is a one-way, full-range dynamic speaker!

Also in the Altra Fedeltà room it was possible to see, for the first time, the new tube

monos from Dr. **Klimo** (Germany). This unusual-looking amp uses my beloved EL34 tubes, six per side, and is capable of giving 100W into 16/8/4/2/1 ohm. According to Dr. Klimo, the Sensets are able to drive the Apogee Scintillas. Not bad at all.

Great news from **Sonus Faber**, the flagship of Italian-fi: The Extension is a wonderful piece of art, realized with a new technique which permits big curved surfaces in solid wood without the costs of the usual process (that used by Infinity for the IRS). Using a patented process of long and thin blades of wood, Sonus Faber realized its first floor-standing three-way loudspeaker. Amazing for its shape, and with Sonus Faber's magnificent standard of finishing, the Monitor Stratum System, which uses Dynaudio and Genelec speakers and a 6dB/octave network, will be in production starting this month (February). The Extreme Amator, which will be Sonus Faber's top speaker, will have a compact cabinet (fairly bigger than the Amator's) and a completely new woofer, designed for Sonus Faber by Mr. Skaaning of Dynaudio. This incredibly well-made component matches, in terms of sophistication and musical quality, the Esotar tweeter, the most costly HF speaker in the world. Good news also for the electronics. Designed to complete the Amator system, especially the Amator Power amp, the Amator Driver is a no-compromise MOSFET preamplifier with the same precious shape as the Amator Power, in a slim-line version. It was available as of last month.

One of the very best sounds at the show was that of the **Diapason Adamantes**, a compact loudspeaker from a Brescia manufacturer who impressed public and critics last year with the Prelude, a little speaker with great musical performance. Like the Prelude, the Adamantes use a massive chestnut cabinet and pedestal. The peculiarity of this stand is that the three wooden legs have, inside, solid tubular steel with spikes up *and* down. For the first time, it is not the loudspeaker that goes to the floor, but the floor that goes rigidly up to the loudspeaker. The diamond-like shape of the Adamant reminded me of the front panel of the Avalon Ascent. The musical results were absolutely first-class, with an outrageous bass response for such a little speaker. The imaging is amazingly three-dimensional, with exceptionally deep center focus and one of the better localizations of the instruments I've heard.



Unison Research 30Wpc "All-Italian" tube amp

Also very interesting was **Unison Research's** (nothing to do with the US's Unison) new tube amp, a traditional 30Wpc with nontraditional circuitry and an impressive wooden/crystal cabinet.

A special mention for a new item that I will detail in my next Update: The **Moss** Turntable CDP base is one of the most exciting components in the last ten years. It's a completely Italian patent (Giovanni Russo designed it) based on a new concept of the elastic-suspension isolating system. It employs a combination of air, compressed springs, and rigid (lead-filled, with talc) nonresonant elements. I got one—it's now holding an Onkyo GX-D10 Super Integra CDP (used in partnership with the Wadia DigiMaster 1000 D/A converter). All I can say is it's simply wonderful. Not only does the Moss outperform all other isolating bases I've ever heard, but the result of its work is an improvement in this player's performance quantifiable as something like 40%! I'm waiting for a larger base for my Goldmund Studio.

Good news also for **Acoustical**, a medium-size Italian brand specializing in very-high-quality loudspeakers at moderate prices. Its RS4 floor-standing two-way system with the new matching Scenario amplifier had one of the most coherent and musical sounds of the show.

From the "foreign" side, the first prize for best sound and a special mention for best presentation went to Alfredo Gallacci, Stefano Rama, and their collaborators for the "small" equipment in the Sound & Music Import room: Townshend turntable, Mod Squad CDP, Audible Illusion Modulus 2D preamp, Audible Illusion S-120 amp, Vandersteen 2Ci speakers, and,

of course, a lot of Tube Traps: fantastic sound-stage, good tonal balance, good dynamics, and a damned good musical choice. Second prize to Enzo, Luca e Marco Natali for their performance of the piece "how to make this excellent stuff sound good in such a bad room." Audio Research SP14 and Classic 60, Goldmund ST4, Koetsu Red S, Tempest II, and special guest **Apogee Stage** (why doesn't Jason call them "Stella," as he said, or "Apogina," as Ken Kessler proposed?). I have to say that I was really surprised by the sound of the Stage, as I was surprised when I listened for the first time to the Caliper. It seems that the smaller the dimensions, the better the coherence of Apogee's ribbon. I think they will be a great success in this country. Third Prize to Enrico Tricarico of High-Fidelity Italia Imports for the courage to play the Thiel Vs in an impossible room, but especially for the fact that the sound was more than pleasant. Go ahead Jim Thiel!

The Bebo Moroni Academy Award goes, as I wrote first, to Altra Fedeltà of Bologna for the smallest and best-sounding equipment of the show.

The Italian market is a reality, a splendid real-

ity, especially for foreign manufacturers. Walking the halls of Quark Hotel were Julian Vereker, Jeff Rowland, Bob Stuart, Ross Walker, Lew Johnson, Dr. Klimo, Stuart Ross, Steve McCormack, and a strange 6'4" guy speaking very good Italian, asking about Italian ceramics. Someone asked me, "Who is that friend of yours, is he CIA?" "Yes," I answered, "but he's a double agent. At the moment he's here as a representative of a Czechoslovakian car magazine called *Stereophile*, and he introduced himself as Larryocks Archibaldsek. Don't believe a word of what he says, he's trying to build a big facility in the Danube with esoteric American knowledge and Bulgarian technologies." OK, Larry, it's clear that your camouflage was not convincing.

Very little to say about the September SIM apart from the fact that it continues to have incredible popular success. The most exciting thing was the **Magnat Digatec**, the first really "esoteric" car CD/tuner, wonderful construction in the best German tradition, performances of very first quality, and a lot of really interesting digital functions. But not much for such a gigantic show. **S**

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Write A Review Of Stereophile's First LP...

*And Win An Expense Paid
Trip To Santa Fe*

Last Fall, *Stereophile* magazine released its first recording, of Gary Woodward and Brooks Smith playing flute sonatas by Prokofiev and Reinecke, and a work by American composer Griffes that gave the LP its title: *Poem*.¹ The full story was published in the September 1989 issue (p.66). Basically, we wanted to offer our readers a recording of acoustic music made with the minimum of electronics and processing—the sounds of the instruments would be as true to reality as possible. The images of the instruments were cap-

tured with a purist microphone technique so that with even a halfway decent system, a true soundstage would be created between and behind the loudspeakers when the recording was played back.

Did we succeed in these intentions? Is *Poem* of true high-end sound quality? And if so, do the musical values of the recording live up to the sound? Is *Poem* more than "just another audiophile recording" living down to J. Gordon Holt's famous dictum: "the better the sound, the worse the performance"?

Normally, before buying an album, you'd read a review to discover the answers to those questions. But as *Stereophile's* editors were inti-

¹ Those who have not yet obtained a copy of the album can find an order form on the next page.

mately involved in the LP's production, it seems inappropriate for any of the magazine's staff to write a review. So . . .

We decided to ask the magazine's *readers* to write a review!

Write an LP Review

What we're looking for is a reasonably short review—absolutely no more than 500 words—that contains an informed evaluation of the music *and* sound of *Poem*. We are *not* looking for unsupported praises or pans, but well-written, constructive criticism, whether positive or negative. (Writing a negative review will in no way reduce your chances of winning.)

Your review should include your name, address, and telephone number at the top; please type or print double-spaced on only one side of the pages. Send to:

LP Review Competition
Stereophile
P.O. Box 5529
Santa Fe, NM 87502

Your review must reach us by Monday, March 5, 1990. (Those wishing to Fax their reviews to us: our Fax number is (505) 989-8791.)

Win a trip to Santa Fe

The six reviews that the Editors of *Stereophile* consider to be the best will be published in the May 1990 issue of the magazine. The writer of the one considered the overall winner will be invited out to Santa Fe at our expense to spend a hi-fi and music weekend with I.A, J.A, R.L., R.H., D.O, and J.G.H, while the five runners-up will each receive a copy of the *Stereophile* Test CD and an advance pressing of the next *Stereophile* LP, of Brahms solo piano works, which is scheduled for release in June 1990.

Good luck! And happy listening.

Review Competition Rules

- 1) The entry must be no more than 500 words long.
- 2) Only reviews received by *Stereophile* on or before March 5, 1990 will be judged.
- 3) Anonymous entries will not be judged; entrants must not object to their names being published in the magazine.
- 4) By sending in an entry, an entrant agrees that his or her review can be published in *Stereophile*.
- 5) Only one entry per entrant.
- 6) No member of *Stereophile's* staff or their relations will be allowed to enter.
- 7) The judges' decisions will be final.

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* Reprinted from HIFI Heretic, Summer 1989

THE AUDIO ANARCHIST

Sam Tellig

“You’re a yenius.”
It was Lars on the phone. Who else?

“I know I’m a yenius. But what have I done this time?”

“Armor All Protectant,” replied Lars.

“So I recommended Armor All Protectant for cleaning CDs. It lets you remove fingerprints and grundle from the label side without damaging the silkscreened printing.”

“No, that’s not what I’m talking about. Armor-Alling the *playing* side improves the sound of CDs,” chimed Lars, confidently.

“You’re mad,” I said.

“Maybe so. But try it. You recommended it in the first place.”

It so happened I had made some recent improvements in my system. The Spica Angelus. British Fidelity Digilog processor. Krell KSP7B and KSA80. Maybe I was in a better position to appreciate the sonic virtues of Armor All.

So I spritzed some of the white miracle fluid—a silicone/water emulsion—on a CD. I waited a few minutes for the water to evaporate. Then I massaged the silicone and whatever else is left after evaporation into the disc. Following Lars’s instructions, I buffed with a clean, well-washed undershirt.

Yumping Yehosephat!

Lars was right. The disc sounded different.

Different is not always better, as I have oft reminded readers, so I got another CD, listened to it untreated for a few minutes, then went through the Armor All ritual again. It was a DG recording—Berlioz’s *Harold in Italy*, played by the Berlin Philharmonic under Loren Maazel. Berlioz is our editor’s favorite composer!

This is not such a great recording—multi-miked in the DG tradition of the 1970s through the late 1980s. But I could hear things I hadn’t noticed in the recording before. There was more detail. At one point, a member of the Berlin Philharmonic, or a member of the recording crew, sneezes. There was more ambience. More air. More *there* there—palpable presence. Digital sounded more like analog—albeit bad DG analog.

And so on, for disc after disc, late into the



night. Each time, treble was cleaner, less grundgy. Shining each disc with Armor All Protectant was like cleaning a window—there was less sonic grit, grime, grundge.

The oddest, and most noticeable change of all was that the sound was louder in each case—and I didn’t touch the volume setting. Each disc sounded more dynamic after treatment—deeper, tighter, tauter bass, along with more crystalline highs, more subjective extension at the top and bottom of the frequency range.

“Lars, you’re right. I am a yenius. I thought this was yust in yest in revenge for Lunar Cable, but that’s because I am so yaded. You have yust made the digital discovery of the decade and I am going to yump at the chance to write about it.”

“Yackass,” laughed Lars.

Then Lars lit up with this idea.

“Let’s have fun with the Thursday-night ’philes at Definitive Hi-Fi. I can rebottle this Armor All Protectant in small spray bottles and label it as something else.”

“Just as you would if you were making the product for the high-end hi-fi market and charging ten times what it costs from the auto-supply department.”

“Yah,” said Lars.

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"What do we call it?"

"How about SA-LAR, after Sam and Lars? SA-LAR CD Magic."

A few nights later, Lars appeared at Definitive Hi-Fi with a dozen bottles of "SA-LAR CD Magic." We used the stuff to treat CDs and played them on the Wilson WAMM—with the \$9000 Krell SBP-64X Processor in the system.

"Holy Moly," said one of the 'philes. "It's like you turned up the volume. The whole CD just opens up dynamically."

"It's so much cleaner, clearer, crystalline," I said, to get the other 'philes' juices flowing. It was true.

"What is this stuff?" queried Mario, a digito-phobe.

"It's a white liquid. . . sort of like, well, sort of like bull semen," observed one of the more cynical 'philes.

"He got it at a sperm bank in Stockholm," roared another.

"Shut the hell up and yust listen," chided Lars.

Every person heard a difference with every disc, every time. Sometimes the difference between an untreated disc and a treated disc was startling—the soundstage opened up, dynamics expanded, and a wealth of new detail revealed itself.

Lars was. . . yubilant.

So am I. I have been running around to everyone's house with a bottle of Armor All and an old undershirt.

Every person hears a difference. I'm talking about ordinary people. Not nuts like Lars and me, but people with average ears and average systems. Sane people. The stuff even works with a Sony Discman and headphones.

I told Music and Sound's Stu Wein, who imports the Musical Fidelity Digilog. Stu went bananas and phoned Ken Kessler in England. According to Stu, KK is going ape. He's writing up Armor All in the February *Hi-Fi News*. I hear Ken convened a listening panel and played treated *vs* untreated samples of the same CD release.

Back to the Thursday-night 'philes.

"Who knows about this?" asked one equipment-manufacturer friend, furtively.

"Why? Do you think we could repackage Armor All and sell it for ten times the price?"

"It's an idea."

"Well, I'm afraid I've let the cat out of the bag. Ken Kessler knows and he's going to tell

the world. Lars has told Mike Moffatt. I've told Krell's Dan D'Agostino.

"Besides," I continued. "I don't want anyone to make big profits on this. The poor audiophile deserves a break after paying through the nose for record-cleaning fluids, rubber rings, and the like. Armor All Protectant is so cheap it's practically free. A 4oz bottle costs under two bucks and treats hundreds of CDs."

Here's how to make your supply of Armor All really last.

Buy a big powder puff at the cosmetic counter in Woolworth's—best place. Have your wife or girlfriend buy it if you're shy.

Now open up a dozen or so CD jewel boxes and reverse the discs so that the play side is facing up. Line up the opened jewel boxes on a table. Spray a little Armor All on the powder puff and treat each CD with a few repeated pats. You don't want to drench the discs with the stuff—harder to wipe off.

Let the Armor All dry for a few minutes. Or hours—doesn't matter, just so long as the water evaporates. Now, using a well-washed undershirt, as Lars recommends, massage the disc in circular motions along the radius of the CD. This way, if you put light surface scratches on the disc—and you might—they will tend to be radial scratches and won't cause the CD to mis-track. Do not wipe around the circumference of the CD in complete circles as then any scratches will follow the line of pits. It may take a bit of buffing before you remove all the dried residue.

What I do is put a little check mark on the back of the booklet which accompanies each CD. You might even write the date. That way you'll know you have treated the disc. Once a disc is treated, it tends to stay treated, though I've had only a few weeks' experience. You might want to dust off the disc again, buffing lightly just before playing.

When you use Armor All Protectant to treat the dashboard and vinyl upholstery of your car, you're supposed to repeat the treatment every few weeks. But CDs are not exposed to the sunlight and open air like your car's interior. Some Armor All product literature states that Armor All should be "renewed" ever six months or so. We'll have to see how often repeat treatments are necessary. Here's something that's interesting from the Armor All literature, which I've been digging into: "Because it penetrates so deeply, best results

are obtained if three successive treatments are applied, allowing 24 hours or more between applications. More applications are not harmful." Hmmm.

At any rate, applying Armor All is much less a pain than cleaning LPs. And you don't need an expensive cleaning machine, although I wouldn't be surprised if someone invents one.

Isn't it nice that Lars and I have latched on to Armor All before some company starts promoting a CD polish in a big way—selling you a teeny tiny bottle for ten or twenty bucks? Think of all the companies that aren't going to make money just because Lars and I found Armor All first. Ha-ha-ha-ha-ha. And there goes another potential source of dealer profit down the drain, too. Heh-heh-heh-heh.

Anarchy!!!

You may find some other product that works as well as Armor All Protectant, although I doubt you'll find one as readily available and as cheap. And I doubt you'll find a product that makes the discs sound better. The difference between the untreated and treated disc is usually dramatic. (On occasion, with a poor recording, the difference is for the worse: the badness of the recording comes through.)

Armor All makes a bigger difference than any other CD tweak that Lars or I have tried. A bigger difference than changing cables or speaker wire. Or ringing a disc. Or paying some kludge-meister \$1200 bucks to transform a \$200 machine. You think I'm foolin'? Go buy the Armor All and try it—what have you got to lose? Not even the two bucks, because you can always use the stuff in your car if not on your discs.

Lars and I couldn't wait to tell our friends. Lars told Mike Moffatt of Theta, who theorizes that Armor All's antistatic properties might have some sonic benefit. I told Marc Finer, formerly of Sony and now an independent consultant, and he wonders whether you should treat the label side of each CD while you're at it—to help protect each disc from data damage.

I told Krell's Dan D'Agostino. "Dan, maybe the Armor All will make your \$3000 processor sound as good as your \$9000 processor," I suggested mischievously. As I write this column, Dan says he hasn't tried Armor All yet. I asked him if he's afraid what he might hear, but he says no, he just hasn't had time.

What is this stuff, anyway?

According to company literature, Armor All

is "a polymeric formulation of deterioration inhibitors specifically compounded for protection and preservation of natural and synthetic polymer materials in adverse environments." Basically, the stuff is a silicone-in-water emulsion, as I said. When the water evaporates after application, the Armor All becomes waterproof—water can't remove it. So I don't know how you would de-Armor All a disc, though I can't imagine any reason why you'd want to.

Armor All is said to have long polymer molecules that penetrate by capillary action the surface layer of the material it is applied to. The molecules hook or wrap around the molecules of the material—in this case, the polycarbonate CD playing surface—and become physically a part of it, protecting the surface from "attack" by ozone, oxygen, and ultraviolet rays. Not that such attack is a problem with CDs, but, long-term, who knows? Regular use of Armor All Protectant may help preserve CDs—stop them from deteriorating, cracking, or rupturing, if this proves to be a problem.

At any rate, Armor All assures me that there is no reason to believe the product can do any harm to the CD. Or any harm to you, for that matter. The stuff appears to be very benign, as far as chemicals go. If you get the stuff on your hands, no big deal. The only downside I can see, aside from the fact that you might put light surface scratches on the disc when buffing—be careful—is that the disc becomes slippery. You have to take a little more care when returning a disc to its jewel box or else the disc may slide on the floor. Armor All Protectant is not recommended for use on floors. I can see why.

I had several talks with the folks at Armor All. One of my favorite stories is the one about the kids from a 4-H Club in the midwest. The kids shined their pigs with Armor All and the glowing porkers won first prize. Being a major pig lover myself, I worried about the welfare of the porkers. But Armor All assured me they came to no harm. I guess the stuff comes off when you roll in the mud.

Naturally, when I visited *Stereophile* in Santa Fe recently, I took along a bottle of this miracle elixir. No one wanted to believe that it made a difference. But LA heard a difference. So did Bob Harley, and Bob's been involved in CD and Laser Disc manufacturing.

I told JA about it, but he was busy putting out the new issue the weekend I visited. So I didn't get a chance to witness his reaction.

"The next thing you know," said John at brunch, "you'll be suggesting I put Armor All on LPs."

"Not on LPs. For that, there's Alberto-Culver Static Guard."

"I do have a problem with static now that I've started cleaning my LPs," said John, thoughtfully.

"I'll bet you do. . . in Santa Fe," I roared. "You *must* use Static Guard."

"But I don't like the idea of putting anything on my records."

"It's not British?" I asked. "But neither is cleaning your records. That's American. Linnies never clean records—the stylus is supposed to clean the record. You need to take things a step further and Static-Guard your records after you clean them."

I enjoy tweaking JA.

Later, I tweaked Larry. He was playing a test pressing of the new *Stereophile* LP.

"Sounds like the cartridge is mistracking."

It was.

Moments later, Dick Olsher said, "I think Sam's right."

"Oops," said Larry. "Maybe I need to adjust the tracking force."

"You need a *Shure!*" I bellowed. Olsher started to laugh in his soup. "I'm sure if you call Shure they'll be happy to send you one."

Where was I? Oh yes, Static Guard. . . then I'll get back to Armor All. (A certain amount of Anarchy does reign in this column, as you can see.) Yust in case you haven't heard, here's how to use Static Guard. Take two large powder puffs—that makes three powder puffs you'll be buying at Woolworth's, including one for the Armor All—and spray a very light application of Static Guard on Powder Puff A. Now rub Powder Puff A against Powder Puff B to apply the Static Guard to both puffs—a little goes a long way.

With a record turning on a turntable, apply Powder Puff B, the one that didn't get the Static Guard directly, to side A of the LP, and Powder Puff A to side B of the LP. Got it? You buff with each puff. Good. If you use a suspended belt-drive turntable, you may find this inconvenient. I use my VPI machine for applying Static Guard. The trick is to apply as little as possible. Apply too much and the LP will gum up slightly and the stylus will grundle up. The stylus may grundle up anyway on the first play, but this is good: the stylus is cleaning the record.

Great thing about Static Guard—other than the fact that it's cheap—is that records stay destaticized for five years or more. That's how long I've been using the stuff. Generally speaking, you don't have to re-clean your treated records. But you may want to give them a light brushoff.

John, have you tried Static Guard yet? I bought you the can and the two powder puffs, so you have no excuse. And, John, you, too, might try a Shure. You might find that Static Guard helps make a Shure sound as good as the Koetsu that may have worn out your records! Heh-heh.

Back to Armor All.

"This Armor All thing is going to be big news," chirped Lars.

He's right. The phenomenon raises questions—uncomfortable questions, I am sure—about the way CDs are manufactured, and whether manufacturing standards should change. Apparently, when you shine a disc with Armor All, you make it easier for the laser to read the bits in the pits. A disc that's been Armor Alled certainly looks different—shinier, brighter. Maybe what the Armor All does is smooth out the microscopic hills and valleys on the disc's polycarbonate undercoat.

Armor All raises the hope that CDs may yet decisively beat LPs in terms of sound quality. I still prefer LPs—more natural, more palpable presence than CDs—but I have not yet tried in my own system digital processors from Theta, Krell, or Wadia. Wadia think? The Armor All combined with these knockout processors may tip the scale the other way. I certainly don't think Dan D'Agostino, Mike Moffatt, or other digital gurus have anything to fear from the use of Armor All—it should make a good processor sound even better.

At any rate, I can't imagine not treating a CD with Armor All before play. In other words, I can't bear to listen to an untreated CD. All that sonic grime, grit, grundle—gotta get rid of it.

Try it. And while you're arming yourself with Armor All, you might get a can of Static Guard, too.

Follow-Up: Monitor Audio 7 loudspeaker

Am I the only person who's continually afflicted with hi-fi gremlins? It seems that if anything can go wrong with a piece of equipment, it will—for me. This includes a pair of

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Monitor Audio 7

Quicksilver KT88 mono amps. One of the amps refused to play until after I turned it off, when it would play for all of about six seconds. Fed up, I kicked the amps out of the house. . . only to learn from the repairman that he could find nothing wrong with the one I thought had gone down. Weird, because I tried changing tubes from one amp to the other. Could it have been a problem with the MFA Magus preamp? With the Magus back at MFA, I'll never know.

As for the mechanical resonance problem with the Monitor Audio 7 speakers that I commented on last month, I'm not sure what was the cause—loose port, loose crossover inside, or whatever. It wasn't loose screws on the drivers—I tightened them. (Loose screws in my head are another matter.) I do know that speakers can take a beating during UPS shipment.

Mo Iqbal of Monitor Audio had another pair shipped to me, and these work fine. A good buy at \$379/pair, the Monitor Audio 7s most obviously compete with the Celestion Model 3s, which are cheaper at \$269/pair, but not so well finished or as smooth throughout the treble. Both the Monitors and the Celestions are best suited to small systems in small rooms, like my office. So that's where I'll be auditioning the Monitor Audio 7s at greater length.

Last call, Comrades!

This is it. If you want to go to Russia with me, write to me right away. I'll have to close out the group at the middle of February, so if you're

serious about going, don't write for information. No time. Send me a check for \$500 per person made out to Finnair and we will then Fed Ex you the visa application, etc. Write: Russia Tour, P.O. Box 1198, Ridgefield, CT 06877.

The trip leaves March 29 from JFK in New York and returns April 9. Total cost per person is \$2495, double occupancy. Single supplement: \$1518. Tour visits Leningrad, Odessa, Moscow (with a side trip to Zagorsk), and Helsinki. In addition to the usual tourist destinations—Kremlin, Hermitage, Potemkin steps, Lenin's mausoleum (hurry before they bury him "like a human being")—we'll go to some less usual, but equally interesting places, like Dostoyevsky's apartment. Many tour guides don't even know where it is. Nor are they aware that the Melodiya shop on Leningrad's Moskovskii Prospekt is often better stocked than the main shop on Nevskii. But Sam knows!

Emphasis is on musical performances—opera, ballet, symphonic. Virtually all meals and tickets are included. Best thing of all is that your fellow travelers will be *Stereophile* readers. Would anyone else take you shopping for LPs on Karl Marx Street in Odessa. . . and then to the Opera House in the evening? This is your last chance, so don't blow it. **S**



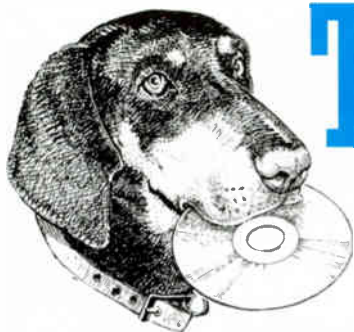
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The Stereophile Test CD



The end of two audiophiles' friendship:
"How do those new loudspeakers
sound?"

"I don't know. Let me put a disc in the CD
player and we'll listen."

"But how do you know what the CD should
sound like?"

"I assume it's supposed to sound like the
instruments and voices would sound in real
life; the *absolute* sound, if you wish."

"But you don't know if that's appropriate.
Recording engineers have an arsenal of special-
effects boxes and signal processors at their dis-
posal. And as you can see from Peter Mitchell's
"Industry Update" column in this issue of *Ste-
reophile*, even the microphones used at the
very front of the recording chain can introduce
significant coloration, let alone their effect on
the soundstage."

"Rats. Let's just *listen* to it."

"But you don't know yet what the speakers
sound like!"

"Pedantic smartass!"

A not unusual conversation, maybe even a familiar one. Yet as J. Gordon Holt points out in this month's "As We See It" (reprinted from a 1963 issue of this magazine), there is indeed a fundamental problem in using records whose intrinsic sound you don't know to make judgments concerning the sound quality of hi-fi components. Say you put a disc on and the sound is boomy in the upper bass. Unless you were present at the sessions and engineered the recording, you have no idea whether your system is accurately reproducing a boom that was there in the hall or was introduced by the microphones and recorder, or whether it is adding a boomy quality and is therefore *inaccurate*. It could also be a combination of both factors, exaggerating an existing boom.

The same problem exists when it comes to soundstaging. If your system reproduces a soundstage with distinctly unstable central imaging, is this due to an inaccurate reproduction of what should be a well-defined image, such as that produced by crossed figure-8 microphones, the so-called "Blumlein" technique? Or is it due to accurate reproduction of the soundstage produced by a spaced pair of omnidirectional mikes, a technique which, while excellent at capturing sounds with very little coloration, is notorious for producing vague, unstable imaging? Which came first, the chicken or the egg?

In practice, reviewers for this and other magazines get around this apparent impasse in two ways. One is to use recordings that they have made themselves and thus have a better idea about the intrinsic sound quality. The other is to play as many different recordings of as many different types of music as possible. If they *all* sound boomy in the upper bass, then the obvious culprit is the system. Occam's Razor in action!

But that's a time-consuming process. And wouldn't it be convenient for *Stereophile's* readers if they had access to our reviewers' recordings, so that they could check the reviewers' judgments for themselves? So that they had at least one CD where they knew that every step in its production had been carried out with care to ensure that the sound was altered as little as possible between the original and that encoded within its pits. So that they would then have a better handle on how their favorite components changed, or didn't change, sound quality, whether for better or

worse.

We went some of the way toward this goal with the production of *Stereophile's* flute-and-piano LP, *Poem*. Just this one kind of music, however, will not be equally good at revealing *all* sonic problems. It will also not be to everyone's taste.

That's when the idea hit us. Put together a program of recordings made by *Stereophile's* contributors; add a track to demonstrate the kinds of colorations contributed by good professional microphones; add another track to demonstrate the audible difference between a state-of-the-art, 128x-oversampling A/D converter and the industry-standard Sony PCM1630; include a track to allow listeners to check how sensitive they are to absolute-phase inversion; and finish with some simple but useful test tones, ones that will help the magazine's readers to set up their systems. The advent of R-DAT means that the master tape can be inexpensively produced, while the advent of computer hard-disk editing of digital music data means that after the initial analog/digital conversion of any of the tracks, either from the microphone feeds or from the outputs of the analog recorder, there need not be any more quality-destroying conversions.

As you can gather, we got excited about the project, not the least because *Stereophile's* Technical Editor Robert Harley actually worked as a CD mastering engineer before joining the magazine and has considerable experience in assembling and editing CD master tapes. So let me hand this feature over to Bob, so that he can tell you how he turned our plans into a living, breathing silver disc. —John Atkinson

Assembling the master tape

Like many CDs, all the editing on this disc was performed electronically in the digital domain. Unlike most CDs, however, *Stereophile's* test disc was edited and assembled on a Macintosh IIx computer. Instead of transferring digital audio data from one tape to another through an editor, as in conventional digital editing, this project was assembled on a computer hard disk attached to my Macintosh. Hard-disk-based editing is creating a revolution in professional audio. These systems may one day be as common in recording studios and mastering facilities as word processors are in offices.

The complete editing system consists of a Macintosh computer, Digidesign's Sound Tools

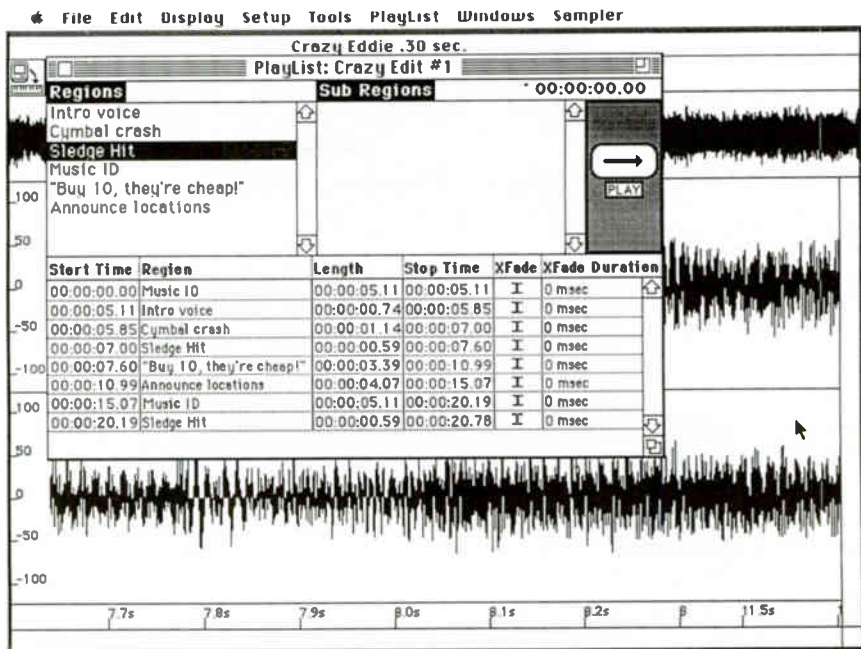


The CD mastering system for the '90s? A Macintosh and Digidesign's Sound Tools.

editing system, and a CMS Enhancements PD600 600-megabyte hard disk. Sound Tools is comprised of a digital interface box (DAT I/O), digital signal processing board for the Macintosh (Sound Accelerator), and editing software (Sound Designer II). A large-capacity hard disk is required for digital audio storage because full-bandwidth, 16-bit digital audio consumes about 10.5 megabytes per stereo minute.¹ The entire system is mouse- and menu-driven using the Macintosh graphic user interface. Sound Tools also has a variety of signal-processing functions including parametric and graphic equalization, phase invert, sampling rate conversion, and FFT frequency analysis, all performed exclusively in the digital domain.

¹ This figure comes from multiplying the sampling rate (44,100) by the length of the quantization word (16), by the number of seconds in a minute (3600), by two (for two audio channels), divided by 8 (8 bits to a byte). —RH

The various DAT cassettes, with original digital recordings or digital transfers from analog—the musical selections and spoken announcements in rough form (with count-offs, no fade-ins, etc.)—were played back on the Nakamichi 1000 transport and the data transferred to the hard disk attached to the computer. Once the data were on the hard disk, the music waveforms, both channels at a time, could be made visible on the monitor. The cursor was then moved over the waveform with the mouse, allowing the signal to be both seen and heard (the data being fed to, and decoded by, the Nakamichi's playback DACs), in order to select edit points. Direction and speed of the cursor are controlled by direction and speed of the mouse, allowing the editor to "rock 'n' roll the tape" in order to zero in on the exact edit point, the combination of visual cues and hearing the signal combining synergistically, allowing precise selection.



A Macintosh screen showing the Sound Design II editing display and typical playlist.

Once the edit-in and edit-out points were selected, the section between points was highlighted with the mouse and saved. After each desired segment had been defined, a playlist was created, putting the pieces in the correct order for replay. (The data stay in the same place on the hard disk; only the access points are changed by the program.) A variety of crossfades between the selections is available with selectable transition times. This simulates an angled cut on analog tape, ensuring a smooth transition between sections. Glitches and ticks can be removed by expanding the waveform visually on the screen until the tick can be seen. A pencil icon is then grabbed by the mouse and the waveform redrawn without the tick.

For the edits in the Schumann Romance that switches between versions transferred through different A/D converters, JA followed the musical score as we listened to the music and watched the waveform. At an appropriate note, we stopped playback, zoomed in on the waveform, listened and watched the cursor move over the waveform, and defined the edit point. After this was done for each portion of the piece, and the playlist assembled, the system

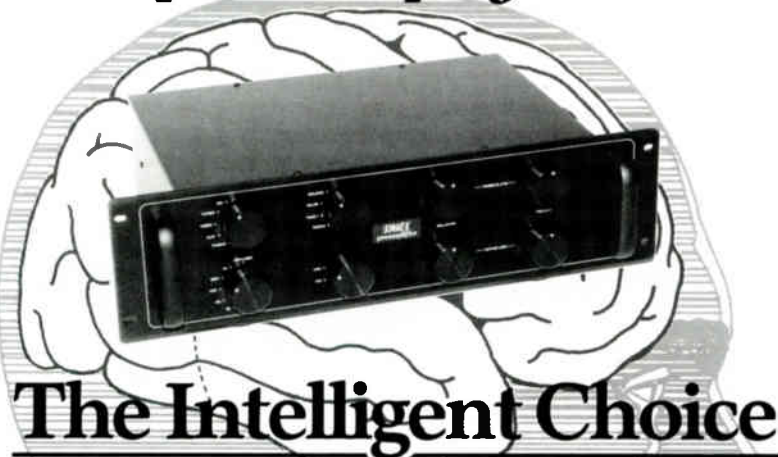
switched seamlessly between the two versions. (Time flies when you're involved in this procedure, the four minutes of music taking three hours to be assembled.)

Peter Mitchell's organ recording had been digitized with a modified Sony PCM-F1-format processor. Rather than go back to the original master tape, I recorded the digital datastream from a Madrigal Proceed CD player directly onto the hard disk. Since Sound Tools accepts the S/PDIF output signal found on most CD players, direct digital-to-digital transfers are possible.

After about half the total program was assembled in the playlist, it was transferred, in the digital domain, through the DAT I/O back to the Nakamichi 1000. We had originally thought the *Stereophile* Test CD would be about 45 minutes long. Based on that assumption, I figured that 600 megabytes of storage would be plenty. Now that the program length had grown to over 70 minutes, I wished for a gigabyte of hard disk capacity. Consequently, I had to assemble the master in two sections, transferring the first edited half to DAT to make room on the hard disk for the second half.

Because it took longer than I anticipated to

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Robert Harley monitors his guitar and bass recording using Stax Lambda Pro headphones.

assemble all the pieces of the project (musical selections as well as the editing hardware), I found myself up all night editing just before my plane left Albuquerque for California and the disc-cutting session. I was transferring one large section from the hard disk to the DAT master tape when I heard a series of glitches lasting about two seconds. I started the transfer again and heard the glitches at the same spot. After listening to that section directly from the hard disk (not through the playlist), I became perplexed: there were no glitches when just that section was played back. My plane was scheduled to leave in just a few hours. After some experimentation, I discovered that the glitches occurred exactly when the screen dimmed. The video display monitor has a feature that automatically turns down the brightness after five minutes of no keyboard strokes or mouse movements. This function was interrupting the flow of digital audio data from the computer to the DAT master tape. Because of this and a few other technical problems, I ended up flying to California without a completely edited, ready-to-master tape.

When I got to LAX, I called my old friends, Ben and Brian Shaw, also known as The Digital Brothers. They have a Sonic Solutions "Sonic System," the *crème de la crème* of hard-

disk editing and CD master-tape preparation systems. Would they help me finish the master before the CD mastering session that day? Fortunately, they made time available for me on short notice. We loaded the two sections of the DAT master I had assembled on Sound Tools onto their 1.5-gigabyte hard disks and did some touch-up editing as well as putting the two sections together. In addition, the Sonic System located the PQ points (track begin, end, and index points) and output the final program to $\frac{3}{4}$ " U-Matic tape for CD mastering. Off to Disctronics for actual PQ encoding and disc cutting.

At Disctronics, the PQ points were manually entered into a Sony DAQ subcode editor. The DAQ-1000 has a feature called "Cue/Review" that plays back the master tape just before and after track changes and index points, beeping when the exact point occurs. This allows verification of index and track point location before cutting a disc. During this check, I noticed that Peter Mitchell's organ recording seemed bright. Could the CD from which I took the audio data have been preemphasized in the recording? If the signal had been preemphasized, we would have to set the flag in the CD subcode that identified this track as having emphasis. This flag engages the deemphasis circuitry in the CD

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player, restoring flat response. I could not be sure because I was listening to playback on JBL 431Is, a speaker not noted for its accuracy. Not wanting to take a chance on being wrong, I postponed the laser mastering until I could verify that the CD was emphasized. (Checking the CD back in New Mexico confirmed that it was.) Since I knew the master tape was good,

with correct PQ codes, I left the master tape in the capable hands of Discronics and anticipated the arrival of the finished discs.

It was a rewarding experience to be so intimately involved in the technical aspects of creating the *Stereophile* Test CD.

—Robert Harley

Track information (Total playing time: 70:54)

[1] Reference Tone (DDD) 1:21
1kHz sinewave tone at -20dB, L+R, with a spoken introduction by Sam Tellig (The Audio Anarchist)

[2] Channel Identification (DDD) 0:26
Left (Index 1), then Right (Index 2), with Sam Tellig and Ralph the Christmas Dog

[3] Channel Phasing (DDD) 0:39
In-phase (Index 1), then out-of-phase (Index 2), with Sam Tellig and Ralph the Christmas Dog

[4] Pink Noise at -20dB (DDD) 2:15
Correlated between channels, then uncorrelated from 1:11 (Index 3)

[5] "Why Hi-Fi Experts Disagree" (DDD) 6:17
J. Gordon Holt reads from *Stereophile* Vol. 1 No. 4 (March-April 1963), recorded in mono by Robert Harley with, in order, the following microphones: Shure SM57, AKG D190E, Sennheiser MD441, Electrovoice RE20, Coles 4038, B&K 4006, Crown PZM, Milab LC25, Neumann TLM170, AKG C414B, Neumann U87, Neumann U47FET, Neumann U67, Telefunken U47, Telefunken ELAM251, AKG C12, AKG C12 (modified by Stephen Paul), EAR The Mic. (Index points 2-19 mark the edits between each microphone.) Mikes are mainly courtesy of Audio Rents, Los Angeles, CA; Coles courtesy of Audio Engineering Associates; Milab LC25 courtesy of Dick Olsher; AKG D190E courtesy of John Atkinson; EAR The Mic and B&K 4006 courtesy of *Stereophile* magazine. Microphone preamplifier: EAR 824M (which uses tubes). Recorder: Nakamichi 1000 R-DAT.

[6] E. E. Bagley: *The National Emblem* (ADD) 1:18
Nether Providence High School Band
Recording Venue: Nether Providence, PA
Recording Date: 1948
Recording Engineer: J. Gordon Holt
Microphone: Brush crystal
Recorder: Brush BK401 Sound Mirror $\frac{1}{4}$ " open-reel recorder (mono)
Transfer to digital: Nakamichi 1000 R-DAT
Digital Transfer Engineer: Robert Harley

[7] Theodore Dubois: *Les Sept Paroles du Christ* (excerpt) (ADD) 4:32
Philadelphia Oratorio Choir

2 We had wanted to get as much correspondence as possible between the microphones featured on this track and those used to capture the music tracks. Unfortunately, Gordon had mislaid the Sony C37 mikes used for his music recordings when he moved to Colorado; the Calrec Soundfield mic was not available to us when this track was laid down; and copyright problems meant that two music tracks that were made with microphones featured in this track did not make their way on to the CD. —JA

Recording Venue: First Baptist Church, Philadelphia, PA
Recording Date: 1961

Recording Engineer: J. Gordon Holt
Microphones: two Sony C37 cardioids in ORTF configuration

Recorder: Ampex 601/2 $\frac{1}{4}$ " open-reel recorder at 7.5ips (NAB EQ)

Transfer to digital: Nakamichi 1000 R-DAT

Digital Transfer Engineer: Robert Harley

[8] Maurice Ravel: *Chanson bébraïque* (Absolute Polarity Test) (ADD) 2:34

Sam Jones (tenor), pianist unknown

Recording Venue: University of Wisconsin

Recording Date: 1964

Recording Engineer: J. Gordon Holt

Microphones: two Sony C37 cardioids in ORTF configuration

Recorder: Ampex 601/2 $\frac{1}{4}$ " open-reel recorder at 7.5ips (NAB EQ)

Transfer to digital: Nakamichi 1000 R-DAT

Digital Transfer Engineer: Robert Harley

[9] Armas Järnefelt: *Praeludium* (ADD) 2:31

Delaware Symphony Orchestra (in concert)

Recording Venue: Wilmington Opera House, Wilmington, DE

Recording Date: 1977

Recording Engineer: J. Gordon Holt

Microphones: two Sony C37 cardioids in ORTF configuration

Recorder: ReVox A77 $\frac{1}{4}$ " open-reel recorder at 15ips, with dbx noise reduction (NAB EQ)

Transfer to digital: Nakamichi 1000 R-DAT

Digital Transfer Engineer: Robert Harley

These four recordings made by *Stereophile's* founder, J. Gordon Holt, were selected from many hours of tape, and we are sure you will agree that the venerable JGII (in whose ears we trust) is truly talented when it comes to picking the best spot to place his pair of microphones. We are particularly proud to be able to present Gordon's very first tape recording, made in the year the magazine's current editor, John Atkinson, was born! (Gordon was 18; American tape recording was 2!)

"A note on Gordon's preferred microphone technique as used in the three stereo tracks: "ORTF" refers to a technique devised by the French broadcasting organization (*Office de Radiodiffusion-Télévision Française*) where-

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by two directional ("cardioid") microphones are angled at 110° and spaced apart by around 7", the average distance between a human being's ears. The two microphones basically encode the directions of the voices and instruments by the different loudnesses they pick up. In itself this would give a very narrow stereo image—"fat mono" is how one writer described it—but by spacing the microphones apart, a little time information is added which ensures that the image extends across the full spread of the loudspeakers. (Sound reaching the microphones from the left, for example, will reach the left-facing microphone approximately 0.7ms before it reaches the right.) This is but one of a number of "purist" techniques, all of which share the characteristic of being able to capture a "real" soundstage, so that the listener's loudspeakers seem to disappear. Individual vocal and instrumental images on tracks 7-9 should be precisely located in the space between and behind the loudspeakers.

Track 8 features an "absolute phase" demonstration. The sound starts out with its overall polarity one way around, but finishes with its polarity inverted. According to many writers, especially Clark Johnsen in his book *The Wood Effect*,³ the sound of human voice and many instruments will be more natural with the polarity correct—*ie*, so that an acoustic compression that reaches the microphone will be reproduced as an acoustic compression that reaches the listener's ear—than it will the other way. We have no idea which way 'round on Gordon's recording is correct, but as we have inverted the polarity somewhere in the middle, you will be able to hear for yourself if there is an audible difference between the two states. And can you identify where the change in polarity occurs?

[10] Frederic Chopin: Scherzo in b-flat, Op.31 (ADD) 9:49
 Anna Maria Stanczyk (Hamburg Steinway piano)
 Recording Venue: Derngate Centre, Northampton, England
 Recording Date: September 22, 1983
 Recording Engineer: John Atkinson
 Microphone: Calrec Soundfield Mk III, set to coincident figure-eight 90°
 Recorder: 100V New RTT 1/4" open-reel recorder at 15ips (CCIR EQ)
 Transfer to digital: Nakamichi 1000 R-DAT

³ Clark Johnsen's excellent *The Wood Effect* is available from The Modern Audio Association, 23 Stillings Street, Boston, MA 02210. Tel: (617) 357-8040. Price: \$7.95 plus \$1.05 shipping and handling.

Digital Transfer Engineer: John Atkinson
 Original commercial releases: 1984, Ensemble ENS 118 Real-Time cassette (Whitewater Records, 2 Roche Gardens, Bletchley, Milton Keynes, MK3 6HR, UK); 1985, Pronit M-0012 LP (Poland)

The Calrec Soundfield microphone is a single-point, multi-capsule design that was originally developed to make Ambisonic recordings. It is supplied with a sophisticated control center that, in addition to Ambisonic pickup, allows the user to select many different coincident stereo patterns. For this recording John Atkinson used the control center to synthesize a pair of figure-8 microphones pointing left and right with an angle of 90° between them. This gives an extremely accurate recreation of the original soundfield, but as such a pair of microphones picks up all the sounds to their rear as well as to their front, it is hard for the engineer to strike exactly the right balance between the direct sound of the instruments and the echoes of that sound from the hall's walls, ceiling, and floor: the "reverberation." Small forward and backward movements in microphone positioning also yield large changes in the recording's soundstage perspective. Regarding the tonal changes introduced by this microphone, they are relatively small when it is set to synthesized figure-8s. The recorded piano sound, however, is both a little duller than the original, and slightly accentuates the mechanical noises of the piano keys and mechanism in the presence region. It is very true in the midrange and below, however.

The modern hall has a lovely, uncolored acoustic and the microphone position—10" in the air, about 17" from the Steinway piano, looking down the line of the lid—was chosen in order to capture a reasonable sense of its signature. The piano's keyboard was just to the microphone's left, which means that the piano image, when the recording is played back over good loudspeakers, should extend from the inside edge of the right loudspeaker to just left of center, the rest of the space being occupied by the hall. The piano image should sound as though it is behind the line joining the loudspeakers. If it sounds more forward than that, then the system is doing something wrong.

Piano recordings are also excellent for revealing midrange resonant problems in loudspeakers. Listen for notes that appear to jump forward at you, particularly in the first octave above the treble staff, which is where many

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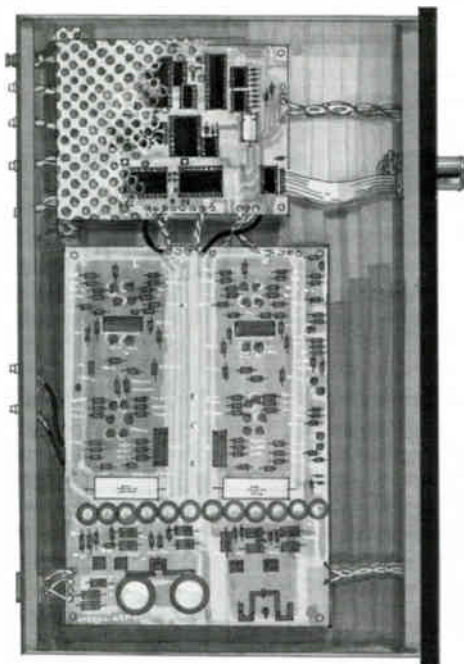
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The tube mics' view of bassist Dan Kolton and guitarist Bruce Dunlap.

drive-units have problems: tweeters at the bottom of their passbands, woofers at the top.

Incidentally, the quiet "Well done!" at the work's conclusion is from the Polish pianist's manager, who was standing to the far left of the microphone. On systems with superb soundstaging, his voice should appear to come from well beyond the lefthand speaker position. Why did he say "Well done!?" The Steinway had been provided for an evening concert performance of Rachmaninoff's *Rhapsody on a Theme by Paganini* by Alicia de Larrocha, and the hall's management had agreed that we could use it for this recording *provided* we did it after the concert. The session therefore started at 11pm; Anna turned in this powerhouse of a performance with the last of her energy at 1 in the morning!

[11] Jerome Kern: "I'm Old Fashioned" (DDD) 3:39

(Lyrics by Johnny Mercer)

Bruce Dunlap (acoustic guitar)

Recording Venue: Tijeras, NM

Recording Date: December 5, 1989

Recording Engineer: Robert Harley

Microphones: two EAR The Mics, set to omnidirectional pattern, spaced by 18"

Microphone preamplifier: EAR 824M

Recorder: Nakamichi 1000 R-DAT

[12] Bruce Dunlap: "Threadledum" (DDD) 4:16

Bruce Dunlap (acoustic guitar), Dan Kolton (double bass)

Recording Venue: Chapel of oforetet, Santa Fe, NM

Recording Date: August 1989

Recording Engineer: Robert Harley

Microphones: two EAR The Mics, set to figure-8 pattern, coincident at 90°

Microphone preamplifier: EAR 824M

Recorder: Nakamichi 1000 R-DAT

Shortly after moving to Santa Fe, Robert Harley met a local guitarist named Bruce Dunlap who had some original material to record. Coincidentally, Bob was about to review the Nakamichi 1000 DAT recorder (see Vol.12 No.11) and needed to record live music to assess the 1000's performance. Thus began several interesting recording ventures.

Bruce had arranged some of his compositions for guitar and acoustic bass and flew his friend, bassist Danny Kolton, to Santa Fe. Bob arranged to use the Loretto Chapel, a 140-year-old church near the *Stereophile* offices, for the recording. The chapel is extremely reverberant, creating a nice sense of space around instruments. Bruce's gentle compositions are well suited to this environment.

This was Bob's first experience with *Stereophile's* EAR The Mic tube microphones and EAR 824M tube mike preamp, and he was surprised by their transparency and tonal neutrality. The soft top end of the recording is actu-

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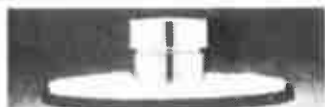


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ally how the instruments sounded in the Loretto Chapel. The mikes were placed about 10' from the musicians in a Blumlein pattern (vertically coincident figure-8s crossed at 90°). This arrangement seems to most accurately capture the spatial information present in the room, with the beautiful chapel acoustic enveloping the musicians. The bass player plucked his instrument with a very *legato* style, which led to very soft attacks; the listener should be aware of his contribution without it either overpowering the guitar or losing definition.

The solo guitar was recorded in the Harley living room, using the EAR mikes in a spaced omnidirectional configuration and the Nakamichi 1000 DAT machine. The microphone technique was chosen by recording small sections of a variety of mike placements and patterns, and then playing them back through a system consisting of Martin-Logan Sequel II loudspeakers, Audio Research SP-14 preamplifier, and VTL 225W monoblock power amplifiers. "I'm Old Fashioned" showcases Bruce's exceptional guitar talent.

[13] George Gershwin: "Summertime" (the "Lesley Test") (DDD) 1:51

(Lyrics by DuBose Heyward & Ira Gershwin)

Lesley Olsher (soprano)

Recording Venue: *Stereophile's* listening room, Santa Fe, NM

Recording Date: November 3, 1989

Recording Engineers: Robert Harley, Dick Olsher

Microphones: two EAR The Mics, set to cardioid pattern, in ORTF configuration

Microphone preamplifier: EAR 824M

Recorder: Nakamichi 1000 R-DAT

As regular readers of *Stereophile* will be aware, the "Lesley Test" is an essential part of Senior Contributing Editor Dick Olsher's reviews: he listens for how the component he is writing about changes the sound of the voice of his wife Lesley (who is a professional singer). The philosophical problem with this test is that only those of us who live in Northern New Mexico are familiar with Lesley's singing voice. For this track, therefore, Robert Harley and Dick recorded her singing *acappella* in a reasonably dead acoustic with two very neutral microphones and the minimum of processing. As DO is familiar with the recording acoustic—it is actually his listening room—and is also familiar with the sound of the mike feed, it is easy for him to get a handle on the color-

ation introduced by the playback chain. For an artist to sing *acappella* is a difficult task, but it does give DO a clear and focused view of Lesley's timbre and intonation without the potential for masking. Now when Dick writes about how a component renders Lesley's soprano as "plummy," or "oversibilant," you'll also have a sonic reference point for your own listening to the same component.

The dynamic range of Lesley's voice on this track is large—DO has a difficult time playing it at a realistic level on his Quad US Monitors—and it will reveal midrange power-handling problems, as well as system distortion problems. (Incidentally, if Lesley's image appears to move from side to side slightly, this is due to the relatively close—42"—placement of the microphone array.)

[14] Robert Schumann: Romance, Op.94 No.1 (AAD) 3:04
Gary Woodward (flute), Brooks Smith (New York Steinway piano)

[15] Robert Schumann: Romance, Op.94 No.2 (AAD) 3:42
Gary Woodward (flute), Brooks Smith (New York Steinway piano)

[16] Robert Schumann: Romance, Op.94 No.3 (AAD) 4:09
Gary Woodward (flute), Brooks Smith (New York Steinway piano)

[17] Robert Schumann: Romance, Op.94 No.3 (AAD) 4:13
Gary Woodward (flute), Brooks Smith (New York Steinway piano)

[18] Robert Schumann: Romance No.3 (ADC Comparison Test) (AAD) 4:07

Gary Woodward (flute), Brooks Smith (New York Steinway piano)

Recording Venue, Tracks 14–18: Allan Hancock Foundation Auditorium, University of Southern California, Los Angeles, CA

Recording Date, Tracks 14–18: June 7, 1989

Recording Engineer, Tracks 14–18: Kavichandran Alexander (Water Lily Acoustics)

Producers, Tracks 14–18: John Atkinson, Richard Lehnert

Analog tape editor, Tracks 14–18: Hugh Davies

Microphones, Tracks 14–18: two EAR The Mics (prototypes), set to figure-8 pattern, coincident at 90°

Microphone preamplifier, Tracks 14–18: EAR 824M

Recorder, Tracks 14–18: Ampex MR70 ½" open-reel recorder at 15ips (CCIR EQ)

Transfer to digital: 128x-oversampling A/D (Tracks 14–16); Sony PCM 1630 (Track 17); 128x-oversampling A/D and Sony PCM 1630 (Track 18) (10 edit points)

Digital Transfer Engineer, Tracks 14–18: Bob Katz

These three lyrical Romances, composed by Schumann in 1849, were captured on Kavi Alexander's vintage tube Ampex tape recorder during the same sessions during which the works featured on *Stereophile's* first LP, *Poem*,

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were recorded.⁴ The tube microphones were approximately 9' back from the flute, with the piano (its lid on the short stick) around 5' further back. Again, the use of a "purist" microphone technique means that on a good system, the image of the musicians should "float" free of the loudspeakers, with the space between and behind them suffused with the sound of the hall. The flute image should be both very narrow and very stable. If it "wobbles," then possibly strong sidewall reflections of the sound from the loudspeakers, or reflections of that sound from a centrally placed equipment cabinet, are interfering with the way the direct sounds from the loudspeakers reach the listener's ears. The piano should have a slightly "boxy" character compared with the similar Steinway on Track 10, due to the rear wall of the stage, which was 3' or so behind the instrument. The piano image should extend from half-left (which is where the keyboard is) to half-right.

Tracks 14-16 were all transferred to DAT by Bob Katz using the 128x-oversampling analog/digital converter co-developed by Chesky Records. For comparison purposes, we repeated Romance No.3 using the industry-standard Sony PCM 1630 A/D converter. If you think that Track 17 has a different sonic signature than the previous three tracks, stop a moment to reflect that the initial A/D conversion for nine out of every ten CDs is made with this Sony converter.

If you feel that there is a large sonic difference between Track 17 and Tracks 14-16, Track 18 will enable you to put that feeling to a double-blind A/B test. Robert Harley and John Atkinson assembled this track by switching between the DAT transfers of Romance No.3 made with the oversampling and Sony ADCs ten times. Can you hear the edit points? You can? You truly have "Golden" ears. You can't? Even though the differences between Tracks 16 and 17 seem large? Perhaps A/B tests *obscure* the very differences you are trying to hear. Does this one?

In a future issue of the magazine, we will publish the score to this Romance with the edit

points clearly indicated. Until then, happy listening!

[19] J.S. Bach: Concerto in d, after Vivaldi, BWV 596, *Allegro* (AAD) 4:50

James Johnson (Flentrop organ)

Recording Venue: Busch-Reisinger Museum, Harvard University, Cambridge, MA

Recording Date: 1979

Recording Engineers: Peter W. Mitchell, Brad Meyer

Microphones: four Nakamichi CM-700s, two cardioid capsules in ORTF configuration, two widely spaced omnidirectional capsules

Microphone preamplifier: Mystic Valley Audio custom mixer

Recorder: Revox A77 1/2" open-reel recorder at 15ips, with dbx noise reduction

Transfer to digital: Sony PCM-F1 (modified)

Digital Transfer: Northeastern Digital Recording

Original commercial release: 1988, *James Johnson Plays Bach*, Titanic T1-162 CD. (Titanic Records, P.O. Box 204, Somerville, MA 02144-0204. Titanic recordings are distributed in the US by Harmonia Mundi USA.) T1-162 was also available as an Ashmont LP.

Harvard's Busch-Reisinger Museum is a small chapel whose stone surfaces produce strong reverberation. The small organ, installed in 1958 by the Dutch company D.A. Flentrop, has a "positiv" rank of pipes mounted on the front rail of the Museum's balcony (often used for the melody), plus additional ranks of pipes 10' further back. To obtain an accurate recorded image of this spatial relationship, a semi-coincident pair of directional cardioid microphones was used in an ORTF array. Widely spaced omnidirectional mikes were mixed in at a lower level to enhance the sense of ambience and to reinforce the bass frequencies. (Unlike cardioid microphones, which tend to have a rolled-off bass except when very close to the sound source, omnidirectional microphones have a flat response to single-digit frequencies, in theory even to DC.)

[20-31] 1/2-octave warble tones at -20dB (DDD). All 0:22 except Track 20, which is 1:01
Center frequencies: 1kHz, 200Hz, 160Hz, 125Hz, 100Hz, 80Hz, 63Hz, 50Hz, 40Hz, 31.5Hz, 25Hz, and 20Hz

These warble-tone tracks were recorded on the Nakamichi 1000 from the output of an Old Colony Sound Lab warble-tone generator, the frequency quoted being the approximate center frequency of each. The generator contains a sinewave oscillator that is frequency-modulated at a rate of 5Hz or so; this is fast enough that the effect of low-frequency room resonances on the perceived level will be minimized, the test tone changing rapidly enough

⁴ For the full story behind the recording of *Poem*, see *Stereophile* Vol. 12 No.9, September 1989. The LP includes Prokofiev's Flute Sonata in D, Reinecke's Flute Sonata in E ("Undine"), and the title work, *Poem*, by the 20th-century American composer Charles Griffes. *Poem* is available for \$15.98 plus \$2 shipping and handling; see the order form elsewhere in this issue for details.

that the resonance doesn't have time to fully develop. These warble tones can therefore be used to give a good idea of a loudspeaker's subjective bass extension. Those with access to a sound-level meter—Radio Shack sells quite a good one for not too much money—can set a reference level with track 20, the 1kHz band, then note by how much the response drops with each successive track. The 200Hz–100Hz bands can be considered the upper bass, 80Hz–40Hz the midbass, and the remaining bands the low bass.

Track 20 can also be used to get a relative idea of a loudspeaker's sensitivity: measure the sound-pressure level with a loudspeaker whose sensitivity you know, then, without changing the playback level, measure the spl of an unknown loudspeaker substituted into the system.

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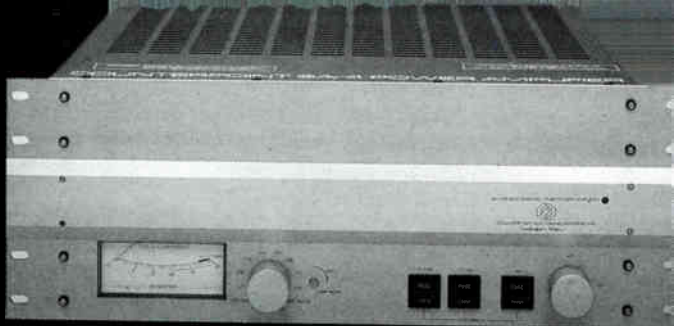
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Carving A Name For Himself

Inveterate inventor Bob Carver
in conversation with John Atkinson

Although it was Thomas Edison who set the tone for technological development in the 20th century, with his intellectual sweatshop in New Jersey, it is the lone inventor who has always had a special place in the heart of the American public. Since the days of Samuel Colt, Eli Whitney, and Nikola Tesla, fortune and fame have awaited the genius tinkerer who emerges from his backyard with a better mousetrap, cotton gin, etc., etc.

Which brings me to 46-year-old Robert W. Carver: a physicist by training; the founder of two successful multi-million dollar con-

sumer electronics companies, Phase Linear and Carver; the creative electronics engineer, termed a "genius" by some for his "Magnetic Field Power Amplifier," "Sonic Hologram Generator," "Digital Time Lens," "Asymmetric Charge-Coupled FM Detector," and "Auto-Correlation Noise Reduction System"; and an always controversial figure, with his "Carver Challenges" first tripping *The Audio Critic* magazine, then *Stereophile*, as Bob tried to show, with some subjective success, that at least with a hand-tweaked prototype, he could match the sound of one amplifier to that of another. "Transfer Function Matching" be



"I love vacuum-tube amplifiers": Bob's Silver Seven.

called the process,¹ and whether or not the Carver company could repeat the feat on the production line proved to be the crux of an intense public debate in these pages back in 1987.²

As Dick Olsber outlines in his review of Carver's Amazing Loudspeaker elsewhere in this issue, Bob Carver visited Santa Fe last September to carry out some urgent redesign on the product. I took the opportunity of his visit to try to pin him down over brunch both concerning the organizational changes that occurred last Summer at the company that bears his name, and about his design philo-

sophy. My first question involved Bob's changing role at Carver following a severe drop in sales of almost \$5 million to \$20.5 million in 1988, a drop that led to a painful operating loss of \$1.3 million.³

Bob Carver: Since the inception of the Carver Corporation, I've been holding down two jobs, one by day and one by night. My daytime job has been president and chief executive officer, and my night-time job has been circuit designer. And inventor. The company has 275 people now, and the scope of both jobs has grown. I asked a friend of mine who's been on our board for many years to help me out and

¹ Vol.8 No.6

² Vol.10 Nos.3 (pp.117-126 & 206-211), and 5, pp.14-23

³ According to a report in *Nation's Business*, September 1989.

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John Atkinson: *Basically, your role as administrator for a 275-strong workforce, coupled with the strategic running of the company, became a full-time job; it wasn't leaving you the time to devote yourself fully to product design.*

BC: That's right.

JA: *Last year you also hired Mark Friedman, one of the forces behind Onkyo's success in the US, to be your Vice President of Marketing and Product Development. I understand that Mark's feeling was that the Carver Corporation's problems basically stemmed from its product line suffering somewhat from staleness. The company had not adhered to the conventional consumer electronics "wisdom" of introducing a new line of products every year.*

BC: That's an understatement. Our products had gotten tremendously stale. For example, my 4000 preamplifier is over 15 years old. It was first introduced in 1974 as the Phase Linear preamp, and then resurrected when I formed Carver Corporation. It's been in our line ever since, and was only discontinued last year. That's a long time for a preamp to exist. And that's just one example. Over the years I've introduced new products with some special technology that the marketplace has liked a lot, but I stopped doing that about two years ago. With the result that we failed to bring out new products.

JA: *For a while in the early '80s, it seemed that every year there would be some new concept introduced which materialized as one or more Carver products. But couldn't you argue that, in fact, the 4000 preamp remaining in production all those years conformed to a good American tradition: "If it ain't broke, don't fix it."? Does a large company like Carver really need to introduce new products on a regular basis to retain its customers' interest?*

BC: I believe that all companies have to introduce new products to retain interest. . . new products and new technologies are the life blood of *any* company, and a failure to introduce new technologies is a failure to fulfill a company's destiny and, of course, the destinies of the people that make up the company.

I also became involved with loudspeaker

design, and I'll tell you something about designing loudspeakers. It's worse than cocaine, in the sense that once you start it's hard to let go, and you end up working till two or three in the morning, ignoring life, ignoring family. It's almost a compulsive sickness. In the process of doing that, I didn't bring out the new products that I should have. So this last year I've made up for lost time and introduced 24 new products.

JA: *One of them, of course, was the C19 tube preamp. That's the second tube product we've seen from you, the first being the Silver Seven power amplifier. Does this represent a newfound passion, or have you always been interested in tubes?*

BC: I started designing amplifiers when I was in the 7th grade. Transistors hadn't arrived on the scene, so all my early work was designing vacuum-tube amplifiers. My first passion is vacuum-tube amplifiers, I grew up with vacuum-tube amplifiers. I *love* vacuum-tube amplifiers, I love them to pieces. I had a fantasy amplifier that I carried around in my mind all of these years; I dreamed about it, on and off, through my military career, through my children being born, through being married. I even purchased some Acrosound A-450 output transformers in the early '60s; I've carried those transformers with me all through my life, waiting some day for the moment to arrive to put them to use. The Silver Seven is that Fantasy Island amplifier, but I never really had the time to do it until now. The basic topology of the circuitry, however, was really hatched years ago.

A secondary reason for the development of the Silver Seven was that I really did want to endow an amplifier with everything that I could possibly think of, or anybody else could possibly think of, that would make it a *wonderful*, wonderful amplifier. And that included the silver wire and the Wondersolder, the gold connections inside. . . I've done a series of converging experiments, the results of which teach me that copper wire may well be equivalent to silver wire. But I'll tell you, in the case of the Silver Seven, if there was even the remotest

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possibility, unseen by me and undetectable by me, that silver would be better, I know one thing for sure: There's no better wire than silver wire!

JA: *Are there passive components where you have more definite feelings, where you have found that a more expensive construction or material does equate with better performance?*

BC: Absolutely. For example, if the power transformer is small and inexpensive, its performance won't be nearly as good in terms of thermal capacity, in terms of current capability, in terms of mechanical noise. But if it's a nice big one, expensively potted, vacuum impregnated, and so on, absolutely.

JA: *When you last visited Santa Fe, I remember you saying that output-transformer design is a black art. When you were conceiving the Silver Seven project, I understand you discussed transformers with people like David Hafler, who's been around since the golden age of tube amps.*

BC: David taught me how to design an output transformer. I had tried to design one myself and it had a bandwidth of 2kHz! Now, a successful audio output transformer requires a bandwidth of a quarter of a MHz if you want to close a feedback loop and make it stable. I talked to many people and I obtained examples of tube audio amplifiers, and I concluded that it was a lost art. Take a look at one of the nicest tube amplifiers around (save my own): the Jadis, say. Its output transformer is horrible at the high end—nothing to do with the way it sounds, but on a measurement basis—it's terribly flawed. I found out that the only guys that really seemed to know what was going on in output transformers were the guys that had been around for a long time: Bill Johnson, Sid Smith, David Hafler. It now seems to be coming back, however. The young guys are relearning how to make an output transformer for vacuum tubes because vacuum-tube amplifiers are very popular. I love vacuum-tube amplifiers. I really do.

JA: *Would it be fair to say that designing the Silver Seven output transformers was almost as obsessive an activity as getting involved in loudspeaker design?*

BC: Oh no, the loudspeaker design took over two-and-a-half years, the transformer design took a few weeks. But only because I talked to David and he taught me. If I had to dope it out

I love vacuum tube amplifiers.

myself, it probably could have been as obsessive a project. But, the transformer that I designed is basically the teachings of David Hafler with my own unique modern twists. Mostly just making it huge and winding it with silver wire. And I didn't run it ultralinear. I run my output stage with fixed screen potentials instead of an ultralinear biasing.

JA: *So it's a little bit like an older Audio Research design. They would run the screen grids at a constant high voltage, regulating it with a series-pass tube.*

BC: Must have been really old ones. The new ones have swinging screens.

JA: *Is Carver making many Silver Sevens?*

BC: It seems to me we're making a lot. I started out making one, then there was a demand—to my great surprise—for a \$17,500 amplifier. So we made ten of them. And now this run I'm working on now is for 30 sets. (It takes four chassis each to make each pair.) I guess we're making about ten Silver Sevens per month.

JA: *To return to loudspeakers, it came as quite a shock when I saw that the first Carver speaker was a planar design. Have you always been attracted to planars?*

BC: I've been attracted to a particular kind of soundstage that was described brilliantly by Harry Pearson years ago in *The Absolute Sound*. It was a soundstage that had front-to-back depth, extended in a large arc behind and around the speakers, and from time to time could actually produce sound images outside of the limits of the loudspeaker edges. It seemed, when I read that essay, that that was so absolutely correct. That's the way a soundstage should be. And at that time, the loudspeakers that I was familiar with were unable to develop a soundstage that even came close to doing that. I found that mostly I would hear a flat curtain of sound strung between two loudspeakers.

However, the loudspeakers where sound could also go out the back, the dipole speakers and the bipole speakers, made a soundstage that approximated the description that Harry Pearson had enunciated in his essay. I thought that was wonderful. The speakers that made the big soundstage were the Magnepans, the

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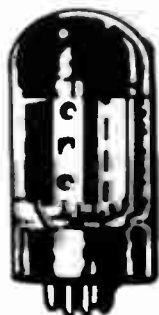
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The classic speakers *all* have had sound going out the back.

Bose 901s, the Dahlquist DQ10s; and if you think for a moment about the speakers that have lasted through the years relatively unchanged, the classic speakers *all* have had sound going out the back, bouncing off the rear wall to make a special use of room acoustics to help generate a large, three-dimensional soundstage. Those are the guys that have longevity. And I think it's because there's something particularly sumptuous, realistic, loveable, and believable about the soundstage that those speakers present. Naturally, I fell in love with the dipole speaker.

After reading Harry's essay, following his teachings, and trying to replicate that soundstage, I found that there were many components associated with that soundfield that had to work just right to make it believable deep into our ear-brain hearing system. One of the basic requirements was that the early arrivals be pristine and uncluttered. Which meant that early reflections, sidewall reflections, needed to be eliminated. Floor reflections, ceiling reflections, all of those things had to be eliminated to allow the first arrivals to arrive uncluttered so that the ear-brain can process both the amplitude and the timing cues associated with those wavefront arrivals.

The way to do that turned out to be by using a line-source driver. Like a ribbon. Because a ribbon does not radiate down, and it doesn't radiate up. And it doesn't radiate to the side very much. It radiates straight ahead and straight back. So there are no early-arrival reflections to muddle up the sound. Our ears hear the first arrivals, latch onto them, and build in our mind's eye a picture that has space and breadth and believability. Then the special use of room acoustics comes in about six milliseconds later. These are the longer-term reflections. If the loudspeakers are three feet from the back wall, by bouncing the sound off of the back wall, a multiplicity of arrivals occurs at our brain and our ears 6ms after the first arrivals and further enhances that lush, big soundstage that I wanted to achieve. That's why I chose a ribbon over anything else. And it works. It works. It can build an incredibly believable, beautiful, fun to listen to, spectacular soundstage with a planar ribbon loudspeaker.

JA: *But then you had to choose whether the line-source ribbon would be electromagnetically or electrostatically driven. Were you at all tempted toward electrostatics?*

BC: Well, when I first decided to do the loudspeaker, I actually built electrostatic ribbons and electromagnetic ribbons. There are two ways to make a diaphragm move: electrostatically or electromagnetically. The universe gives us those two choices. Maybe some day we'll have gravity-driven speakers. (Some theoretical work has to be done before we can harness the forces of gravity.) I built some electrostatic ribbons, and they worked fine. I also built the magnetic ribbons. They also worked fine. I ended up choosing the magnetic ribbon because at the time it seemed that it would be less problematical and less expensive to attain the equivalent results.

JA: *And did you discover along the way why magnetically driven ribbons are not very popular drive-units?*

BC: Yes I did! It's a lot harder than I thought to make a ribbon really work right. Ribbons don't look very good on paper. Even a perfect ribbon on paper has an erratic frequency response, due to the physics of the wavelaunch acoustics. A practical ribbon is even worse than that. It has resonances, buzzes, power-handling capacity problems, it has longevity problems. It's a very difficult design to get right. But amazingly enough, as rotten as a ribbon might look theoretically on paper—and, by comparison, even an inexpensive Radio Shack tweeter looks magnificent—when you put a ribbon in a living room and fire it off, some magic happens. There's a seamlessness, the voices are just pristine, just beautiful. That's the part that I worked on the hardest. Getting voices right.

When I started the design, the closest ribbon that would do it all was the Apogee ribbon. It's a wonderful ribbon, just a fabulous design. However, it has to be rolled off beginning at about 800Hz and its sensitivity—excuse me, its *efficiency*—is approximately one quarter to one eighth of the efficiency that I thought the marketplace would accept. That's proven to be true. When I first came out with the Amazing Loudspeaker, my ribbon was four times less efficient than it is now. And the marketplace wouldn't accept it. I mean, I sold

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Amazing Loudspeakers all right, but not nearly as many as I wanted to.

Even my own amplifiers had troubles driving them, to be honest. You know, if you'd wail on an original Amazing Loudspeaker with one of my amplifiers, which had enough power, sometimes it'd run out of thermal capacity and would go "Click!" The thermal switch would turn it off.

JA: *One difference between the Apogee treble ribbon and yours is that you tension the ribbon from all four sides, whereas the Apogee just has it lying floppily in the magnetic field. Does that give you sensitivity advantages?*

BC: Not sensitivity advantages. It does give me a low-frequency performance advantage. To make the ribbon work right, I felt I wanted it to be perfectly seamless, perfectly crossoverless. I didn't want to put a crossover in the system. To do that required response down to 100Hz and to achieve 100Hz response requires a lot of air area. My ribbon design is therefore a large-area ribbon. As a matter of fact, there's as much area as a 12" driver.

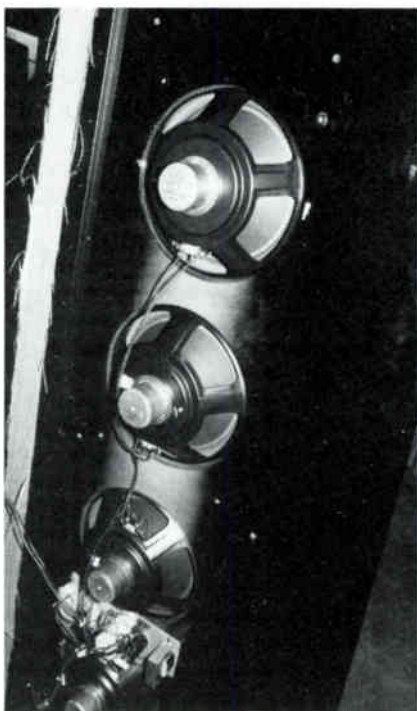
The big problem has been that it's my first serious loudspeaker design. And it's been a lot more difficult than I thought. Once the drivers, the woofer system and the ribbon system, were working properly, just getting the tonal balance right was fraught with difficulties. That drives everybody crazy, not just me, because there is no right or wrong. It's not like a direct radiator system where you can measure it one meter on-axis and make it flat and that's the end of the discussion. Because of the acoustic radiation geometries associated with the ribbon wavelaunch, the tonal balance changes with distance. So you either have to have a way to compensate for that or you have to pick one and hope that your listener agrees with you.

JA: *Voicing a loudspeaker is not a trivial affair when it comes to a planar design.*

BC: It's easier with an electrostatic with a wide panel. It's much more difficult with a line source. Yet a line source is the more perfect transducer.

JA: *Once you had the concept of the ribbon going down to 100Hz, did you try other methods of matching it to a subwoofer before you went with your current one where you use high-Q bass drivers to compensate for the finite-baffle rolloff?*

BC: The first thing I tried was just a normal subwoofer. I couldn't integrate it.



The Amazing Loudspeaker's woofer magnets: small is beautiful.

JA: *Is that because of the mismatch between the omnidirectional radiation pattern of the subwoofer at crossover and the dipole one of the ribbon?*

BC: I honestly don't know. I just didn't care for it. I then tried dipole woofers; at the time I hadn't yet figured out how to make them have flat response without a lot of equalization. So I hooked up my panel to a normal low-Q woofer and EQed it till it was flat, and listened to it: it integrated seamlessly with the ribbon. I thought, "Am I imagining this?" So I hauled out a Quad, which of course is seamless in the crossover region at 100Hz—it doesn't have a crossover. I measured the phase response and acoustic response of the Quad, and compared it with my speaker, paying particular attention in the crossover region: the two curves literally fell on top of each other. And I concluded from that experiment that the dipole woofer was a perfect match to the dipole ribbon, and was definitely the way to go.

Subsequently, I found that there were many advantages, the biggest one being that the

response can be extended down to 20Hz and below without the severe efficiency penalty. The woofers are also cheap, because their magnets are tiny.

JA: *If you use purely electronic equalization to flatten the response, then you would have to use significantly expensive drive-units.*

BC: Expensive drive-units plus the electronics to equalize them.

JA: *From this weekend's experience, there would still seem to be some minor problems with the speaker which have been irritating you for some time.*

BC: I've been hacking away at the problems for two years. And they're down to residual problems right now.

JA: *I felt that with the LF ribbon resonance suppressed, the sibilance emphasis seemed to become more audible. Is it fair to say that, as soon as you've solved one problem, that leaves another slightly more exposed?*

BC: I'll never be happy with my speaker design. There will always be problems to pursue and always problems to solve. That's why I love being an audio designer. I love it with a passion. If the problems went away, it wouldn't be fun.

In the case of the ribbon, the remaining problems involve controlling resonances. So what else is new? Controlling resonances is always a problem in loudspeaker design. A never-ending one. The time-domain performance of the ribbon emerges very naturally by its design, however, so I didn't have to work very hard for that.

JA: *As well as the smaller Silver Edition, I understand that one day you might introduce a twice-the-size version of the Platinum.*

BC: I'm working on the "Great Amazing" right now. Which will be a killer system. It'll be right up there in performance with the Silver Seven tube amplifier. I haven't prototyped it, but as we speak, the cabinets are being fabricated. When I get back home, I'll be assembling it and firing it off for the first time. I can hardly wait! And it'll undoubtedly teach me things during the development that I'll be able to apply to the current Amazings.

JA: *Do you have many other engineers working with you at Lynnwood?*

BC: I wish. There are only two engineers: myself and Vic Richardson, who's been with me eight or nine years. Since right after the inception of the Carver Corporation.

I'll never be happy with my speaker design.

JA: *That's not many creative people for a \$25 million company.*

BC: Yeah. We should have more.

JA: *A change of subject: The last time you appeared in Stereophile's pages was in response to the amplifier challenge. What was the legacy of that whole business?*

BC: When I started that transfer-function emulation project and then subsequently designed an amplifier with that transfer function, I thought I was being a powerful force for good and doing something worthwhile.

JA: *By allowing people to get what in effect was the same sound at a significantly lower cost?*

BC: What, in fact, I ended up doing was just pissing everybody around me off. I angered my dealers, I angered so many people, that I wish I could hop in my time machine, go back in time, and not do it.

JA: *Purely because of the social aspects rather than the engineering?*

BC: I just didn't like having my feelings hurt so much. It's my own fault. I didn't understand at the time that that's what would happen.

JA: *It certainly provided a lot of editorial copy for The Audio Critic, The Absolute Sound, and Stereophile. How do you see the relationship between a company like yours and the high-end hi-fi magazines? Do you see your company and the magazines as basically being in an adversarial position? Or as working toward the same end?*

BC: I see us all working toward the same end. As a matter of fact, in the case of *Stereophile*, it was a horrible slap in the face that hurt me tremendously editorially. But you know what? It really got me off my duff and it got me busy designing some new things. Some important and significant new products. That was the silver lining for me, personally and professionally.

JA: *One of the comments that I thought rang true was from Larry Archibald, when he said that he would be much more interested in seeing what you, Bob Carver, would be capable of doing as a creative engineer if you had no limits imposed.*

I don't think that magazines understand the power they have.

BC: Well, in part it was because of Larry's feelings that I started on the Silver Seven. Now I'm not going to say I did it to say, "Ah! I showed you, Larry Archibald! I can design a great amp too!" But probably at some subconscious level, there was a little of that going on. It did result in a world-reference-class amplifier; the Silver Seven's unquestionably the best amplifier in the world. And it gave me a new transfer function; this time it was *my own* transfer function! And I've done the best job I can to put that transfer function in my Silver Seven-t. It's not exactly the same. It's not an infinite null, but it's as close as I can possibly make it.

JA: *In production?*

BC: Both in production and on the lab bench.

JA: *Because one of the things which came out of that whole business for me was how unstable the null was. If you breathed near the amplifiers, the depth of the null would change and the position of the null would change.*

BC: If you let the sunlight shine on an amplifier that's sitting there with a 70dB null, the null will go higher. Or deeper. *Less null.*

JA: *This is the crux of the matter. . .*

BC: A 70dB null is a very steep null. It's really down to the roots of the universe and things like that. 70dB nulls aren't possible to achieve in production.

JA: *What is your target null between the Silver Seven-t and the original Silver Seven?*

BC: About 36dB. When you play music, the null will typically hover around the 36dB area. So it's not a perfect null. No question about it.

JA: *It's 98.5% the same. . .*

BC: It's not a bad null.

JA: *. . . and there is a significant price difference.*

BC: Yeah. The only way to get a 100dB null is to buy the Silver Seven.

JA: *You were saying last night that one legacy of the Carver challenge was that it made you realize that, in fact, high-end magazines have significant readership among retail-store staff. The people who actually sell the equipment. Do you think that that is as important as the effect they have on audiophiles?*

BC: To the extent that the magazines enhance people's understanding of this wonderful, fun art of ours. Store salesmen are audiophiles.

JA: *Do you think that magazines, a) realize that, and b) take their craft seriously enough?*

BC: I don't think that magazines understand the power they have. You've heard the expres-

sion "the power of the press"? It's amazing. Part of being human is not believing that you can control the world. Why would a normal human being have that belief? And why, indeed, would a magazine *have* that belief? The reality, however, is that there *is* a tremendous, tremendous amount of power inherent in the press. Probably way more than any member of the press thinks or believes. That's been my impression from talking to editors for 20 years.

JA: *So even a casual remark, if it's in print, may have a significant effect, either up or down, on sales for a company like yours?*

BC: Absolutely. A tremendous effect.

JA: *How then could magazines do a better job in acting responsibly?*

BC: [laughs] I think the answer is very easy. Be open, be honest, be receptive to fresh ideas, particularly being receptive to different religions.

JA: *Religions?*

BC: Religions. There are several religions that exist in our audio community. Magazine editors should practice religious tolerance. If you can be honest, if you can be truthful, if you can put your scientific hat on, be scientific when you need be, put your subjective hat on, be a subjectivist when you need be, and always be open-minded, never be defensive, that's what I believe a magazine should strive for.

Now, it's part of being human to be defensive, to have a tad of religious intolerance. That's okay; it's part of *your* humanity, it's part of *my* humanity. But I feel that magazine editors will do their job better if from time to time they step back, survey the scene from above, and question themselves as to their religious tolerance. Other than that, be honest and truthful. And the manufacturers have to respond in kind. They have to have the same fundamental, philosophical approach. Nobody's exempt from that. And I think that in the end the magazines play an incredibly important role in advancing the state of our audio art, both in the effect they have of getting manufacturers to do a better job, and also in their constant questioning "What if?" "What could be?" **S**

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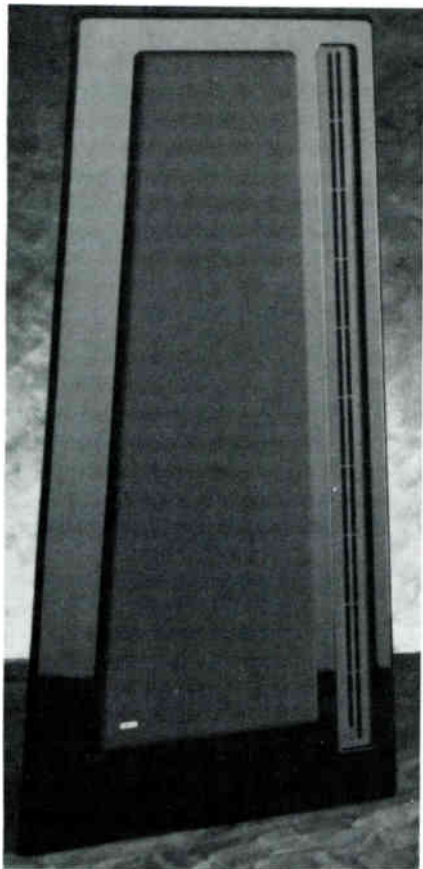
Two-way hybrid with a ribbon operating full-range above about 100Hz, and a patented dipole bass system featuring four 12" woofers in a finite baffle loading. Impedance: 6 ohms nominal. Sensitivity: 88dB/1W/1m. Maximum SPL: 113dB symphonic music, 110dB rock music. Dimensions: 27.5" W by 10" D by 54" H. Price: \$2195/pair in oak, \$2495/pair in black. Approximate number of dealers: 170. Manufacturer: Carver Corporation, P.O. Box 1237, Lynnwood, WA 98046-1237. Tel: (206) 775-1202.

Even to a nontechnical observer, someone without a deep grasp of the germane technical issues, the Amazing Loudspeaker should indeed prove a source of amazement. First of all, there's no box. Don't mistake the back grille for an enclosure—if you pass your hand along

the Amazing's behind, you'll realize that the grille is merely a cosmetic cover; you can actually stroke the woofer magnets if you're so inclined. Yet without an enclosure or electronic trickery, this speaker boasts excellent dynamic headroom and true flat bass extension almost to 20Hz. Just think of the woodworking costs inherent in trying to coax such low-end performance from a conventional box speaker. The savings in carpentry have been put toward one heavy-duty ribbon design. The Amazing begins to sound like an incredible bargain at its modest (by high-end standards) asking price. What's the catch? Fundamentally, the answer lies in superior engineering. And, as Bob Carver will readily admit, good engineering isn't inherently any more costly than bad engineering.

It was the promise of greatness that led me to request a review sample from Carver. What eventually arrived was the Amazing's new Platinum Edition. There's also a Silver Edition, a little-brother version with only three woofers per side as opposed to the Platinum's retinue of four 12" woofers. These new Amazings have *not* been reviewed elsewhere, and differ from the old Amazing in several ways: the ribbon is now pleated for better low-frequency extension and power handling; the new ribbon has more excursion and, to minimize acoustical interference, is one long, continuous design instead of the two shorter segments of the older design.

The elegant fascia of the speaker commands respect and bears more than a passing resemblance to the Apogee designs. However, to characterize the Amazing as a ripoff of the latter would be grossly unfair to Carver. For example, it so happens that the asymmetry of the front baffle is important for smoothing out the bass response of any dipole radiator. A rectan-



Carver Amazing loudspeaker

gular baffle would have worked, but not as well as an irregular one. So to accuse Carver of mindless imitation in this case makes about as much sense as accusing Ford of copying GM because all of Ford's cars also have four wheels.

The woofer section

More accurately, the *subwoofer* section, because undeniably the Amazing is capable of subwoofer performance. The '80s saw the resurgence in several subwoofer designs of the finite baffle, once the low man on the totem pole of baffles. Some of you may recall the Enigma subwoofer, now out of production, and of course more recently the Celestion 6000 subwoofer. In both, electronic equalization is used to compensate for the baffle's LF rolloff down to the woofer's free-air resonant frequency. At frequencies where the average baffle dimension is smaller than half a wavelength, the front-to-back cancellation characteristic of a dipole radiator takes place.

One of the nice features of finite baffles is that the LF rolloff is a gentle, predictable, easily equalizable 6dB/octave down to the driver free-air resonance—below which the response goes to hell at the rate of 18dB/octave. Even so, the bugaboo for such designs remains achieving sufficient dynamic headroom in the deep bass. Push the woofer or woofers extra hard and you run out of voice-coil excursion sooner than you would with that same driver in a box.

The Celestion 6000 is a good case in point. The small-signal response looks terrific with a half-power bass frequency of about 25Hz. But below 40Hz, you'd be lucky to hit 100dB at a realistic listening position even in a small room. Folks, in the deep bass 100dB spls are quite polite.

Bob Carver's innovation lies in his startling reversal of the roles of driver and baffle. Carver's correspondence on this subject is quite eloquent, and the following description is based largely on his writing. Traditionally, the drive-unit alignment is of fairly low Q . (Q stands for "Quality Factor" and is a measure of how sharply defined a resonant peak or dip is.) For example, a woofer Q of 0.42 is considered about optimum for a bass-reflex design. The cabinet, being of high Q , pushes the overall response Q to about 1 in a properly designed system. Bob's insight was to regard the finite baffle as the low- Q or overdamped element in the system and let the high Q of the woofer

bring about an overall system Q of 1. Simply put, the idea is to introduce an under-damped or peaky woofer into the baffle and let the peak in the woofer response compensate for the front-to-back bass cancellation of the baffle.

Sounds simple at first blush, but boy, are there technical difficulties lying in the bush, as Bob will only too gladly tell you. He's spent the last two and a half years addicted to the notion of perfecting this planar speaker—until recently to the detriment of Carver the Company and his own personal life. Speaker designers are a breed apart, junkies whose highs are derived from doing battle with the laws of physics. And to judge from my recent encounter (of the third kind) with Bob, the fire still burns bright. His enthusiasm for the Amazing and his untiring drive to improve them clearly go beyond the call of duty.

To underdamp a woofer you have to reduce the size of the magnet. As the magnet size is reduced, the electrical Q of the driver increases, and with it its total Q . The problem is that the efficiency of the woofer is reduced at the same time. The absurd conclusion of this scenario is zero magnet, zero efficiency, and of course zero cone motion. To improve the efficiency of a woofer with a miniature magnet it is therefore necessary to drastically reduce its moving mass. The idea is to try to keep constant the ratio of force to mass, hence a constant woofer acceleration factor. Because most of the moving mass is represented by the cone, that's where you have to cut. What you end up with at the end is a woofer with a gossamer-thin cone and an unbelievably tiny magnet—quite unlike the traditional woofer with its heavy cone and beefy magnet.

So radically different was Carver's woofer design that Tonegen, its Japanese manufacturer, refused at first to produce it. It took a personal visit by Bob to convince them that that was truly what he wanted. The danger, according to Bob, is that there is a tendency on the part of the audiophile who sees this tiny magnet to say, "Ah-ha, Carver has out-cheaped himself and is just screwing us and ripping us off." But it just would not work any other way. Reducing the moving mass, however, is in itself inadequate to confer a decent efficiency; ultimately, one has to resort to a different strategy to achieve a reasonable system sensitivity.

There it is: sensitivity. A term so often confused with efficiency that, in many audiophiles'

minds, the two concepts are synonymous. Efficiency is a fundamental driver property, determined essentially by driver parameters, that relates (for example) how efficiently a woofer converts electrical input power to acoustical output power. Sensitivity, on the other hand, is a system parameter. For example, a system with ten inefficient woofers may put out more total power than a system with a single more efficient woofer. Thus, there is combined "strength" in numbers. And from a practical standpoint, most of us could care less about driver efficiency—as long as the bottom line is excellent sensitivity.

Those of you familiar with Small-Thiele theory may be reaching for a pen and pad just about now, getting ready to fire off a letter to the Editor. I know what you're thinking: "How can DO say that? Haven't I seen a design equation somewhere that shows efficiency increasing with box volume"? Well, let me save you the postage. It's only a myth; appearances can sometimes be deceiving. And even Richard Small himself will tell you that driver efficiency is determined almost entirely by driver parameters, *not* box volume. It can't be any other way; if efficiency *did* increase with box volume, you'd have infinite efficiency in an infinite baffle. Nonsense. Big, efficient woofers do require big boxes for proper bass alignment, and for that reason big box designs are more efficient. But it's not because of the box; rather, the woofer.

Back to the idea of using multiple woofers to improve system sensitivity. This is not a practical approach for a box speaker. Once you optimize the design for a given woofer to yield maximally flat bass response or whatever, mounting another woofer on the front baffle screws up the bass alignment (the exception is "isobaric" or compound loading). The two woofers in the same box will produce a peaky, non-flat response with reduced bandwidth. The reason is that the acoustic compliance of the woofer pair is doubled, which in turn requires a box volume twice as large. So to keep adding woofers to a box design requires an ever-increasing penalty in terms of box volume. This is not a problem, however, for finite baffle designs.

One of the advantages of the finite baffle is that its bass alignment is unaffected by the number of woofers used—the designer is free to use as many drivers as he pleases to keep

pushing the system sensitivity higher and higher. Carver uses four woofers per side in the Platinum Edition because that's all the room there is, but I'm sure he'd have opted for more, space permitting, and of course only if the ribbon sensitivity could keep pace. The end result is a very respectable sensitivity spec of 88dB—good enough in this respect to compete with many box speakers.

The Q of the Amazing's bass alignment is around 1, considerably higher than the 0.5–0.7 range most designers opt for. Don't expect tight, well-defined bass from such a design. This, according to Bob, is just the sort of bass quality he likes—"a warm, rolling bass."

The ribbon

The ribbon assembly flanks the woofer array on the inside edge of the baffle. If you look closely you can see that the planar "voice-coil" consists of four strips of pleated aluminum foil running the length of the assembly. The strips are joined top and bottom to form a continuous loop. The aluminum is glued to a Kapton backing stretched over a particle-board frame and clamped on all sides with a foam suspension. The foil is sandwiched between two layers of magnets located front and back. There's a total of 36' of ceramic magnets per side that provide the magnetic push-pull force for the ribbon. The Kapton is claimed to be very strong, dimensionally stable, and capable of tolerating extreme temperatures—a perfect recipe for a voice-coil former. The glue used is said to provide damping for the internal resonances of the aluminum.

Being a purist, I naturally feel obliged to point out that, strictly speaking, this sort of design is not a ribbon in the classic sense in at least one respect: The foil operates in the peripheral or leakage field of the magnets instead of being suspended directly between the north and south poles. For most folks, Apogee included, this sort of design qualifies as a ribbon, so I'll let it go for now.

The ribbon operates full-range above about 100Hz, with useful output to about 20kHz. There's a second-order crossover network at around 100Hz. However, I have hedged about the details here because the design changed before my eyes as the review progressed (more about that later). While there are no crossovers in the critical midband, there is at least one pot (hedging again) in the signal path. Sample 1 of

the Amazing featured an upper-midrange control, while sample 2 had no less than two pots, the additional pot being a high-frequency control. Something unique to Sample 1 were two small foam rectangles mounted top and bottom on the back side of the ribbon. I've dubbed them "training bras" because, according to Bob, their function is to provide some damping for the ribbon until it breaks in—after which they may be discarded (though this is not spelled out in the manual).

The bass resonance for the ribbon is claimed to be 75Hz. In Santa Fe, after an extensive break-in period of over 100 hours, we measured a bass resonance centered at 150Hz. At Santa Fe's 7000' altitude, granted, I would expect the resonant frequency to climb because of the reduced air load; for the ribbon, I would even be willing to concede the possibility of a 25% increase. But a 100% increase cannot be explained by blaming Mother Nature, as Bob is inclined to do. I would rather point an accusing finger at Carver's quality-control procedures.

I'm also worried about the selection of a crossover frequency so darn close to the ribbon resonance. The extreme phase shifts that accompany a resonance make it a bitch to design a network with flat amplitude response in the crossover region. As a rule of thumb, one should choose a crossover point at least an octave away from a major driver resonance. A driver can be modeled as a bandpass filter. In its pass band, removed from the bass resonance and HF rolloff, a driver is known to be minimum-phase and thus much more amenable to conventional filter design. Did Carver succeed? Well, in my own measurements and his, there is a notch in the response between 100 and 150Hz, apparently due to the crossover. Of course, there's the possibility that this is caused by a room mode, but I rather doubt it. Bob provided me with measurements he made in a hi-fi store at about 4 meters on-axis, comparing the response of the Amazing to that of the new Quad ESL. Bob figured that since the Quad has no bass crossover, its response would be seamless and would highlight any problems with the Amazing's crossover. With both speakers and the mike in the same physical location, the response curves superimpose very nicely at 75Hz, but there's a 3dB notch in the response of the Amazing relative to that of the Quad, centered at 110Hz.

Virtues of directivity

Conventional box speakers radiate omnidirectionally in the bass. As signal frequency increases, however, the polar response narrows significantly. By the time the tweeter tweets above 5kHz, the response is pretty much confined to a cone with a half angle of 30°. All conventional tweeters beam sooner or later, and may be said to possess increasing directivity as a function of frequency. Looked at as a whole, the directivity of a garden-variety loudspeaker resembles the shape of a pyramid: low-directivity or broad radiation in the bass while taking on an increasingly narrow radiation profile at higher frequencies. In contrast, a dipole radiator has a much narrower radiation pattern, at least through the lower octaves. The pattern resembles a figure eight, with radiation lobes to the front and back and very little side-directed energy. One advantage of the latter pattern is that it significantly reduces early lateral room-boundary reflections and their resultant colorations. There is simply less energy splashed onto the side walls, floor, and ceiling.

I firmly believe that a dipole radiator represents a significant step toward solving the room/loudspeaker interface problem. Early reflections are anathema to accurate reproduction of the soundfield captured by the mikes at the concert hall. These reflections, even if spectrally similar to the direct sound, interfere with it to produce a comb-filter effect that colors perceived timbres. Reflections arriving at the ears during an initial 10ms window—after the direct sound has stopped—are the most troublesome because they are higher in amplitude compared to later arrivals and are not well discriminated against by the ear/brain system. Room treatment is therefore essential to suppress the room's sonic signature. After all, do you want to hear your room's reverberation or the original soundfield?

I've had good results with a dead-end/live-end sort of treatment with the speakers located at the dead end of the room. I'm therefore mystified by Carver's references to the beneficial effects of 6ms reflections when the Amazings are placed 3' from the front wall of the listening room. These reflections are claimed to increase the spaciousness of the soundstage. Well, I would have thought that rear-wall reflections or possibly a delayed rear channel would have done that. But in my opinion, Carver's sugges-

tion is a recipe for destroying the accurate transduction of the original soundfield on the recording. I'm making a tacit assumption here that the soundfield captured during the recording session is worth preserving. This may be a poor assumption in the case of multi-miked pop recordings, in which case the additional adulteration of the room may actually be desirable. In the case of properly executed purist recording techniques, the recorded soundfield is rich with spatial clues and incorporates the right blend of direct/diffuse sound. That's the sort of information I'd like to preserve in my listening room. Unfortunately, this is much more difficult to do than I've so far indicated.

It's a fact of life that most of us listen in semi-reverberant environments. Room treatments are most effective at higher frequencies, say above 5kHz. At much lower frequencies it's very difficult to dissipate sound energy very quickly. As a result, unless you're glued to the loudspeakers, a significant portion of the sound energy at your listening position is due to room reflections. A critical distance may be defined at which the reverb energy just equals the direct sound energy. The basic problem is that this critical distance changes with frequency. It would be highly desirable to keep the ratio of reverb to direct energy constant at the listening seat. But because directivity or beaming typically increases with frequency, this goal is impossible to achieve. Recall that the average speaker is omnidirectional in the bass. It pumps lots of bass energy off-axis; together with the fact that room absorption is ineffective in dissipating bass energy, this assures that reflected energy is bass-rich and treble-shy. As directivity increases, more energy is concentrated on-axis and the direct component of the total sound increases. Finally, above about 5kHz, the absorption of highs by room surfaces, together with the on-axis treble beaming, combine to make the treble sound almost completely direct.

This is an important concept to understand. It explains, for example, why two speakers that measure exactly alike on-axis sound different—in the same room. The answer, of course, is different directivity patterns which change the character of the room reverb. Line-source tweeters like those in the Amazing are by their nature more beamy than a typical dome tweeter. Thus, if you've optimized your system for a dome-based loudspeaker, substitution of a

line ribbon at the same position will result in a noticeably brighter balance. Why? Because the direct/reverberant sound ratio starts to increase at a lower frequency for line sources. This predominance of direct sound will emphasize overtone structures in the upper octaves, imbuing timbres with a bright, steely character. The solution is to either move farther back from the speaker or experiment with treble rolloff!

So what response is "correct" for a quasi-line-source design like the Amazing? It would be a definite mistake to equalize the Amazing to be flat on-axis in the near field. I learned this the hard way. I tried it, and had to duck the razor blades the Amazing hurled at the listening seat. Three meters away, the sound was excruciatingly bright. An even bigger blunder would be to equalize the Amazing to be flat at the listening seat. The superimposition of a reverb curve deficient in highs over a flat direct-sound curve naturally results in a listening-seat balance featuring high-frequency rolloff. That's the correct tonal balance. An attempt to flatten this composite curve by jacking up the direct-sound contribution will significantly brighten timbres. Trust me, you'll be reaching for the cotton balls.

Because of treble beaming, the tonal balance of the Amazing changes with listening distance. Generally, at 3m from the front baffle you'll be sitting beyond the critical distance for frequencies up to about 5kHz. To reiterate, the right choice at the listening seat is an upper-octave rolloff to ensure a natural sound balance; one that does not distort the direct/reverberant sound ratio.

It was this sort of experience that led J. Gordon Holt² to embrace the "Down with Flat!" philosophy in earlier issues of the magazine. It was quite puzzling at the time. Jack Hjelm from Audio Research had just finished installing some gigantic tube amplifier in JGH's system to drive one of the Infinity IRS systems.³ As a final touch he proceeded to equalize the speakers to flat at the listening position using an Ivie hand-held real-time spectrum analyzer. The resultant sound was *bright*; but, according to Jack, it had to be right; after all, it was flat.

¹ For a more technical exposition of these concepts, see Professor Han's "Frequency Responses in Acoustical Enclosures," AES Preprint 2452(F-3), 1987.

² In whose ears we trust. —JA

³ See *Stereophile*, Vol.9 No.4, pp.29–41.

Well, sometimes "flat" is not. As soon as the ARC sage left, JGH proceeded to kill the treble.

You should now understand why some argue that the ideal transducer should have constant directivity up to about 5kHz, and *decreasing* directivity beyond—precisely the opposite sort of behavior exhibited by most loudspeakers. Such a directivity pattern will ensure that the direct/reverberant ratio of sound in the room is fairly constant as a function of frequency. Incidentally, the new Quad ESLs, as far as I know, have the most uniform directivity of any commercial loudspeaker. The Quad's diaphragm is driven by concentric ring stators with suitable time delay such that the radiation pattern closely resembles that of a point source located some 300mm behind the diaphragm. Most other dipoles start off correctly with a controlled directivity in the bass, but cannot maintain that level of polar response with increasing frequency.

The electronic control box

The Amazing's optional gadget box allows a variety of signal processing. It may be inserted into the tape-monitor loop of an integrated amp or between power amp and preamp. Because the initial intent was to market the Electronic Controller as an integral part of the Platinum Series package, I received one with my first sample of the speaker.

Moving from left to right on the front panel, the first function is the bass Q control. Q can be adjusted from 0.3 to 2.0. Why anyone would want to loosen the bass any further is beyond me, but going the other way, to a Q of about 0.5, proved a worthwhile enhancement. At this setting, the bass character of the Amazing underwent a much-needed transformation in definition, from quivering Jello to reasonable firmness. Pitch definition and bass detail were now much more readily resolvable. It was no longer safe to eat beans while listening to music.

Unfortunately, there's a significant price to pay. The EC box not only squashes dynamics but contributes an earful of solid-state hardness and grain to the mids and treble. The cure in this case is worse than the disease. With the EC in the chain, tube amps sounded solid-state, tube liquidity being well masked. Removal of the EC from the signal path after an extended listen invariably brought forth a sigh of relief.

To the right of the bass Q control are a "High

Frequency Trim" that allows you to shelve the treble above 4kHz, a "Sub Bass" synthesizer that will generate or supposedly "restore" sub-bass harmonics to program material deficient in deep-bass energy, a "Gundry Perspective" control that allows you to shelve the upper mids and thus change the apparent orchestral perspective, and finally a "Sonic Hologram" control.

The Sonic Hologram attempts to fix what some consider a basic flaw of conventional stereo. The argument runs something like this: When we listen to an instrument live, each ear receives a single input; call these left and right. Trying to reproduce the same solo instrument via a pair of loudspeakers results in each ear receiving two inputs. The left ear receives a left speaker input, and because of head diffraction there is delayed crosstalk from the right speaker. The situation is similar at the right ear. Sonic Holography tries to cancel out these crosstalk signals so that the left ear effectively hears only the left speaker, and vice versa. This sort of argument makes a lot of sense when trying to reproduce a binaural or "dummy head" recording via loudspeakers. Such a recording will only sound right through headphones, and there has been a lot of work done on devising circuits to make binaural recordings compatible with stereo loudspeaker reproduction. However, the logic of the argument breaks down for true-stereophonic recording techniques such as Blumlein. Here, as with other coincident recording techniques that rely on intensity differences for localization, it is precisely this kind of crosstalk generated by two-channel stereo that is relied on to produce natural phase cross-correlation between the ear-input signals. The important point is that head diffraction is operative at all times, generating two ear-input signals even under live listening conditions.

I did experiment with Carver's circuit and found it to make a difference, but only sometimes for the better. Although the action of the Sonic Hologram circuit seemed somewhat unpredictable, nevertheless a couple of generalizations are in order. First, the circuit acted to expand image outlines, providing a blown-up or zoom version of the original spatial outlines. Second, on multi-miked recordings, and in general where the left and right channels contain quite a bit of out-of-phase information, the Sonic Hologram helped to flesh out the

soundstage—but at the expense of pinpoint imaging. However, program material recorded with coincident or quasi-coincident techniques, where there is high phase coherency between channels, was adversely affected by the Carver circuit. Here the imaging became unstable, outlines wandering away from their center of gravity within the soundstage. A case in point was my wife Lesley's voice throughout the Lesley Test. The weight of the image shifted from side to side as if an unseen hand was playing games with the channel-balance control.

On the whole, I'd forget about the Electronic Control Box.

Will the real Amazing please stand up?

As this project evolved, it became clear to me that the Amazing was truly a moving target, a fluid design that certainly from my perspective, and inferentially from Bob Carver's, was not altogether final. Santa Fe became a proving ground for the Amazing; several versions of the speaker have been assessed to date. I have to confess, however, that some of the changes along the way were triggered by my thoughts and suggestions. At times I felt as if I were in the design loop for this product. The above scenario is more than vaguely reminiscent of the Bud Fried syndrome: "I'll keep changing it till you're happy." And I'm sure that the initial monkey wrench thrown by Bob into the proceedings was an attempt to manipulate the situation in his favor. But I remain convinced that Bob was subsequently motivated by a passion to perfect the speaker to the detriment of good business practice. There's no question in my mind of Bob's intense commitment to the speaker.

To clarify the situation, let me give you a synopsis of the sequence of events. The first sample (which we received last July), as you'll discover shortly, was beset by serious sonic problems and was on its way to, most probably, a terminal review. Just about then, in early September, as though he had read my mind, Bob phoned me and the fun and games started.

All of the above add up to unusual circumstances indeed. Normally, a manufacturer does not receive this much free consultation. From my perspective, it was a question of wanting to see a promising product succeed. From JA's perspective it was crucial to ensure that the

magazine would not get trampled on—our policy is *not* to allow manufacturers to use *Stereophile's* facilities and *Stereophile's* writers' talents for design consultancy purposes, whether paid or unpaid. The ground rules, as JA laid them out, were that if Bob were to visit Santa Fe to redesign the Amazing Loudspeaker, *Stereophile* would report on *all* of our experiences with the product; that Carver would take full responsibility for the design; and that a production version of the speaker would be subsequently submitted for testing. It was this final item, however, that proved difficult to pin down. Apparently, the Platinum Edition Amazing Loudspeaker was being sold all along, so that at least some speakers—identical to my first sample—are either in dealers' inventories or in consumers' hands.

Act I

Sample 1, Take 1. Out of the box and before any significant break-in, the sound of the ribbon had a strong metallic flavor to it—as though a large sheet of Reynolds Wrap was being crinkled. After over 100 hours of break-in this coloration largely abated, but did not entirely disappear. There remained a metallic aftertaste, no doubt due to internal resonances in the presence region.

During setup, the recessed terminal cup of the Amazing proved a pain in the butt. It was difficult to fit spade lugs within the recess. However, it proved real easy to strip the plastic shaft of the binding posts provided; be careful not to overtighten these. Lord, why is it so difficult to find expensive loudspeakers with high-quality binding posts?! I also managed to work loose one of the binding-post retaining nuts, in the process breaking a solder joint. After Robert Harley had repaired the connection, I proceeded to tweak the installation.

It proved necessary to back off the front baffle a good 10' and toe-in the speakers considerably before a decent soundstage materialized. I next trimmed the tonal balance using the Upper Midrange Control (UMR). This pot allows a nominal ± 3 dB of amplitude control over a frequency range of 1–6kHz, with full impact at a center frequency of about 2.5kHz. This exercise turned out to be extremely frustrating. I spent hours trying to get the Amazing to sound right. Using the Lesley Test as program material, it was just impossible to obtain a natural balance. Turning this pot up to where

Lesley's upper registers had the right brilliance also elicited sibilance and a metallic transient etch sufficient to tattoo my ears. Shelving the upper mids and presence region down to the point of achieving a tame enough presentation brought about a significant alteration of tonal colors. Rather than preserving a sweet and smooth character through the upper registers of soprano voice or violin overtones, timbres took on a slightly dry and grainy quality.

There was lots of midrange and treble detail, and it was resolved clearly enough—commensurate with the performance level you'd expect from a fast transducer like a ribbon. So it was all the more disturbing to deal with the level of reproduction below 500Hz or so. On the one hand, you have lots of scintillating treble detail that beckons you to get involved in the music. On the other hand, the lower octaves serve to isolate you from the music. Taken as a whole, the midbass, upper bass, and lower midrange were veiled and muddy. Bass lines were consistently ill-defined and difficult to follow. Because much of a hall's sonic signature resides in this range, it was not surprising that I could not penetrate deep into the soundstage. I just could not get an adequate sense of hall. I could not place myself in the space of the performance. Every one of my records that I've come to depend on for soundstaging evaluation, the Proprius *Laudate!* and *Cantate Domino* for example, failed to flesh out properly through the Amazing. I could make out the leading edge of hall reverb, but its trailing edge became indistinct. It was as though a thick curtain were dropped before my eyes at a crucial moment to obscure the true expansiveness of the hall. The loss of soundstage transparency and immediacy was so obtrusive and disturbing that I had to try something.

One of the things I tried was a number of amplifiers, including Carver's Silver Seven-t monoblocks. The Seven-t turned out to be a sonic disaster, combining the worst attributes of solid-state and tubes. Treble transients were sizzly and steely, the bass heavy and undifferentiated—sort of a bloated thump. The mids were dryish and grainy. And the soundstage—what a mess! Compressed depth to the point of one-dimensionality, and never really coalescing into a unified whole. And to think that Carver had wanted me to bi-wire the Amazing with no less than two pairs of the Seven-ts. The Krell KSA-200 provided the Amazing with a

much-needed dose of bass control, but it also emphasized the ribbon's mechanical resonances. The Music Reference RM-9 offered much-needed midrange liquidity without exacerbating the presence-region nasties, but wasn't nearly as accomplished as the Krell in the bass. The ideal amp for the Amazing (this is true for many ribbon-based designs) would be one that combined solid-state bass control and current drive with tube-like liquidity, textural softness, and imaging. I only wish money could buy such a beast.

In desperation, I decided to try one final trick: a cheap experiment, if you will, since it only involved a dollar's worth of masking tape. I experimented with taping the back side of the ribbon; $\frac{3}{4}$ "-wide tape was just fine for this application, as it neatly fit over the slits in the magnet structure. The optimum pattern turned out to be one where alternating slits were taped shut. The idea was to try and resistively dampen whatever ribbon resonances I could. The really amazing thing was just how effective this idea turned out to be. The ribbon's inherent presence-region resonance around 5–6kHz was not abated, but the difference in the lower octaves was nothing short of dramatic. The upper-bass heaviness largely disappeared. Bass lines became distinct. And, just as important, soundstage transparency shot up to a point where I had no difficulty any longer in delineating hall size—as though the fog that had previously surrounded this region all of a sudden evaporated.

Another surprise was that the veiling was not caused by the woofer section, but rather by the ribbon's bass resonance. This dramatic change for the better is readily apparent from fig.1. (The curves were generated during Bob's subsequent visit to Santa Fe.) The top curve shows

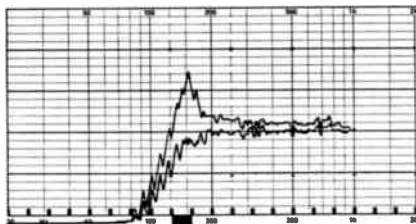


Fig.1 Amazing Loudspeaker, LF response at 4", top trace without silk damping, lower trace with (vertical scale 10dB/large division)

a peak of some 14dB centered at 150Hz for the undamped ribbon. With a swatch of silk applied to the back of the ribbon for air-flow resistance, the bottom curve shows the end result. About this time Bob Carver phoned me with a major announcement.

Act II

Here I am itching to close out this project, and Bob announces that the current Platinum version of the Amazing, the one I have been listening to, has been discontinued. According to Bob, there are new grilles for the front and back that reduce diffraction effects, as well as a new crossover network. I wonder about Bob's amazing timing, but naturally I want a new sample as soon as possible to close the loop. Bob has a better idea. Since my pair of Amazings was already broken in, why not come out to Santa Fe and install the various upgrades himself?

So, on a Saturday morning in October, there's Bob in my listening room, along with Mark Friedman (Carver's National Sales Manager) and JA. The grilles are here, but what about the crossover? Bob waves this Rube Goldberg contraption about that looks like an octopus in heat. It turned out later that this "new crossover" was thrown together by Bob that same morning in his motel room using Radio Shack parts and a coil-winder he brought with him. What Bob really wants to do is spend the day experimenting and hopefully end up with something *Stereophile* likes. We spend part of the morning listening; Bob really likes the concept of damping the ribbon. So we spend part of the afternoon scrounging for various damping-material samples, including nylon stockings, silk cloth, and chiffon. The results of the silk damping experiment (fig.1) are so impressive and Bob so ecstatic that he resolves to incorporate some form of damping in all future production. Next Bob attempts to build a notch filter to counteract what he measures to be a 7kHz peak in the ribbon response. A new crossover is installed late that evening, and, after some additional listening late into the night, it's clear that the tonal balance still isn't quite right. As Bob leaves, I make it clear to him I expect a new production sample incorporating all of the final changes.

Act III

Sample 2 arrived at the end of October. It

differed from the first sample in several ways. First, damping was provided on the back side of the ribbon assembly. Bob decided to use a thin gauze-like material called "pre-wrap." This stuff was taped to the back of the baffle with electrical tape; a temporary measure, Bob assured me, until the proper moulding is fabricated to hold the gauze in place. Second, the crossover network was revised to better blend ribbon and woofer. The crossover frequency was pushed slightly higher to compensate for the 2dB loss in ribbon efficiency incurred by the damping material. A 7kHz notch filter was included in the network to kill a major ribbon resonance. A Very-High Frequency (VHF) control was added to give the user some control over frequencies above 10kHz. This, according to Bob, helps in controlling a treble resonance in the range of 10–12kHz. Third, new woofer grilles were installed with larger cutouts on the back side. Fourth, a "High-Altitude" resistor kit, with instructions, was included for adjusting the damping of the woofer section. Finally, this particular pair of Amazings was supposedly already broken-in by Bob prior to shipment.

This pair certainly sounded much smoother right out of the box, so much more so than our broken-in first sample that I began to suspect one of two possibilities: either this was a hand-selected sample unrepresentative of the lot, or just a randomly selected lucky sample. If the latter possibility is the correct one, it highlights QA problems in getting these ribbons to sound alike.

We proceeded to break in the second sample for an additional 50 hours. The first listening session with the new Amazing proved to be more of a positive experience than the first sample ever provided—although I still had some major reservations. Bass definition was decent, although still lacking much impact. There wasn't much sense of punch; bass attack was more like a limp noodle than a whiplike crisp. The amazing thing about the Amazing was that, despite measuring flat into the low 20s, its deep bass simply failed to sound that way. There was always lots of bass, but on organ recordings the Amazing could not generate a convincing bass foundation below about 40Hz.

The "High-Altitude" kit provided by Carver with the Amazing allows for the insertion of either a 1 or 2 ohm resistor in series with the woofer section. According to Carver, this is

supposed to lower the woofer Q and thus tighten the bass. I would agree that a series resistor would reduce the quantity of bass, but I don't see how the Q of the response is lowered in this fashion. Substitution of the 1 ohm resistors per Carver's instructions is not straightforward: it forces you to bi-wire the speakers, but since that in itself is not a bad thing, it should not prove a deterrent. The resistors clearly reduced bass output. But, just as clearly, bass quality was *not* improved. In fact, the midbass got more muddled, taking on more of a one-note bass character. Charlie Haden's double bass on "Lonely Woman" on *The Shape of Jazz To Come* (Atlantic CD, 1317-2) not only became more anemic, but pitch definition decreased to the point where his lines were hopelessly muddled. This resistor kit is a miscalculation; my kind recommendation would be to give it a hasty burial.

However, the Amazing's imaging was much improved with these samples. Soundstage width and depth were both more than adequate, and the level of transparency through the lower mids and upper bass was quite astonishing when compared with the first sample. Hall reverb was now easy to resolve, and resolution of massed voices was very good. With both pots at their nominal 12 o'clock positions, the upper octaves were now quite listenable. Much of that presence-region scream was absent. The presentation was still overly sibilant, and treble transients were still a tad on the hot side—but tolerably so. The problematic upper mids remained very much so. Timbres through this region just didn't sound right. No combination of UMR and VHF pot settings managed to restore timbral accuracy. The best compromise turned out to be a 12 o'clock pot setting, but I was left with the impression that the Amazing was still hopelessly colored in this region.

A magical moment

At some point during the second session, something very magical happened. It was as though the sky opened up and a hand descended to bless the Amazing. I was diddling with the toe-in angle again, but that wasn't really it. All of a sudden the Amazing got smoother and sweeter at the top, and I found myself suddenly drawn into the music. For the first time, I found myself enjoying these speakers. Things weren't altogether right, but there was enough right

here to combine for an enjoyable experience. The upper range of Lesley's voice was still adulterated. But the focus of her vocal outlines was tight, and midrange textures were smooth. An occasional squawk crept in around 1kHz in one of the ribbons. And you also need to know that the ribbon buzzes like a kazoo below 1kHz. The buzzing is normally not audible, being masked by the music. But with pure sinewave test signal it's easy to pick out the accompanying buzz.

But enough bad news for now—the Amazing was beginning to flex its muscles. Record after record was thrown on the Aura turntable (an excellent 'table from Down Under; review forthcoming), with very musical results. Pilar Lorengar as Princess Pamina (*The Magic Flute*, London OSA-1397) really shone with an intense vocal purity. Mezzo-soprano Janet Baker's voice (Holst: *Savitri*, Argo ZNF-6) was reproduced with a honey-smooth quality. The husky hue of Cleo Laine's lower registers (*Live At Carnegie Hall*, RCA LPL1-5015) was perfectly captured by the Amazing. Therese Juel's voice on the Opus 3 *Test Record 1* was well-behaved—just slightly erring toward oversibilance. Violin tone was just as captivating. Itzhak Perlman grooves on this sort of music. The Bruch Violin Concerto (EMI ASD 2926) is just the sort of repertoire to give Itzhak freedom to ooze calories. That he does, and the Amazing reproduced his violin tone with sufficient sweetness and suaveness. High-powered orchestral material was reproduced with excellent dynamics. Retrieval of low-level detail was excellent, even when confronted with complex, dense musical passages.

Act IV

It's mid-November. You guessed it. Another phone call from Bob. He's changed the cross-over again. As I write this, Bob may be on his way to Santa Fe to install the upgrade. If he does, I'll report the results in a future Follow-Up. And one more thing. Bob followed up on a suggestion of mine to treat the ribbon foil surface with a damping material. Bob used a 3M damping compound which he brushed onto the foil. He found that the treatment yielded, in his words, an instantly broken-in, or "aged," ribbon. The problem is that because of the increase in moving mass, the efficiency drops dramatically. So Bob is thinking of completely overhauling the ribbon design as a long-term

project in order to bring the efficiency back up. In a year or so, there may very well emerge "Son of Amazing."

Taking stock

Coupling the Amazing's relatively modest asking price with the level of performance achieved by what has to be viewed as a transitional prototype, there looms the potential for a great speaker. At the outset it should be emphasized that, even at its best, the Amazing possessed an inescapable coloration in the presence region. With this speaker, you'll forever be married to an oversibilant presentation. You can hear the 5kHz peak as an emphasis of surface noise, and it also gives treble transients a slightly zippy or hot character.

On the positive side, the Amazing is capable of exquisite midrange textural smoothness and sumptuous liquidity. Low-level detail resolution is excellent: no nuance is too small for the Amazing. The dynamic range is excellent. The Amazing will play loud without audible compression or congestion. With the right amp, the lower mids take on a convincing authority. Bass extension is very good, with decent impact, but don't expect amazing bass quality and definition. The Amazing's bass performance is very amp-dependent, with a solid-state amp being a requisite for eliciting its full potential. The rub is that a typical solid-state amp is likely to exacerbate the Amazing's presence-region zip. With a lot of sweat and tears in setup, the soundstaging can be quite convincing, with excellent spatial resolution. The damped ribbon is sufficiently transparent to allow one to gaze very deeply into the soundstage and to clearly delineate hall size.

There's some buzzing and grille snapping on large bass transients, but generally I have not found these warts to be annoying because they're masked by the music.

Finally, the big question mark is variability in ribbon quality. Unquestionably, it takes the ribbon a long time to break in. In the interim, the sound is rough and edgy. The controlling factors here do not appear to have been adequately researched by Carver. JA expressed the opinion that Carver's method of clamping the ribbon may not be optimum. That I do not know. But I can tell you that waiting for the ribbon to break in is like having to go through puberty all over again: it's a royal pain in the butt. But when that magical day dawns, the

Amazing begins to smile at you and all may be forgiven—unless you've lost your patience along the way.

Finally, I want to make it perfectly clear that, as of now, I do *not* recommend this speaker. If and when the design stabilizes, and I have a chance to evaluate a true production sample, then a final assessment can be rationally made. I consider it insane to spend any money on what has to be regarded, for now, as an evolving prototype.

Postscript: measurements

As an interested observer during much of Dick's auditioning of the Amazing, and having spent most of a weekend with Bobby the C last September (see my interview with him elsewhere in this issue), I was intrigued to get the final samples of the Amazings into my own listening room for a little measuring fun. Having just installed the MELISSA measuring system in my PC (see Sidebar), I felt that this speaker would really give it a workout.

And I wasn't wrong. The Carver Amazing's impedance, measured with MELISSA, is shown in fig.2, the upper trace being the magnitude and the lower the phase. The lower of the two humps is the woofer resonance at 23Hz or so, while the upper is due to the crossover circuit, *not* to the ribbon suspension resonance. (The impedance of the ribbon alone, not shown, features a smoothly rising impedance below 200Hz.) The sharp peak at 6710Hz is due to the notch filter introduced by Bob Carver in his attempt to reduce the speaker's audible sibilance. All in all, though the impedance doesn't drop below 3.76 ohms (shown by the cursor position in fig.2), the Amazing's lowish sensitivity means that an amplifier capable of delivering high currents *and* high voltages will be best suited to drive it.

Fig.3 shows the anechoic section of the Amazing's impulse response (calculated from

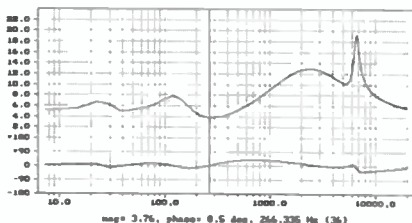


Fig.2 Amazing Loudspeaker, impedance magnitude and phase

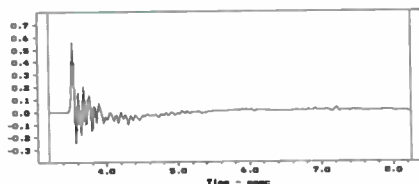


Fig.3 Amazing Loudspeaker, impulse response on ribbon axis

the MLS data), measured at a 48" distance, 36" from the floor (a typical listening height), using a calibrated B&K 4006 microphone. (Both controls were set to their 12 o'clock position, which was how DO had preferred listening to the speaker.) The leading edge of the pulse is well-defined, but there then follows a complicated pattern of ringing. The Amazing's ribbon is most definitely *not* unresonant (though, of

course, the resonances may be due to the air-spaces in front of and behind the ribbon that are enclosed by the magnet structure).

Performing a Fast Fourier Transform on the discrete time-domain data gives the Amazing's anechoic frequency response. I have shown this from 200Hz upward⁴ to the right of fig.4, which was plotted using graphics software I wrote myself rather than that provided by MELISSA, because I prefer *Stereophile's* published frequency-response plots to have the same aspect ratio and 50dB scaling as the traditional B&K graphs. Obvious features are the

⁴ The truncation of the impulse response data before the first room reflection, that from the floor, means that the FFT-derived spectrum has a resolution of approximately 200Hz and is only truly accurate an octave or so above that frequency. —JA

Measuring with MELISSA

Wouldn't you just know it. As soon as I decide on a formal regime of measurements to accompany *Stereophile's* loudspeaker reviews—see Vol.12 No.10, October 1989, p.166—along comes some hot new technology that changes everything. Robert Harley reported in last month's "Industry Update" column how impressed he and I were with the new MELISSA measurement system from DRA Laboratories.

We were sufficiently impressed that we persuaded *Stereophile's* publisher Larry Archibald to splash out and buy one.

MELISSA is an expanded acronym for MLS or "Maximum Length Sequence." The system's progenitors, Douglas D. Rife of DRA Labs and John Vanderkooy of the University of Waterloo, explained at some length in the June 1989 issue of the *Journal of the Audio Engineering Society*¹ what a Maximum Length Sequence is and how it can be used as the basis for an audio measurement system. A sonic MLS sounds like white noise and, indeed, it appears to have the spectrum of white noise. But as it is a pseudo-random signal, actually having a formal structure, a dedicated analyzer can compare the original MLS signal with the version of it output by the DUT (Device Under Test). By performing a cross-corre-

lation operation, it can derive the DUT's impulse response. Performing a Fast Fourier Transform (FFT) on this impulse response will then give the DUT's transfer function (amplitude and phase responses).

If the DUT is a loudspeaker, then as long as the computed impulse response is free from room reflections, the system will automatically produce the speaker's anechoic frequency response without recourse to expensive anechoic chambers. In addition, by successively windowing the calculated impulse response one time sample along and performing the FFT, the system shows how the frequency response equivalent to that impulse response decays with time, revealing the presence of cabinet and drive-unit resonances. The Heyser Energy-Time Curve can also be easily calculated. If the calculated impulse response is long enough to include all the room reflections, then performing the FFT will give the transfer function of the speaker *and* the room, allowing the reverberation time, intelligibility index, and direct/reflected ratio to be calculated. By connecting a high-value resistor in the hot connection to a loudspeaker, the speaker's complex impedance can be calculated by looking at the impulse response, hence transfer function, of the resultant voltage divider.

MELISSA is undoubtedly a powerful tool, but it actually appears to offer nothing more

¹ "Transfer-Function Measurement with Maximum-Length Sequences," Douglas D. Rife and John Vanderkooy, *JAES*, Vol. 37 No. 6, June 1989, p. 119.

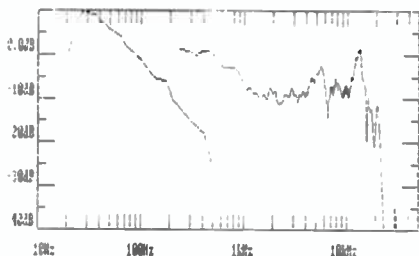


Fig.4 Amazing Loudspeaker, nearfield LF response and MELISSA-derived anechoic response on listening axle at 48"

downward trend in the lower midrange, presumably due to the baffling of the ribbon, with then obvious peaks in the 5–6kHz and 11–13kHz regions. No wonder DO found this

than what is already offered by traditional FFT or TDS techniques. Why then is *Stereophile* so excited about it?

- Unlike narrow-pulse-based FFT testing—the system I have used until now, for example—the MLS stimulus signal has a very narrow dynamic range; *ie*, it can be played at reasonable levels without the danger of driving the DUT into nonlinear behavior. It intrinsically, therefore, has a sufficiently high signal/noise ratio that it will operate in reasonably noisy environments (like a typical listening room) without the user having to average a large number of samples.

- As well as being accurate, it's *fast*. I measured all the loudspeakers reviewed in this issue in just one normal working day. With my old system, using a Heath-Zenith 8-bit 'scope and a QuickBasic FFT program I developed myself, this would have taken twice as long,² and I hadn't even started to write the software (assuming that I could) to perform all the fancy post-processing functions MELISSA includes as a matter of course.

² For interest's and paranoia's sakes, I used MELISSA to analyze the impulse responses captured by the Heath 'scope for the loudspeaker reviews published in *Stereophile* since May 1989. The anechoic responses were effectively identical to those published, which came as a big reassurance considering John (Waveform) Orvös's crack in the December 1989 issue (p 243) about "journalists attempting to bolster the technical credibility of their subjectivity, using . . . lap computers with the latest trendy FFT programs." Trendy they may be, Mr. Orvös, but if they're accurate, then why get so hot under the collar?

speaker to emphasize sibilants. (Bob Carver's notch filter appears from this measurement to be both too narrow and too high in center frequency to significantly reduce the energy in the lower of these two regions.) I also examined the $\pm 15^\circ$ lateral off-axis behavior of the ribbon; the response was effectively identical on both the woofer and to the baffle-edge sides, suggesting that, though DO found otherwise, the exact toe-in should be relatively uncritical in producing the best tonal balance. Maybe what the toe-in achieves is to affect the audibility of the time-domain problems rather than those in the frequency domain.

The curve to the left of fig.4 is the response of the topmost of the four woofers, measured in the nearfield; *ie*, with the microphone almost touching the grille cloth. Without the

- It's *cheap*. Just \$2750 buys the complete package: a long card to fit in one of a PC's expansion slots, and all the software. The card contains the MLS stimulus generator (which can also be programmed to produce pulse and squarewave signals), a 12-bit A/D converter sampling at up to 150kHz, a 9-bit DAC, and a 4- or 8-pole anti-aliasing filter, programmable as to bandpass and type, all completely under software control. The system can also be used as a conventional digital-storage oscilloscope, with then its comprehensive FFT capabilities used to measure distortion. About the only practical limitation is that the host PC *must* carry a math coprocessor and have a hard disk, no big deal these days. We have installed *Stereophile's* MELISSA system in a Compaq "luggable" 80286 computer so that we can easily assess our reviewers' listening rooms as well as easily and quickly measure review loudspeakers in Dick Olsher's, Robert Harley's, Larry Archibald's, and my rooms.

I envisage MELISSA being a useful tool in *Stereophile's* long-term quest to provide some correlations between what is measured and what is heard. Those wishing more information on MELISSA should contact Douglas Rife at DRA Laboratories, 607 West Nettletree Road, Sterling, VA 22170. Tel: (703) 430-2761. Fax: (703) 430-0765. I heartily recommend it.—**John Atkinson**

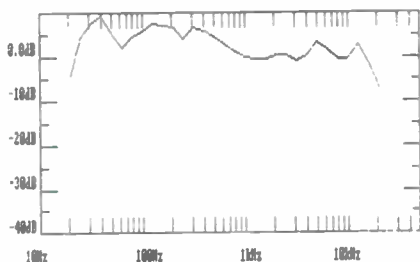


Fig. 5 Amazing Loudspeaker, spatially averaged, 1/3-octave, in-room response

cancellation effect of the finite baffle loading, the intrinsic response can be seen to be centered on the drive-unit's resonance (though this driver's appears to be a little higher than that suggested by the system impedance).

It is impossible to estimate from this near-field measurement what the speaker's true extension would be in-room. I therefore carried out a spatially averaged, 1/3-octave measurement using an Audio Control Industrial SA-3050A spectrum analyzer with its calibrated microphone.⁵ The bass can be seen from fig. 5 to be elevated by more than 6dB compared with the treble region, with extension really only down to 30Hz. Certainly in my room, the speaker sounded unmusically "slow," which correlates nicely with this measurement. The midrange, however, does feature an exceptionally smooth response trend, suggesting that DO was right on the money when he talked about "exquisite midrange textural smoothness

⁵ See Vol. 12 No. 10, October 1989, p. 166 for how this test is performed and why I feel it gives a good correlation with the subjectively perceived tonal balance of a loudspeaker. —JA

and sumptuous liquidity" in this region.

But oh, look at the treble. There again is the sibilance, as revealed by the MELISSA measurement. Even with totally different measurement hardware, this excess of energy in the 5kHz and 12.5kHz 1/3-octave bands was apparent on every axis; its audible effect was severe.

Finally, one of the beauties of MELISSA is that its post-processing options allow you to look for resonant behavior in a very effective manner. Fig. 6 shows the typical "waterfall" display produced as the system analyzes the decay of the impulse sound emitted by the speaker (shown in fig. 3) in discrete time slices. Interestingly, the very audible energy excesses around 5–6kHz and 11–13kHz, though presumably due to resonances—note the persistent small ridges in these regions parallel to the time axis—decay reasonably quickly. But note the very long ridges at 1600Hz (the cursor position) and at 1300Hz, which persist in the case of the 1600Hz resonance right out to the 6ms edge of the graph. Though there are only minor peaks in the amplitude response at these frequencies, these long decay times reveal them to be major resonances. Undoubtedly it was their presence that led Dick to feel that "an occasional squawk crept in around 1kHz."

Though these FFT-derived graphs are unreliable below 500Hz or so, due to the truncation of the time-domain data to remove room effects, note that fig. 6 does reveal the exaggerated nature of the lower mids, and hints that the bass energy just keeps on a-comin', as suggested by Dick's auditioning, presumably due to the highish-Q LF alignment.

—John Atkinson

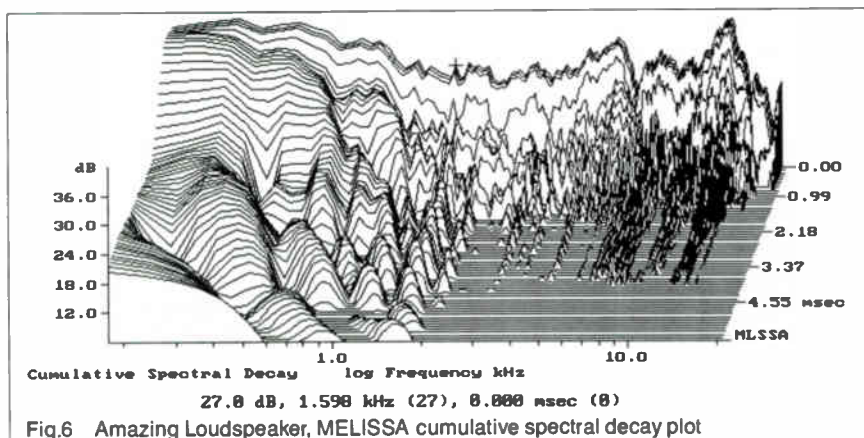


Fig. 6 Amazing Loudspeaker, MELISSA cumulative spectral decay plot

ACOUSTAT SPECTRA 11 LOUDSPEAKER

Thomas J. Norton

Three-way loudspeaker with 8" sealed-cabinet, dynamic woofer and electrostatic midrange/tweeter. Crossover frequencies: 250Hz and 2500Hz (see text). Frequency response: 45Hz–20kHz \pm 3dB. Minimum recommended power: 75W. Impedance: 8 ohms nominal, 3 ohms minimum. Sensitivity: not specified, but stated to be a minimum of 3dB more efficient than full-range Spectras. Dimensions: 72" H by 15" W by 14" D. Weight: unspecified, but estimated 60–70 lbs each. Price: \$999/pair. Approximate number of dealers: 125. Manufacturer: Acoustat, Rockford-Fosgate Corp., 613 South Rockford Drive, Tempe, AZ 85281. Tel: (602) 967-3565.

Draft! There's just no way to do it. To let you, the readers, know all about one of the better loudspeaker deals around, without letting Acoustat (and their dealers) in on the secret. JA is bound to spill the beans just by sending the traditional prepublication draft to the manufacturer. Then Acoustat will send dealers copies, and before you know it, Bingo! Instant pressure to increase the price. Let's see now, if JA just misplaces Acoustat's zip code, then we print the published review in two-week disappearing ink, and send out the dealers' copies about two weeks late. . .

Never work. If the Spectra 11 is any clue at all, the folks at Acoustat are clever enough to figure out some way to see the review. But maybe they're not so clever. I mean, couldn't they figure out that electrostatics are supposed to be fussy? And unreliable? And hard to drive? And most important of all, expensive? Whoever heard of a full-range loudspeaker with an electrostatic mid and top and dynamic woofer (below 250Hz) for under \$1000/pair? Downright indecent. Can't be any good.

Maybe if I start with the soporifics—you know, meet the manufacturer, here's how it works, this is why it works, etc., etc.—Acoustat and Co. will fall asleep and, Rip van Winkle-like, wake up after the damage is done. Good idea.

It occurred to me as I was unpacking the Spectra 11s, the most recent of the new generation of Acoustats, that this was to be the first panel loudspeaker I have reviewed for *Stereophile*. Plenty of six-sided boxes of all sizes and pretensions, from the Munchkinesque to Goliaths big enough to give the neighborhood burglar a hernia. There have been occasional exceptions—the ZSEs were boxless dynamics, and I did have a pair of Apogee Duetta Mk.11s in house for several months to use in conjunction with other reviews. But the reader might be justified in asking if TJN is a "true audi-

ophile." Aren't all "true audiophiles" heavily into (or at least lusting after) panel loudspeakers?

Sometimes it seems that way. Electrostatics, particularly the full-range variety, have been something of a touchstone among enthusiasts ever since KLH and Quad came out with their respective versions in the late '50s. While Quad certainly takes the prize for singular, uninterrupted dedication to the cause, other manufacturers have regularly and eagerly jumped into the fray, only to emerge a few years later, battered and bloodied, abandoning the idea. A good electrostatic loudspeaker or electrostatic hybrid (combining an electrostatic midrange-tweeter with a dynamic woofer¹) is easy to build on paper, difficult in practice, and hard to produce consistently. But that has never discouraged the enterprising, and new manufacturers have continually sprung up to replace those dropping out of the chase. Acoustat, while a brash young upstart by Quad's standards, has been around long enough to be something of a fixture in the electrostatic loudspeaker market.

Just in case you missed it in DO's review of the Spectra 22 (Vol.12 No.10, October 1989), Acoustat, which had been building electrostatics out of Florida since the mid '70s, is presently a division of Rockford-Fosgate operating from Tempe, Arizona. Somewhere in the interim Acoustat was bought out by Hafler, which was then absorbed by Rockford-Fosgate (the in-car, *not* the surround-sound people), which also continues to own Carboneau, a large Michigan-based loudspeaker driver manufacturer. Got that? The important point in all of this is that Acoustat's Jim Strickland is still chief engineer and the company now has ample resources at their disposal.

¹ That's the most common form of hybrid. Anybody else remember a unique Koss hybrid, the Model 2 of the late '70s, which combined an electrostatic woofer/midrange with a Philips soft-dome tweeter?!



Acoustat Spectra 11 loudspeaker

Panacea or Fool's Gold?

An electrostatic loudspeaker, at its most basic level, is nothing more than a large capacitor. One plate—lightweight, flexible, and allowed to move—is connected to a power supply which elevates it to a high DC potential (5kV in the case of the Spectra 11s). A high-value resistance between the power supply and this plate acts to maintain a constant charge on the latter as it moves in response to its electrostatic attraction to a variable charge on the other plate—the rigidly fixed stator. The charge on the latter comes from the audio signal. The moveable plate becomes the diaphragm; its electrostatically induced vibration creates soundwaves. The audio signal is almost invariably interfaced to the stator via a transformer which steps up the output voltage of a typical amplifier to the much higher voltage level required for the system to work.² A simple, single-ended design of this nature will work, but distortion (second harmonic in particular) will be fairly high. In practice, all modern designs of any high-end aspirations have two stators (which must now be acoustically transparent) driving opposite sides of the diaphragm in a push-pull arrangement.

Because the diaphragm of an electrostatic loudspeaker is driven over its entire area, it is less subject to nonlinearities and breakup than is the cone of a typical dynamic system. Its mass is low in comparison with the mass of the air it drives, in theory resulting in good transient response. The mass of this air load, combined with the low stored energy of the relatively "lossy" diaphragm, combine to damp diaphragm resonances. And since most electrostatics are allowed to operate as open dipoles, cabinet colorations are virtually nonexistent.³

But the electrostatic is not a magic feather; it has its own unique set of problems. The large radiating area needed to overcome dipole cancellation and provide good low-frequency

² It's possible, of course, to use a high-voltage, transformerless amplifier to drive the stator of an electrostatic loudspeaker directly. The very first Acoustat, the ca 1976 Acoustat X, did indeed have such an integral amplifier, a transistor-tube hybrid. But commercial considerations generally demand a more universal design. The integrated amplifier-loudspeaker (electrostatic or not) has never really caught on among audiophiles in general, although the powered loudspeaker does have a certain following in some countries, notably Germany.

³ In reality, the need to fit the elements into some sort of framework means that there may be residual colorations from vibrations of this structure. These can sometimes cause problems, especially in a full range electrostatic—or in any other type of panel loudspeaker.

extension can result in limited dispersion, especially in the high frequencies. And while the dipole radiation pattern has certain advantages (notably in its restricted radiation from the sides and top), its strong rear radiation can make placement tricky, especially in a small room. And there are those who argue, not without some justification, that the rear radiation rebounding off of the back wall results in time-smearing of the primary, frontal wave. Reliability can also be a problem with electrostatics, though more recent designs from Acoustat and others seem to have solved many of the more common failure modes—notably the shorting together, and resultant arcing, of stator and diaphragm when driven hard.⁴ Furthermore, the need to clamp the edge of the diaphragm somewhat negates (but not entirely) its theoretical lack of resonant breakup modes. Not only that, forces which help to damp resonant modes also conspire to inhibit motion in the first place; the air load on the diaphragm can make it difficult to obtain the extended high-frequency response and fast rise time usually expected of an electrostatic—a considerable amount of force is required to make the diaphragm react quickly against this air load.⁵ And lastly, an electrostatic can present an inefficient, reactive load, conspiring to make the choice of driving amplifier difficult.

Description

The Spectra 11 sidesteps some of the complications inherent in a full-range electrostatic by going the hybrid route. Below 250Hz the load is taken up by a dynamic woofer, in this case an 8" driver in a sealed cabinet. The woofer low-pass is 12dB/octave (electrical). High-pass on the electrostatic midrange/tweeter is at 6dB/octave electrical, though overall rolloff (adding in its natural low-frequency limiting) approximates 12dB/octave. Wall-socket mounted transformers,⁶ one for each loudspeaker, feed

low voltages into power supplies mounted atop each woofer enclosure. The Spectra 11s arrive in three cartons—one for each woofer and the third for the electrostatic arrays. The user (or dealer) must mount the arrays atop the woofers. It's a relatively simple job, but does require opening the power-supply case. I found the fit between woofer and panel to be very tight, but a smart rap with a hammer did the trick. (Considering our similar experience with the Spectra 22s, Acoustat may want to include a hammer with each pair of loudspeakers!) The assembly instructions were clear; the job took less than an hour, total, for both loudspeakers.

The internal construction of the electrostatic array is similar to that of the Spectra 22. The panels are configured as mirror-image pairs with the outer portions driven full-range, the remainder rolled off above 2kHz. Thus the high frequencies are reproduced only by a long, narrow array, maximizing high-frequency dispersion. The network which acts as the low-pass filter on the inner segment also slightly delays the signal to it, causing it to "electrically curve." Thus SPECTRA: Symmetric Pair Electrically Curved Transducer. The Spectra 22 differs from the 11 in that it is larger, and to accommodate its greater low-end extension (for the electrostatic element, that is), it is divided into three segments instead of the 11's two. The 11's power supply is essentially the same as the 22's—tightly regulated and factory-adjusted for consistency—except for the 22's pilot light.

I encountered only one minor difficulty with my early-production sample Spectra 11s: one of the power supplies arrived damaged. Its circuit board had pulled loose from its plastic-stud moorings. Acoustat quickly furnished a replacement. Mine was apparently not the only such failure in early versions. The design will be changed in early 1990 to eliminate this potential problem—Allen-head screws and spacers will replace the plastic studs holding the circuit board in place.⁷

⁶ Similar to the dozen or so already living in your kitchen drawers and used to recharge all your rechargeable screwdrivers and water pipes.

⁷ If you happen to own an early production sample which arrived in good condition, I recommend some reinforcement of the circuit board prior to any shipment or major move. A piece of foam or crumpled newspaper wedged between the board and the top of the woofer cabinet should do the trick. But remove it prior to use. And heed Acoustat's warnings about disconnecting the line cord and the audio-feed line prior to opening the transformer case, and discharging the panels. We're talking dangerous, even lethal voltages inside the power supply!

⁴ I'm not aware of any consistent failure problems from today's "big four" electrostatic manufacturers—Acoustat, Martin-Logan, Sound-Lab, and Quad. Certainly none to match those from earlier generations of electrostatics from other sources—which shall remain blissfully nameless (they're no longer in the electrostatic game). I strongly discourage the purchase of any used electrostatic loudspeaker from a manufacturer no longer in the business of building such systems, for that reason.

⁵ Do electrostatics operating under lower pressures at high altitudes (such as in Santa Fe) have a quicker rise time, but less damping of the delayed resonances, than those used nearer sea level? And can this affect the sound, making a given electrostatic loudspeaker faster, and perhaps subjectively brighter and/or more dynamic, than at lower elevations? An interesting hypothesis. In any event, my listening is done near sea level.

In its general layout—electrostatic panel atop a small woofer enclosure—the Spectra II is strongly reminiscent of the Martin-Logan Sequel. And its size is very nearly the same. But it would hardly be practical to configure such a system in any other fashion. Cosmetically, it's quite apparent where compromises were made to keep the price down. Only one finish is available: black grille with black woofer cabinet (the sides are a metallic black laminate which Acoustat calls "black matrix"). Particle-board edges are visible at the rear of the woofer cabinet; Acoustat's ads claim that this is medium-density fiberboard, but the review pair appear to be built of particle board. A knuckle-rap test on the back and sides of the enclosure indicates some resonance and a possible lack of heavy internal bracing. The overall fit and finish are more than acceptable for the penurious audiophile, the size manageable, and certainly the resources have been concentrated where they belong—on the sound. But the look is decidedly Spartan, the WAF (Wife Acceptance Factor) dismal at best; the availability of a lighter finish would help considerably. Good-quality banana jacks are fitted (one set only, bi-wiring is not provided for), but their shanks were too thick to accept the spade lugs from Monster M-1 and AudioQuest Green Hyperlitz speaker cables. I had to first attach the lugs to Monster Terminator banana plugs—an added interface I would prefer to avoid.

Acoustat recommends that the Spectras be broken in before serious use. Accordingly, I connected them up to the video system in my den/video room for several weeks while I became acquainted with my new primary listening room, using B&W 801 Matrix Series 2s. When I felt I had a reasonable handle on the new environment (which seems superior to the old, all things considered), the B&Ws were moved aside and the Spectra IIs took their place. Initially I set them up about 4½' out from the long wall, 8-9' apart, and toed in toward a listening position located 9½' from the plane of the loudspeakers. While this eventually proved to be a near-optimum location, I did experiment with other positions. Eliminating the toe-in and facing the Spectras directly forward caused the stereo image to lose focus and the highs to recede—something they did not need. A loss of focus was also experienced when moving the speakers closer to the rear wall. Placing them across the short dimension

and about a third of the way down the room reduced the immediacy of the sound and decidedly thinned out the low end. I ended up with the original placement, aided only by the addition of Tiptoes, which made a small improvement in the already very fine image focus.

Associated equipment used for the review included the SOTA Cosmos turntable, SME V pickup arm, Krell KC-100 cartridge, CAL Aria CD player, Klyne SK-5A preamp, Forté 1a, Classé DR-9, and Levinson No.23 power amps, Monster M-1000 interconnects, and Monster M-1 and AudioQuest Green Hyperlitz speaker cables. Approximately 75% of the program material used was analog LP, the remainder CD.

The sound

Check out the fellow in the corner—the one with the Acoustat T-shirt. And the gentleman over by the door with the Spectra tie tack. Sound asleep, both of them? And the ladies in the next room? Good. Because the secret is about to come out. . .

The Spectra II is one of the most unfailingly "musical" loudspeakers I have had in my listening room. I have never been particularly comfortable with the adjectives "musical" and "analytic" as applied to audio equipment. But it's difficult to avoid the "musical" designation when trying to describe the Spectra IIs' sound. My first impression was something like, "Gee, that sounds nice—not spectacular or even particularly goose-bumpy, but sweet." Detailed, but not obviously so. Open and unforced through most of its range—especially in the all-important midrange. Bass just slightly warm, but reasonably deep and defined. Imaging very good, depth a bit less so, but still very competent. And they are coherent; even the blend of the dynamic woofer and electrostatic mid/top is handled well. It didn't take much listening to conclude that this new Acoustat is rather special. Not perfect, as we shall see, but a loudspeaker with "entry-level high end" written all over it. A loudspeaker for people who hate loudspeakers.

It's probably easiest to start with the Spectras' main shortcomings: a subjective lack of top-octave extension and limited dynamics. With regard to the latter, we're not talking sheer volume level here. The Acoustats are unlikely to satisfy heavy-metal freaks but will certainly play loud enough to fulfill any reasonable expectations for a moderately priced, high-

resolution loudspeaker with high-end aspirations. What they lack is the sense of visceral excitement that comes from finely rendered dynamic contrasts. They simply sound rather tame. They can also become a bit pinched and congested as the volume becomes louder and the scoring more complex. The excerpt from *The Right Stuff* from *Star Tracks II* (Telarc CD-80146) has knocked off my shoes and rolled down my socks on more than one occasion—with speakers as diverse as the IRS Betas and the Epos ES-14s. It didn't sound bad through the Acoustats, it just failed to raise any goosebumps. The same can be said of "Olympic Fanfare" from *Center Stage* (Wilson Audio Specialties W-8824). That elusive but vital (to this listener, at least) "jump factor" was missing.

The Spectra 11s also sound rather closed-in and soft, with a noticeable shortage of upper-octave air and spaciousness. This should not be taken to mean that they sound dull or lack high-frequency detail. On the contrary, definition and resolution are particular strengths of the Spectras—as I will elaborate on shortly. Rather, the feeling of an unrestricted top end and the sensation of a fully developed sound-space surrounding the performers are just not there in sufficient measure. On *Antiphone Blues* (Proprius PRCD 7744), a recording with a huge, spacious acoustic, the church ambience, while still quite evident, was clearly reduced in comparison with loudspeakers having a more open top octave. And the metallic edge of Arne Domnerus's saxophone had less bite than it should—though it was clearly more pleasant than through loudspeakers which overdo this quality. (After this review was written, rumblings from Santa Fe, where a second pair awaited measurements, indicated that listening on a higher than normal axis somewhat improves the subjective high-end extension. Frankly, I had found the vertical dispersion of the Spectra 11s to be somewhat better than similar, slightly shorter "line" sources. But a subsequent check did indicate a *very subtle* EHF enhancement about a foot above my accustomed listening height. Not enough, however, to make me consider revising my observations.)

But it's at about this point that my review notes run out of negatives on the Spectras. Once you get beyond the somewhat pallid dynamics and limitations at the frequency extremes, especially at the top, the 11s become

strikingly good loudspeakers. No, the very deepest bass is not there; the lowest pedals of the pipe organ won't ruffle your trouser legs, the impact of the bass drum is softened, and the bass range, in general, is less than ideally taut and punchy. But you won't confuse the low-frequency response of the Spectra 11s with that of any bookshelf mini-monitor. Given the proper setup, the low-end performance is capable of riveting your attention. Dorian's striking organ recording of the Mussorgsky *Pictures at an Exhibition* (DOR 90117) came across with a solid LF foundation—the lowest-octave loss notwithstanding. And if the low-frequency response of *Rhythm Devils Play River Music* (Wilson Audio Specialties W8521) didn't exactly cause the neighbors to suspect an earthquake in progress, it came closer than you might expect—especially when driven by the Levinson 23. I encountered no woofer overloading at anything approaching a reasonable listening level, something that can't be said for the minimonitors which make up much of the Spectra's competition.

But no audiophile buys a dynamic/electrostatic hybrid for the bass response. He or she is usually delighted if the bass extension, detailing, and integration are well-handled and do not detract from the expected clarity of the upper range. The Spectra 11's low end more than meets those criteria. The real strength of the new Acoustat lies in its ability to render superb resolution, from the lower midrange to the mid-treble, while it hardly seems to be trying. It is detailed without being pushy, three-dimensional without making you immediately aware of its ability to render depth, subtle yet clear. If that sounds like music, then that's what the Spectras (with the exceptions already noted) sound like. Midrange is convincing. Human voice, in particular, has that palpable presence combined with natural, unobtrusive sibilance. Instrumental timbres seem right.

While the Spectras may not be the last word in openness in the top octave, their overall HF response is superb. There is no sense of hardness or over-etching; the combination of subtlety and detailing is as good as you're likely to find. I nearly lost track of the number of Opus 3 recordings I sampled, reconfirming my appreciation of the variety and gradations of HF detail captured on this label. Just how many different kinds of guitars *bare* they recorded? Through the Spectras, I had no trouble telling

them apart. And you want to hear the subtleties of shading that a good percussionist can create? You'll hear it here. About the only criticism I can offer is that the 11s almost never became snarly or bright, even when it seemed to be called for by the music or recording. And recordings which tend to have, on other high-resolution loudspeakers, an electronic edge, had that edge softened. A result, I feel, of the upper-end and dynamic limitations of the Acoustats. But if a loudspeaker must deviate from the ideal—and every loudspeaker does—far better that it should err in this direction.

If precision of imaging has been the Achilles heel of many panel loudspeakers, the Spectra 11 is an exception. One of my favorite soundstaging tests is the last cut on side two of *Dafos* (Reference Recordings RR-12)—I like to call it "The Natives are Restless" cut. The first few minutes, however, are very subdued, with quiet voices, gently struck percussion, and bird calls of unknown origin positioned throughout the soundstage. The Spectras enabled me to precisely locate the individual sounds—both laterally and front-to-back. And the image held up to reasonable head movements. The soundstage stayed where it belonged. Furthermore, while earlier Acoustats, especially the lower-priced versions, had sometimes given me the uncomfortable sensation of listening through a giant set of headphones, the Spectra 11s did not. Not that they were incapable of surprising effects. On the aforementioned *River Music* album, the image on cut 1 extended from slightly below and beyond the outside edges of the left and right loudspeakers at their outer limits to, in the center, about a foot in front of, slightly above, and a shade to the right of my nose!

I wasn't initially convinced that the Spectras were as effective in presenting depth as they were in rendering lateral position. When the cues were extremely subtle, and intertwined with the same cues which provide air and space, the depth was less fully realized. But on recordings with strong depth cues, the third dimension was very definitely there. If you don't hear striking depth from the Acoustats on the quiet bands ("Sub Level 3" and "Atmosphere Station" of the *Aliens* soundtrack CD, Varese Sarabande VCD47263), there's something wrong in your system—and it isn't the Spectra 11s. I also heard excellent resolution of fine details on these selections, details of which

I was previously unaware. And while I'm on the subject of resolution, the "chime" on the Hildegard of Bingen cut from the *Hi-Fi News & Record Review Test Disc 1* was plainly audible through the Spectras. (Thanks to JA for pointing this test out in his review of the Rogers LS7t in the December '89 issue.)

The Acoustats, unlike many electrostatics, did not appear to be particularly fussy with respect to amplification. I was, unfortunately, unable to try them with a good tube amplifier, but they worked well with all three solid-state amps used during the evaluation. The 50Wpc Forté 1a is a bit below Acoustat's minimum recommended power of 75W, but it did an excellent job with smaller-scale music. The Classé, however, despite its only slightly higher 70W rating, had a considerably more robust low end through the Acoustats. Its more up-front HF also better suited the Spectras. And while I don't expect to see too many readers mating these loudspeakers to amplifiers in the Levinson's price range, a good amp of 100Wpc or more would not be wasted on them. The Spectras are moderately power-hungry; my informal measurements showed them to be 4dB less efficient than the B&W 801s.⁸

How does the Spectra 11 compare with its likely competition? Neither the Snell Q nor the Epos ES-14 has as extended a low end. The Snells have a distinctly more spacious sound; the Eposes are clearly more dynamic and punchy. Neither is quite as natural and subtle as the Acoustat. The Snells, with stands, are competitive in price. The Eposes, with stands, will run you considerably more. (I view the escalating price of the Epos with some alarm. If I didn't think so highly of this loudspeaker, I wouldn't care.) The Vandersteen 2Ci is strong competition, though notably more expensive with the required stands; nor have I heard them in my own listening room, although I've heard them elsewhere on many occasions.⁹

Conclusions

The weak points of the Spectra 11s just might make them a less than spectacular experience

⁸ If your room/listening tastes/preferred listening level let you get away with a bit less power, however, don't let any of this dissuade you from trying the Forté 1a. It's every bit as good as DO and GL say it is.

⁹ A pair of Steens is on the way from Santa Fe as I write this; I'll relay my impressions of the Spectras as soon as possible—might even make the same issue as this review, but I can't promise.

in a dealer's showroom. But they do so many things so well, and at such a fair price, that they quickly won me over. They belong on your list of speakers that must be auditioned—even if you contemplate something far more expensive. They're a solid Class C choice, and will even give some Class B loudspeakers a difficult time of it. I suspect that more than one high-end dealer will be tempted to keep the Spectra IIs out of earshot of their more upscale models with higher profit margins.

LA, in the October 1989 "As We See It," made a case for "buying cheap" when it comes to loudspeakers, and mentioned a few prime candidates. You can add the Spectra II to that list. Somewhere near the top.

With any luck at all, Acoustat didn't bear a word of this. I did bear one of them (the guy with the Rockford lapel pin, I believe) mumbling something between snores about a Spectra II+ being readied for a post-Winter CES launch—with more up-scale cosmetics, a slightly more refined woofer with a thicker, more rigid cabinet, a high-frequency level control, and bi-amp/bi-wire capability. And a price several hundred dollars higher. But it'll be an additional model, not a replacement for the II. Now if we can just wake up the folks from the Acoustat factory without disturbing the marketing folks, there just might be enough Spectra IIs to go around.

Measurements

Fig.1 shows the spatially averaged response of the Spectra IIs in my listening room. The overall balance can be seen to be rolled-off in the highs, with an excess of 4–5dB in the exact region covered by the woofer (35–300Hz). The apparently depressed HF, however, owes more to the limited dispersion of the Spectra II's electrostatic panel in its top two octaves in both

lateral and vertical planes. The on-axis response measures and sounds both flat and smooth to about 14kHz, with the exception of a degree of boost between 2kHz and 2.5kHz, though there is still a lack of top-octave air. In a footnote to Sam Tellig's discussion of the Spectra II in last month's "Anarchist" column, I conjectured that the elevated woofer level will be most likely due to the fact that the woofer radiation is effectively omnidirectional while the electrostatic panel has a bipolar, figure-eight dispersion pattern. This disparity will therefore be less pronounced in larger rooms.

I measured the anechoic response of the II using *Stereophile's* new MELISSA system. The impulse response (taken with a 30kHz measurement bandwidth) on my normal 36"-high listening axis is shown in fig.2 while the equivalent anechoic response is shown on the right-hand side of fig.3: the overall trend above 1kHz is flat, though a lack of energy between 1 and 2kHz and a slight excess between 2 and 3kHz can be seen. The treble rolls off above 14kHz and is marred by numerous small peaks and dips, which are due either to innocuous interference or to subjectively more problematic resonances. The left-hand side of fig.3 shows the response of the woofer alone, measured in the nearfield. LF extension is good, the half-power point lying at 35Hz, below the lowest notes of the (four-string) double and electric basses.

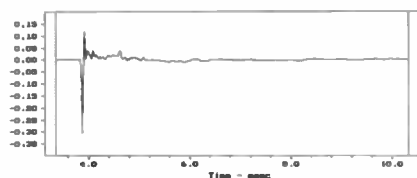


Fig.2 Spectra II, impulse response on listening axis

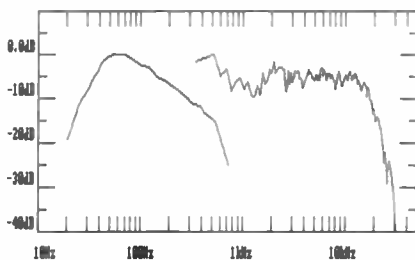


Fig.3 Spectra II, nearfield LF response and MELISSA-derived anechoic response on listening axis at 48"

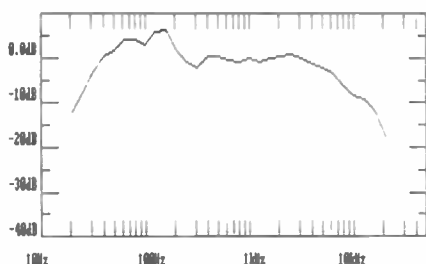


Fig.1 Spectra II, spatially averaged, 1/3 octave, in-room response

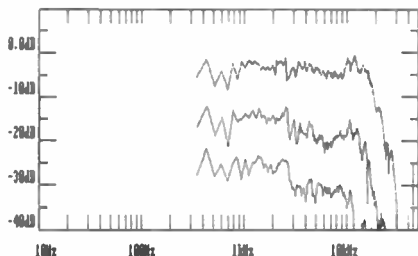


Fig.4 Spectra II, anechoic response on midpanel axis (top trace), 15° laterally off-axis (middle), 30° laterally off-axis (bottom)

Using MELISSA, I also explored the off-axis responses. The top curve in fig.4 shows the response on my preferred axis, which was very high; 48" from the ground is *above* the head of a listener sitting in a normal chair. Comparing this curve with fig.3 shows that the lower treble is smoother on this axis, though the 10–12kHz region is now a little exaggerated in level, which might add subjective "air" to the sound on this axis. The lower two curves show the Spectra II's response at the same height respectively 15° and 30° off-axis to the side. The speaker's output above the slight peak at 2.5kHz or so can be seen to increasingly shelve down as the listener moves to the side of the speaker, while the extreme highs are affected by what can only be interference effects. Though smooth, this limited dispersion implies that these speakers should either be listened to from at least 15' away (preferably in a live, underdamped room) if the sound is not to be too mellow; in a smaller room, Tiptoes should be used to tilt the speaker to aim the center of

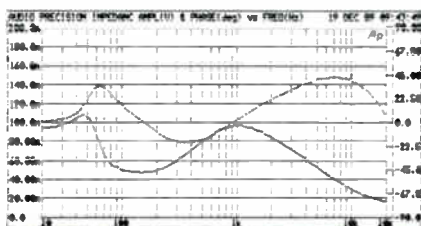


Fig.6 Spectra II, impedance magnitude and phase (2 ohms/div)

the panel at the listener's ears, in my opinion.

The post-processing power of MELISSA allows you to explore for the presence of delayed resonances. The classic three-dimensional "waterfall" display in fig.5, plotted from 200Hz to 30kHz, shows how the anechoic frequency response of the Spectra II on the "high" axis changes as the exciting impulse decays; resonances show up as ridges parallel to the time axis. (Note, however, that the frequency resolution below 500Hz is insufficient to reveal lower-midrange problems, due to the need to window the time-domain data to eliminate the effect of room reflections from the measurement.) The slight excess of energy noted in the in-room response can be seen to correlate with two strong resonant modes, at 2131 and 2575Hz. In my room, these were audible as added "bite" in the lower treble; I actually had to play around with both lateral and vertical listening axes to minimize their subjective effect (though I could never entirely eliminate it). The top octave, though decaying rapidly in level (revealing the fast nature of the electrostatic driver), also features some mildly resonant behavior, though the strongest mode, at

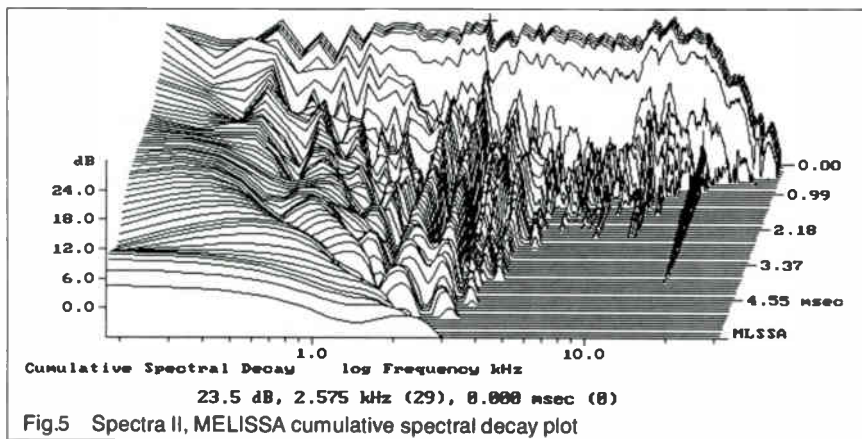


Fig.5 Spectra II, MELISSA cumulative spectral decay plot
23.5 dB, 2.575 kHz (29), 0.000 msec (0)

16.6kHz, will be unlikely to annoy anyone except small children and dogs. The lower two, at approximately 10,450 and 12,350Hz, are less important, though they are most prominent—and audible—on this higher axis.

Finally, the Spectra 11's impedance (fig.6) was measured to assess how difficult a load it would

present to an amplifier. The 11 ohm peak at +51Hz reveals the infinite-baffle woofer tuning, while the impedance drops to 5 ohms between 80 and 300Hz. Though it drops to 2 ohms above 10kHz, the Spectra 11 will be hardly likely to present inexpensive solid-state amplifiers with any problems. —**John Atkinson**

THE PROCEED CD PLAYER

Robert Harley



Proceed CD player

CD player with 8x-oversampling digital filtering, dual 18-bit DACs. Specifications: Frequency response: 10Hz–20kHz +0dB, –0.2dB. THD: 0.004% at 1kHz, 0dB. S/N Ratio: 105dB (unweighted). Channel separation: 120dB. Intermodulation distortion (SMPT E IMD): 0.006%. Dynamic range: 98dB or greater. Maximum output: 4.25V (balanced), 2.115V (unbalanced). Output impedance: < 1 ohm. Power consumption: 25W at 120V, 60Hz. Shipping weight: 27 lbs (12.24kg). Dimensions: 8.9" (227mm) W by 8.4" (214mm) D by 13.25" (337mm) H. Price: \$1650. Approximate number of dealers: 50. Manufacturer: Madrigal Audio Laboratories, 2081 S. Main Street, P.O. Box 781, Middletown, CT 06457. Tel: (203) 346-0896.

The Proceed CD player is the first digital product from Madrigal Audio Laboratories, a company known for their Mark Levinson preamplifiers and power amplifiers, including the very highly regarded 20.5 power amplifiers. Given Madrigal's track record of producing ultra-high-end (and expensive) components, I was surprised and encouraged that the Proceed CD player is so affordably priced.

The Proceed was a long time in development, reflecting Madrigal's care and thoroughness before releasing a new product. Many technical innovations have been incorporated into the Proceed, and the machine's unusual

appearance exemplifies the "start from scratch" attitude behind its development. With its nearly square proportions, grey cabinet, and sparse front-panel controls, the Proceed may set a new trend in audio component styling.

Technical description

The Proceed's design philosophy reflects the more recent trends in digital audio thinking. One of these ideas, which challenges conventional wisdom, places a high priority on the transport mechanism's sonic characteristics. Although it can be proved that virtually all CD transports produce an identical bit stream (at

least the same ones and zeros), there is mounting evidence that CD mechanisms do make a sonic contribution to the decoded signal.¹

Madrigal chose the high-quality Philips CDMI Mk.II metal transport for the Proceed. In addition, the Philips decoder electronics used with the CDMI Mk.II have been modified to produce a cleaner "eye pattern." According to Madrigal, slight temperature changes affect the "eye pattern." The eye pattern, so called because the RF (Radio Frequency) signal produces a fuzzy waveform with a clear "eye" in its center when displayed on an oscilloscope, is the signal produced at the photodetector when struck by laser light reflected from a spinning disc. This raw signal contains all the information on a CD, and is subsequently decoded to retrieve the audio and subcode data. A high-quality RF signal is vital to error-free data retrieval. However, it is greatly affected by the pit shape created when the CD master glass is cut, and varies between CD plants.²

The Proceed has an extensive power-supply system. According to Madrigal, the transport affects sonic performance through interaction with the power supplies. Without adequate care given to power-supply design, transport servos (focus, tracking, rotational) can affect the DC supply to analog audio circuitry. Madrigal has given the Proceed two master power supplies and 11 distributed supplies to ensure isolation between sections. These separate power supplies are individually regulated, an improvement over capacitive decoupling or filtering. Most of these regulators are three-pin TO-220 types. Four of these supplies provide DC to the analog section (one for each rail of each channel), four supply the DACs (again, one for each rail of each DAC), and there is one each for the transport logic, decoder, display, and digital filter. The regulators are scattered about the Proceed's circuit boards, in close proximity to the circuits they supply. In addition, the single power transformer has separate taps for digital and analog circuitry. Attention was paid to grounding, including large circuit-board traces to provide noise a free path to

ground. The analog and digital sections each have their own ground plane.

This power-supply system is elaborate and impressive, especially in such a reasonably priced product. The digital decoding section features the ubiquitous Philips SAA7210 decoder chip and SAA7220 4x-oversampling digital filter. The latter chip is only partly used, however, to implement the error correction. The corrected digital signal is fed to an 8x-oversampling digital filter chip (the same, apparently, as that used in the ultra-expensive Accuphase player). Usually, the Philips TDA1541 dual DAC is part of this chip set. However, Madrigal has chosen the Burr-Brown PCM58P DACs for the Proceed. I have noticed a tendency toward Burr-Brown DACs and away from the TDA1541 in the more sonically ambitious digital decoders. The PCM58P is an 18-bit unit with fast-settling, glitch-free current output and a Schmitt-trigger input. A Schmitt trigger reshapes the incoming signal into a near-perfect squarewave, providing the DAC with a clearer transition from one to zero at the signal's rising edge. After burn-in and just before shipping, each DAC's performance is optimized by adjusting an external MSB trimmer.

The analog audio section (electrostatically shielded from the rest of the digital circuitry) uses, according to Madrigal, "devices from a new generation of high-performance integrated circuits." These op-amps are said to maintain the advantages of discrete circuitry with external compensation using precision capacitors and resistors. Inside the Proceed, I saw 8-pin ICs that looked like op-amps, but could not distinguish their type: they were not marked. The Proceed's deemphasis circuitry is passive, and switched in the circuit by FETs.

Fully balanced outputs on XLR connectors, and unbalanced outputs on RCA jacks, are provided. In addition, a third RCA jack supplies a digital output to an external digital processor or DAI recorder. Output impedance is a very low 1 ohm.

Removing the Proceed's heavy metal cover revealed a unique and impressive layout. The Proceed's unusual shape allows optimum positioning of the circuitry, both for thermal considerations and for keeping analog and digital circuitry discrete. In addition, the circuit boards are mounted at right angles to each other, minimizing interaction between them. The transport and transformer are mounted on the

¹ I do, however, disagree with Madrigal's assertion that better transports create fewer interpolations, thus improving the sound. Interpolations are rare events on most discs. In addition, since they occur periodically, not continuously, they would not affect the overall sound.

² Watch for an article next month on CD quality. Including a survey of discs made at various factories around the world. Error rate graphs, RF-signal photographs, and tips on how to detect poor-quality CDs will be included.

bottom for stability. The audio board is mounted on the chassis's rear panel so the output jacks can be connected directly to the board. Parts quality appeared very high, including double-sided glass-epoxy circuit boards. I was particularly impressed with the Proceed's construction quality and level of thought put into its design and layout. It clearly represents some original thinking in CD-player design. The innovation and build quality would be impressive in a product twice the Proceed's price.

In addition to rethinking the inside of a CD player, Madrigal has also radically revamped the outside, both in appearance and functionality. The unusual shape and grey color set the Proceed apart from other CD players. The machine also eschews the trend to loading CD players with elaborate features, most of which are never used. Instead, the front panel is very plain. Just above the drawer are Stop, Play, Pause, Previous, and Next pushbuttons. The only other controls, on the right side of the panel, are marked Drawer (open/close), Next/Previous (index), Scan (forward/backward), Program, and Repeat. The machine is very straightforward and easy to use. In addition, the rubberized control buttons have a unique and comfortable feel. In general, I found the sparse and direct front-panel controls a welcome change from the clutter of many other machines. During the month I lived with the Proceed, I never felt short-changed on features. (The remote control is the identical Philips unit to that supplied with CAL, Kinergetics, and Meridian players.)

Sound

The playback system used to evaluate the Proceed included an Audio Research SP-14 preamplifier, VTL 225W monoblock power amplifiers, and Martin-Logan Sequel II loudspeakers. Speaker cable was AudioQuest Hyperlitz Clear, and interconnects were Magnan Type V (CD player to preamp) and Expressive Technologies (preamp to power amps). All components were plugged in to a Tice Powerblock/Titan combination. My dedicated listening room has optimum dimensional ratios and is treated with Phantom Acoustics Shadows, an active low-frequency control system. For reference, I compared the Proceed with a Marantz CD-94 (to which I have listened extensively), the Kinergetics KCD-40 favorably reviewed by JA last month, and California Audio Labs' Tempest

Special Edition. Source material included CDs I had engineered or those recorded when I was present during the recording session.

Over the past few months, I had grown familiar with the Marantz CD-94. Although it has several weaknesses (ill-defined bass and lack of dynamics), it is relatively free from the "digital glare" so common among other CD players and digital decoders. After a long listening session with the Marantz, I connected the Proceed, which had been warming up for several days.

Starting with my own jazz recording, the Proceed immediately demonstrated its superiority. The most striking difference was the tightness, depth, and articulation of bass. The Proceed presented a very solid, punchy LF foundation that brought a renewed rhythmic drive to the music. Bass had a depth and dynamic impact I had not heard from CD playback through the Sequel IIs before. Well-recorded drums jumped from the soundstage with percussive attack. These characteristics greatly increased listening pleasure. Listening to Reference Recordings' *Dick Hyman Plays Fats Waller*, a solo piano performance recorded direct to CD (read all about it in last month's feature article), revealed the weight and authority the Proceed is capable of presenting. The piano has a rich, full low end that was particularly satisfying, even with the Sequel IIs' midbass suckout at the crossover point.

The Proceed's overall tonal balance was very natural and musical, but with a slight upper-octave upward tilt. Treble presentation, though forward, was clean and devoid of hash or spittiness. This presentation added a certain excitement to music compared with the Marantz CD-94 and the Kinergetics KCD-40. On most recordings, however, I preferred the smoother top end of the Kinergetics. The upper octaves were somewhat detailed and analytical, but not thrust upon the listener as with many players. Overall, the slight tendency toward brightness and forward treble was minor, and did not detract from musical enjoyment. Extended sessions did not create a sense of fatigue or the desire to turn down the volume.

The midrange had a more laid-back character, giving the impression of sitting farther away from the musicians. After listening with my eyes closed for an extended period, I was taken aback when I opened them and discovered the speakers only 10' in front of me! This characteristic was particularly enjoyable: it created

the feeling of transportation into the music, making it easy to forget the intervening playback system. The midrange also had a liquid texture, free from glare and graininess. Concurrently, the soundstage seemed to be presented behind the speakers, with a sense of air and space around the entire soundstage. However, the Proceed somewhat lacked the three-dimensionality experienced with the KCD-40, California Audio Labs Tempest SE, Theta DSPre, and Wadia 2000 (\$2000, \$4000, \$4000, and \$7800 respectively). Instruments toward the rear of the soundstage did not seem as separate from instruments in the front. However, the Proceed's soundstage easily beat the Marantz for depth and spatial resolution. It may be unfair to compare the \$1650 Proceed with the more expensive Tempest, Theta, and Wadia; such comparisons, however, speak highly of the Proceed, considering its much lower price. Overall, I found the laid-back spatial perspective very inviting and musically involving.

Next to the Marantz CD-94 (which has been consistently recommended in Class B of *Stereophile's* "Recommended Components" listing), the Proceed excelled in every area. Bass depth and control, dynamics, soundstaging, and liquidity were all superior through the Proceed. Toward the end of the listening sessions, I compared the Proceed with the Kinergetics KCD-40, favorably reviewed by JA last month. The KCD-40 was more in the Proceed's league. In fact, the two machines sounded remarkably similar. The main difference was the Kinergetics' softer, less detailed top end and more laid-back treble presentation. The Kinergetics also had a greater sense of soundstage depth. The KCD-40's bass control and impact, though excellent, did not match the Proceed's. The ability to resolve low-level detail was slightly better through the Proceed. All things considered, I could live with both machines.

Incidentally, all auditioning took place with the Proceed fully warmed up. On one occasion, however, I tried to listen to it after it had been turned off for a few days. The difference was staggering. Until the Proceed reaches optimum temperature, it sounds shrill and harsh. All components need warmup, but the Proceed's sonic change with temperature was the most radical I have encountered. I therefore strongly recommend that the Proceed be auditioned only after it has been turned on for several days.

During the CD-player evaluations, I had been using Reference Recordings' new CD, *Tropic Affair* by Jim Brock, recorded live by Keith Johnson. Out of curiosity, I played the LP of the same recording on a VPI HW-19 Jr. fitted with an AudioQuest PT-5 tonearm and Sumiko Virtuoso Boron vdH cartridge. This front end, though excellent, is far from the ultimate in LP replay.

Nevertheless, the difference was astounding. None of the CD players even came close to the LP sound. The LP was the clear winner in soundstage width and depth, natural timbres, and dynamic impact. This comparison was later repeated at JA's house, pitting his Linn/Ittok/Troika combination against the formidable Wadia Digital 2000 Decoding Computer. Everyone in the room felt that LPs offered superior playback over CD, but none was prepared for the magnitude of the difference we heard.

Measurements

The Proceed showed no surprises on the bench. Frequency response was extremely flat, with a very slight rolloff (0.1dB right, 0.2dB left) at 20kHz, though there was a minor deemphasis error of +0.2dB at 16kHz. Spectral analysis of a -90dB, dithered 1kHz signal, shown in fig.1, revealed a low level of HF spurious, though some linearity error can be seen by the -90dB recorded signal rising above the -90dB horizontal division. Somewhat surprisingly, this implied positive level error was not apparent on a plot of departure from linearity (fig.2). Checking with a 1/3-octave spectrum analyzer suggested that it is fig.2 that is correct. not fig.1, with a -2dB error apparent between -70 and -90dB.

The "fade to noise with dither" track on the CBS test disc resulted in a fairly straight line (fig.3), indicating good differential linearity. It

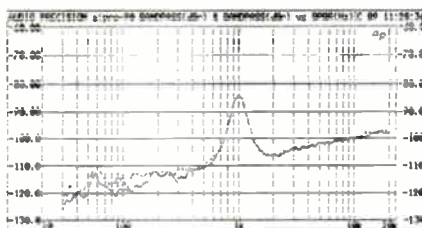


Fig.1 Proceed, dithered 1kHz tone at -90.31dB, with spurious and distortion, RH channel dotted

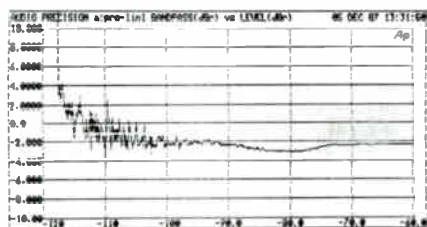


Fig.2 Proceed, left-channel linearity

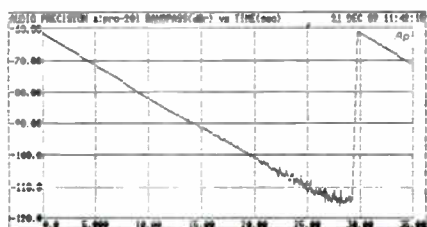


Fig.3 Proceed, left-channel fade to noise with dither

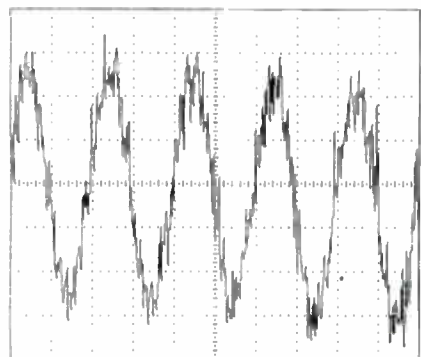


Fig.4 Proceed, 1kHz undithered tone at -80.77dB (5ms window)

also sounded exceptionally pure as it decayed, with no harmonics audible, just rather hashy-sounding noise. In addition, linearity was nearly perfectly matched between channels. Looking at the low-level waveforms with a storage 'scope indicated that audio-band noise was a little higher than with some other machines, though the absolute noise floor was still below -90dB. Fig.4 shows the -80.77dB undithered 1kHz tone from the CBS test CD: what should be a stepped waveform with seven distinct levels is obscured by the noise present. Similarly with the undithered -90.31dB tone shown in fig.5. This waveform consists of just three levels, +1, -1, and digital zero, but this can be seen to be overlaid with around half of an LSB's worth of noise. The same is true of the mono-

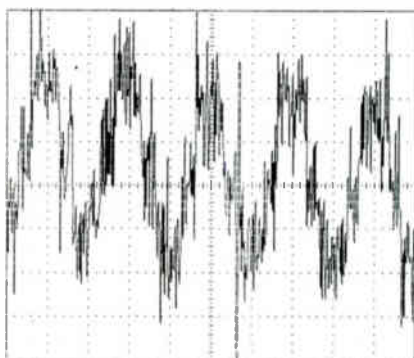


Fig.5 Proceed, 1kHz undithered tone at -90.31dB (5ms window)

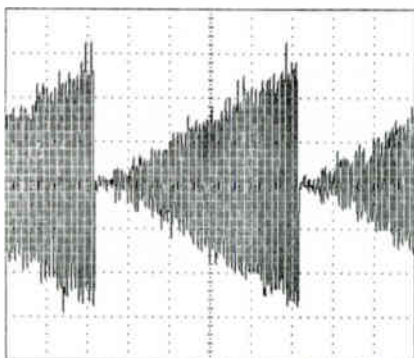


Fig.6 Proceed, monotonicity waveform (100ms window)

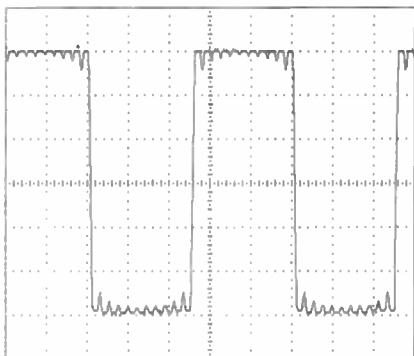


Fig.7 Proceed, 1kHz, 0dB squarewave (2ms window)

tonicity trace (fig.6), which should feature 10 distinct "steps" in the waveform, but is somewhat obscured by noise. The straight slopes, however, suggest good differential linearity.

The high-level performance of the Proceed's digital filter is revealed by fig.7, which shows

how the player reproduces a 0dB, 1kHz square-wave. The flat tops to the waveform suggest that the digital filter actually clips with this signal, while a slight asymmetry is also apparent, the negative "tops" appearing to have a slight HF roll-off compared with the positive "tops." This is a severe test signal, however, and one that is hardly likely to be met in real-life music. Nevertheless, the Proceed might be expected to sound a little hard with extremely hot CDs, such as the Bainbridge Stephen Kates Rachmaninoff recording.

The Proceed's error-correction capability was tested with the second disc of the Pierre Verany set (PV.788032). It proved to have some problems with the larger dropouts, anything over a 1.5mm gap in the data leading to repeated blips in the sound. Finally, its maximum output is 0.5dB higher than the standard 2V, which will be audible on an A/B comparison. Take care when auditioning to match levels carefully.

Conclusion

The Proceed represents a considerable advancement in mid-priced CD player design. While it does not stretch the bounds of the state of the art in digital playback, it nevertheless provides a musically satisfying experience at a moderate

price. I can give it a Class B recommendation. It clearly bests some of the older Class B competition (the Marantz CD-94, for example), and rivals the more expensive units.

On the positive side, the Proceed scored very high in dynamics and punch. It has the ability to convey the rhythmic drive and intensity of music, resulting in an exciting rendering. Midrange textures were round and liquid, and the slightly distant perspective was musically inviting. On the downside, the slightly uptilted treble balance may not suit everyone's tastes or system. In addition, the soundstage lacks the depth and spatial resolution heard from other, albeit more expensive, players such as the California Audio Labs Tempest or the Kinergetics KCD-40.

Construction quality and build cannot be faulted. One look at the inside reveals the integrity of both design and execution. The Philips CDMI Mk.II transport, for example, is of higher quality than that found in other machines in this price range, including the Kinergetics KCD-40.

Overall, the Proceed CD player is a worthy start to Madrigal's new Proceed line. Its few faults are minor, considering its overall musicality and reasonable price. **S**

THREE LOUDSPEAKER SYSTEMS

John Atkinson reviews the Acoustic Energy AE2, RSL Speedscreen II, and TDL Studio 1

Acoustic Energy AE2: two-way, reflex-loaded, stand-mounted loudspeaker. Drive-units: 1" (25mm) metal-dome tweeter, two 4.5" (110mm) metal-cone woofers. Crossover frequency: 3kHz. Crossover slopes: 4th-order, 24dB/octave. Frequency response: 65Hz–18kHz \pm 2.5dB, 50Hz–22kHz \pm 4dB. Sensitivity: 91dB/W/m (2.83V). Nominal impedance: 8 ohms (5.5 ohms minimum at 50Hz and 250Hz, 16 ohms maximum at 27Hz). Amplifier requirements: up to 250W. Harmonic distortion (no frequency specified): less than 0.05% of second and third harmonic at 90dB at 1m; less than 0.1% of second and third harmonic at 100dB at 1m. Power compression factor: less than 1dB at minimum impedance (250Hz) with an increase of 16dB (1W:40W ratio), frequency response within \pm 0.5dB at 17V RMS (ref. 2.83V input). Dimensions: 15.15" (385mm) H by 9.25" (235mm) W by 11.8" (300mm) D. Internal volume: 15 liters. Weight: 37.5 lbs (17kg) each. Price: \$2500/pair (matching stands cost \$1280/pair). Approximate number of dealers: 20. Manufacturer: Acoustic Energy, 3A Alexandria Road, London W13 0NP, UK. US Distributor: Acetrain Inc., 8300 Tucker Lane, Potomac, MD 20854. Tel: (800) 527-7161.

RSL Speedscreen II: three-way, floor-standing loudspeaker with passive bass radiator. Drive-units: ribbon tweeter, 1.4" (36mm) soft-dome midrange unit, 8" polypropylene-cone woofer, 12" passive bass radiator. Crossover frequencies: 600Hz, 9.5kHz. Crossover slopes: 6dB/octave, 12dB/octave. Frequency response: 30Hz–30kHz \pm 3dB. Sensitivity: 88dB/W/m. Nominal impedance: 8 ohms. Amplifier requirements: up to 250W. Dimensions: 48" H by 19" W by 5" D (base is 12" deep). Weight: 60 lbs each. Finishes available: oak veneer or black, with a black grille cloth. Price:

\$898/pair. Approximate number of dealers: Factory Direct. Manufacturer: RSL Speaker Systems, 8381 Canoga Avenue, Canoga Park, CA 91304. Tel: (818) 882-1001.

TDL Studio 1: two-way, transmission-line loudspeaker. Drive-units: 1", ferrofluid-cooled, metal-dome tweeter, 6.5" plastic-cone woofer with vented poles. Crossover frequency: 3kHz. Crossover slopes: first-order, high-pass; second-order, low-pass. Frequency range: 28Hz-20kHz. Sensitivity: 86dB/W/m. Nominal impedance: 8 ohms. Amplifier requirements: greater than 30W. Dimensions: 28.5" (724mm) H (32.5", 824mm, on stands) by 9" (230mm) W by 13.2" (335mm) D. Weight: 39.5 lbs (18kg) each. Finishes available: walnut veneer or black, with a brown grille cloth. Price: \$1445/pair (matching stands cost \$180/pair). Approximate number of dealers: 37. Manufacturer: Transducer Developments Ltd., P.O. Box 98, High Wycombe, Bucks HP13 6LN, UK. US Distributor: Transducer Developments Ltd., 652 Glenbrook Road, Stamford, CT 06906. Tel: (203) 324-7269.

This current series of loudspeaker reviews started last October with reports on the \$250/pair Celestion 3 and \$550/pair Spica TC-50, both of which are two-ways, followed by three slightly more expensive two-ways in December, the Amrita AMRIT-MiniMonitor, Paradigm Control Monitor, and Rogers LS7t. For this month's group, I raised the price limits and ended up with three interesting models. Two are English, the TDL Studio 1 and Acoustic Energy AE2, and both use versions of the same tweeter, though they are otherwise very different. The third, and least expensive, is an American design sold only by a Californian retail chain. Before you reach for your pen to complain about the politics concerning its inclusion, consider the fact that some quite well-known brands also suffer from very limited distribution. On balance, I decided that it was fair to include the speaker, the RSL Speedscreen II, in this group.

Review context

Each of the three pairs of speakers was positioned for the best sound (with only one pair of loudspeakers in the listening room at a time), generally some 4' from the rear wall (which is faced with books and LPs) and approximately 5' from the side walls (which also have bookshelves covering some of their surfaces). Source components consisted of a 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 Kinergetics KCD-40 and Proceed CD players. Amplification consisted of a Mark Levinson No.25/26 preamplifier combination driving a pair of Mark Levinson No.20.5 monoblocks via 15' lengths of AudioQuest LiveWire Lapis balanced interconnect. Speaker cable was 5' lengths of AudioQuest Clear Hyperlitz, doubled-up for biwiring. Regarding my use of very ex-

pensive components for my loudspeaker reviews, something that has come under attack in this month's "Letters" column, this is for two practical reasons. The first is that I want to be sure of getting the best sound from the speakers under test; I do not want to compromise their intrinsic performance, it being considerably easier to extrapolate downward than upward. Second, having used this amplification almost continuously for the last six months, I am extremely familiar with its sound. Third, with any series of listening tests, it is essential to limit any changes to just the component under review. Change the amplifier as well as the loudspeaker, and how do you know what sonic characteristic can be attributed to what component?

Regarding measurements, I use a mixture of nearfield, in-room, and quasi-anechoic FFT techniques (using the MELISSA system from DRA Labs described elsewhere in this issue) to investigate objective factors that might explain the sound heard. The speakers' impedance phase and amplitude were measured using the magazine's Audio Precision System One.

Acoustic Energy AE2: \$2500/pair (not including stands)

In the September 1988 issue of *Stereophile*, I wrote a rave review about the first speaker, the AE1, from what was to me a totally unknown English company, Acoustic Energy. Though tiny, and possessing an intrinsically limited low-frequency response, the \$1500/pair AE1 was one of the most musical loudspeakers I have ever used, throwing a deep, beautifully defined soundstage, and possessed of a clean treble and a sweet, if rather forward-balanced, midband. It was also technically unusual in that it featured a metal-cone woofer (though the deep anodizing used as a surface treatment meant that it



Acoustic Energy AE2 loudspeaker

should rather be regarded as a ceramic-metal-ceramic-sandwich cone). It has been a puzzle to me that no other US magazine has picked up on the AE1: get with it, you guys; even at its four-digit price, the AE1 is a musical bargain.

Which brings me to the AE2. Considerably more expensive at \$2500/pair, the '2 features the same metal-dome tweeter as the AE1, sourced from the British ELAC company, but marries it to *two* of the diminutive metal-coned woofers. Three narrow, slightly flared ports on the front baffle, 1" in diameter and 5.5" deep, reflex-load these woofers, and a steep-slope, 24dB/octave crossover divides the audio band at 3kHz. The cabinet, finished on all surfaces with a "nubby" black paint, is constructed from 25mm MDF, with the sidewalls loaded with plaster. It felt decidedly nonresonant! The speakers are supplied as a mirror-imaged pair. They can also be used on their sides, with the tweeter at the top. I didn't try this, however.

The big surprise for me with the AE2 was its recommended stand. At \$1280/pair, costing as much as several Class C speakers in *Stereophile's* "Recommended Components" listing, these 25"-high stands must be the most expensive in the world!

They are also probably the most sturdy. Each has two vertical pillars comprised of a finned aluminum extrusion some 4" in diameter, inside of which is a polyethylene bag filled with lead shot. These pillars are bolted to cast-aluminum top and bottom plates; the top plate has four small cones at the corners to make contact with the speaker;¹ the bottom plate is fitted with four carpet-piercing spikes, these

adjustable from above with an Allen wrench. (At the front of the baseplate is a small bubble-level.)

The sound: Setting the speakers up for the optimum sound proved problematic in that it was all too easy to get a midrange-forward balance with rather a shouty low treble. I tried facing the speakers straight ahead, both with the tweeters on their inside edges and on the outside edges; I also tried the speakers toed-in to the listening seat with the tweeters on either edge. The low treble was slightly better balanced with the mids when the speakers were listened to slightly off-axis on the woofer side. (Off-axis on the tweeter side, the sound was rather too bright.) I ended up, therefore, with the speakers toed-in with the tweeters on the outside edges.

The sound was still a little shut-in in the top two octaves. Changing to the Wadia 2000 processor was a disaster, the sound becoming considerably more shut-in. I therefore replaced the Kinergetics CD player with the Proceed, which has a little more subjective HF energy. This gave a more successful treble balance; I carried out all my serious auditioning with this combination. As the AE2 seems very sensitive to such small changes, however, I recommend that you take the advice of your Acoustic Energy dealer about what components will enable it to give of its best.

Once I was satisfied that I had the speakers set up optimally, I sat down to some serious listening. That the AE2 has some tonal character was apparent. But before I discuss it, let me just tell you that this speaker was in some ways the best I have ever auditioned. Forget its physical size—its sound was BIG, with more "jump factor" than any other domestic model I have used. Whether it was on rock—the bottom-falling-out-of-your-Universe bass guitar at the start of Thomas Dolby's "Pulp Culture" from *Aliens Ate My Buick* (EMI-Manhattan CDP-7-48075-2)—or classical—the brass-motifs-over-rustling-strings suspense at the start of the Intermezzo of Sibelius's *Karelia* Suite (London 414 534-2)—the AE2s demonstrated an uncanny ability to make the hairs on the back of my neck stand on end. Recorded drums never sounded anything but impactful, making

¹ To judge by the details of the casting, the top plate for this stand also serves as the bottom plate for a similar stand intended for use with the AE1. This uses just one finned, lead-filled pillar.

my reference Celestion SL700s, which are tonally more neutral, sound rather wimpy by comparison. And at high levels, loud, climactic sounds didn't obscure the smaller details of the sound, something that is almost ubiquitous with smaller loudspeakers, in my experience.

The soundstage produced by the AE2s was also big, with an astonishing sense of "air" and space. A much-played album these days in the Atkinson household is a sampler² from the French Astrée label: track 4 is a virtuosic solo from gamba player Jordi Savall; at one point he bangs the strings of his instrument, illuminating what the AE2s revealed to be a vast space around the instrument.

The soundstage was also well-defined, with instrumental and vocal images possessing a considerable degree of palpability. About the only anomaly regarding the AE2s' ability to throw a wide, deep, well-defined soundstage was in the mid-treble, where there was a degree of "splash" to the sides. A dual-mono pink-noise signal revealed the narrow central image to be appreciably wider in the presence region (the frequency band where the speaker's woofer crosses over to the tweeter).

Again and again, however, my listening notes mentioned the feeling of "space" created by these Acoustic Energy speakers. Every time I turned the system on, this aspect thrilled me.

Which is why I was disappointed by the speaker's relative lack of neutrality in the mid-range. Violins and violas acquired an "eee" character, which in itself was relatively benign, the listener becoming accustomed to it. But this was accompanied by a rather "hooty" quality, particularly noticeable on recorded piano at reasonably high replay levels, and on trumpet at lower levels. In particular, with the London Sibelius recording mentioned above, the trumpet took on a "bark" in its middle register that made me want to turn the volume down. (This was particularly ironic in view of the fact that the excellent dynamics and lack of congestion in the treble and lower-midrange and bass of these speakers in general made me want to turn the volume *up*.)

Higher and lower in frequency, the AE2 seemed remarkably uncolored. Apart from a slight accentuation of the flute's breath-noise "chiff," *Stereophile's Poem* LP (STPH 001-1) repro-

duced as well as I have ever heard it in the treble, the instruments being set well back in the hall acoustic (though the depthwise separation between flute and piano was not as great as it should have been). And the piano's lefthand registers literally "purred." In fact, listening with the lights off to natural organ recordings, such as the Michel Chapuis track on the Astrée sampler, the subjective bass extension seemed so good that when I turned the lights on, it came as a rude shock to be reminded how small the speakers really are. That this subjective low-frequency extension is due to a considerable extent to the stand was confirmed by replacing them with 24" wooden stands from Chicago Speaker Stands. Though the basic tonal character of the AE2 remained, much of its spatial magic and bass authority had gone.

Measurements: The AE2's impedance curve (fig.1) reveals the port tuning to lie at 42Hz. The use of two 8 ohm woofers means that the minimum impedance drops to 4 ohms in the upper-bass/lower-midrange, though it remains above 6 ohms above 600Hz. The slight peak at 1kHz implies the presence of some sort of EQ network in addition to the low-pass/high-pass filters.

The AE2's impulse response, calculated by the MELISSA software from the Maximum-Length-Sequence data taken with a 30kHz bandwidth on the tweeter axis at a distance of 48", is shown in fig.2. Overlaid with ultrasonic

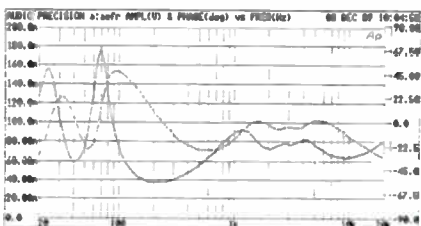


Fig.1 Acoustic Energy AE2, impedance magnitude and phase

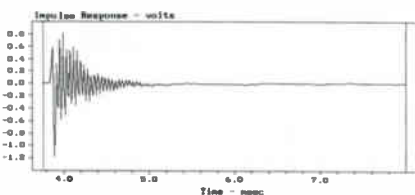


Fig.2 Acoustic Energy AE2, impulse response on listening axis at 48"

² My thanks to Guy Lemcoe for bringing this excellent- and natural-sounding collection to my attention.

ringing from the tweeter's high-Q "oil-can" resonance, it suggests that the drive-units are connected with the same electrical polarity. Low-pass filtering the impulse response gives a shape that implies a degree of midband emphasis. Performing a Fast Fourier Transform on the anechoic section of this impulse response gives the AE2's anechoic frequency response (with a resolution of a hair over 200Hz), which is shown to the right of fig.3. An overall flat response on this axis is broken up by narrow suckouts centered on 1kHz and 3.5kHz, with slight peaks above those frequencies. The response starts to roll off above 16kHz, but is then interrupted by the tweeter resonance at 24,590Hz, which rises more than 10dB above the reference level. This should be inaudible, however.

To the right of fig.3 is shown the nearfield response of one of the woofers: this reaches a half-power point with respect to the level at 200Hz at 65Hz, which is quite high. This, however, doesn't include the output from the three small ports, which, to judge from the impedance plot (fig.1), should extend the half-power frequency to 45Hz or so.

The AE2's asymmetrical drive-unit array means that its off-axis behavior will be different to either side. Fig.4 shows the anechoic responses taken on the tweeter axis 15° off-axis to the two sides. The top trace is that to the side with the two woofers, whereas the lower is that to the tweeter edge of the cabinet. It can be seen that the former, while sharing most of the features of the anechoic trace in fig.3, lacks the crossover notch, while the latter accentuates it. This reinforces my experience from the listening that the AE2s sounded best with the tweeters on the outside edges of the speakers. (This is specific to my room, however, where the side walls are a long way from the speaker positions. If the AE2s are used in a room where the side walls are in close proximity, it might be better to place the speakers with their tweeters on the inside edges.) Incidentally, for those asking where the tweeter resonance has gone in fig.4, I had set MELISSA's antialiasing filter to be flat to only 20kHz for these two measurements, thereby suppressing the 25kHz peak.

In-room, measured on a spatially averaged, $\frac{1}{3}$ -octave basis using an Audio Control Industrial SA-3050A spectrum analyzer with its calibrated microphone, it can be seen that the AE2's ports only boost the bass output by a

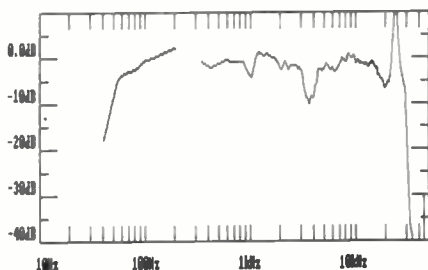


Fig.3 Acoustic Energy AE2, nearfield LF response and MELISSA-derived anechoic response on listening axis at 48"

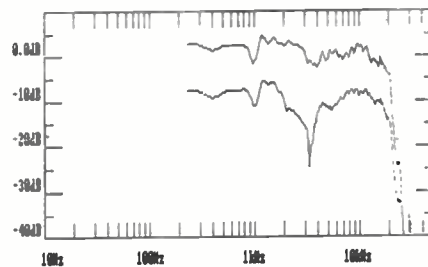


Fig.4 Acoustic Energy AE2, lateral off-axis responses, 15° on woofer side (top) and tweeter side (bottom)

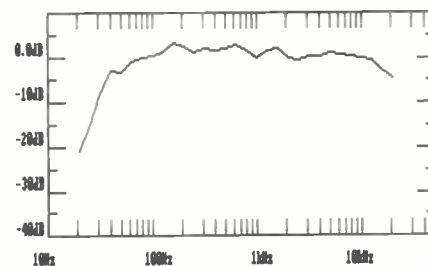


Fig.5 Acoustic Energy AE2, spatially average 1/3-octave, in-room response

small amount (the small dimple centered on 40Hz superimposed upon the overall falling trend below 125Hz in fig.5). Therefore, though the auditioning suggested excellent subjective bass weight, the AE2 must still be considered a minimonitor. As suggested by the listening tests, measurement confirms that the overall midrange output is boosted compared with the treble, though not to anything like the extent found by Martin Colloms in his review in the January 1989 *IIFN/RR*, which indicated that the HF unit's output was depressed by 5dB. The treble, in fact, measures as being commendably flat, with only slight lacks of energy

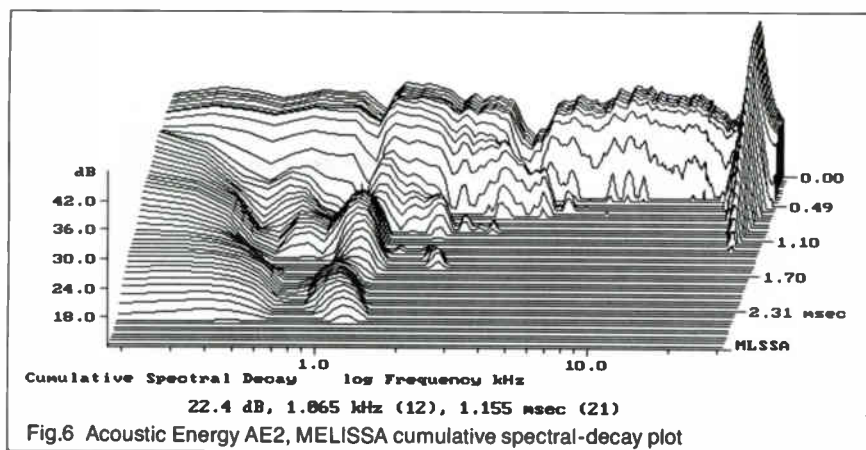


Fig.6 Acoustic Energy AE2, MELISSA cumulative spectral-decay plot

centered on 1kHz, 3kHz, and 16kHz spoiling the smooth trend.

The postprocessing power offered by MELISSA enables you to examine the spectral decay of the computed impulse response—*ie*, you can see how the response changes with time after the exciting pulse has been and gone, revealing the presence of resonances by the way in which they persist. Fig.6 shows the “waterfall” plot for the AE2. The two most obvious features are the tweeter resonance and the suckouts at 1kHz and 3kHz: the calculated response at time zero in fig.6 is actually identical to that shown in fig.3. Note how the ultrasonic tweeter resonance is depicted as a “ridge” whose height decreases with time. Apart from that, the entire tweeter region decays very quickly and cleanly, correlating with my feeling from the auditioning that the AE2’s high frequencies were, indeed, very clean-sounding. That the depression centered on 3kHz is due to interference between the tweeter and woofers is revealed by the fact that that frequency band also decays quickly. But look at the 1kHz suckout: as the pulse decays, a ridge appears at the exact center frequency of the suckout, revealing that it is actually associated with a resonance. This, perhaps, is associated with the slightly “hooty” quality noted on trumpet and piano, as well as the “eee” nature of strings. (Because of the dependence of this coloration on associated components, however, it could also be a function of the exact balance between midrange and highs.)

Conclusion: I found the AE2 to be very fussy both when it came to finding the optimum

placement in the room and in choosing source components that enabled it to sing. Although it is relatively expensive even without stands, the dedicated stands are also essential, in my opinion, to getting the most from the AE2. This, of course, puts the system price almost up to \$3800, where even small faults become of paramount importance. Its small but noticeable midrange-coloration level might then be thought by some to be a major failing. But if you are more concerned about superb presentation of detail and dynamic impact, coupled with a smooth, uncolored treble, particularly if your tastes run more to rock music, then the AE2 must be considered as one of the finest speakers in this price class. Recommended conditionally, therefore, but if Acoustic Energy can rid the AE2 of that vestigial midrange coloration, they have a speaker to rival the Wilson WATT in pushing the state of minimonitor sound to new heights of musical satisfaction.

RSL Speedscreen II: \$898/pair

RSL is the house brand of a California chain of retail stores, Rogersound Labs, that is part-owned by the leader of the RSL loudspeaker-design team, one Howard Rodgers. (Rogersound Labs also owns the Upscale Audio high-end store in north Los Angeles.) The range offered by RSL is unbelievably wide, with models addressing just about every market niche and price category. The Speedscreen II, however, is Howard’s attempt to produce a true high-end loudspeaker at an affordable price. To the casual observer, the Speedscreen appears to be a planar design; however, its shallow, braced enclosure houses moving-coil

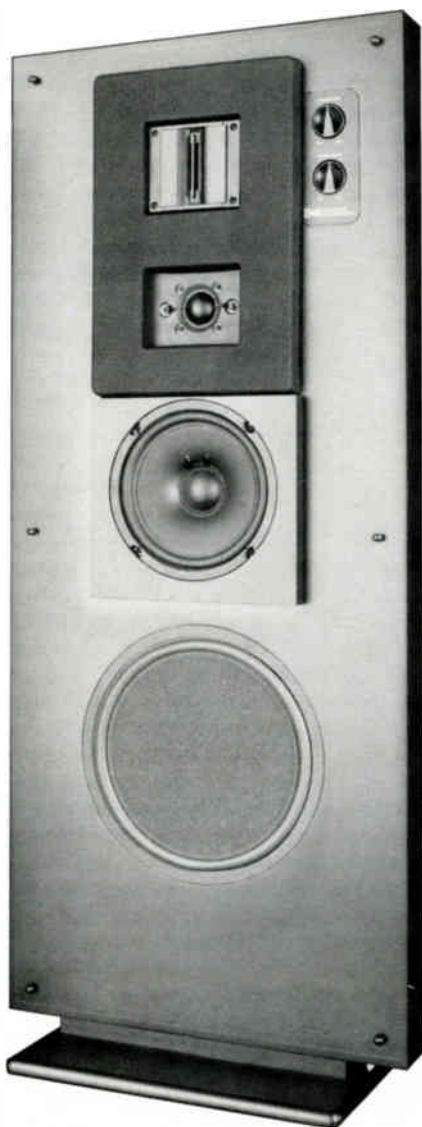
drive-units, and is a result of Howard's attempts to minimize the effect of cabinet resonances. "I always thought deep, narrow enclosures sound 'boxy,'" said Howard when he visited Santa Fe last September, "and the wide but shallow cabinet seemed to be the best way to get a large internal volume without 'boxiness'."

The classic problem associated with wide baffles, however, is that in the upper midrange and treble, diffraction problems and reflections of the sound from the edges lead to often severe beaming, the so-called "Vertical-Venetian-Blind" effect. To minimize this in the Speedscreen II, Howard developed a soft moulded surround for the tweeter and midrange unit which is intended to absorb the treble energy emitted to the sides by these drivers.

Looking at the drive-unit complement, the bottom of the baffle features a largish, flat passive radiator with a foam surround. This loads an 8" polypropylene-coned woofer mounted above it on a small sub-baffle. Unusually, this driver is rolled-off relatively early, above 600Hz, which means in musical terms it is only asked to reproduce fundamentals and low harmonics of most instruments and voices. The range from 600Hz to 9500Hz is handled by a 1.4" soft-dome unit sourced from Japan, while the top octave of treble is reproduced by a ribbon tweeter manufactured by Philips. (This actually uses an etched flat voice-coil on a plastic substrate and appears to be identical to the unit used as a supertweeter in the expensive Waveform design.)

The crossover features high-quality components—polypropylene capacitors and low-series-resistance, laminated-core inductors—and the internal wiring is all Monster Cable. Electrical connection is via gold-plated binding posts, and L-pad controls on the front panel offer a degree of cut or boost of the midrange and treble drivers. (In their minimum positions, these controls cut the level of their respective drivers completely.) A 3A fuse on the rear panel provides a degree of protection in case of extreme overload.

The sound: As Howard Rodgers was visiting when the speakers were delivered, I asked him to set the Speedscreens up in my listening room to sound as he would want. The speakers ended up firing straight ahead, some 4' from the side walls and 40" out from the rear wall.



RSL Speedscreen II loudspeaker

Though the speakers' bases are fitted with carpet-piercing spikes, these are not long enough to reach the floor beneath my carpet and $\frac{1}{2}$ " pad; I substituted Tiptoes. Howard had set the HF control to 1 o'clock and the midrange to 12 o'clock; ultimately, I preferred the treble balance with the HF control backed off somewhat, to the 12 o'clock position, and a little more upper-midrange energy to balance the lower midrange, the control being set at 2

o'clock. This was how I carried out all my auditioning and measurements.

My listening chair places my ears some 37" from the ground, which proved to be a little low for the Speedscreens: the most palpable treble balance was obtained with the listener's ears level with the ribbon tweeter. Listening to the tweeter on its own with a pink-noise signal revealed it to have a basically smooth nature, though, as with some other drivers of its type, the bottom edge of its passband sounded rather ragged. This driver also seems to have a very narrow dispersion pattern vertically, and sitting with my ears level with the midrange dome gave a rather hollow-sounding balance, as though there was a suckout in the upper crossover region. Laterally, it has much wider dispersion, but again care must be taken with positioning the speakers to get the optimum treble balance. With the speakers firing straight ahead as set up by Howard Rodgers, but with the HF control set to 12 noon as I preferred, the sound at the listening seat was evenly balanced. But if the speakers were moved farther apart, the sound lost body. In fact, despite the absorbent surround for the treble drivers, the wide baffle still seemed to endow the Speedscreen with horizontal dispersion problems, as the treble balance seemed critically dependent on speaker and listener position. From my experience with the speaker, the Speedscreen needs to be listened to from at least 9' away for the sound to properly integrate in the upper midrange and treble.

When optimally set up, however, and with the listener on the right axis, it was possible to get a very smooth-sounding balance—violins sounding excellent—with plenty of HF "air" around instruments.

I had also had problems getting an even balance at the other end of the frequency range. Though organ recordings revealed that the Speedscreens were capable of pumping out a satisfying level of low bass, and low-frequency definition was also good, the sound lacked a little upper-bass weight. Though the low bass could be felt through the floor, the entire bass region sounded shelved down compared with the lower midrange. Above the bass, the lower midrange had a rather forward, "gruff" quality that obscured the definition of tenor instruments such as the cello. This didn't affect the quality of spoken male voice, however, this being reproduced with an excellent lack of col-

oration other than a small degree of "quack." And piano reproduced with very little unevenness in the critical region in the octaves immediately above the treble staff, undoubtedly due to the fact that just one drive-unit handles the fundamentals *and* their harmonics for notes to the right of the piano's keyboard.

My only real criticism of the sound was in the integration between the lower midrange and the band above it, the region defined by the octave above middle C. Too often, I got the feeling of a "phasiness" in this region with the Speedscreen, of an aural confusion that didn't allow the music to gel. It is perhaps significant that this is the region where the woofer starts to cross over to the dome unit; the problem with using a separate midrange unit is that it is hard to find a frequency band to place the crossover that *doesn't* carry significant musical information.

The soundstage produced by the Speedscreens was big, there being a good sense of depth and the width extending to the outside edge of the speaker positions. Noticeable also was a sense of height when compared with the other two speakers I review this month. Stereo imaging, though reasonably well defined, was rather unstable, even small head movements causing the central image to swing quite wildly. I suspect that the wide baffle, again, is producing diffraction effects that interfere with the image stability as well as introducing beaming effects that change the tonal balance.

Dynamics seemed quite good, though it took a surprising amount of power to bring the sound to life, normally a sign that a speaker's balance is lacking in some areas.

All in all, however, this is pretty good performance for a pair of loudspeakers that costs significantly under \$1000.

Measurements: Looking first at the Speedscreen's impedance, its magnitude (solid line) and phase (dashed line) are shown in fig. 7. Only dropping below 6 ohms in the presence region, this is an easy load for any amplifier to drive. The woofer tuning is revealed by the peak at 50Hz, with the passive radiator tuned to a low 28Hz, suggesting good subjective bass extension.

In the time domain, the Speedscreen had a relatively complicated response. Fig. 8 shows the anechoic impulse response on the midrange driver axis—which is where my chair places my ears—as calculated by MELISSA.

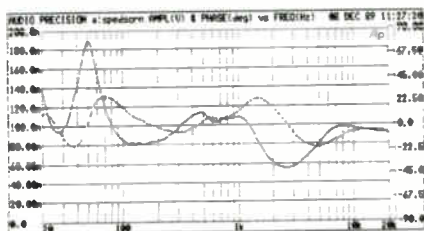


Fig.7 RSL Speedscreen II, impedance magnitude and phase

This is equivalent to the anechoic response shown on the right of fig.9: note the rather high level of the woofer compared with the midrange and the overall rising response in the treble, which is ameliorated when you sit to the side; the Speedscreens do, therefore, need to be fired straight ahead rather than toed-in to the listening seat. (The sharp rolloff above 20kHz should be ignored; it is due to MELISSA's antialiasing filter.) As suggested by the auditioning, the dip centered on 4kHz is listening-height-dependent; fig.10, taken on the ribbon tweeter axis, is considerably smoother in the high treble, reinforcing my earlier conclusion that the listener shouldn't sit too low.

The left of fig.9 shows the responses of the woofer and passive radiator, measured in the nearfield. The woofer appears to be well-damped, and reaches its half-power point at 38Hz; the passive radiator covers almost the entire bass range, from 20Hz to 100Hz. It is difficult to infer from these nearfield measurements how they translate into subjective bass performance, which is why I also carry out spatially averaged in-room response measurements. Fig.11 indicates that the bass, though extended down to an excellent 30Hz, is actually shelved-down overall compared with the midrange, as suggested by the auditioning. The passive bass radiator doesn't quite provide sufficient support of the woofer, in my opinion. Apart from the slight lack of energy around 2kHz, however, the entire treble balance in-room is extremely flat.

Looking at the MELISSA-derived "waterfall" display (fig.12) of the Speedscreen output on the midrange axis, it can be seen that the output of the ribbon tweeter in general dies away very rapidly, there being only a suggestion of resonant behavior. (The "ragged" nature of the ribbon's FFT-derived response seems to be typical of these planar drivers, perhaps falsely suggesting a "crinkly" signature to the sound.

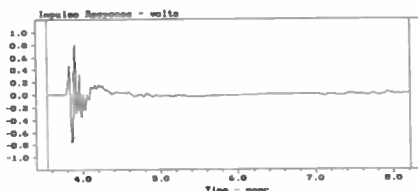


Fig.8 RSL Speedscreen II, impulse response on listening axis at 48"

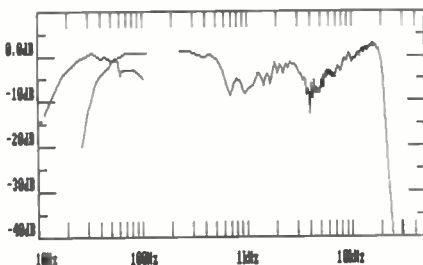


Fig.9 RSL Speedscreen II, nearfield LF response and MELISSA-derived anechoic response on listening axis at 48"

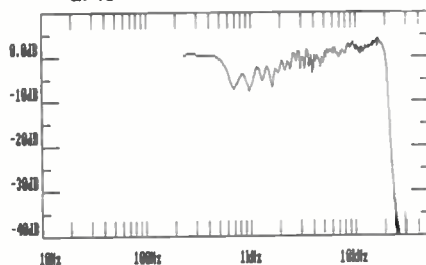


Fig.10 RSL Speedscreen II, MELISSA-derived anechoic response on ribbon axis at 48"

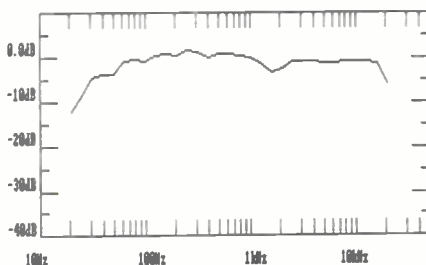
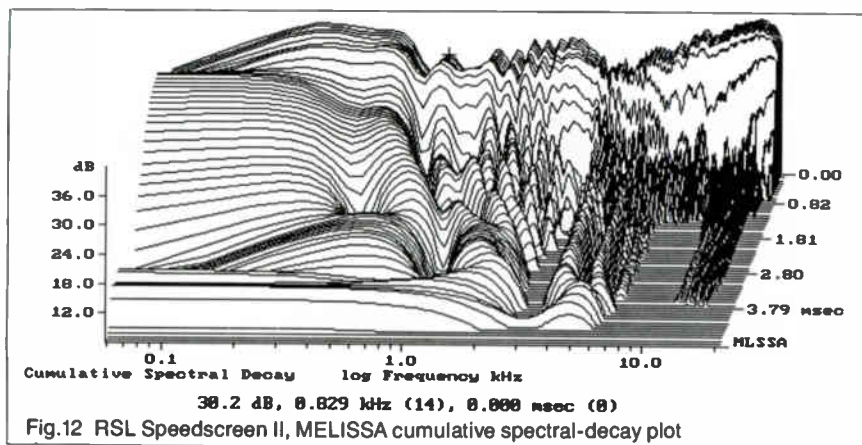


Fig.11 RSL Speedscreen II, spatially averaged, 1/3-octave, in-room response

Remember, I did think the tweeter sounded rather ragged at the bottom of its range when listened to on its own.) The Foster midrange driver, however, doesn't seem to be particularly well-behaved, there being a series of resonances



noticeable throughout its passband. Note, in particular, the ridges apparent in the plot at 4 and 5kHz. While these may not be high enough in level to significantly color this driver's passband, other than adding a slight "quack," they could well correlate with my feeling that the Speedscreen could sound too "hard" when driven to highish levels, particularly on female voice.

I couldn't find any measured aberration that would correlate with the "phasiness" noted in the lower mids, but I did find that the baffle and rear panel had significant resonant modes between 230 and 250Hz, at 280Hz, and at 345Hz. These might well tie in with the subjective "gruffness" that I noted on the sound of the cello.

Conclusion: On the positive side, the Speedscreen II offers a "big" sound at a relatively affordable price, will not present drive problems to inexpensive amplifiers, and features a smooth, relatively uncolored treble and upper midrange. Debts include poor integration between the lower midrange and the rest of the mids, rather unstable imaging, fussiness in optimum setting up, and a bass region that, while extended, is shelved-down overall. It still represents good value for money, and readers in Southern California who find the Spica Angelus (\$1275), Vandersteen 2Ci (\$1400 with stands), and Magnepan MG2.5R (\$1695) financially out of reach should check it out.

TDL Studio 1: \$1445/pair (not including stands)

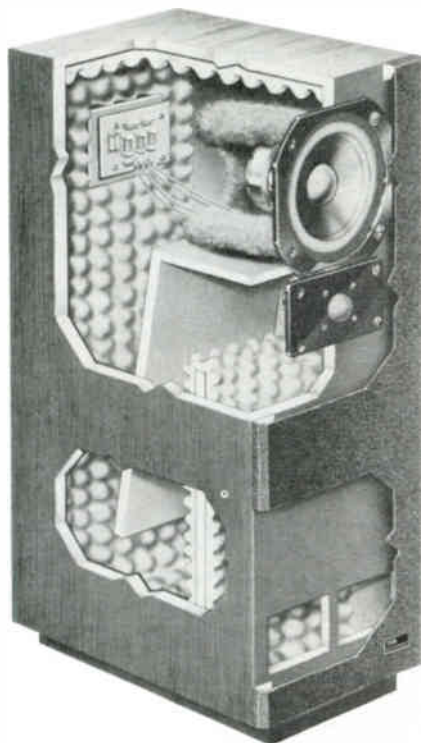
TDL is part of ELAC, one of the most successful

OEM drive-unit manufacturers in the UK, particularly renowned for the 1" aluminum-dome tweeter that they make for Monitor Audio, Acoustic Energy, and British Fidelity. Perhaps of even more interest to readers of *Stereophile* is that the TDL system designer is one John Wright, who designed the classic series of IMF loudspeakers³ and who also was one of the leading equipment reviewers in the UK back in the '60s. (For a while John was also a contributor to this magazine, his comprehensive reviews of tonearms appearing in Vol.2 Nos.10 & 12.)

The IMF designs represented the first commercially successful application of the "transmission-line" woofer-loading principle, and the TDL models continue that tradition. Even though the Studio 1 is the smallest speaker in the TDL range, it still loads its 6.5", Cobex-coned woofer with a resistively damped line that is intended to absorb the cone's back wave. (The cabinet interior contains internal partitions that produce a folded line.) In practice, the short line possible in the modest-sized enclosure cannot totally absorb the sound, so it is arranged to vent at the foot of the front baffle, its output supplementing the frontal radiation of the woofer in the bass to give good low-bass extension. A practical transmission line therefore takes on some of the characteristics of a reflex design.

A two-way design, TDL's Studio 1 uses a ver-

³ IMF stood for Irving M. ("Bud") Fried, who was associated with John for a long while. When John and Bud split up, however, the English company retained the rights to use the name IMF, which is why Bud's own brand of American loudspeakers, some of which also feature transmission-line bass and midrange loading, are known as "Fried."



TDL Studio 1 loudspeaker

sion of the same aluminum-dome tweeter that appears in the Acoustic Energy AE2. This is mounted vertically *beneath* the woofer, an arrangement that, provided the correct drive-unit electrical polarities are observed, tilts the main response lobe upward toward the listener's ear—important in a modest-sized speaker such as this. The crossover circuitry is mounted on a printed circuit board fastened to the rear of the terminal panel, which has four knurled, gold-plated, all-metal binding posts to allow the speaker to be biwired. The crossover is relatively simple, a series non-polarized electrolytic capacitor in the tweeter feed providing a first-pass high-pass slope, with a series resistor to lower the tweeter level; the woofer filter is basically second-order low-pass, with a series air-cored coil and a shunt electrolytic capacitor. There is also an RC Zobel network shunting the drive-unit terminals.

The Studio 1 cabinet has a small plinth attached to its base which slots into a small space-frame stand, some 4" high, which is fitted with carpet-piercing spikes. A pair of

these stands costs \$180, but as the Studio 1 really does need the stand to sound its best, in my opinion, it's a shame that they are not included in the purchase price. Surprisingly at this price level, though the cabinet sides, top, and bottom are finished in real wood veneer, neither of the drive-units is rebated into the black-painted baffle. The woofer frame does have a degree of profiling, however. The grille consists of brown jersey cloth stretched over a fiberboard frame. Though its internal edges do have a slight flare in the vicinity of the drive-units, it appears to present a significant acoustic obstruction, so I left it off for most of the auditioning (see later).

The sound: Preliminary listening suggested that it was important not to sit at too high a listening position with the Studio 1s, an audible "hollowness"—probably due to a crossover suckout—developing when you can see a significant amount of cabinet top. I therefore used the adjustable spikes to ensure that my ears were in line with the cabinet top, which gave the smoothest response trend at my listening seat with pink noise. (I sat 8' from the speakers; because the tweeter-under-woofer topology results in a slightly tilted-up main response lobe, the further you sit from the Studio 1s, the less critical will be this transition between flat and hollow-sounding treble.) Slight but persistent excesses of energy in two regions could still be heard on the optimum axis with pink noise, however, one in the midrange centered around 750Hz or so, the other in the mid-treble. It remained to be seen how audible these would be with music. (Noise signals are useful—read, notorious—for revealing slight balance problems.)

I couldn't resist the temptation: having been exposed to years of being told how good the bass is of a transmission-line speaker, I broke my rules—I normally start my auditioning with spoken voice—and reached first for an organ recording, the Telarc Bach set from Michael Murray (CD-80088), which features the infamous Toccata and Fugue in d. (Trivia lovers might be interested to learn that this most organic of all organ works was probably originally written for violin!) I was not disappointed. Though the very lowest notes did lack substance, the reproduction of the pedals was excellent for what is basically quite a small two-way speaker with a single 6.5" woofer. The

only indication that this *was* a smallish two-way was at high replay levels, when things became rather congested. In fact, this congestion set an upper replay-level limit of around 95dB in my room, which may not be enough for some tastes. In this respect, the Studio 1 fell considerably behind the Acoustic Energy AE2.

Upon further listening, however, it became apparent that not all the congestion could be laid at the feet of the woofer's limited radiating area. At the end of the Fugue in D on the Telarc disc, the organ pedals take up the half-scale passage that has been the subject of the fugue. Even at moderate replay levels, there was some confusion in the upper bass that somewhat obscured pitch definition.

Rob Wasserman's double bass, on the "Ballad of the Runaway Horse" from his *Duets* album (MCA MCAD 42131), was also rather lumpy in this same region, and when he duets with himself on this album, in the Aaron Neville track "Stardust," for example, the two double basses tended to interfere with one another's sounds to a greater extent than through either of the other two loudspeakers reviewed this month. Spoken male voice also had a rather chesty quality, there being an underlying bass "grumble" to the voice character, similar to that obtained when you speak too close to a directional microphone, and low-pitched drums sounded rather "slow." However, this wasn't to anything like the same degree as with a typical high-Q reflex design, and in fact it was the excellent clarity and extension of the mid- and lower bass that accentuated its audibility.

Moving higher up in frequency, the midrange was clean, apart from a slight "hoot" noticeable on piano and female voice around the top of the treble staff (the 600–800Hz region), where it made the latter sound rather "shouty." This was less noticeable on orchestral music than it had been on voice, piano, and pink noise, however, and the upper midrange and treble were very smooth, overall. There was a slight wispiness to the extreme highs, however, that slightly accentuated the wire-sound of a typical snare-drum, and was unkind to the sound of closely miked violins. Naturally miked violins were presented with just the correct degree of astringence. (This was via the dark-toned Kinergetics player; via the brighter Proceed, there was too much treble energy.)

Where the Studio 1s scored, however, was the way they presented a good sense of recorded

space. The guitar and double-bass track on the *Stereophile* Test CD is a good test of this: the way in which the guitar's upper register slaps the surrounding chapel acoustic into motion seems to be very system-dependent. Via some speakers, although the instruments' tonalities are reproduced correctly, the "space" on the recording, that I heard from the microphone feeds, is almost entirely diminished. Via the TDLs, however, you could well hear the dome of ambience around and behind the instruments. Midrange images seemed to be a little more forward than strictly accurate, to judge by the way the speakers reproduced my own piano recordings, but there was still a considerable degree of depth apparent. The horns, for example, at the start of the Ashkenazy/Philharmonia recording of Sibelius's *Karelia* Suite (London 414 534-2), were set *way* back. And on *Stereophile's* *Poem* LP, though the tonal balance was a little on the "cold" side, the piano was set the correct distance behind the stable flute image. It was actually listening to this track with the grilles on that convinced me that they were a sonic no-no. The grilles rendered the piano both less well-defined in space, and too forward.

Measurements: Looking first at the Studio 1's impedance (fig.13), this suggests that the speaker is an easy load to drive, only nearing 6 ohms in the upper bass. The port/line tuning lies at 30Hz, indicated by the minimum at that frequency. Note, however, the glitch in impedance around 130Hz, which the phase response (dashed line) suggests is due to a resonance, presumably due to the transmission line, and which could correlate with my feelings about a "lumpy" response in this region. Turning to the Studio 1's impulse response as calculated by the MELISSA software, this—taken with a 30kHz bandwidth on the 36"—

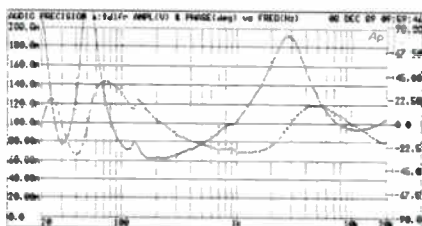


Fig.13 TDL Studio 1, impedance magnitude and phase

high listening axis at a 48" distance—is shown in fig.14. Although overlaid with ultrasonic ringing from the tweeter, it can be just seen that both drive-units are connected with the same polarity, the slow rise from the woofer being overlaid soon after its start by the tweeter output.

Windowing the impulse response as shown in fig.14 removes reflections of the impulse from the room boundaries; thus performing an FFT calculation will give the speaker's anechoic response on that axis, as can be seen on the righthand side of fig.15. Due to the windowing, the resolution of this curve is just under 200Hz. Nevertheless, features to be noted include the peak in the midrange centered on 710Hz, the crossover notch on this slightly too high axis between 2kHz and 3kHz, as well as the overall rising trend in the treble, broken up by what are cancellations probably due to interference with the direct sound by reflections of that sound from nearby obstructions, culminating in the tweeter "oil-can" resonance at 24,950Hz. (Though this looks alarming, as with the identical peak shown by the Acoustic Energy's tweeter, it's inaudible.) Repeating this measurement on the tweeter axis—an unrealistically low listening height—gives a more even treble balance as shown in fig.16, the crossover notch filling in, though the midrange peak is still noticeable. (This trace was taken with a 20kHz measurement bandwidth, hence the reduction of the tweeter resonance to a small blip on the plunging level above 20kHz.)

The lefthand side of fig.15 shows a composite of the woofer and port/line output responses derived from nearfield measurements. The woofer rolls off below 65Hz, reaching its half-power point ref. 100Hz at 42Hz, the frequency of the bottom notes of the four-string double and electric basses, but it can be seen that the woofer output does continue to rise in the upper bass. The port output is centered on its tuning frequency, 30Hz, with half-power limits at 20Hz and 90Hz.

In-room, the bass does indeed extend down to 30Hz, as shown by the $\frac{1}{3}$ -octave curve in fig.17. This is calculated from 20 individual spectra measured at different points in a 72"-wide by 18"-high window around the listening position, and has proven to give a good correlation with a loudspeaker's perceived tonal balance. The spatial averaging almost completely

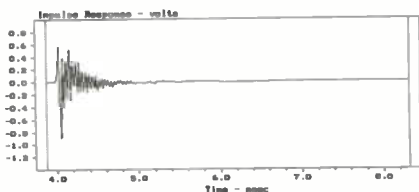


Fig.14 TDL Studio 1, impulse response on listening axis at 48"

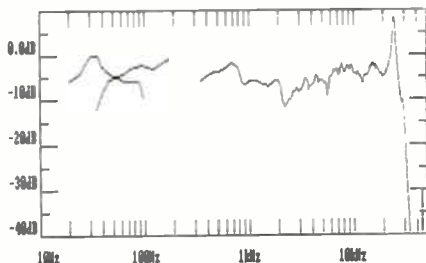


Fig.15 TDL Studio 1, nearfield LF response and MELISSA-derived anechoic response on listening axis at 48"

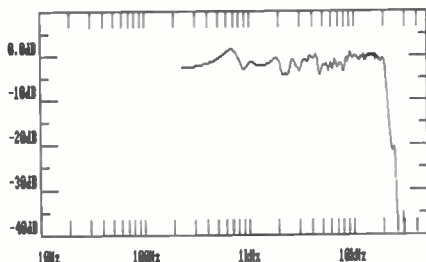


Fig.16 TDL Studio 1, MELISSA-derived anechoic response on tweeter axis at 48"

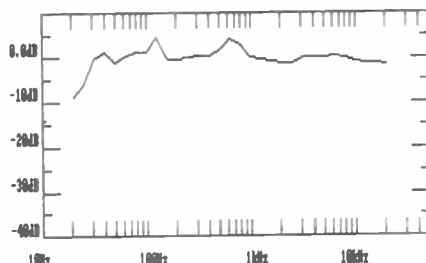
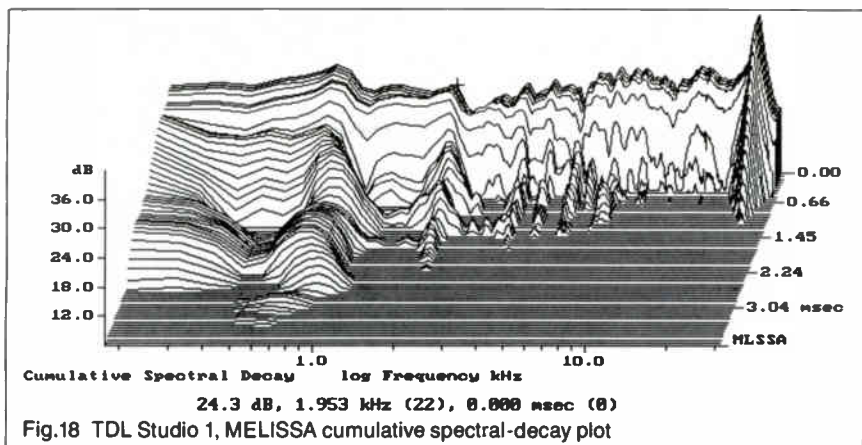


Fig.17 TDL Studio 1, spatially averaged, 1/3-octave, in-room response

removes the effects of low-frequency room resonances, yet two strong peaks are apparent in this trace: one centered on 700Hz, as implied by the listening tests, and the lower centered



on the 125Hz band, not uncoincidentally the same frequency as the resonance indicated on the impedance plot (fig.13). Above 1kHz, however, the response is commendably flat.

The individual measurements taken to derive this in-room response suggest that listening too high to the Studio 1 does result in a significant lack of energy between 1250Hz and 3kHz, audible as a "hollow" quality.

The "waterfall" or cumulative spectral display plot produced by MELISSA and shown from 200Hz to 30kHz in fig.18 reveals, of course, the ultrasonic tweeter resonance smoothly decaying with time. Apart from that, the entire tweeter region decays very quickly, reinforcing the subjective impression that the treble is basically clean-sounding. The midrange, however, does have a number of resonant modes apparent, presumably mainly due to the woofer. The cursor in fig.18 is positioned at what turns out to be a reasonably strong mode at 1953Hz, though the most persistent (and audible) is the lower one at 710Hz. Unlike the version used by Acoustic Energy, this tweeter does have some minor resonances noticeable in this plot between 4 and 10kHz. What I find interesting is that the best-defined of these, at 7kHz, actually makes its presence known, like the Acoustic Energy's 1kHz resonance, as a suckout in the anechoic response (the curve at time zero), showing just how hard it is to distinguish between resonant and interference effects in a traditional frequency-response curve.

Conclusion: When auditioning the TDL Studio 1s, be sure that the grilles are removed and that you are on the optimum listening axis, as

the balance is otherwise unmusically hollow-sounding, with the upper treble left unsupported. The short stands are essential to achieving this, in my opinion. But on the correct axis, and provided the replay level isn't too high, the Studio 1 will provide a good degree of low-frequency extension for such a small speaker. The colorations noticed in the upper bass and midrange were a little too apparent for my tastes, but as the audibility of both will be very much dependent on music type, they may or may not detract from the clean, detailed treble and excellent imaging offered by these speakers. At \$1625 including stands, the Studio 1 comes under strong competition from the Magnepan MG2.5R and Vandersteen 2Ci, both of which will play louder without strain or congestion, but it is sufficiently differently balanced from either that it could well find a successful niche in the US market.

Postscript: Reviewed & Recommended Loudspeakers, 1986-1990

For those planning to purchase a pair of loudspeakers costing up to \$2500/pair, the Table shows the 91 models which have been reviewed by *Stereophile* in the last four years or so. (Some may no longer be in production, in which case the price quoted is the last published price. I have left them in this listing to help those buying secondhand.) Back issues of *Stereophile* are available from the address given in the advertisement in this issue. The rating (if any) referred to in the table is that achieved by the loudspeaker in question in the most recent version of *Stereophile's* "Recommended Components" listing (see Vol.12 No.10, October 1989).

Table: Reviewed & Recommended Loudspeakers, 1986-1990

Model	Price/Pair	Issue(s) reviewed	Reviewer(s)	Rating
Fanfare Prelude	\$189	IX-8-117	TJN	
Goodmans Maxim	\$245	XI-7-93	TJN	
Celestion 3	\$269	XII-10-161	JA	D
Heybrook Point Five	\$299	XI-7-93	TJN	
Ohm CAM 16	\$300	XII-4-145	JA	
Wharfedale Diamond III	\$300	XII-2-122	JA	D
AR 19	\$320	IX-6-96	DO	
Kindel P-100 II	\$329	X-4-122,6-127	TJN	
Camber 1.5	\$339	X-7-117	JA	
Paradigm 5sc	\$360	XI-1-128	JA	D
Black Bag	\$369	XII-2-114	JA	
Monitor Audio 7	\$379	XIII-1-81, 2	ST	
AR Powered Partner	\$400	XI-2-108	BS	
Spectrum 208B	\$449	XII-1-152	JA	D
Magnepan SMGa*	\$495	X-7-129	GG	D
Greg Acoustics Entertainer	\$499	IX-3-81	DO	
Kevek ES6	\$520	X-5-159	JA	
Siefert Maxim III‡	\$549	X-4-120	TJN	
Kindel P-200	\$550	IX-3-77	JGH	
Spica TC-50	\$550	VII-2-25, XI-1-113, XII-10-161	AHC,MC,JA	C
Monitor Audio R352‡	\$559	X-7-117	JA	
Castle Durham	\$575	X-2-101	TJN	
JBL 18Ti	\$590	X-5-152	JA	
True Image HR-6.5	\$590	X-7-117	JA	
Norberg BCS-16	\$595	IX-5-114	DO	
MB Quart MB 280	\$599	XII-1-152	JA	
AR TSW 410	\$600	X-7-117	JA	
Rauna Freja	\$625	XII-1-152	JA	D
Rauna Tyr II	\$625	IX-2-99	JGH	D
Delaware Acoustics DELAC S10*	\$629	XII-4-137	JA	
British Fidelity MC2	\$649	XI-7-93	TJN	C
Rogers LS3/5a	\$649	XII-2-115,3-142	JA	C
Paradigm Control Monitor	\$680	XII-12-114	JA	D
ARC CS2	\$695	X-7-117,9-133	JA	
Quadrant Q-250**	\$695	X-8-131	JA	D
Camber 3.5A	\$699	XI-8-127	JA	D
Monitor Audio R300/MD	\$699	XII-4-142	JA	D
AR 35	\$700	X-7-117	JA	
Altec Lansing 301	\$750	IX-7-126	JGH	
Tennessee Sound Co. Symphony I	\$750	X-3-132	DO	
Vortex Screen*	\$750	XII-7-140	RH	
Snell Type Q	\$780	XI-6-117	TJN	C
Music & Sound 925‡	\$799	IX-3-75	JGH	
Spectrum 410**	\$799	X-3-163	BS	
Pres Classic II	\$849	X-5-152	JA	
LC Domestic Monitor One*	\$849	XII-2-119	JA	
Kindel Purist L	\$850	XI-2-101	TJN	C
Audio Concepts Quartz*	\$869	XI-2-101	TJN	
Amrita AMRIT-MiniMonitor	\$875	XII-12-114	JA	

Table: Reviewed & Recommended Loudspeakers, 1986-1990

Model	Price/Pair	Issue(s) reviewed	Reviewer(s)	Rating
RSL Speedscreen II‡‡	\$898	XIII-2	JA	
Siefert Magnum III	\$899	X-5-161	JA	
TNT-Lines M1	\$899	XI-9-99	JA	
Wharfedale 507.2	\$940	XII-1-152	JA	
Rogers LS7t	\$949	XII-12-114	JA	D
Celestion SL6Si	\$950	X-5-153	JA	C
Saras Model 44	\$950	IX-3-80	DO	
Monitor Audio R652/MD	\$989	X-5-159	JA	
Angstrom Reflexion**	\$995	X-3-163,XII-2-111	BSJA	
Acoustat Spectra II*‡‡	\$999	XIII-1-71, 2	ST,TJN	
DCM Time Frame TF1000*	\$999	XI-6-128	JA	
Image Concept 200*	\$1000	XI-8-127	JA	C
Thiel CS1.2*	\$1090	XII-1-113,6-75,11-165, XIII-1-77	LA,STJA,ST	C
Epos ES-14	\$1195	XI-6-117,XIII-1-73	TJN,ST	C
Synthesis I.M210*	\$1195	X-8-131	JA	C
Vandersteen 2Ci	\$1195	IX-6-92,XII-5-97, XIII-1-71	AHC,JA,ST	B
DX Labs 175*	\$1200	X-8-131	JA	
Spica Angelus*	\$1275	XI-2-96,XIII-1-75,79	JA,ST	C‡‡‡
VMPS Tower II/R*	\$1329	XI-5-101,10-145	TJN	C
Monitor Audio R852/MD	\$1350	XI-6-117	TJN	
Nelson-Reed 8-02/B‡	\$1390	XI-1-123	JA	
Orpheus 808*	\$1400	XI-6-128	JA	
TDL Studio I‡‡	\$1445	XIII-2	JA	
Acoustic Energy AE1	\$1500	XI-9-99	JA	B***
PSB Stratus*	\$1500	XI-5-106	JGII	C
Rauna Balder*	\$1500	XI-6-128	JA	C
SR Bolero	\$1580	XII-4-147	JA	C
Thiel CS2*	\$1650	VIII-6-86,XII-1-103	AHC,LA	C
Magnepan MG2.5R*	\$1695	XI-6-114/128	JA,JGII	C
Monitor Audio R952/MD*	\$1750	XI-1-120,2-127,5-51	JA,ST	C
Mission 780 Argonaut*	\$1800	X-7-103	JA	
Mitek ZSE 380*	\$1800	XII-5-109,6-151	TJN	
Acoustat Spectra 22*	\$1850	XII-10-129	DO	
Snell Type C/II*	\$1890	XII-5-90	TJN	B
GNP Valkyrie	\$1895	X-3-160	TJN	
Celestion SL600Si	\$2000	XII-5-103	JA	B***
Carver Amazing Loudspeaker*‡‡	\$2195	XIII-2	DO	
Magnepan MGIIIA*	\$2195	IX-4-91,X-1-108	AHC,MC	B
Thiel CS3.5*	\$2450	X-1-104,XII-1-110	AHC,LA	B
Acoustic Energy AE2‡‡	\$2500	XIII-2	JA	
Fried G/3*	\$2500	IX-7-104	DO	
Martin-Logan Sequel II*	\$2500	XII-8-113,9-54,10-174	JA,ST,DO	B

* Floorstanding; stands not required

** Stands included in price

*** Class B but limited I.F. extension

‡ Review and rating were of earlier version

‡‡ See review in this issue

‡‡‡ The Audio Anarchist considers the Angelus to belong in Class B

ADCOM GFP-565 PREAMPLIFIER

Gary A. Galo



Adcom GFP-565 preamplifier

Solid-state stereo preamplifier. Specifications: Output impedance (bypass, normal, and lab outputs): 100 ohms; Output level: 2.0V (rated), 10.0V (max); THD plus noise: 0.0025% (high-level), 0.009% (phono). IM distortion (SMPTE): 0.0025% (high-level), 0.0025% (phono). Frequency response (± 0.5 dB): 5Hz–90kHz (high-level), 5Hz–70kHz (phono). RIAA accuracy: 20Hz–20kHz ± 0.1 dB. Weighted S/N ratio: > 100dB (high-level), > 95dB (phono). Power consumption (120V AC/50–60Hz): 10W. Weight: 11 lbs. Dimensions: 17" W by 12 $\frac{1}{2}$ " D by 3 $\frac{1}{4}$ " H. Sample tested: SN 935-133604 (production sample). Price: \$798. Approximate number of dealers: 350. Manufacturer: Adcom, 11 Elkins Road, East Brunswick, NJ 08816. Tel: (201) 390-1130.

In recent years, Adcom has carved an enviable niche for themselves in the entry-level category of high-end audio. Their excellent GTP-400 tuner/preamplifier, which I reviewed in Vol.12 No.9, has further enhanced their reputation for musically satisfying sound at affordable prices. The GFP-565 is Adcom's newest preamplifier and their most expensive to date. The GFP-565 was designed to offer more than simply excellent performance for the price asked. This new arrival is Adcom's attempt at manufacturing a preamplifier which can compare favorably to the most expensive state-of-the-art products offered by other high-end manufacturers. As such, its \$798 price tag is still reasonable, especially when the 565 is compared with other preamps in the under-\$1000 price range.

I'd like to correct a potential misunderstanding (a dealer I know was even confused) regarding Adcom's current product line. Although the physical appearance of the GFP-565 is virtually identical to Adcom's older GFP-555 preamplifier, the 565 bears absolutely no internal resemblance to the 555, and as such it is *not* an updated GFP-555. Adcom is preparing a completely redesigned GFP-555, called the GFP-555 II, which will retain the physical appearance and \$500 price tag of its predecessor. By retaining the same case, front, and rear panels used in the GFP-555 for both of their new preamps, Adcom has been able to put all of

their money into the circuitry of these new products, rather than spending some of it retooling the mechanical parts. I firmly agree with this philosophy.

Like the GTP-400 tuner/preamp, the GFP-565 combines the design talents of Walt Jung and Adcom's product-development director C. Victor Campos. The 565's main amplification circuitry and power supplies were designed by Walt, while component selection was a collaborative effort. Walt's contributions involve far more than the fine-tuning of existing circuitry, since the phono preamp and line-level stages employ unique circuit topologies which he developed. Walt's reputation as the foremost authority on the use of IC op-amps in high-performance audio circuitry is further reinforced by the GFP-565 preamp, in my opinion.

Victor Campos brought his rare talents for realizing a first-class design through the final stages of production without compromising the performance along the way. In fact, the production version of the GFP-565 is, if anything, slightly better than the pre-production prototype I first evaluated. As has been the case with other Adcom products, the 565 is completely *American* in design, and although the main printed circuit board is manufactured in the Far East, final component assembly and testing are done right in East Brunswick, NJ.

The GFP-565 was designed to satisfy purists, who normally demand as simple a signal path as possible, as well as those audiophiles in need of a full-featured preamp. These two seemingly contradictory requirements were addressed by supplying the 565 with three sets of outputs. The bypass outputs are intended for the purists (among whom I include myself). No tone controls or filters corrupt the signal path when the bypass outputs are used, but the balance control is still operational. The bypass outputs are also direct-coupled, eliminating any possibility of sonic degradation normally associated with coupling capacitors.

The bypass outputs still allow the use of an external processing loop, so they are not absolutely purist in the sense of minimizing every possible switch contact. A mono switch and loudness contour are also available when the bypass outputs are used, but the contour switch and its associated filter components are connected to a tap on the volume control, so these components and switch contacts are not in the signal path. Like the GTP-400, the loudness contour's characteristics are based on the studies of Robinson and Dadson. The contour characteristics are gradually reduced as the volume control is advanced, but the circuit should be switched out when listening at normal volume levels.

Similarly, the mono switch does not actually place contacts in the signal path; it simply connects the left and right channels together. A few purchasers may wish Adcom had included separate left/right mono switching, helpful for playback of the double-duration mono CDs from Rodolphe Productions. However, if you purchase the 1953 Clemens Krauss performance of Wagner's *Ring*,¹ which you should if you love this music, you'll receive a free L/R mono switchbox. Although the switchbox is a cheap, flimsy affair that you'd never want to leave in your signal path, the box could easily be connected to the 565's external processing loop, to be switched in only when necessary. Plans for constructing such a switch have also appeared in *Audio Amateur*.²

For those in need of the tone controls, two additional outputs providing those features are included. The normal output is capacitor-coupled with a high-quality film device, whereas

the lab output is direct-coupled. The tone controls provide boost or cut below 300Hz and above 3kHz, with a minor side effect on information between those two frequencies. A high-cut filter is also provided via the main and lab outputs. The filter characteristic is very gentle, being only 2.7dB down at 20kHz. This might be just enough high-frequency cut to remove some of the "edge" from a cheap CD player, but I would hope that anyone purchasing the GFP-565 would be using sources worthy of its own performance.

Six inputs are provided on the GFP-565, including phono, CD, tuner, tape 1 and 2, and video/aux. Separate selector switches are provided for listening and recording, and since two tape outputs are also included, tape copying in either direction is possible. The 565 does not have an infrasonic filter for the phono preamp. I asked Victor Campos why he had dispensed with this feature when it had been included on previous preamps, including the GTP-400 and the GFP-555. Victor said that he believed that any infrasonic filter compromised the sound quality of the phono preamp. The GTP-400 and GFP-555 contained the filter because of the fact that these less expensive preamps would probably be used with cheaper turntables which generate more infrasonic noise.

The 565 will probably be used with more expensive turntables which do not suffer from this problem. Of course, this still does not address the record-warp issue, but the GFP-565 does not become unstable when fed a large amount of infrasonic information from a warped LP. When I compared the 565 to the Audio Research SP-11 II (more on this later), I found that warped LPs played through the SP-11 II caused visibly greater infrasonic movement of my woofers than the same discs played through the 565 *at the same playback level*. The SP-11 II contains a switchable infrasonic filter.

The circuitry in the GFP-565 is based on IC op-amps, but their implementation is rather sophisticated. The ICs used in the 565 are specially selected devices bearing Adcom's own part numbers. Both the phono preamp and the line-level stage employ high-current, low-output-impedance IC buffers within the feedback loop. These IC buffers are not op-amps, instead being unity-gain devices designed to work with an op-amp to form a complete gain stage. The op-amp's output feeds the input of

¹ Reviewed by RL, Vol. 11 No. 8, August 1988.

² Galo, Gary A. "New Compact Disc Technologies" in "Ask TAA," *Audio Amateur*, August 1989.

the high-current buffer, which in turn drives the feedback loop and the next stage of amplification. This configuration allows the op-amp to provide the necessary gain without being affected by the loading of the next stage. The IC buffers are externally biased for pure class-A operation, and each device is mounted on a small aluminum heatsink.

The implementation of the buffers in the phono preamp is rather unusual. The gain of the phono preamps is accomplished with an ultra-low-noise IC op-amp. A low-noise op-amp will not, however, produce a silent phono preamp unless the RIAA equalization network has very low impedance at high frequencies. In any feedback-based RIAA preamp, the noise level will ultimately be limited by the impedance of the RIAA feedback network. Adcom uses an RIAA network with an impedance of approximately 250 ohms at high frequencies, whereas most other IC-based phono preamps have an impedance of 1k or higher, which in turn results in a higher noise level. So why do other manufacturers use a high-impedance feedback loop when they could optimize the noise performance by lowering the impedance? Very simple. Few, if any, IC op-amps can supply enough current to drive a low-impedance RIAA network while still maintaining low distortion.

Adcom's high-current IC buffer makes the use of a low-impedance RIAA feedback network possible. The op-amp provides the necessary voltage gain, with its output feeding the input of the buffer. The buffer, in turn, drives the RIAA network, with plenty of current to spare. The result of all this is the quietest phono preamp I have ever encountered. The low output impedance of the IC buffers in both the line-level and phono stages also improves dynamics by an order of magnitude over what the op-amps could achieve by themselves. The output stages of the IC op-amps are also operated in class-A, not with the common pull-down resistor technique, but using a more sophisticated current-source arrangement. All integrated circuits are soldered to the PC board, eliminating contacts in the signal and power-supply lines which result when IC sockets are used.

The phono input is a fixed-gain circuit designed for use with cartridges whose outputs are 2mV or higher. The designers deliberately avoided making an all-purpose phono preamp

with switchable gain for low-output moving-coil cartridges. I can't argue with this approach. A phono preamp circuit should really be designed for a single gain setting; doing otherwise will invariably result in compromised performance. You can't optimize a phono preamp for high-output cartridges, throw in a switch and resistor, and expect the preamp to perform equally well with low-output cartridges. An optimum preamp for low-output cartridges requires a circuit topology tailored for that purpose. My experiences with audiophiles who use low-output cartridges is that most have their favorite step-up devices anyway. [*This runs counter to my experience.* — Ed.]

The tape outputs are buffered using IC op-amps in a unity-gain voltage-follower configuration. As with the GTP-400, I applaud Victor Campos's insistence on the use of tape output buffers. They are absolutely essential if the integrity of the internal signal path is to be maintained. The loading of the circuitry caused by tape recorders—particularly if they are switched off—and cable capacitance can seriously impair the performance of an otherwise excellent design. Every preamp claiming high-end performance should have actively buffered tape outputs, but many, including the older GFP-555, the \$900 Forté 2, and the \$5000 Audio Research SP-11 II, do not.

The GFP-565's power supplies provide $\pm 18V$ to the circuitry, with extremely low output impedances. Discrete solid-state regulators are used, along with 6800 μF Panasonic TS series electrolytic capacitors at the inputs of the regulators. The outputs of the regulators are bypassed with 470 μF Panasonic HF series low-ESR (equivalent series resistance) electrolytics.³ Three additional pairs of the 470 μF HF series capacitors are used for bypassing near the phono preamp, line-level, and tape-out buffer circuitry. These capacitors are placed as close to the circuitry as is physically possible. It is worth noting that all of the 470 μF bypass capacitors have a 35V rating even though 25V capacitors would have been more than adequate for the $\pm 18V$ supply rails. This was done in the interest of lower power-supply impedance, since the 35V caps have a lower ESR than their 25V counterparts.

One severe limitation of power-supply out-

³ I have used many Panasonic HF series capacitors in my own equipment and have found them to be the best electrolytic capacitors available.

put impedance is normally the resistance of the circuit-board traces. No matter how good the supply, its ultimate output impedance, as far as the circuitry is concerned, is limited by the resistance of the conductors connecting the supply to the circuitry. Adcom has taken the unique approach of paralleling the power-supply traces with three heavy brass busses, insuring virtually unmeasurable resistance between the regulators and the circuitry. The power transformer is encased in a mu-metal shield which, given the vanishingly low noise level of the 565, is highly effective.

The 565 preamp employs separate power-supply regulators for the headphone amp. Your first reaction might be: "how thoughtful of Adcom to devote so much attention to the headphone amp." Wrong! This was done so the headphone amplifier would not put an additional, unnecessary load on the main power supply. In fact, the headphone amplifier is nothing special, being based on a dated 4556 dual op-amp.

Adcom spared no expense on the quality of the passive components used in the GFP-565. All resistors are 1% metal film manufactured by Roederstein, which are among the finest resistors available for audio use. The RIAA feedback network uses 1% -tolerance Roederstein film capacitors, normally very difficult to obtain in the United States, and very expensive. Panasonic polypropylene capacitors are used in the tone-control and filter circuits (which are not connected when the bypass output is used). Both the volume and balance controls are premium Alps pots, the same grade used by Audio Research in the SP-11 II. (Incidentally, judging by the physical appearance of the SP-11 II's resistors, I believe they are also Roedersteins.)

All of the GFP-565's circuitry is contained on one large circuit board, with the exception of one tiny circuit board next to the power transformer which contains the jumpers necessary for configuring the 565 for various line voltages. The main circuit board is double-sided, with the component side covered with a copper ground plane. This is a beautifully manufactured board, worthy of the attentions to detail taken in designing the circuitry which it contains. The recording and listening selector switches are also made by Alps. The working parts of these switches are soldered directly to the PC board, and are operated by mechanical remote connections on the front panel. This

eliminates the need for unnecessarily long leads between the input and output jacks, the switches and the circuitry. Gold-plated connectors are used for all input and output jacks. Overall, the quality of construction is excellent.

One final touch which separates the GFP-565 from the competition in this price range is their choice of material for the bottom plate. Many audio designers are aware of the sonic problems encountered when a chassis made of permeable metal is placed close to the circuitry. Adcom uses an aluminum bottom plate to eliminate these problems. If the full sonic benefits of the aluminum bottom plate are to be realized, the 565 should not be placed on top of another component with a steel top. The 565's cover is made of steel, but the distance between the cover and the main circuit board is said to be large enough to prevent any sonic problems.

The same free interconnect Adcom supplies with their other preamplifiers is included with the GFP-565. As I stated in my GTP-400 review, the cable is far better than those normally given away, and many users will find it perfectly satisfactory. I conducted my evaluations with my own cables, however. The 565 manual, at least the version I received, is a bare-bones affair consisting of loose pages stapled together in one corner, a presentation hardly worthy of this fine preamp. They didn't even bother to include a list of specifications. Victor Campos tells me that the manual is being rewritten.

The sound

The first GFP-565 sample I received was a pre-production prototype which Adcom supplied in June 1989. When the first production units rolled off the assembly line in September, I was promptly sent a sample. The two were very similar in their sound, with the production unit being subtly better in the areas of inner detail and imaging. The pre-production prototype used some substitute parts, not in value but in origin of manufacture, due to the lack of availability at that time. Roederstein has a six-month backlog on certain resistor values. The production samples contain all of the specified components.

All of my comments on the sound refer to the actual production sample connected to my system via the bypass outputs, which I believe is essential if the full potential of this preamp is to be realized. I also recommend making sure

the tone-control and high filter switches are left out, even when the bypass outputs are used. Even though the tone-control and filter circuits are not in the signal path, their passive components are still connected to the bypass outputs when they are switched in, which can result in a very subtle degradation of the sound.

In common with other solid-state preamps, the sound of the GFP-565 improves after warm-up. As is my normal practice with preamps, I left both samples of the 565 powered continuously. I should point out that the sonic improvement after warm-up is quite subtle; the 565 sounds extremely good even from a cold start. Phono preamp evaluations were made with my custom-built belt-driven turntable, Grado Signature tonearm with both Grado Signature 10MR and Adcom XC-MR2 cartridges. The line-level section was fed by my extensively modified Magnavox CDB-650 CD player.

During my evaluations of the pre-production prototype, a problem developed which I must report. At one point in my listening I noticed my woofers moving forward as I advanced the volume control. This occurred only when the recording and listening switches were set to the same input. Suspecting a DC offset problem in the tape-output buffers, I disconnected the preamp, hauled it over to my office, and put it on the bench. Sure enough, there was 18V DC on both channels of the tape 1 outputs. Further investigation showed that the suspect dual op-amp had the same 18V on its inputs as well, explaining the appearance of DC at the main preamp outputs when the recording selector was moved to the same position as the listening selector. On my system, this problem was potentially damaging since my tri-amplified system has a DC signal path for the woofers from system input to output (the midrange and tweeters do not, since bandpass and high-pass filters are, by the nature of their design, capacitor-coupled). Most power amplifiers do have input coupling capacitors, so such a failure is unlikely to damage any associated equipment.⁴

I phoned Victor Campos, who immediately

rushed me several replacement op-amps via Federal Express. While Victor was recovering from heart failure, I desoldered the bad IC and installed a replacement. (Adcom was ready and willing to fix the preamp for me, but I felt it would be a waste of time and shipping expense to send the unit back when I was perfectly capable of repairing it myself.) The pre-production sample has performed flawlessly ever since, and it has seen more than four months of continuous operation since the IC was replaced. (I loaned it to a friend when I received the production sample; she intends to buy one.)

I have not experienced a single problem with the production unit. The pre-production sample was hand assembled; perhaps excessive heat during the soldering of the bad IC caused the failure. I am not the least bit concerned about this problem, and report it only because I believe a reviewer has an obligation to document any and all difficulties for the edification of the reader.

The GFP-565 is the best under-\$1000 preamp I've had the pleasure of hearing. The phono preamp is one of the very best I've ever heard, period. The total absence of background noise in the phono preamp is immediately striking. If you hear any noise, you can rest assured that it is from your LP playback system and not from the GFP-565. The inner detail and clarity of the 565 phono section is stunning. Try any heavily scored, well-recorded LP, such as Respighi's *Pines of Rome* with Dutoit and the Montreal Symphony (London), and you'll be able to penetrate the densest portions of the score with ease.

The 565's phono section does not deliver such impressive inner detail at the expense of warmth and hall ambience. It simply delivers an accurate account of what is on the record—clarity, warmth, ambience, and whatever else exists in the program material. The string sound on Chesky's reissue of Fritz Reiner's *Scheberazade* emerges with characteristic sweetness and delicacy. The 565's phono preamp reproduces a wide and deep soundstage. On Reiner's *Scheberazade*, the boundaries of the stage in Orchestra Hall are clearly evident, particularly the back wall of the stage. Similarly, the smaller room boundaries of the MGM soundstage studio used for Sheffield's Wagner disc, conducted by Erich Leinsdorf, are realistically reproduced.

⁴ This is not strictly true as, depending on the preamp volume setting and the power amplifier's intrinsic LF extension, the 18V DC offset will be reproduced as a full-power pulse of relatively long duration when the input and record selector switches are set to the same input. This happened to me some eight years ago with a preamp possessing a similar problem: by the time I realized what had happened, the power amplifier, which was capacitor-coupled, had still managed to fuse both woofer voice-coils.

—JA

One "depth test" I constantly use as a reference occurs just prior to the Forging Scene proper on side 3 of Solti's *Siegfried*, on my pre-DMM German Teldec pressings. The scraping of the sword against the anvil is deep in the soundstage, behind the orchestra, and that is precisely where it appears when played on the GFP-565. The dynamics of the 565 phono are excellent, to say the least. Siegfried's Funeral Music, on side 9 of Solti's *Götterdämmerung*, contains a crescendo in the brass of shattering impact, and it is delivered most impressively by the Adcom phono section.

The GFP-565 phono preamp does nothing to exaggerate clicks, pops, or other forms of LP surface noise, indicating that such transients are not driving the preamp into non-linear operation or, if they are, the preamp's recovery is virtually instantaneous. The neutrality of the tonal balance will depend strictly on the cartridge used, since you'll be hard pressed to find a preamp with flatter RIAA equalization. This phono preamp is an excellent vehicle for revealing the differences between phono cartridges, not only in terms of tonal balance, but in other aspects of performance as well. The 565 clearly revealed the differences in spatial characteristics between my Grado Signature 10MR and my Adcom XC-MR2, with the Grado having superior depth perspective. The Adcom cartridge has greater inner detail, but is also slightly recessed in the midrange when compared to the Grado. The 565 does nothing to mask these differences.

The specific comments I've made about the GFP-565's phono preamp can also be applied to the line-level stage as well. It's clear that the designers had the same goals in mind for both sections of the preamplifier, but a few specific comments are in order here as well. Dynamics of the line-level stage are also superb. The brass crescendo on the CD version of Siegfried's Funeral Music (Solti *Götterdämmerung*, disc 4, track 8) is reproduced with tremendous impact. At the same time, the soft tympani roll at the very beginning of the Funeral Music is delicate and well articulated. In fact, if a high-quality LP playback system and CD player are used for the comparison, the two versions of this recording sound remarkably similar.

The Forging Scene "depth test" I referred to above, when heard on London's CD version of Solti's *Siegfried*, passes with flying colors as well. Again, there can be no question that the

LP and CD have the same master tape in their ancestry. In my experience, it is rare that an LP and CD of the same source sound similar enough to consider the differences of little consequence. Both the LP and CD must be extremely faithful replicas of the original, and their respective playback devices must exhibit high degrees of sonic accuracy. Beyond that, the design of an RIAA phono preamp and line-level stage with such similar sonic characteristics is an impressive feat. The greatest difficulty does not lie in the design of the line-level stage, but rather the phono preamp, where so many design parameters must be considered and so many things can go wrong.

I recently acquired the new Chesky CD of Jascha Horenstein conducting Dvorak's "New World" Symphony 9 and Wagner's *Flying Dutchman* Overture and *Siegfried Idyll*. This important addition to the Horenstein CD discography is sonically Chesky's finest orchestral CD to date. The accuracy of instrumental timbres and clarity of inner lines are reproduced by the 565 with breathtaking realism. The line-level stage's ability to reproduce the low-bass region with virtually unrivaled impact and clarity can be heard on any Telarc CD, but I find Maazel's *Rite of Spring* to be particularly impressive. I have not heard any commercial preamplifier with better low-frequency extension, impact, and clarity. (Only my custom-built reference preamp is superior to the 565 in this respect, but I went to the extreme of using separate supply regulation for the line-level stage. My phono preamp and tape-output buffers are powered by a different set of regulators.)

The GFP-565 is an extremely accurate preamplifier. Whether or not it is musical depends strictly on the source material. The 565 does not add those euphonic colorations which make every recording sound sweet, pleasant, and musical. On the other hand, it adds none of the stridency or harshness that many still believe characterizes IC-based audio circuits. Instead, it tells the truth, and accuracy is, in my opinion, what high-performance audio is all about.

Comparisons

I've had the opportunity to compare the GFP-565 with several well-known preamps, including the older GFP-555, the Forté 2, and the Audio Research SP-11 II. The GFP-565 is, by

far, the quietest of any of these preamps, particularly the phono section. I've never encountered a quieter phono preamp. The GFP-555 sounds gritty in the high frequencies when compared with the 565. The 555 has a more analytical, colder, and less musical sound. Dynamics are not as impressive, particularly in the bass region. The 555's phono preamp was worse in this regard than the line-level stage. The phono preamp also loses inner detail, becoming congested during orchestral climaxes.

Several design weaknesses in the GFP-555 have not been repeated in more recent Adcom products, most notably the GTP-400 and the GFP-565. First, the phono preamp is powered by an essentially de-regulated power supply, since the designers put 33-ohm decoupling resistors in series with the supply lines. These resistors, used in *many* preamp and CD-player circuits, are often called safety resistors, since they protect the supply regulators in the event of a catastrophic circuit failure. This "safety" feature is unnecessary with properly designed supply regulators, which should shut down if the output rails are shorted to ground. Nearly all IC regulators are protected in this fashion. Decoupling resistors substantially raise the output impedance of the supply, defeating the purpose of the regulation, in turn degrading the dynamics and soundstaging.

The GFP-555's power supply also has fuses in the secondary circuit of the power transformer. This is another bad practice. To maintain as low a supply impedance under dynamic conditions, any fuse should be confined to the primary side of the transformer. Finally, the 555 has a rather dirty signal path, with the output IC op-amps driving the tone-control circuits and filters. No less than eight switch contacts appear in the signal path between the IC's outputs and the jacks on the rear panel! The contacts are bad enough, but when they appear just prior to the preamp's output, the loading effect of cables, etc. can make them perform in a non-linear fashion. From a perfectionist point of view, there should be no switch contacts between the output IC and the output jacks. The sound of the GFP-555 is noticeably inferior to the newer and cheaper GTP-400, and not the least of the reasons for this are the GTP-400's superior power supply and cleaner signal path.

The \$900 Forté 2 was a disappointment. This

op-amp-based preamp sounds very musical and pleasant and reveals more inner detail, particularly at climaxes, than the GTP-400 or the GFP-555. The high end is a bit smoother than the other two, and the dynamics are better than the 555. When compared with the GFP-565, however, the Forté 2 falls short in every aspect of performance. The Forté's soundstage is narrower than the 565's, in both the phono preamp and line-level stages, and the Forté's depth perspective is not nearly as impressive. The 565 maintains a deeper soundstage, which remains rectangular right to the back of the stage. The Forté's soundstage collapses to near mono, like a triangle, at the rear of the stage, a characteristic I've consistently observed in equipment with inadequate power supplies. Both lateral imaging and depth are less precise than the GFP-565.

The 565 reveals more inner detail and is far more dynamic than the Forté. The bass region, in particular, is reproduced with greater impact by the GFP-565. The 565's phono preamp is also considerably quieter than the Forté's. The Forté 2's Tiffany-like gold-plated connectors and machined aluminum knobs give a true high-end appearance and feel. Then why should this \$900 preamp be so easily beaten by an \$800 contender? I was shocked when I first removed the Forté 2's covers. This \$900 preamp has an *unregulated* power supply!

The Forté 2 has an outboard supply containing a skimpy 6VA transformer, rectifier diodes, and a pair of 2200 μ F capacitors. This minimal raw supply is connected to the main chassis with 6' of cable which is no heavier than 20 gauge. Inside the main chassis are a pair of simple R/C filters for the positive and negative rails, each containing a pair of 1000 μ F caps. The R/C networks are on the line-level end of the main PC board. Six inches away, a pair of 4.7 μ F caps are all the bypassing the phono preamp is given, *one hundred times lower in value than the bypass capacitors used by Adcom in the 565*. In terms of dynamics, the Model 2 might better be described as mezzo-Forté, but contrary to what is often believed, the inadequate dynamics have *nothing* to do with the power-supply operating voltages, instead being directly related to the lack of supply regulation and the resulting high output impedance.

Both the phono preamp and line-level stages of the Forté 2 are buffered using a discrete transistor arrangement biased for class-A operation. Like the GFP-565, the buffers operate

inside the feedback loop and, in the case of the phono preamp, drive the RIAA feedback network. It's strange, then, that Nelson Pass chose a high-impedance RIAA feedback network, with its resulting higher noise level. The Forté's RIAA network looked awfully familiar, and is, in fact, the same network used by Lampton and Zukauckas in their late-'70s Mark I preamp.⁵ The Forté's buffers may not be capable of enough current to drive a lower-impedance RIAA network, which is unfortunate since the Linear Technology LT-1028 op-amp used by Pass is capable of a much lower noise level than he has realized in this RIAA circuit. Finally, the IC op-amps are not soldered to the PC board; they are socketed.

Victor Campos challenged me to compare the GFP-565 to the Audio Research SP-11 II, recently discontinued but considered by many to be a definitive statement on preamplifier design. Since *Stereophile* owns one, arranging to borrow it was no problem. I really didn't expect the 565 to hold its own with a \$5000 preamp, but the results were not exactly as I had anticipated. I had expected the SP-11 II to easily outperform the 565. Only half of it did so, and only after a long warmup (after the unit had been on for ten minutes it sounded pretty bad). The SP-11 II's line-level stage is absolutely gorgeous; it is the best line-level stage with gain I have heard. It is incredibly detailed, and that detail and transparency are maintained in the most complex, heavily scored passages. The soundstage is huge, both in width and in depth.

Subtle changes in dynamics which are masked by other preamps are revealed with stunning realism by the SP-11 II. Its ability to recover ambience is also exceptional. In all areas of performance, the SP-11 II's line-level stage was an order of magnitude better than that of the GFP-565. But the Audio Research preamp is seven times the price. Is it seven times as good? Absolutely not. It's difficult to quantify such differences, but I would say the SP-11 II's line-level stage is roughly twice as good as the 565's. In terms of cost vs performance, the law of diminishing returns is definitely at work here.

The SP-11 II's phono preamp was an entirely different matter. The GFP-565 easily outperformed the Audio Research phono section. The

565 has lower noise, greater inner detail, and is free of a small amount of extraneous grit which the SP-11 II adds to the music. This grit does not appear in the form of high-frequency stridency or edge. It is simply a subtle layer of grudge which separates the listener from the innermost details of the music. Since phono preamps must also be fed through a line-level stage, the 565 would appear to be placed at a disadvantage. But, even though the 565's line-level stage is inferior to that of the SP-11 II, the capabilities of its phono preamp were still able to be revealed. As a system, the GFP-565's phono and line stages are superior to the SP-11 II for the playback of long-playing records.

One obvious listening test would be to connect the 565's phono stage, via the tape outputs, to a line-level input of the SP-11 II. This is really not as straightforward as it seems, since the signal would have to pass through the tape output buffers of the 565. The 565 would have to be internally modified to bypass the buffers, so I did not attempt such a test.

Those who love the sound of the SP-11 II—there is good reason for feeling that way about the line-level section—may be shocked to find out that the SP-11 II is not giving them that great tube sound. The SP-11 II is a hybrid design using both 6DJ8 triode vacuum tubes and field effect transistors (FETs), but tubes do not play a major role in the gain characteristics of this preamp. The line-level section consists of two stages, each using two FETs and a single 6DJ8. The two FETs are cascaded, with the second FET feeding the triode tube in a cascade configuration. The audio signal actually passes through twice as many transistors as tubes, with the transistors providing most of the voltage gain.

Conclusions

As someone who finds it difficult to use a piece of commercial equipment without eventually modifying it in some way, I'm sure that many tweekers will succumb to the temptation to modify the GFP-565. I must honestly warn you that most attempts to alter the 565 will result in a degradation of its performance. First, the 565's passive components are the finest available today from any source. Better-sounding resistors and capacitors simply do not exist, and I don't care whose Super-Duper-Wonder-Deluxe resistors and capacitors you care to consider. Second, the active devices have been so

⁵ Lampton, Michael and Don Zukauckas. "A Low Distortion IC Preamplifier/Control Unit," *Audio Amateur*, February 1979.

carefully selected for their respective circuit topologies that inserting your favorite op-amp will invariably degrade the sound. In particular, there is not a single op-amp I know of which, if substituted in the Adcom phono preamp, would result in anything but poorer performance. The GFP-565 is a thoroughly engineered product that delivers the maximum performance that can be extracted from these circuit topologies in this chassis with this control layout. Before you mess with it, you'd better know *exactly* what you're doing.

The GFP-565 is a superb preamplifier that can hold its own with all but the most expensive products. If an \$800 preamp can be compared to a \$5000 product, with the results being a toss-up depending upon which source material you prefer, it speaks very well of the lower-priced contender. Based on the listening I've done over the past six months, I'd rank the preamps I've compared here, and in my GTP-400 review, as follows:

Phono section	Line-level section
1) Adcom GFP-565	1) Audio Research SP-II II
2) Audio Research SP-II II	2) Adcom GFP-565
3) Forté 2	3) Forté 2
4) Adcom GTP-400	4) Adcom GTP-400
5) Adcom GFP-555	5) Adcom GFP-555
6) Hafler DH-110	6) Hafler DH-110

Considering that the Forté 2 serves as an example of solid Class C sound, and the SP-II II, prior to being discontinued, stood near the top of Class A, the GFP-565 easily deserves a Class B recommendation. The GFP-565 now sets the standard for preamps under \$1000, and should remain a worthy contender for years to come.

Postscript: Measurements

The Adcom GFP-565 exhibited a flat frequency

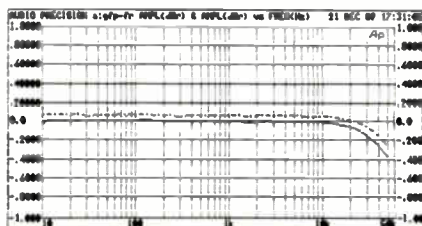


Fig.1 Adcom GFP-565, line-input frequency response, 250mV output level

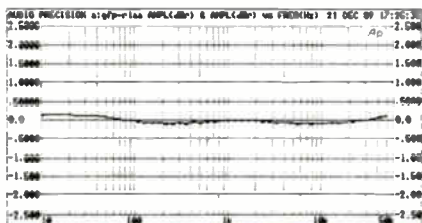


Fig.2 Adcom GFP-565, RIAA accuracy

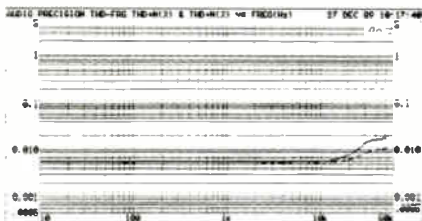


Fig.3 Adcom GFP-565, THD + noise, line input, IV output level

response measured from the CD input to Norm outputs, as shown in fig.1. RIAA accuracy was also very flat, deviating less than 0.1dB across the audible band (fig.2). Phono overload was a high 110mV at 1kHz. THD and noise, again measured from CD input to Norm out, was less than 0.006% across most of the band, rising slightly above 12kHz (fig.3).—Robert Harley

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Hafler Iris FM tuner

The Iris tuner is a companion unit to the Iris remote-controlled preamplifier reviewed by JA in Vol.12 No.6. The virtues of the preamp were found to be its user-friendly remote, featuring precise control of level and balance, and its neutral line stage. The two virtues, as JA expounded and I concur, make the preamp extremely useful for A/B comparisons of audio equipment. This review, however, is focused on the audio merits of the tuner/preamp combination and its remote-control congeniality, which on the tuner's part does not win equally high marks.

The tuner's front-panel markings are green against a blue-black background. From left to right are a five-level signal meter, five station presets, 5-6-digit frequency display, up-down tuning control, memory store, mute level (mis-labeled Distant Station), blend on-off, mono-stereo, and power on-off. A remote receive-command indicator, mute light, and stereo indicator are above the last five controls. The rear panel contains remote-control connections, fixed-level RCA audio outputs, and both 300 and 75 ohm antenna connectors.

The first-rate interior construction includes two glass-epoxy circuit boards. One has RF, audio, and the power supply minus the power transformer and input voltage strapping. Digital remote and display functions/circuitry are on the second front-mounted board. The digital remote circuitry is active only when called for, in order to minimize self-inflicted noise. A separate slice of circuit board is used to mount the remote umbilical connectors and functions as a ribbon cable from the rear to the front of the tuner. A questionable design approach is the use of plug-in IC sockets. While this approach may aid in servicing, long-term good conductivity in critical circuits may suffer from contact oxidation. The instruction manual is basic Dick

and Jane, but fails to state exactly what remote functions are available for the tuner. Actual remote choices are limited to the five presets, up-down scan, and manual scan downward. Why upward manual scan is not included is subject to speculation.

Circuitry

The Iris is actually a reworked and refined DH-330 with remote control added. It uses conventional circuitry with a five-section front end for good image rejection. The newer model features a sliding high-blend rather than the dynamic noise suppression used on the DH-330. I borrowed one of the elder tuners for an A/B comparison. The Iris was slightly more sensitive, brighter, and had minutely better stereo separation. Both noise-reduction systems are equally effective at preserving a subjective stereo image without objectionable noise on weak stereo signals as low as $15\mu\text{V}/28.2\text{dBf}$.

A further listing of what the Iris tuner will do and not do should ease evaluation. First the pluses: 1) The Iris has exceptionally low distortion, similar to the Onix BWD1 when receiving lower-modulated, non-SCA carrying stations. 2) It interfaces cosmetically and sonically with the matching preamp: a slight droop in response at 1kHz and a very gradual droop below 500Hz add a touch of crispness to dry-sounding FM stations. 3) Stereo imaging and separation are topnotch. 4) The Iris handles strong signal inputs without distortion.

Now the minuses: 1) The Iris tunes in 50kHz increments, which are too large for fine tuning and serve no purpose for tuning North America's 200kHz station spacing. 2) Tuning is awkward and requires two-button operation: scan direction and stop. 3) No direct 88.1 to 107.9MHz is provided in the manual mode. 4) Limited selectivity restricts the tuner's useful-

ness and contributes to high distortion on stations carrying SCA. 5) The Iris lacks the headphone and variable audio outputs of the older DH-330 tuner. 6) Only five presets are provided. More are needed considering the cumbersome manual tuning. 7) The Mickey-Mouse remote-control cables are difficult to attach. 8) FMX compatibility is poor. Numerous squeaks and swishes were heard when receiving FMX-formatted stations. As a matter of note, the only tuner tested that does not mind being injected with FMX poison is the NEC T-710, presumably because the digital "Walsh Transform Beat Canceller" can lock on to and remove the wavering 38kHz components found in the system. (FMX uses two 38kHz subcarriers, one 90° phase-shifted from the other. The critical difference in phase is altered by the addition of AM noise in transmitters, antennas, and multipath, and has led to Dr. Amar G. Bose's published negative comments on its practicality.)

The competition

Since this review concerns the quality of marriage between the two Iris units, I listened to the tuner with other preamps and the preamp with other tuners. The Iris being no slouch in audio quality, it required some careful listening and thought as to what is fair competition for a \$650 preamp. I narrowed it down to the modified B&K PRO 10MC from Sound Unlimited of Bristol, CT for four reasons: 1) At \$768, it is close in price (less without MC modifications). The remote and associated IR card are an additional \$150 for the Iris. 2) Because the stock version has received good press in *Stereophile* and the mod version was a hands-down winner in an A/B comparison against a factory unit at a recent 20-person listening session involving the Connecticut Audio Society. (Modifications include better op-amps, rebiasing for class-A operation, upgrades of all critical signal and power-supply capacitors, and installation of a toroidal transformer.) 3) Likewise, it's a tonecontrolless preamp. 4) Whereas some mods are kludges, the workmanship of this one is first-class.

At first listen, the Hafler preamp is cleaner, more accurate, and will give that illusion unless some comparison is made. Its sheen and lack of irritation are well-suited for FM listening because it is not often one knows whether the original sound is being colored by the FM sta-

tion or the receiving equipment. And what you don't hear won't hurt you. On the other hand, the modified B&K appears to be more into the music whether listening to FM or CD. There is far better pinpointing of instruments in the soundstage. In fact, this preamp makes bunk of the notion that low frequencies always blend together. Not so: a bass drum can be heard slightly left of center, string bass on the right. Organ was also better on the B&K because the spread of the pipes was apparent. On the Iris preamp the lows were more homogenized, but the midrange and highs appeared properly staged.

The best explanation I can offer for the modified B&K's superior low-frequency resolution and imaging is that the power-supply impedance is exceptionally low and lessens 60, 120, 180, and 300Hz power-line residue that normally mix with desired low frequencies, causing the common low-frequency blur heard on the Iris. Therefore, I agree with JA that the Iris is neutral, but not at low frequencies.

But all is not roses with the modified B&K: its faults are that it has a turn-on/turnoff DC glitch that may upset some amplifiers, there is considerable bleed-through from the line inputs to phono, and, despite the preamp's precise imaging, it can sound slightly gritty unless the input source is squeaky-clean. However, the tradeoffs do not outweigh its total musicality.

The Iris tuner was also tried with the Adcom GFP-555 preamp (\$490). The overall results were that the Iris only retained its low-distortion sound with its matching preamp. Second preference was the spruced-up B&K, then the Adcom. Using the best-sounding tuner on hand, a carefully aligned Luxman T-117, results were different. The B&K and the Luxman fell in love, producing the best imaging and bass-transient response I have heard from FM. Using the T-117 with the Adcom and Hafler produced okay, but not magic sound.

Lastly, the subject of remote control needs to be addressed: the Hafler remote-controlled Iris combo is more oriented, as indicated thus far, to favor the preamp. As of this writing, I do not know of a remote-controlled tuner that fully duplicates all front-panel functions. For instance, the elaborate remote for the Onkyo T-9090 II has 31 buttons but does not provide manual tuning, power on/off, or programming functions. Another poorly designed remote is

on the current H/K Citation 23 tuner: when a station is selected, the tuner reverts to Wideband and must be manually switched to Narrow, if needed, at the tuner. H/K claims a newer version of the tuner, available in early 1990, will have a remote with bandwidth switching. And as you're reading this, Quad is introducing its model 66 remote-controlled preamp. I had a chance to operate the large, heavy companion remote at a recent Quad press conference. Not only does the remote have adjustable balance—the forte of the Iris—but it incorporates adjustment of the manufacturer's tilt and filter tone controls. Projected price is near \$1700. A Philips-based companion CD player is also being introduced, and a soon-to-be-released FM6 tuner will follow. But a look at the remote indicates that it is geared to favor the preamp and CD player.

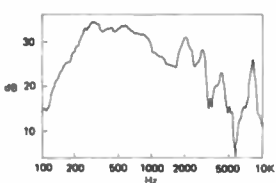
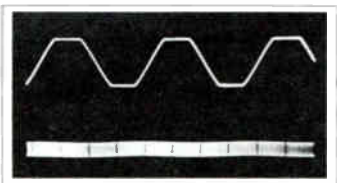
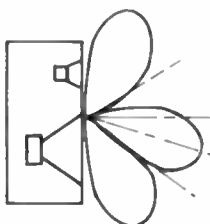
Conclusion

If you own or plan to purchase the Iris preamp and are considering purchasing the Iris tuner, you'll get good sound providing reception conditions do not require high selectivity, superior

SCA rejection, and FMX is not present. Any low-frequency blending heard with the preamp will not be noticed in systems with a common subwoofer, and the resulting sound will be quite transparent. And if you're only concerned with listening to/switching the few stations allowed by the limited-function remote, its preamp favoritism will not be a purchasing obstacle. For a few more bucks, however, the usually discounted, high-performance, remote-controlled Onkyo T-9090 II FM tuner (list \$750) might be a better buy, provided an additional remote can be tolerated.

Appendix

Tuners mentioned in this review but not referenced directly to review appearance: Hafler DH-330 (\$425) Vol.10 No.8; H/K Citation 23 (\$699) Vol.10 No.6; Onkyo T-9090 II (\$750) Vol.11 No.5; Onix BWD1 (\$885) Vol.10 No.8; NEC T-710 (\$299) Vol.11 No.10; Luxman T-117 (\$600) Vol.11 No.2. For B&K modifications contact Sound Unlimited, 169 Church St., Bristol, CT 06010, Tel: (203) 584-0131. **S**



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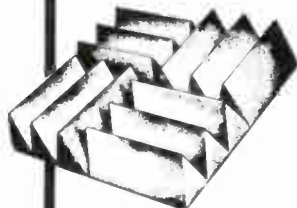
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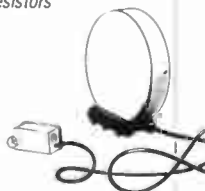
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*Estonian conductor
Neeme Järvi talks
with D.R. Martin*

In the ten years since he left the Soviet Republic of Estonia for the West, conductor Neeme Järvi has put more unusual symphonic repertoire on record than any other ten conductors combined. In fact, Järvi is probably the most recorded conductor of the '80s. He has a way to go to match the career totals of Herbert von Karajan and Neville Marriner; but at the clip he's going he shouldn't have any trouble surpassing at least Marriner by the time he's 60 or 65. To date something like 120 Järvi recordings have been issued, with about 30 awaiting release. At least two dozen other recordings have been scheduled.

If it were merely a matter of quantity, Järvi's prodigious output would be a curiosity, a Guinness category for conductors. But by any

standard of comparison, he's produced a goodly number of first-rate recordings, from Dvorák to Richard Strauss to Martinu. His Prokofiev series with the Scottish National Orchestra—of which he used to be musical director and chief conductor—is a particularly splendid achievement. He's effectively introduced the world to at least one major symphonist, fellow Estonian Eduard Tubin, and presided over mini-revivals of the likes of Glazunov, Berwald, Stenbamm, and Kalinikov.

Although he'll continue to record with the Scottish Orchestra, his musical home is with the Gotbenberg Symphony (Sweden), of which he's music director. He's also recording with major orchestras such as the Chicago Sym-

phony, the Concertgebouw, and several London orchestras, as well as minor ensembles such as the Stockholm Philharmonic and the Stockholm Sinfonietta. He's affiliated with Chandos, Bis, and Deutsche Grammophon.

D.R. Martin: Before you came to the West ten years ago, you weren't exactly a stranger to the recording process. You made records for Melodiya, and did a lot of recording for Estonian radio. Was recording in the Soviet Union all that different from recording in Sweden or Scotland or Chicago?

Neeme Järvi: The process is similar, but technically it's different. Western equipment was not available. It was all Czech or East German, not Russian at all. Of course, the playing quality was different, too. For Melodiya Records, I did Estonian music and accompanied Russian artists. The main thing I did for Estonian Radio was broadcast recordings of Estonian music. All new works by Estonian composers for radio, and some of them were also recorded for Melodiya, as well, such as the Raats Concerto for String Orchestra, and Arvo Pärt. Many records of Pärt. Pärt now lives in Berlin and he is quite well known. I was the first conductor of many of his new pieces, like the first three Symphonies of *Perpetuum Mobile*. Also, Estonian classical music, older music. I've done two records of *Music from Estonia* for Chandos, which show what else other than Tubin is available from Estonia.

DRM: There's no overlooking the fact that you've put Estonian music on the world map, what with your Tubin recordings and the *Music from Estonia* series, which contains some marvelous music. Why, for example, do you think your Tubin series on Bis has struck such a responsive chord?

NJ: He's a real symphonist. We don't have real symphonists these days. We have experimenters; a lot of composers who do experiments. But there's no real continuation from the style of Sibelius, Nielsen, Stenhammar, Petterson. In Nordic countries there is no great personality. But Tubin's music is all good. Maybe the First Symphony is a little weak, but the Second's a

Estonians want to put the economy right, they want to put the environment right. Nature has been absolutely destroyed by Soviet factories, pollution.

great symphony, the Third's a great symphony, Fourth, Fifth, Sixth. They're all very different, too. Two marvelous violin concertos. The Balalaika Concerto, written for a Russian instrument by an Estonian; but it's not Russian music. The balalaika player, who was a surgeon, came to Tubin and asked him to write a concerto. He brought the instrument to Tubin, he played it for him. And Tubin wrote this fantastic symphony in Tubin style for balalaika and orchestra. Beautiful, great music. Then the Contrabass Concerto. I think it is the best double-bass concerto ever written, from a technical point of view, a musical point of view.

DRM: But what makes Tubin so special?

NJ: Tubin's music is international, not Estonian music. Like Sibelius. You feel the Finnish in Sibelius, but not Finnish folk tunes. It's the same thing in Tubin: there are no folk tunes in his music. Only if it's something like *Estonian Dances* or *Estonian Dance Suite*, or the *Kraat Ballet*. The rest of it is international music that anyone can understand. Another one is George Lloyd. Nobody knows George Lloyd's music. Ten symphonies! Who in England knows him? Never performed, unless it's him conducting it somewhere, there are a few recordings available. Very good music, very beautiful, highly professional. If you find the volume of *Music from Estonia* on Chandos, it has Heino Eller's *Elegia* for harp and strings, like *Transfigured Night* from an Estonian composer. It has great form and is so fresh in style, written in 1930s.

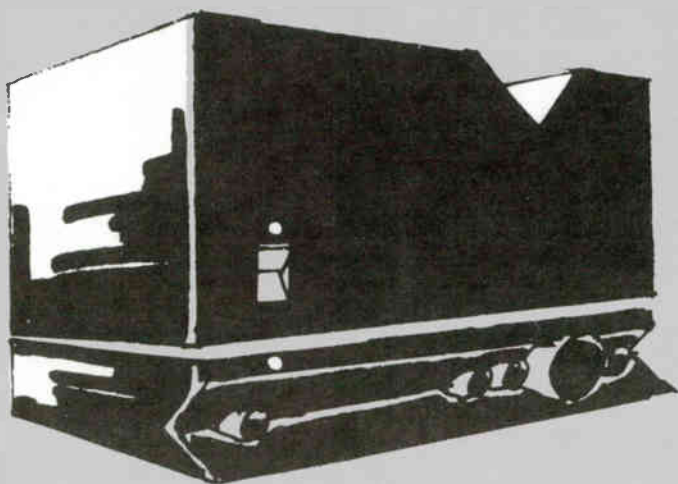
DRM: Things in Estonia have changed dramatically since the last time we talked a year and a half ago. And that's an understatement. What did you hear from your friends and relatives back home when you visited there in September with the Gothenberg Symphony? What did it feel like to be back after ten years?

NJ: The great thing is that Estonia is now thinking of independence, of their own national feel-

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ings and culture. Estonians want to do it their own way. They want to put the economy right, they want to put the environment right. Nature has been absolutely destroyed by Soviet factories, pollution, and everything. The conditions are so bad. I met all my friends again, people who some way for the first few years had forgotten me. . . . No, not forgotten me. But politically it was impossible [to acknowledge me]. The Soviet Union had a policy that if you left the country you don't exist anymore. But going back this time was a victory. I didn't go back as a tourist. We had four concerts, a great success, a great reception. Like an explosion in [Estonian] cultural life.

DRM: *If it had been like this ten years ago, would you have left in the first place?*

NJ: No, maybe not. Because now people can go abroad freely. You can make contracts [in other countries].

DRM: *It's obvious to one who's looked at your concert programs or your discography that you have a more wide-ranging repertoire than probably any other significant conductor. Quite apart from the fact that you must like it this way, how in the world have you managed to acquire and maintain so much repertoire?*

NJ: I'm a very quick study. It comes from 20 years of experience in Estonia, when I did a lot of new music. I can't play just a limited repertoire. I need variety, all the time. Orchestras like variety and freshness, too. I learn new things all the time and I try to find good music. It is so boring to deal with the symphony management in London, for example. No, that doesn't appeal to the people here, they say. Rachmaninoff 3, not popular. Two yes, but not 3. Beethoven 7 yes, 6 no. It's a very boring life. I do every week something different. Lately I conducted Sibelius 2, Nielsen 5, Pärt 3, Schmidt 2, Rachmaninoff 1, Virkhaus 3, Orff *Carmina Burana*, smaller pieces by Alfvén, Stenhammar. Coming up are Mahler 5, Schmidt 3, Berlioz *Requiem*, Scriabin, Mussorgsky, Prokofiev 6. Only Pärt 3 comes twice. One in Atlanta, one in Chicago. I always do something new, and my manager always looks at me and says, "Why are you doing something different every week? Why are you making your life so problematic? Do the same repertoire all the time. It's easy, for you and to plan." A lot of conductors are in that position, to do one program very well 20 times, 30 times, 60 times. But I don't know how interesting their lives are.

DRM: *Any ideas why so many conductors lead such constricted musical lives, especially on record?*

NJ: Because they basically have very narrow repertoires. They do certain repertoire which is important to them—Mahler symphony, Bruckner symphony, another Mahler symphony, another Mahler symphony, Brahms symphonies, Beethoven symphonies, more Mahler and Bruckner. They think it's most important to show their interpretation of Mahler symphonies. I think it's most important to show the world music it doesn't know through recordings: from Scandinavia, Russia, Estonia, Czechoslovakia. Martinu is a great composer and there were only Czechoslovakian records, and that's it. Why was nobody interested? Six great symphonies, symphonies all written in America. Why was nobody doing that? Because it's too much work. Much easier to do some Classical piece that the orchestra and conductor know; the record company's happy because that piece makes money. *This attitude is so wrong.*

DRM: *The flip side of that is that there's a suspicion that someone who has such a big repertoire can't be doing it all the justice it deserves. Some critics think that about you.*

NJ: They wonder, how's it possible for him to prepare so much repertoire, he's not serious. People told me I'm not serious. But I knew this music, almost everything I've recorded, for a long time, since I was a student. I'm 50 years old now, and I've known this music for 30 years. Now I have the possibility [to record], then I didn't.

DRM: *But when you look at your discography you realize that the range of repertoire that you've done is unprecedented, and I think that makes people suspicious. If you did it like Marriner and Karajan did in their recording heydays, in ordinary repertoire, I don't think anyone would much notice or care. But the suspicion is that since this is mostly offbeat repertoire, coming out with great speed, maybe it's prepared in a slapdash way.*

NJ: There's nothing wrong with how I record. Many of the orchestras I've recorded with aren't the world's best, but I try to get from them their

best. Maybe there are some wrong notes, some intonation problems, small things. But basically the interpretations are good. If you listen to the Vienna Philharmonic play Richard Strauss under Klemens Krauss, it's all out of tune! But that's great, the critics say, "the best." But if Järvi's doing some small thing with the Scottish Orchestra . . . [scowls]. But I have to live with this and I have to make recordings.

DRM: *You've also extensively recorded Dvorák, Sibelius, Strauss, Prokofiev, Shostakovich, mainstream stuff, and for the most part those recordings have gotten good notices. But last year you came out with a Brahms cycle with the London Symphony, on Chandos, and the critical reception wasn't nearly as good. Why not?*

NJ: Because critics are not serious enough to listen to them. I don't see anything wrong with my Brahms symphonies. If critics would look at Furtwängler recordings. . . Look how he is changing tempi, how he is slowing it down. Why can't I also do it? When I'm doing it I'm wrong, they say. *I'm not wrong.* It's just my reading. Maybe it's slower, heavier. Listen to the second movement of the Second Symphony, how beautiful it is. But [the critics] are not seriously listening to it. I don't think my Brahms is "unmusical," like one American critic said. He doesn't know anything about music. When my Sibelius came out there was a very nasty critic who destroyed all my Sibelius music in America. America is a very special country that doesn't like newcomers very much. If you're already established, or a big name, *then* you're great. But not before that. This is a type of critic in America. Not in France, not in other countries in Europe, not in Japan. My Sibelius was destroyed [here], but in Japan, in France, the

If you listen to the Vienna Philharmonic play Richard Strauss under Klemens Krauss, it's all out of tune! But the critics say, "the best." But if Järvi's doing some small thing with the Scottish Orchestra . . .

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critics said it was the best Sibelius. Why such a big difference? Are the people stupid here or stupid there? Or is it that people here just don't like newcomers? The same thing with the Brahms. You must listen carefully, take these Brahms symphonies and look at them carefully, because there are beautiful things in them. But there are so many Brahms symphonies, 20, 30 recordings.

DRM: *You're saying there are too many records of Brahms coming out for the critics to give them all a decent evaluation?*

NJ: I am saying they don't listen to them seriously if it's not an "important" person who's conducting.

DRM: *I think I can speak for a lot of record collectors when I say that the work you've done for Chandos with the Scottish National Orchestra has been especially felicitous. The Prokofiev is fantastic, and I think some of the Dvoráks are amazingly fresh. So I was disappointed when I read that you'd resigned as chief conductor of that orchestra. Why'd you quit?*

NJ: Because I had one orchestra in Sweden [the Gothenberg Symphony], with which I had a very good relationship. And two orchestras on the same continent . . . [sbrugs]. I live in America, and I didn't have a chance to go home at all. I thought it's too much work here. It was an exciting relationship and very good. I'll go back there, but not as chief conductor. I'll continue recording there, but only a certain amount; not the huge amount that I did.

DRM: *When you make a recording for, say, Chandos, do you do much editing, or go for long takes?*

NJ: Just performances. Chandos is a fantastic company. They like performances. We do one performance, then another, then choose [movements] from between the two performances. And maybe there'll be small things in both performances that need to be done again. So there's

very little editing. I don't know why records have to be different from performances. The performance is the main thing. I like very much the performances of old conductors, where they're really concert performances. Now you know in a minute that it's a recording rather than a performance—all nice, all clean, but nothing happens. It's a coincidence if anything happens. And that's very rare.

DRM: *I've always been amazed at the contrast between a conductor like Haitink live and on record. In a concert hall he's a tremendously physical, almost visceral conductor. But on record he's tidy, well-behaved, not very interesting. Tennstedt's another one—very impressive in person, but not as good on record.*

NJ: Haitink is so beautiful, so well-played—and empty. There is something missing.

DRM: *What kind of Järvi recordings can we expect to see in the next year or two?*

NJ: We did Franz Schmidt symphonies with the Chicago Symphony. No.2 comes out first. We

Haitink is so beautiful, so well-played—and empty. There is something missing.

did Reger with Concertgebouw, three records, "Hiller" Variations, *Ballettsuite*. And we continue with the Scottish Orchestra on a lot of Prokofiev pieces. *Prodigal Son*, complete, and *Cbant Symphonique*. All that for Chandos. Two more Sibelius records are coming, lots of pieces by Sibelius never recorded—*Scene de ballet*, Overture in A and Overture in E, *Humoresques*. Two more records of Stenhammar, including the Piano Concerto No.2 with Christina Ortiz. That's good music. Maybe some Schumann and Mendelssohn. That's with the Gothenberg, for Bis. I'm doing the Hugo Alfvén symphonies with the Stockholm Philharmonic and the Schubert symphonies with the Stockholm Sinfonietta, both for Bis. But in Gothenberg we're also doing Shostakovich 11 to 15 with Deutsche Grammophon. We're doing opera intermezzi and a Russian record, *1812 Overture* and things like that. We're also going to do Borodin symphonies and Prokofiev's *Fairy Angel* for Deutsche Grammophon.

You know in a minute that it's a recording rather than a performance—all nice, all clean, but nothing happens.

DRM: *Does it matter to you how your engineers mike your recordings, whether it's minimally miked or multi-miked?*

NJ: The engineer's doing that and I'm not very much involved. The Chandos people, for example, know how to make that sound and I don't know very much about the technical aspect. I feel a big difference when I'm recording in a good hall, or a bad hall; I prefer a natural sound to an artificial reverberance. My Scottish Shostakovich and Strauss works were done in Caird Hall, Dundee, a huge empty hall. A beautiful, open sound. You don't need a magic box to make the sound better. Sometimes they ask me how I like the sound. Maybe it's too close and I want more space. Make the hall more apparent.

DRM: *How about digital vs analog sound. Do you take any sides in that dispute?*

NJ: I like the sound of CDs very much, but I don't have good equipment at home, and I don't know what to buy. I got quite expensive equipment, but I didn't like its quality. I have Polk speakers, but I maybe have too much carpeting in my room. It's a dull sound. I turn it up louder and louder, and it's not good sound. For practical things like this I don't have the time to go and find out what to do.

DRM: *Do you have a preference between CDs and LPs?*

NJ: It doesn't make any difference. I'm still collecting LPs. The LP times are over, but I still have many thousands of records.

DRM: *What do you think have been your finest experiences in recordings, and your worst?*

NJ: It's a difficult question. I'm always excited when I'm making a recording. But especially I like the Prokofiev recordings. I like very much his scoring; it sounds different from any other composer's. Prokofiev's very powerful, beautiful. As for bad experiences, sometimes when you're working with a string orchestra you don't have the best players. You have to cope with some intonation problems. But not very much.

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DRM: I'd be remiss if I didn't point out that you were a student of Mravinsky, who's been enjoying something of a revival in the West, with quite a few of his recordings coming out on CD. And your teacher was Nicolai Rabinovich. What were they like? As men, as conductors?

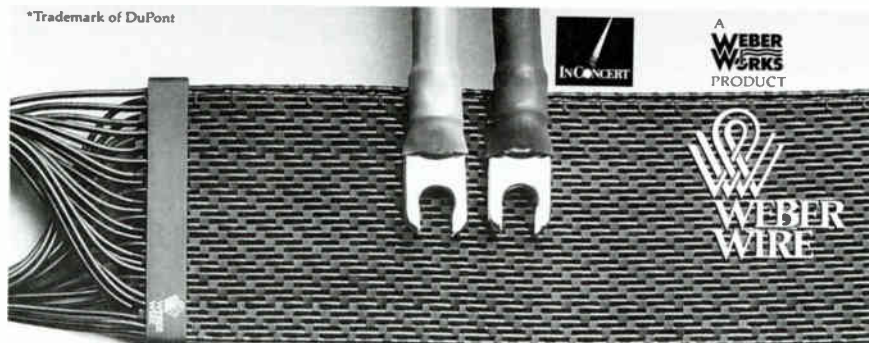
NJ: I studied with Mravinsky in the postgraduate studio, one year. But I knew him all the time because I went to hear his concerts, his rehearsals. He and Kurt Sanderling were together [at the Leningrad Philharmonic]. Sanderling was the second conductor when Mravinsky was chief conductor. Mravinsky was a very calm person, but not very interesting, not very open in talking to people. Very private. Very demanding. The orchestra never enjoyed his rehearsals, but he did very good performances. He did six, seven, eight rehearsals for a performance. Very narrow repertoire.

Sanderling, though, was very interesting. He was happy and always talked about nature, birds; when he was rehearsing he always had some image of why the music was written. His technique was not so clear as Mravinsky's; Mravinsky's baton technique was fantastic. But

Sanderling was always very successful. What was interesting was that he not only did symphonies, but miniatures. He did these little things, overtures, very beautifully, very special. Those concerts always sold out. It was a great time. And Rabinovich was their best friend. He was actually the smartest person of the three. Always when there was need to talk to someone, if a question came up on a piece of music, about interpretation, about style, Mravinsky and Sanderling asked Rabinovich. He was a great man, a great pedagogue. Not a very great conductor himself. He did very good concerts, but he was technically limited. He played Bruckner, Mahler. What we learned from him was German classical music, not Russian at all. Because these people studied with Bruno Walter, Otto Klemperer. Fritz Stiedry was chief conductor of Leningrad Philharmonic before Mravinsky. Rabinovich, he was the one who gave me what I have.

DRM: Do you get much chance to listen to records and CDs yourself?

NJ: Not very much. But when I'm at home I listen to some of them, and I hope to listen a lot when I retire. **S**



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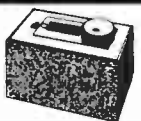
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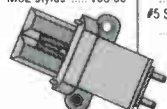
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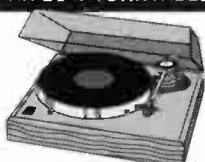
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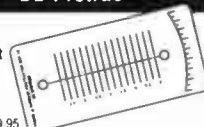
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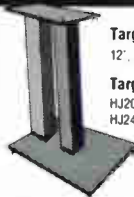
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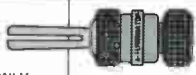
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The King is Dead: Vladimir Horowitz, 1904-1989

Igor Kipnis

WORD • 89



Born in Berdichev, Russia, on Oct. 1, 1904, Vladimir Horowitz died of a heart attack last Nov. 5 in New York City. Even from the time of his first professional appearance, in Kiev in 1920, in his debut recital in Berlin in 1926 and subsequently in Paris, in the famous Tchaikovsky Concerto confrontation with Beecham at his New York debut in 1928, he was the stuff of which legends are made. There were other outstanding, even superstar pianists, of course, just as there were other violinists than Heifetz and other conductors than Toscanini, but Horowitz existed almost as a law unto himself. Perhaps, it is true, a very few keyboard virtuosos could play with even greater velocity, sometimes even more cleanly, and some were hailed as interpreters of more probing profundity in such special niches of repertoire as Beethoven, Schubert, or, possibly in part, Mozart; certainly a good many performers were far less self-indulgent, both personally and interpre-

tively, as well as much less eccentric in both public and private image. From the standpoint, however, of sheer digital display, the control to balance individual voices, even the technique to create simultaneous singing lines, the imagination to evoke an almost unbelievably varied palette of colors from the keyboard, and, not least, the capacity to range dynamically from gossamer whisper to the most incredibly hair-raising pianistic thunder, there have been few contemporaries who even approached Horowitz's total abilities.

There is one other aspect of his musical personality that no other pianist I know has been able to equal: an element of excitement that is tangibly electric in its impact, a current of high voltage that is totally and distinctly Horowitzian. That charge was always there when you heard him in person; it even existed *before* he actually walked out on the stage, as I had occasion to be aware whenever I was fortunate



Photo by Arthur F. Umboh, courtesy Deutsche Grammophon

Vladimir and Wanda Toscanini Horowitz

enough to be able to attend his concerts. The very first time I recall experiencing that electricity was in the late 1940s as a teenager, when from the highest balcony of Newark's Mosque Theater I heard and saw him—a very small figure in formal afternoon wear but one with the most amazing power to project—in a program that included his version of the *Pictures at an Exhibition*. I also remember his encore, which, to my great annoyance, turned out to be such a mundane trifle as *Träumerei* (teenage piano students are notoriously critical). It took a number of years before I could understand just why he was apt to choose this, one of his most frequently played miniatures, as an example of simplicity, tonal painting, and the fact that not every Horowitz recital had to end with such a blockbuster as his *Carmen Fantasy* or the *Stars and Stripes Forever*.

My first awareness of the pianist, however, was a recording often put on the living-room phonograph by my maternal grandfather (I was staying with my grandparents in Chicago while my parents were touring in Europe just before the outbreak of World War II). This was the earliest of Horowitz's three versions of the Rachmaninoff Third Concerto, made with Albert Coates conducting in December, 1930, at the start of the pianist's contract with His Master's Voice in England, and it made an indelible impression on this seven-year-old.

That performance, once reissued on LP as Seraphim 60063, is currently available in CD form as part of an anthology largely performed by Rachmaninoff himself on Fidelio EB-3 and 8819, as well as on cassette on Concert Artist H-030. I would, however, advise waiting for the EMI Classics three-CD Horowitz collection, due out presently. That will contain just about all of Horowitz's HMV recordings dating from between 1930 and 1936, and a few items from his trip to England in 1951 (first issues of Chopin Op.29 Impromptu and two Scarlatti Sonatas). The earlier material consists, of course, of the Rachmaninoff, the 1932 version of the Liszt Sonata, fabulous Chopin and Schumann, Haydn, Beethoven, Poulenc, Debussy, Stravinsky, and others—even the "Flight of the Bumble Bee"—and should be considered an indispensable cornucopia of essential and younger Horowitz, not to be missed on any account.

Even earlier recordings than these exist, for Horowitz had first been approached to record piano-rolls in Hamburg in 1926 for Welte-Mignon and then, subsequently in the US, by Duo Art. A selection of the former company's rolls with the pianist were very recently issued in Germany (Intercord INT 860.864, CD imported by Koch), which, though undeniably fascinating as documents, especially in such works as the Liszt *Figaro Fantasy*, which he

never committed to disc, are still prone to the dynamic, rhythmic, and other mechanical limitations of that particular medium. In other words, they are highly interesting, but all too often don't *sound* like the most distinctive pianist of our century (he, in fact, disclaimed his piano-roll recordings).

Just past Welte-Mignon but before contracting with HMV, Horowitz made his US debut, and in 1928 and 1930 waxed eight 10" sides for the Victor company. These included a selection of short, encore-type pieces by Dohnányi, Liszt, Debussy, Scarlatti-Tausig, Chopin, Horowitz's own *Danse excentrique* (the aforementioned Welte-Mignon rolls of 1926 had the same composition entitled *Moment exotique*), and the pianist's powerhouse *Variations on Themes from Carmen*. Some, if not all, of this incredible, virtually mind-blowing material was available once on RCA LM-2993, a mono (of course) LP entitled *The Young Horowitz*. RCA will shortly issue all of its older and more recent Horowitz recordings on CD; I will simply recommend these earlier performances in advance as essential, not just basic, items for the Horowitz aficionado, as well as for those wondering what the legend was all about.

The specialized Horowitz collector will undoubtedly be intrigued by a Debussy *Doll's Serenade* and the finale (only) from the Tchaikovsky First Concerto, with Nicolai Malko conducting the Danish Radio Orchestra, these from radio broadcasts reissued in a *Great Musicians in Copenhagen* multi-CD anthology on Danacord DACOCD-303. Another curiosity, likewise in fairly grisly reproduction, is a powerful Brahms Concerto in d of 1936 with the Amsterdam Concertgebouw Orchestra coupled with the complete Tchaikovsky, this time with the New York Philharmonic in 1948, both works effectively conducted by Bruno Walter. In spite of muddy sonics, poor balance, a clattery piano, distortion, attenuated highs and bass, momentary level dips, and four minutes missing (one acetate side did not survive) from the first movement of the Brahms, this is nonetheless a remarkable document, for Horowitz did not ever record that particular concerto commercially, only the B-flat (No.2).

I recall playing a tape of this performance to a pianist friend some years ago, who remarked that the soloist's playing sounded frightened in part. That statement, one with which I do not entirely agree, perhaps reflects the tension he felt emerging from this high-voltage perfor-

mance. To be sure, the emotional impact is close to razor-edge, but is all the more intriguing for that. It also marks the period immediately preceding the pianist's first retirement from public performance, a four-year interim. The 1948 Tchaikovsky on this Monaco-based, Italian-pressed AS CD (AS-400) is transferred just fractionally sharp, but features typical Horowitz excitement, though the Toscaniniled commercial versions—both the 1941 studio and the 1943 live renditions—seem better controlled and integrated. The second of these, an April 25, 1943 War Bond concert, has recently been released in CD form as 18014 by Melodram (pitched a half-tone flat, Mortimer Frank kindly informs me). It will also be issued by RCA in April, coupled with the Horowitz/Reiner "Emperor" concerto. Melodram also issued the Tchaikovsky with the pianist in a 1945 Hollywood Bowl concert, William Steinberg conducting, on a 1981 LP (Connoisseur [*sic*] MEL 302) that is supplemented, not very economically, by a coupling of only three short encores. I would in any case advise waiting for RCA's forthcoming complete release of the commercial Toscanini on CD, which will include both of the pianist's justly famous recordings of that concerto with the Maestro, plus the very first Victor Records collaboration between the two titans, the Brahms Concerto 2 of 1940.

On the subject of unauthorized recordings, I cannot resist mentioning yet one other Horowitz Tchaikovsky Concerto, once an underground LP (*ie*, not commercially available) but now imported as a CD on Movimento Musica 11007, where it has been coupled with the Violin Concerto performed by Menuhin, Fricsay, and the Berlin Radio Symphony Orchestra. This was the period just before the pianist's 12-year hiatus from the concert stage, as well as marking the 25th anniversary of his American debut. That January 12, 1953 New York Philharmonic appearance, with no less than George Szell conducting, can only be described as one of the most unbelievable displays of pianistic pyrotechnics I have ever encountered.

The reader may recall my mentioning the Horowitz electricity, a peculiar listening sensation that, to me, resembles nothing so much as a jolt of current at particularly climactic moments, very often at a portion of a cadenza, when velocity and attack reach almost unbearable heights. That incredible tension, that coiled-spring kineticism, occurs numerous times in this 1953 Tchaikovsky performance,



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but its most startling appearance is at the commencement in the last movement of the final double-octaves cadenza. It is here that Horowitz erupts demonically, sounding exactly as though he were being shot out of a cannon. For the listener I think it one of the most exciting effects ever to be experienced; for Horowitz, it is quite understandable why the pianist might want to take a respite soon after this point. Incidentally, some of the performer's February 25th recital of that year, the official 25th Anniversary commemoration, have been reissued from time to time, but one would hope that RCA would also have plans to issue the whole of that concert on CD; it, too, represents an equally remarkable moment in Horowitz history.

Somewhat earlier, between the mid-'40s and the early '50s, RCA recorded the pianist in a very large variety of his typical repertoire, first in Hollywood and then in New York. Almost all of these mainly prime-Horowitz discs, a remarkable Scarlatti two-78rpm album (M-1262) excepted, have been reissued, recoupled, reshuffled, and repackaged in LP form over the years, and, as CD buyers undoubtedly have noted, are turning up in that form as well (see below). Among the most important items, as well as some personal favorites: collections of Chopin (including the *Andante Spianato and Grand Polonaise*, RCA 7752-2-RG, to be released this month, and a 1950 selection of Mazurkas; Mendelssohn (the *Variations Sérieuses* need to be mentioned); Liszt (the 1950 *Funérailles* is included on RCA CD 5935-2-RC); the Brahms D-Minor Violin Sonata with Milstein, a playing partner from the early '20s; the Horowitz-edited *Pictures at an Exhibition* of Mussorgsky (a 1947 studio version, as well as a live 1951 taping from Carnegie Hall); in April, RCA will issue three contemporary sonatas, Prokofiev No.7, Kabalevsky No.3, and Barber Op.2, which were premiered by Horowitz in the US, the latter for the first time anywhere; and one must not forget the incendiary encore specialties, such as *Danse Macabre*, the Mendelssohn-Liszt-Horowitz "Wedding March and Variations," the Moskovsky tidbits, and, of course, *The Stars and Stripes Forever*, all to appear this month on RCA 7755-2-RG.

To these, I am impelled to add the second version of the Rachmaninoff Third Concerto, Fritz Reiner conducting, which, I am delighted to report, has just been issued on CD (see below). If there is any special characteristic of



Photo by Arthur F. Umboh, courtesy Deutsche Grammophon

the recorded Horowitz sound during the '40s and earlier '50s, it is perhaps that, in addition to microphoning of a rather more overtly brilliant, and sometimes shallow character, the pianist's mannerisms and dynamic teasings (especially in attempting to search for ever more expressive effects) tended to veer away interpretively from that of earlier and simpler declamation to the occasionally artificial.

Horowitz's next recording excursions, made near the start of his lengthy sabbatical, were in the living room of his own New York townhouse and included some truly remarkable 1954-55 performances and repertoire of Clementi and Scriabin, music not at all that point so very popular but which surely owes some of its subsequent burgeoning interest to the pianist's initial efforts. Recent RCA CD reissues of this repertoire, both highly recommendable, are reviewed below. A stunning album of material, of which the Schumann Clara Wieck Variations and the Chopin Polonaise-Fantasia are special standouts, was taken mainly from 1951 live performances and entitled *Horowitz in Recital*; originally issued in mono as RCA Victor LM-1957, it served somewhat to fill in for the lack of many new recordings, although more Chopin and Beethoven (Op.10 No.3 and Op.57 as his first stereo efforts) were taped before Horowitz's surprise move to CBS and recordings sessions for that new label in 1962.

With Columbia (CBS Masterworks) we enter

the more recent years, and with them an obviously greater familiarity on the part of most readers, collectors, and Horowitz enthusiasts with material that was not only issued in stereo, was more effectively and vividly recorded, but has also lasted longer in the ephemera of record merchandising and listings in the record catalogs. Among the present CBS CD prizes, more often than not effectively recouped from the mixed-composer original issues, are: MK-42409 (a Schumann anthology, including *Kreisleriana*); MK-42306 and MK-42412 (*Favorite Chopin*, Vol.1 with, among other works, 6 Mazurkas, always a Horowitz speciality, and Vol.2 with the Sonata No.2); MK-42410 (Scarlatti Sonatas, though I consider the 1946 album superior for its greater infusion of personality; the latter will soon appear in RCA's *Classic Horowitz Recital* compilation); and MK-42411 (all-Scriabin, with the Sonatas 9 and 10, a selection of Etudes, and *Vers la Flamme* adding up to a superb representation of this composer).

If a good part of these discs portray Horowitz in more up-to-date sound, due in part to the material being taken from studio rather than live sessions, there is also a three-CD set, M3K-44681, which presents the pianist exclusively in the setting of Carnegie Hall with an audience. Taken from several different occasions—the “Historic Return” recital of May 9, 1965, a TV special of 1966, and several recitals of 1968—this is probably as important a document of Horowitz's later career as one can find. I was a member of that audience for the first two concerts mentioned, and, although the recordings are not a substitute for the unbelievable excitement of the actual events, I can honestly say that I would not be without them (I reviewed this set in Vol.12 No.4). A number of collections of shorter pieces which might appeal to those not wishing to collect all of what is beginning to sound like a massive pileup of recommendable Horowitz recordings include such CBS recouplings as *Favorite Encores* (MK-42305) and *Portrait of Vladimir Horowitz* (MK-44797), but be aware of possible duplication of some repertoire with a few of the other discs just noted.

A return to RCA followed, and with it a seeming preference on the part of the pianist to recording live before an audience: *The Horowitz Concerts*, *Horowitz on Tour*, *Horowitz at the Met*, and *Horowitz in London*, adding up to over a half-dozen albums between 1975 and

1982, resulted. Some but not all of the contents of these have been transferred to CD, as for instance the Scarlatti, Chopin, Liszt, and Rachmaninoff compilation of the 1981 Metropolitan Opera recital selections on RCA CD1-4585, and the 1982 Royal Festival Hall appearance in London on CD1-4572. The Horowitz collector will, of course, be grateful for all material, especially when repertoire that the pianist had not previously recorded shows up, as for example the Liszt Ballade No.2 and various works of Schumann, including the Op.20 *Humoresque*. Still, as fascinating as the pianist always is, some of these performances reflect the more idiosyncratic style of the later Horowitz, and the necessarily closer, live miking on occasion make unpleasant, clattery listening when removed from the sensations of the actual event.

Deutsche Grammophon beckoned to the pianist with recordings in 1985 at home (*The Last Romantic*, DG 419 045), with mostly shorter pieces and some elegantly conceived Mozart, quite beautifully and warmly recorded; and again in session: *The Studio Recordings* (DG 419 217), featuring, among other repertoire, stately, atmospheric Liszt and a highly effective and personal *Kreisleriana*, quite different from his previous CBS version. The next DG release, a year later, was the well-publicized *Horowitz in Moscow* recital of 1986 (419 499), emotional in content, more freewheeling in expression in the Mozart K.330 Sonata, for instance, than in the previous home recording.

Perhaps the best way, however, to experience the event of Horowitz's return to his native country is to see the commercially available video tape or laserdisc of the telecast (the laserdisc version, featuring the better sound with CX noise reduction, is on Pioneer PA-87-179); somewhat maddeningly, the contents of the CD and the laser disc are not quite identical, the latter containing a good bit more Scarlatti, Chopin, and Schubert, but *not* the CD's *Polka de W.R.* by Rachmaninoff. Other laserdiscs (and video tapes) include *The Last Romantic* (Pioneer PA-97-193), same in contents as the DG CD but with the addition of interview/conversations as occurred in the original 1985 Maysles brothers film of that name; *Horowitz in London* (Pioneer PA-9-82-031), including a similar interview segment with a fascinating but obviously eccentric personality; the contents of my original RCA LP version of this 1982 recital is not identical to the laserdisc, there being items not included in each; and, finally,

Horowitz Plays Mozart, which also emanated from a TV film of Horowitz's 1987 recording session of the Concerto 23 in A, in which the pianist, in fine fettle, collaborates with a decidedly back-seat Carlo Maria Giulini (DG laserdisc 072 215-1). Only because of the lackluster orchestral contribution do I have somewhat mixed feelings about the Concerto, though the visual shots of the sessions are very much worth owning; the DG 423 287 CD audio ver-

sion of the concerto, however, includes a really impressive performance of the Sonata in B flat, K.333; interested readers may note that the sonata, plus the other DG studio recordings as well as the Moscow recital, have been gathered into a three-CD album entitled *The Solo Recordings* (DG 427 269-2 GH3).

There follow capsule reviews of the most recent Horowitz releases, commencing with four extremely important reissues from RCA.

Recent Horowitz releases

Horowitz Plays Clementi

Sonata quasi Concerto in C, Op.33 No.3; Sonata in G, Op.34 No.2; Sonata in F, Op.14 No.3; Sonata in F#, Op.26 No.2; Rondo from Sonata in B-flat, Op.41 No.2

Vladimir Horowitz, piano

RCA Victor Gold Seal 7753-2-RG (CD only). Nathaniel S. Johnson, digital remastering supervisor; James Nichols, eng.; John Pfeiffer, prod. ADD. TT: 72:56

If Clementi's music, especially his later works, lacks the reputation of Beethoven's, some of which it resembles in emotional content, it is scarcely Horowitz's fault. 1954 is the date of issue for the majority of these sonatas, the rondo (Op.41 No.2, but mislabeled Op.47 No.2) stemming from 1950; the most recent and only stereo recording, the live Sonata quasi Concerto in C Major, is taken from the 1979/80 concerts. The latter, fortunately without applause, is clattery and shallow, the earlier material in contrast dry and startlingly midrange, but the performances of the mono material in particular are wonderfully eloquent, as well as remarkably profound, especially in the slow movements. A real sleeper!

Horowitz Plays Rachmaninoff

Concerto 3 in d, Op.30; Sonata 2 in b-flat, Op.36; (Horowitz, Ed.); Moment Musical in e-flat, Op.16 No.2; Prelude in G, Op.32 No.5; Polka de W.R.

Vladimir Horowitz, piano; Fritz Reiner, RCA Victor Symphony Orchestra (Concerto)

RCA Victor Gold Seal 7753-2-RG (CD only). Nathaniel S. Johnson, digital remastering supervisor; James Nichols, remastering eng.; Edwin Begley, Lewis Layton, engs.; John Pfeiffer, prod. ADD. TT: 70:34

The principle live material here is the Second Sonata of 1980, attenuated in the bass and constricted in dynamics, a not pleasant sound but a pistol of a performance. The main reason, however, for acquiring this disc is the first CD issue of the Third Concerto in Horowitz's second recording, less severely cut than the 1930 Coates version but still not as complete as the far less satisfactory Ormandy third time around. This 1951 mono version has two places, both of them in the cadenzas of the fast movements, when that incredible surge of electricity men-

tioned earlier is on display, and they must be heard to be believed. If the Sonata is not especially felicitous as a recording, the processing of the mono Concerto deserves plaudits, for the result to my ears, in spite of some tape hiss, is more vivid and even better balanced (the orchestra under Fritz Reiner was always recessed) than my old, worn, bacon-crackly LP. It's good to have it back.

Horowitz Plays Schumann

Sonata 3 in f, Op.14 (Concerto Without Orchestra); Humoresque, Op.20; Fantasiestücke, Op.111; *Nachtstücke* 3 in D-flat & 4 in F, Op.23

Vladimir Horowitz, piano

RCA Victor Gold Seal 7753-2-RG (CD only). Nathaniel S. Johnson, digital remastering supervisor; James Nichols, remastering eng.; Edwin Begley, eng.; John Pfeiffer, prod. ADD. TT: 71:50

All this rather less-often-played Schumann derives from live recitals of 1976 (Sonata), 1979 (*Humoresque*), and 1980 (*Nachtstücke*, *Fantasiestücke*). To this repertoire Horowitz brings a particularly imaginative, non-literal, fantasy-like approach typical of both the composer and the late interpreter. Sometimes the music surges forth larger than life, but as always the pianist is endlessly fascinating. The piano, often clattery, shallow, and moderately closeup, is not unlike what one might have heard in some seats at a live Horowitz event, but still is far from having the airiness, transparency, and fullness of the more recent DG Horowitz discs.

Horowitz Plays Scriabin

Sonatas No.3 Op.23, No.5 Op.53; Preludes Nos.1, 3, 9, 10, 13, 14, & 16, Op.11; Op.13 No.6; Op.15 No.2; Op.16 Nos.1 & 4; Op.27 No.1; Op.48 No.3; Op.51 No.2; Op.59 No.2; Op.67 No.1; Etudes, Op.8 Nos.7 & 12; Op.42 No.5

Vladimir Horowitz, piano

RCA Victor Gold Seal 7753-2-RG (CD only). Arthur M. Fierro, digital remastering supervisor; Joaquin J. Lopes, remastering eng.; John Pfeiffer, prod. ADD. TT: 66:04

Just as CBS's all-Scriabin CD is essential for the Horowitz enthusiast, so, too, is this compilation, made up in part from important earlier material, including the Third Sonata and 16 Preludes of the pianist's sessions at home in 1954-55 (RCA says 1956, the date the mono LP

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was first released). That earlier sound, a bit boxy and closeup, has been made to reproduce with greater fullness than the original LP, though its slight tape hiss and essentially mid-range sonics contrast startlingly with the full range of the Op.8 No.12 Etude from the 1982 London recital. All of the qualities Horowitz brings to Scriabin are here: impetuosity, passion, mystery, perfumed neuroticism, and, where required, bursts of explosion that only he could summon.

Horowitz at Home

Mozart: Sonata 3 in B-flat, K.281; Adagio in b, K.540; Rondo in D, K.48; **Schubert:** *Moment Musical* in f, Op.94 No.3; **Schubert-Liszt:** *Ständchen; Soirées de Vienne* Nos.6 & 7

Vladimir Horowitz, piano
Deutsche Grammophon 427 772-2 (CD only). Tom Lazarus, Paul Goodman, engs.; Thomas Frost, prod. DDD. TT: 53:33

Recorded at various times in 1986, 1988, and 1989, this collection of pieces is new to the Horowitz discography, which will of course provide its own interest for the aficionado. Only the delicious Schubert-Liszt *Soirée de Vienne* No.7 is to be heard elsewhere (the Moscow recital). Certainly these Viennese bonbons are wonderful examples of Horowitz's art in his twilight years, as are in their very different way the relatively early Mozart Sonata and the D-Major Rondo. Both of these are marvelously clear in articulation and wide-range in dynamics, especially on the quietest side, though fortes are never overblown. If the *Adagio* seems a bit matter-of-fact and not very tragic in character, the album as a whole provides a superb portrait of the autumnal, more inward Horowitz.

Horowitz in Concert, 1967-1968

Scarlatti: Sonatas in F# and G (L.35 & 124, K.319 & 260); **Haydn:** Sonata 58 in C (Hob.XVI:48); **Beethoven:** Sonata 28 in A, Op.101; Liszt: Scherzo and March (S.177); **Mendelssohn:** Etude in a, Op.104b No.3

Vladimir Horowitz, piano
CBS MK 45572 (CD only). Bud Graham, Fred Plaut, engs.; Thomas Frost, prod. ADD. TT: 51:25

Shortly before Horowitz's death on Nov. 6, it had been announced that he had returned to the CBS fold, and in fact he had begun to record Haydn, Chopin, and Liszt-Wagner for the label in the last week of October. CBS—now Sony Classics—had not announced a release date as of early last December, but presumably at least some of that material will be soon forthcoming as an appropriate memorial, plus, of course, whatever else there is in the vaults for which approval from the pianist had been received. Such approval was forthcoming for the present "in concert" collection taken from recitals of the late '60s and, quite amazingly,

consisting of works the pianist had not ever previously recorded. The Liszt, interestingly, was evidently only played once by him, at Queens College in New York, 1967; I don't think one would consider it a great piece, but it does receive a diabolical rendition at the hands of the pianist, as does the whirlwind-like Mendelssohn Etude (once recorded by Rachmaninoff). I find Beethoven's Op.101 sonata perhaps overly refined as to details of articulation, tone, teasing rhythms, and dynamics, the outcome being more the curiosity of Horowitz's late Beethoven than late Beethoven being played by Horowitz. The Haydn, however, is brilliant, the Scarlatti dazzling. The pickup is sometimes slightly noisy in ambience (Carnegie's subway in excellent voice), but the closeup reproduction overall is good, marred only by some harshness in the Beethoven and Liszt. One should, however, rejoice that all of this material does in fact exist and that the pianist, for almost all of his incredible lifetime, was so favored by the record companies. One hopes as well that his enormous recorded repertoire can continue to be made available to audiences of today, as well as, one sincerely hopes, those of future generations, who undoubtedly will have to wonder in awestruck amazement, like the rest of us, at the phenomenon called Vladimir Horowitz. **S**



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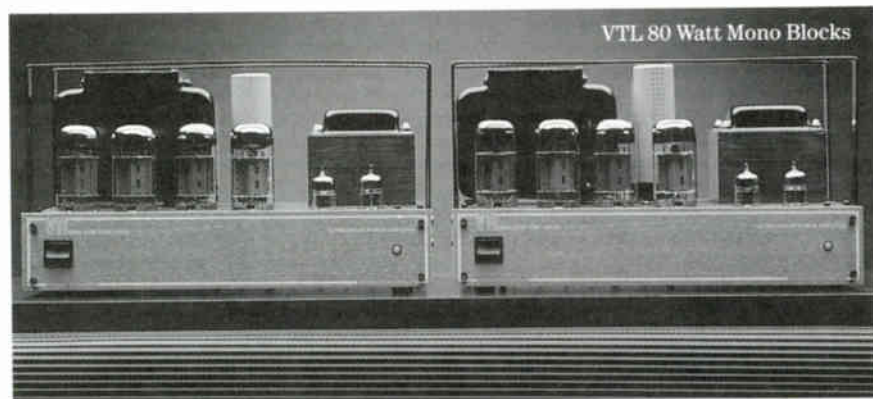
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RECORD REVIEWS

Classical

BEETHOVEN: The Late Sonatas, Nos. 28–32, Opp. 101, 106, 109–111

Richard Goode, piano

Elektra/Nonesuch 979211-2 (2 CDs only). DDD. TT: 2:09:08

As a newcomer to Richard Goode's artistry, I must admit to being stunned by the sheer poetry and sensitivity of his musical expression. His textural lucidity and total grasp of formal structure, and, what's more, his ability to make this comprehensible to his audience, immediately bring intimations of Alfred Brendel's skill; there is the same intellectual depth, but a different vision emerges, and the added warmth and fluidity of Goode's playing make him just a little less clinically astringent.

Such wonderful control and strict allegiance to the scores demands a total subservience of character; there is no hint of egocentricity here, no pyrotechnical display, and yet there is still room for an interpretation that treats these late, great sonatas to a less aggressive approach than they normally receive. The "Hammerklavier" is a case in point: a well-controlled but huge dynamic range with careful consideration for matters of weight and touch make for aesthetically pleasing solutions to this sonata's perennial problem of drama vs architecture. Goode has stated that "speed still has a lot to do with [his] perception of the immense power of the [first] movement," although a flexible fluctu-



After nine years, two new Van Dyke Parks recordings. But . . . (see "Rock & Pop")

ation within it is essential. So he takes the movement at the fastest tempo he is capable of, and, with his immaculate coordination and balance, it works. The Fugue is the most subtle and pleasing I have heard too. Searing through the precision and clarity demanded by its contrapuntal textures comes an intense emotional charge that turns this dry, academic exercise into an inspired piece of music.

Op.109 is exquisite, especially the variation movement which builds to the most effective climax, while the huge pendulum swing of emotional and technical requirements in Op.101 is met with unerring perspicacity. It is the difficult final sonata, the lengthy two-movement Op.111 in c, that failed to convince me. Such unprincipled rhetoric needs the strength of a strong character behind it—thus one of Goode's finest qualities becomes a weakness.

But I am prepared to sacrifice one sonata for the refreshing insights that the other four have brought, and as this is to be the first set in an ongoing cycle, I await the rest with impatience (N.B. my music editor, please!). I hope that the intimacy and presence that this recording brings, with its large-as-life reproduction of Goode's very fine piano, will also be repeated.

—Barbara Jahn

BEETHOVEN: Trios, Op. 70 Nos. 1 ("Ghost") & 2
The Castle Trio. Lambert Orkis, fortepiano; Marilyn McDonald, violin; Kenneth Slowik, cello
Smithsonian Collection ND 036 (CD only). Timothy Martyn, eng. & prod. DDD. TT: 59:16



Shining through these period-instrument performances is a probing musicality that goes right to the heart of both scores. In the more familiar No.1, outer movements have exceptional vitality and swing, not so much from unusually fast tempos as from sharply drawn accents and clean articulation. Indeed, the explosive development section of the first movement sounds almost volcanic in its aptly Beethovenian eruptions. Only a slow movement paced more like an *andante* than the *Largo assai* specified by the composer may prove unsettling for some listeners, but even here the group makes a fine case for its tempo, some of the more "ghostly" sections acquiring an otherworldliness rarely suggested in more broadly paced accounts.

The less familiar No.2 is equally impressive, the performance bringing out all of the unusual lyricism that often sounds more typical of Schubert than of Beethoven. And the vibrato-free (but never honking or nasal) string tone complements the work's harmonically eerie moments. As in No.1, the grasp of style is exemplary, a prime case in point being the wit with which the humorous part-exchanges at the close of the second movement are tossed off. And Lambert Orkis's fortepiano (a Gialf, ca 1825) has a solidity and power that one does not ordinarily associate with the instrument. All major repeats are observed, including that of the development and recapitulation in the first movement of I. The engineering is a model for chamber music: clear, intimate but not too close, and free of extraneous noises or of even a hint of stridency. Cellist Kenneth Slowak's booklet notes discussing performance practices in Beethoven's day are uncommonly detailed and informative. Better versions of either of these glorious works are probably not to be had on CD.

—Mortimer H. Frank

BELLMAN: Songs

Martin Best, vocals, guitar, cyster
Nimbus NI 5174 (CD only). DDD. TT: 45:01

I admit that, until this CD popped out of the *Stereophile* jiffy-bag, I had never heard of Carl Michael Bellman (1740–95). I am, of course, very familiar with Martin Best from his numerous Troubadour recordings, and have reviewed his *Cantigas* disc in these pages. According to Best, "Everyone in Scandinavia knows Bellman." I confess that in my troubled life I have occasionally consorted with known Scandinavians, but none have so much as mentioned this particular composer. This notwithstanding, Best apparently has gained a considerable reputation for Bellman performances in the latter's native Sweden. Here he gives us a selection of works in English translations which

have evidently been published and approved in Sweden (where American books sell very well without translation. Most educated Swedes read English with more facility than many "educated" Americans.).

Carl Michael Bellman's entire output would appear to consist of an enormous picaresque song-cycle revolving around several characters from what might have been called the lower class of 18th-century Stockholm. In the creation of this minor epic, Bellman was greatly inspired by John Gay's *Beggars Opera* (as, of course, were Bertolt Brecht and Kurt Weill), from which he borrowed both content and a number of melodies. Other tunes were taken from composers whom Bellman might have heard in concert in Stockholm. Bellman was himself an accomplished performer on the cyster, a close relative of the cittern, and he arranged most of his pilfered melodies¹ for that instrument. Best performs them on both cyster and modern classical guitar.

Having acquired the above information from Nimbus's liner notes, I did not expect any particular treat from this disc. Boy, was I wrong! Bellman's songs are like that pleasant Swedish beverage *aquavit*: they go to your head and stay for a while. They run from comic to wonderfully bawdy to tragic: some are bitterly cynical, but behind it all is the soul of a true romantic—one who knows both how much beauty there is in life, and how much there ought to be. Quintessentially 18th-century in their wealth of Classical allusions and dense layering of images, they have at the same time an earthy, folkloric quality. Texts and melodies complement each other to produce a genuine folk-opera. (Bellman reminds me at times of the late Phil Ochs, especially "The Party.")

Now for the problem: this disc, from its musical content, merits the highest recommendation; it would receive it, if not for the sound. Here, if anywhere, is material calling for an intimate, close presentation. Instead, Nimbus has chosen to surround Best with their traditional reverberant soundfield. The timbre of his instruments survives remarkably well, but the reverb (natural though it may be) renders his normally excellent diction almost unintelligible. Even after three hearings, I am not sure of a few of the lines (no texts are provided), and the concentration required to understand the words certainly detracts from the listener's pleasure. Bad karma points to Nimbus. (In fairness, I should mention that this is a seven-year-old recording, and that the engineers might not do it the same way today.)

¹ Science-fiction fans would call Bellman's works "filksongs," the etymology being a combination of "filch" and "folk."

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—Les Berkley

BERLIOZ: *La Damnation de Faust*

Suzanne Danco, soprano; David Poleri, tenor; Martial Singher, baritone; Donald Gramm, bass; Harvard Glee Club, Radcliffe Choral Society (G. Wallace Woodworth, cond.); BSO, Charles Munch

DEBUSSY: *La Damoselle Elue*

Victoria de los Angeles, soprano; Carol Smith, contralto; Radcliffe Choral Society, BSO, Munch

RCA 7940-2-RG (2 CDs only). Lewis Layton, eng.; Richard Mohr, prod. ADD. TT: 2:20:50

BERLIOZ: *La Damnation de Faust*

Edith Mathis, soprano; Stuart Burrows, tenor; Donald McIntyre, baritone; Thomas Paul, bass; Tanglewood Festival Chorus (John Oliver, dir.), Boston Boys' Choir (Theodore Marier, dir.); BSO, Seiji Ozawa

DG 423 907-2 (2 CDs only). Klaus Hiemann, eng.; Thomas Mowrey, Franz Christian Wulff, prods. ADD. TT: 2:01:45

There are four complete *Damnations* currently available. These are the only two that count. The other two, Colin Davis/LSO *et al* on Philips, and Solti/CSO *et al* on Decca/London, merely tiptoe the pavement of good intentions, but get nowhere near the essential tension, drama, or excitement inherent in this work.

What makes these two *Damnations* special has a great deal to do with the character and approach to Berlioz taken by the BSO during the Musical Directorship of Charles Munch, and how much of this approach remained a part of their collective consciousness, even after a decade which included the very different regime of Erich Leinsdorf, a couple of seasons with William Steinberg, and the eventual ascendance of Seiji Ozawa. Although Munch had retired as BSO Music Director by 1963, he continued to appear in Boston as guest conductor until his death in 1968. Since the Ozawa recording was made only five years later, that's not such a long time for the BSO to have been out of touch with the conductor who virtually codified a unique and unimpeachable style for the playing of Berlioz.

The genuine article is Munch's own performance, recorded by RCA on February 21-22, 1954, the year of "New Orthophonic" and the sincerest form of flattery for Mercury Living Presence, the adaptation of simple miking and descriptive paragraphs on the purity and artistic integrity of the recording process. RCA had a few tricks of their own going for them, including active research and development in stereo recording. The original libretto booklet bears the following note: "At the time this recording was made, a special microphone setup was used to make a separate stereophonic recording of the same performance as part of

RCA Victor's continuing policy of development and research in recording techniques."

That's really great, only somewhere along the line, part of the stereo master was either damaged or lost. It's also possible that only parts of the work were recorded in stereo while the complete work was taped in mono. Otherwise this recording, and not the Reiner/CSO Strauss works, would have been the historic first fruits of stereo taping in the US. RCA still has parts of this recording in stereo, and faced a controversial decision. Should they reissue the parts they have in stereo and use the mono masters for the rest, or be consistent and issue the complete work in mono? I know how I would have voted, but I can understand their decision to use mono only.

The original LP issue in early stampings (I can vouch for SIs) is a vinyl collector's item on six generously spaced sides. They learned well from Mercury. You could drive a truck through the grooves of the Pandemonium Scene on side 6! And it rocked some rafters on early Klipschorns and AR 1Ws alike. But before you shell out a penurious vinyl addict's fix fee, be aware that the bass on sides 1 and 6 was goosed up. On a fully bassed system, the room rumble and the exaggeration may annoy you beyond belief. You must also avoid the 1960s French RCA reissue in phony stereo on four sides, a compressed, revolting disaster.

In terms of sonic restoration, the CD is the clear winner: its equalization is ideal, its dynamics open, clear, and splendid. I wish I could say the same for the formatting. Someone at RCA got the bright marketing idea to offer the de los Angeles recording of Debussy's *Damoselle Elue* as a filler, the inclusion of which not only required an unfortunate interruption of continuity in *Damnation* Part III, but they couldn't have chosen a worse spot: the breath-pause between the end of Mephistopheles's evocation "Esprit des flammes inconstantes . . ." and the start of "Minuet of the Will-o'-the-Wisps." The break could have come after the Minuet. Even better, they should have saved the Debussy for a de los Angeles vocal single, and spaced the Berlioz with two uninterrupted Parts per disc. The dead silences between certain sections are also unfortunate. Mohr and Layton were known to record as much as half an hour of "silent" room sound per recording for editing purposes. These room-sound bits would often be inserted between closely knit sections of a work. I suspect that in restoring and recopying this master, some of these fine bits were thrown out with worn-out splices, and replaced by leader tape.

The Ozawa/DG is largely secondhand Munch, less exciting overall, but with many fine, even

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haunting moments nonetheless, and it's the stereo of which RCA has cheated us, one of DG's finest recordings from its checkered history. With no filler, disc 1 times at 55:20 and disc 2 at 66:25, respectable even for full price, and both of these performances are offered at mid-price.

Munch's great advantage is his cast. Martial Singher almost steals the show as Mephistopheles. He is to this role what Hans Hotter is to Wotan, and in this quasi-opera treads easily the fine line between operatic style and that of French Art Song. David Poleri, in powerful voice, makes us sympathize with a character to whom Berlioz was hardly complimentary. Most of his material would cast him as a gullible wimp, not as a questing philosopher scientist willing to risk his immortal soul for experience. The part of Marguerite would seem the least sympathetic of all, a tease for Faust, an excuse for some showcase soprano material, and a participant in this non-opera's most operatic sections, Part III, Scenes 13 and 14, but this recording features Suzanne Danco, who has this role coming and going. In Scene 13, you can hear her coming; in Scene 14, you can hear her going. Space hardly permits the praise due to Donald Gramm's cameo appearance as the Brander, or Munch's magical power over collegiate non-native-French-speaking choristers hardly familiar with the demon language in "Pandemonium." All of this must be heard to be believed.

Ozawa's cast holds its own against these stars, except for Donald McIntyre as Mephistopheles. Admittedly, Singher is a hard act to follow, but I find McIntyre impossible to swallow. His overacting makes his character repulsive, not at all the beguiling and intriguing con man that Singher portrays with such subtlety and skill.

If this work is new to you, and you don't wish to duplicate, the RCA will provide an incomparable musical experience, in mono sound that should impress anyone but the most fanatic stereo zealot. The DG will provide a musical experience better than one would expect from Ozawa, which still falls short of Munch. The stereo sound is phenomenal for a 1973 DG. I recommend both, but the choice of one or the other is up to you.

—Richard Schneider

BRAHMS: Trios for Piano, Violin, & Cello, Op.8 (1889 version) & Op.87

Mirecourt Trio: John Jensen, piano; Kenneth Goldsmith, violin; Terry King, cello

Music & Arts CD-294 (CD only). Lowell Cross, Peter Nothnagle, engs. DDD. TT: 64:57

MENDELSSOHN: Complete Works for Cello & Piano Variations concertantes, Op.17; Sonata 1, Op.45; Sonata 2, Op.58; Song without words, Op.109

Terry King, cello; Robert Moelling, piano

Music & Arts CD-288 (CD only). Lowell Cross, Peter Nothnagle, engs. DDD. TT: 64:02

Brahms's Op.8 piano trio is both a young and old work. Written in 1853, when the composer was 20, it was the first chamber work he elected to publish. He later became dissatisfied with it and in 1889 revised it extensively; this revised version on this CD is usually performed today.

At times this performance by the Mirecourts, an ensemble of 16 years' standing and Artists in Residence at Grinnell College in Iowa, recalls the younger, ardent, more expansive and ambling Brahms. The trio's shared conception of the piece is of a great, almost symphonic breadth of expression, and fine details of ensemble communicated with near-unanimity. No doubt I'm twisting the facts to fit my observations, but this trio's apparent identification with the younger Brahms makes the largely unrevised second-movement Scherzo speak volumes about all in Brahms that is alert and glinty-eyed and spooky.

But this movement is one of the few places where light invades the Mirecourt's performance. Overall, the sense is of too-consistent premeditation: the effect deflates the artists' obvious conviction. Tempo shifts come across as pedantic rather than spontaneous. The very perfection of the trio's orchestra-like articulation becomes a problem in that there are too few holes left for light to shine in on the playing. The performance often lacks a chamber feel.

Contrast this with my own favorite recording of Op.8, by Julius Katchen, Josef Suk, and János Starker, available until a few years ago on Decca Ace of Diamonds LP, recently reissued on two London CDs (which I haven't heard). This more relaxed session emphasizes the give-and-take among chamber players. It's a mature approach to Brahms, reinforcing the more concise, less busy spirit of the 1889 revision. The adjective "autumnal" pops up too often as a hackneyed descriptor for late Brahms; describing Katchen, Suk, and Starker in this material, it is for once completely appropriate.

The Mirecourt's reading of Op.87 goes no better, again offering rhetorical density without sufficient emotional buoyancy.

Ironically, one need look no farther than the Music & Arts catalog to find a recording of these two trios as grand in intention as the Mirecourt's, but which in accomplishment puts theirs to unfair disadvantage. Music & Arts CD-739 features performances from the early '50s by Edwin Fischer, Wolfgang Schneiderhan, and Enrico Mainardi. These three musicians are fully in touch with the Brahmsian romantic tradition, committed to a communal ideal rather

than leaning on nostalgia—or on lockstep preconception, as I interpret the Mirecourts. Pianist Fischer was by the time of these recordings in his mid-70s; his technique (never his most impressive attribute) even more compromised. Yet he plays here with ease—nay, with a sparkle and humor which evades the players on the new CD.

Sound on the new Music & Arts doesn't help matters. The image is flat and cramped, which may contribute to my impression of constriction in the performance. Piano sound is notably recessed. Timbres of all instruments are bright, becoming downright shrill atop the violin. In fact, despite its dynamic compression, drop-outs, hiss, and obvious deterioration of the source material, the Fischer/Schneiderhan/Mainardi CD conveys the essential timbres better than the Mirecourt recording of 35 years later.

The readings of the Mendelssohn cello works share cellist Terry King with the Brahms. It is not only because of the relative unfamiliarity of the works, and therefore fewer preconceptions and competing recordings, that the Mendelssohn fares better. Here King communicates with his pianist with more charm and relaxation than with his trio partners. Sonata 1 is played with verve and *élan*; during the Andante movement of 2 his cello plays pianissimos that waft like a feather. Sound is more open and naturally proportioned, too, though still not of the highest quality. Very recommendable to those exploring Romantic chamber music. —Kevin Conklin

BRITTEN: *Billy Budd*

Peter Glossop, Billy Budd; Peter Pears, Captain Vere; Michael Langdon, John Claggart; John Shirley-Quirk, Mr. Redburn; Bryan Drake, Mr. Flint; Owen Brannigan, Dansker; Robert Tear, a novice; others. Ambrosian Opera Chorus, LSO, Benjamin Britten

***The Holy Sonnets of John Donne*
*Songs and Proverbs of William Blake***

Peter Pears, tenor (Donne); Dietrich Fischer-Dieskau, baritone (Blake); Benjamin Britten, piano
London 417 428-2 (3 CDs only). Gordon Parry, Kenneth Wilkinson, engs.; John Culshaw, prod. ADD. TT: 3:24:55

BRITTEN: *Albert Herring*

Peter Pears, Albert Herring; Sylvia Fisher, Lady Billows; Johanna Peters, Florence Pike; April Cantelo, Miss Wordsworth; Owen Brannigan, Supt. Budd; Joseph Ward, Sid; Catherine Wilson, Nancy. E.C.O., Benjamin Britten

London 421 849-2 (2 CDs only). Kenneth Wilkinson, eng.; John Culshaw, prod. ADD. TT: 2:17:56

BRITTEN: *Peter Grimes*

Peter Pears, Peter Grimes; Claire Watson, Ellen Orford; James Pease, Captain Balstrode; Lauris Elms, Mrs. Sedley; Geraint Evans, Ned Keene; Jean Watson, Auntie; others. Royal Opera House Orchestra & Chorus, Covent Garden, Benjamin Britten

London 414 577-2 (3 CDs only). Kenneth Wilkinson, eng.; Erik Smith, prod. ADD. TT: 2:21:59

BRITTEN: *The Prince of the Pagodas*

Royal Opera House Orchestra, Covent Garden, Benjamin Britten

Diversions for piano (left hand) and orchestra

Julius Katchen, piano; LSO, Benjamin Britten

London 421 855-2 (2 CDs only). Erik Smith, prod. ADD.

TT: 2:04:45

The works on these discs represent 25 years in the compositional life of Benjamin Britten. It's good to have these sets back in the catalog, not only because each is the only version of each work currently available, but because, for the most part, the word "definitive" would not be out of place.

Billy Budd is a great work of conscience and morality which can be carefully analyzed and nicely appreciated on disc. Despite the use of men's voices exclusively, the opera never lacks color. Britten obviously was aware of the pitfalls of such a choice, and wisely makes contrasts within sameness. The tenor Vere (written, of course, for Pears, with a reedy, unsonorous timbre all his own) has, as his officers, basses and baritones; Claggart, a deep bass, is invariably involved, vocally, with tenors, except, of course, when he's with Billy. And Billy himself is in the level, natural, baritone range—the "normal" place for a man's voice to sit. The boys' voices occasionally punctuate the fabric with a sharp-edged purity, as if to let us know that innocence *can* exist at sea. This work is so rich that I'm amazed it hasn't been recorded more often, although Home Vision has just come out with a version on videocassette, starring Thomas Allen as Billy, which would be worth looking into. At any rate it's good to have this one back.

The digital remastering has brought some of the orchestral niceties and subtleties to the fore: one can clearly hear the plaintive sax solo after the flogging scene, and the dark brass and woodwind during the scene in which the court sits are particularly impressive. The textures of the large choral passages, especially in the aborted battle scene, have never been clearer. Granted, this was one of the jewels in London's crown when it was recorded in 1967 (it was, I believe, John Culshaw's final opera production), but newcomers will be amazed at its lifelikeness and dramatic truth.

Everyone in the cast is close to ideal—even the novice Robert Tear (a Pears sound-alike since) and Benjamin Luxon as his friend, both at the very dawns of their careers, are luxuries. Although James Morris brought a more sinister sexuality to Claggart at the Met a few years ago, Michael Langdon's reading is cruelty and darkness personified. Pears's Vere is wise, trapped, and tragic; no one I have heard since can come close to his stature. His clipped diction and

nobility are wonders. Peter Glossop was, to my ears, always a good B baritone, and while he's perfectly adequate and frequently moving, he lacks a certain glory and wonderment one wants in Billy. All the others perform with a real sense of mission.

Britten's leadership is everything one could hope for. The horror of Vere's "I am the messenger of death" speech and the ensuing series of chords (which say more about what goes on when Vere tells Billy his fate than words ever could) are spinechilling, the ensembles hold together brilliantly, and, in general, the work has an impetus and tension no other conductor has brought to it. If you don't know this work, now's the time to discover it.

The three discs are filled out with the composer's *Holy Sonnets of John Donne* and *Songs and Proverbs of William Blake*. These are dark cycles of songs composed 20 years apart ('45 and '65), and they're masterful if hardly fun. The former, with Pears as soloist, is the more approachable—each song presents an entire picture, from the brief "Batter my heart three person'd God" to the ninth and final "Death be not proud." The mood is glum but the effect is riveting, and Pears's diction, as ever, is faultless, his involvement total. The Blake settings are tougher nuts to crack. The seven songs are linked thematically, and while entirely tonal, there is little melody to latch onto. Fischer-Dieskau's readings are superb, his English startlingly good. Britten's pianism is remarkable—the first group requires some dizzying fingerwork while the second's rhythmic demands add to the nervous energy inherent in the poetry. These are cycles to ponder. I wish the balance between piano and singer were better, but otherwise, these are crucial parts of any serious Britten collection.

Albert Herring is the composer's most "entertaining" opera, meant as a serious frivolity; it is one. Taken from one of de Maupassant's wittiest and most telling stories, it examines the smallness of provincial life with a nasty eye, but the good guys win, so who can complain? (There are actually critics who have compared Albert Herring and Peter Grimes as victim characters; this strikes me as a desperate lit-crit stretch.) I must acknowledge that this work is not for everyone—even some of Britten's die-hard admirers have trouble with its "adorable" story line—but it's part of an important, large picture and fascinates nonetheless. And the third-act "threnody," in which the other characters lament Albert's death (he is, in fact, very much alive), is a masterwork of irony. Some people just can't take a joke.

The orchestra is small and the individual parts, in the remastering, are all naturally audi-

ble. The LPs tended to distort in ensembles to a point of real shrillness, but no such problems occur here; indeed, the clarity of the interweaving gives this work the intimacy it needs. Britten conducts, at times, with amazing speed—only a team trained by the composer could have met the demands.

Pears, attempting to sound 18 while in his 40s, is remarkably convincing. It would be all too easy to portray Albert as a goofball, but Pears knows better, and lets us know that he knows better. It works. Next comes Sylvia Fisher's Lady Billows (she actually ought to be first), one of the great comic bullies in the repertoire. Her attitude is palpably wretched: one wants to deck her. I would also single out Owen Brannigan's Superintendent Budd, a real nasty snob/redneck if ever there was one. This opera is a great example of team playing. All the wit, all the conscious pomposity are in evidence, and a good time is had by all. It may not be your cup of tea, but it's worth a try—and this reading will probably never be bettered.

Peter Grimes is the best-known of Britten's operas. The Jon Vickers/Colin Davis recording on Philips has mysteriously disappeared, and it's a pity—it goes along with this London version to present the opera in all of its manifestations. Despite its dark, cruel theme, Britten always concentrates on the beautiful aspects of the score; Davis (and Vickers) go for the rage and lack of control in Grimes's psyche. Both approaches are valid. The sea and its mercilessness are felt at every turn in this powerful work; on stage it never fails to pack a wallop. On discs it's a different matter, but even the first-time listener can hardly avoid being moved.

The digital remastering is again totally successful, bringing both voices and instruments closer without distortion. The moodiness of the work is perfectly captured. I hear a bit of hiss every so often, but it passes quickly and the clarity returns; the surging of the sea in the justly famous Four Sea Interludes (they can be easily found on CD—each has its own cueing point) is always with us, and the string tone is particularly bright. And since there's so much choral work in the opera, it's nice to report that there's no muddiness or other problems in the reproduction (there was some pre-echo on the LPs).

Peter Pears's portrayal of the titular crazed loner is still thoroughly convincing, even after Vickers's perspectives and insights. Of course, it helps that the opera was composed for him—Pears's voice was always most comfortable where other tenors had trouble, *ie*, around the E and F on the staff—his lunatic narrative "Now the Great Bear and Pleiades" near the first

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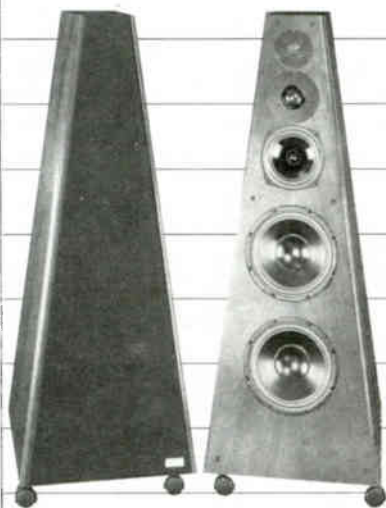
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act's close, with its repeated soft E's, sounds natural. (Vickers, on the other hand, has to croon them in semi-falsetto, and doesn't quite make it.) Claire Watson is a colorless Ellen Orford; but so is just about every soprano I've ever heard; the role seems to be written that way. James Pease is a strong but sympathetic Balstrode, the remainder of the cast is superb, and orchestra and chorus outdo themselves for the composer. This crucial release should be in every serious collection.

The final recording is chock-full of the oddest birds in the Britten *oeuvre*. His ballet *The Prince of the Pagodas* (which I've never seen danced, only heard) is spectacularly glitzy and exotic, reminiscent of Prokofiev (but with more melodies), and composed on a very large scale. This performance is cut somewhat, but since it rarely satisfies, I get the feeling that few will balk. What I do like about *Prince* is that one can hear where Britten's ideas about his three eastern-influenced church parables came from—he later pared down the acquired knowledge. The colors are bright, but the content of *Prince* seems to be too much about too little.

The *Diversions* were composed for the one-armed pianist Paul Wittgenstein in 1940, and diverting the piece is. Variations were always a favorite of Britten's; indeed, the *Young Person's Guide to the Orchestra*, possibly his most popular work, is itself a set of variations. This is a lovely, young work, full of tonal beauties and some playfulness as well. Julius Katchen's performance strikes me as ideal, although I haven't heard Fleisher's. The mono sound is tubby and shallow, and this is a definite caveat.

Reservations notwithstanding, it's good to have all of these on CD. I wish that modern, after-the-fact recordings of Britten's operas were available, but record companies don't seem to want to take such risks—although in the face of such competition, it would be hard to blame them. Still, where's *Gloriana*? And the re-release of the mono *Turn of the Screw*? They'd be most welcome—as are these 10 discs.

—Robert Levine

DVORÁK: Symphony 1 ("The Hero's Song")
Chandos ABRD 1352 (LP), CHAN 8597 (CD). TT: 74:11

DVORÁK: Symphony 8 ("The Wood Dove")
Chandos ABRD-1352 (LP), CHAN 8666 (CD). TT: 56:36

Both: Neeme Järvi, Scottish National Orchestra
Ralph Couzens, eng.; Brian Couzens, prod. DDA/DDD.

The only signs of consistency in Neeme Järvi's career seem to be the frequency of his recordings and the inconsistency of critical reaction to them. His cycle of Brahms symphonies took a battering at the hands of Mortimer H. Frank in Vol.12 No.8, and reviews elsewhere have run from less than lukewarm to effusively flattering. Both

extremes describe the omnipresent Estonian's readings of Dvorák's Symphonies 1 and 8.

On the less-than-lukewarm side is 8. On the effusively flattering side is 1, in which Järvi finds a bravura and ebullience that escape him in several other of the composer's works. There is a sense of emotional kinship and involvement in 1 that seldom wanes, from the carefully nurtured buildup in the introduction of the first movement to the brash, spellbinding coda of movement four. Phrasings are fresh throughout, and have a sure-handed vitality.

This is in direct contrast to the tepid, wayward lethargy displayed in 8. Järvi's interpretation is fraught with muddled orchestral balances and a drowsy malaise (especially in movement three) that remain unrelieved until the surprisingly sentient finale, the coda of which is astonishingly authoritative. But such subtleties as the gentle kiss of a final chord in the third movement are sapped of their poignancy and grace. The overall impression is that of a richly original symphony rendered mundane.

Both symphonic-poem pairings fall somewhere between the interpretive qualities of the two symphonies. Neither displays the torpor of 8 or the brilliance of 1.

Two older recordings of Symphony 1 by the LSO, one under István Kertész on London and one under Witold Rowicki on Philips, give much more rewarding views of the work. Rowicki's is entrancingly dramatic, while Kertész's is more poetically captivating. As for 8, von Dohnányi gives a rich performance of bold contrasts with the Cleveland on London, and Bruno Walter offers, perhaps, the definitive interpretation with the Columbia Symphony Orchestra on CBS. Järvi's reading of movement four does not suffer in comparison to either.

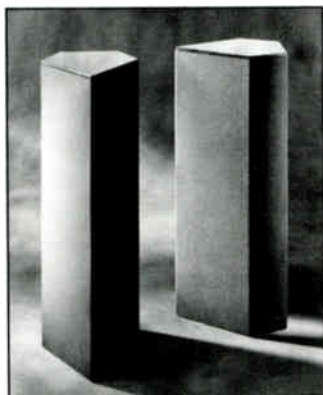
The Chandos sound may be pleasing to some, but I found it rather brassy, with little underpinning from the bass regions. Wind instruments are in the forefront here, in a highly reverberant environment that offers excellent depth but a very lightweight-sounding string complement. The Symphony 8 LP seems strikingly more distant, muddier, and less dynamic.

The enigma of Neeme Järvi continues unresolved by his Dvorák recordings. Whether future work reveals his banal or his insightful side bears close watching.

—Robert Hesson

ELGAR: Enigma Variations; Serenade for Strings; In the South
Andrew Litton, Royal Philharmonic Orchestra
Virgin 7 90727-2 (CD only). Mark Vigers, eng.; Andrew Keener, prod. DDD. TT: 65:00

I strongly urge any *Stereophile* readers who have not read Lewis Lipnick's detailed account of this recording (May '88) to do so, and then



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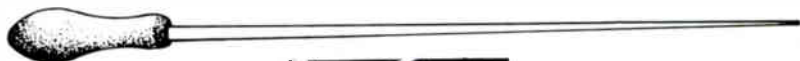
—Jim Stoneburner, *Stereophile*, Vol. 12, No. 7, July 1989

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to go out and buy this disc, "if only to hear this once-in-a-lifetime performance of Nimrod," as he suggested. My own view, recently expressed in a review of Sinopoli's Symphony 2 (August '89), and more recently still strengthened on hearing Barbirolli's exciting and spontaneous 1958 *Enigma Variations* (PRT NIXCD 6006), was one of skepticism at the unidiomatic efforts of non-Brits in Elgar. I must now concede that two Americans, Litton and Slatkin (whose *Kingdom* and Elgar 2 have been very favorably received in Britain), have made me think again.

Litton here seems to breathe the air like a native, and while he hasn't taken Barbirolli's bold risks in characterizing each variation, he captures the very essence of Elgar with great subtlety. One complaint—Vigars reluctantly agreed to give a mike to violist Andrew Williams for his important solo in *In the South*. Did he take it away again for Dorabella's variation in the *Enigma*, as the viola can hardly be heard?

The Serenade opens in breezy, *al fresco* mood, although I found its Larghetto a mite too slow, but Litton has contrasted perfectly, with an intuitive sense of balance, the swing between Straussian flamboyance and bucolic meditation in Elgar's Alassio-inspired tone poem *In the South*. Altogether, an encouraging venture.

—Barbara Jahn

MÉHUL: The 4 Symphonies; Overtures: *La Chasse de jeune Henri*, *Le Trésor supposé*

Michel Swierczewski, Orchestra of the Gulbenkian Foundation

Nimbus NI 5184/85 (2 CDs only). DDD. TT: 117:55

MÉHUL: Symphonies 1 & 2

Jorge Rotter, Rhenish Philharmonic Orchestra

Marco Polo 8.223139 (CD only). Susanne Vogt, eng.:

Rudolf Hohlweg, prod. DDD. TT: 53:10

Admired by Beethoven, Mendelssohn, and Schumann, Étienne-Nicolas Méhul (1763–1817) ultimately fell into relative obscurity. Yet if these releases are any indication, his music may well be worth more than fleeting attention.

In the light of Méhul's many successful operas, what is most surprising about these works is their amelodic, strongly motivic style. In this regard the four symphonies (composed 1808–1810) often suggest Beethoven, especially in their darting, often jagged profiles. But there are also anticipations of Mendelssohn, particularly in the finale of 3, where the scampering elfin lightness of this strikingly original movement foreshadows the airy whimsy of the scherzos from Mendelssohn's Octet and *Midsummer Night's Dream* music. Indeed, this finale is a kind of *moto perpetuo* whose brilliance anticipates the orchestral showpieces that were to come later in the century. Equally

arresting are some bold touches in orchestration, particularly the unaccompanied pizzicatos that provide the extended introduction to the Minuet of 1 and which look ahead to the third movement of Tchaikovsky's Symphony 4. But most of all, perhaps, these symphonies, with their occasional stabbing dissonances and unresolved nervous agitation, sound like harbingers of the somewhat more austere orchestral works of Franz Berwald.

Given these bold and often highly expressive strokes, as well as the admiration that Méhul once inspired, one may well wonder why this music has been so neglected. For one thing, as the notes accompanying this set make clear, the scores for 3 and 4 were lost, and parts for them were not discovered until 1979. More significantly, though, despite their originality and markedly symphonic character, these works often remain two-dimensional. The melody for unaccompanied cellos that introduces the slow movement of 4, for instance, is, quite simply, uninteresting and characterless. Furthermore, Méhul, for all the inventiveness of his motifs, fails to realize their developmental possibilities. As a result, the music sometimes sounds like faceless busywork lacking the conflict, contrast, and growth that are at the heart of aptly handled sonata structure and that produce compelling drama in Haydn, Mozart, and Beethoven.

Still, there is much here that is arresting and communicative, especially in these pointed, animated readings. I was particularly struck by how much more expressive the two overtures in this Nimbus set seem here than they did in the comparatively fussy and stodgy readings of Sir Thomas Beecham (in a long-out-of-print Columbia LP). In fact, the directions of Rotter and Swierczewski have a vibrance that makes either release attractive. Certainly those who do not wish to invest in all of the symphonies would do well to acquire the single Marco Polo disc.

But aside from offering more music, the Nimbus release features slightly superior sound—a bit close, perhaps, and too resonant for some tastes, but with a generally suaver, more musical ambience than the slightly harsher Marco Polo engineering provides. In addition, the Gulbenkian ensemble is marginally more polished and colorful than its Rhenish counterpart. But either release makes possible an eye-opening walk into history. With familiar warhorses receiving seemingly endless duplication, these discs comprise a refreshing novelty.

—Mortimer H. Frank

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ble Amsterdam; Netherlands Chamber Choir; Chorus Viennensis
Philips 422 074-2 (CD only). Roger de Schot, eng.; Mike Bremner, prod. DDD. TT: 71:06

The preparation, both of a scholastic and performing nature, that has gone into this disc is quite exemplary, and in such a crisp, well-focused recording nothing of it has been lost. Frits Noske, Professor Emeritus of Musicology at Amsterdam University, has reconstructed this edition in what he believes to be the nature of a Venetian Vesper service of the early 17th century. This means that although much of its music is by Monteverdi, antiphon repeats after the psalms have been substituted by vocal and instrumental pieces by other significant composers of the time; antiphons III and IV by instrumental sonatas by the Venetian Dario Castello, antiphon II by a toccata of Giovanni Gabrieli, and antiphons I and V by a motet and "sacred dialog" by Alessandro Grandi and Natale Bazzino, respectively.

In the polyphonic items an attempt has been made to use combinations of instruments as witnessed by a young diplomat, Constantijn Huygens, sent by the States General of the Netherlands to the Venetian Republic in 1620, who kept a diary that reported on a performance of this very work conducted and led by Monteverdi himself. An even more impressive choral contingent, here also including nine excellent solo voices, complements these instrumental colors. Frits Noske, in his informative insert notes, tells how the Venetian Vesper service was a colorful affair that grew to a "Monumental concert spirituel" lasting several hours, much to the disgust of the ecclesiastical authorities in Rome who were, for political reasons, powerless to do anything about it. Their loss is, fortunately, our gain.

—Barbara Jahn

BARBARA STROZZI: *Songs for Solo Voice*

Glenda Simpson, mezzo; The Camerata of London: Penelope Cave, harpsichord; Barry Mason, chitarone, baroque guitar; Richard Boothby, bass viol
Hyperion CDA 66303 (CD only). Mark Brown, prod.; Tony Faulkner, eng. DDD. TT: 52:00

In the words of writer Ursula K. Le Guin, "Synchronicity can strike at any time." It was not long ago that I read an excellent essay on the life of the early 17th-century Venetian singer and composer Barbara Strozzi. Until that time, I had not heard of her; thereafter, I read her name at least four or five times in other contexts, and at last comes this recording, unbidden, to my door. It has proven a welcome arrival indeed.

Barbara Strozzi's life could be described as a case history of the talented female musician in almost any period of history. Born into a

musical family, she gained notice first as a singer, then as a composer of works which were performed in a private chamber academy established by her generous father. Had she been male, the story would undoubtedly have been grander—a Court appointment, a post in the Church. For a woman, even in the relatively liberal atmosphere of Venice, such was impossible. Fortunately, Strozzi was able to publish eight books of her music, seven of which have survived. Had she not been born to relative wealth, even this might not have been possible, and posterity would be the poorer for the loss of some very lovely music.

Glenda Simpson and the Camerata of London are best known for their performances of Elizabethan music; in particular, a remarkable record of lute songs in authentic (or at least reasonably authentic) Elizabethan pronunciation. Now, with her voice considerably more mature, but no less lovely, Glenda Simpson has moved on to the 17th century after extensive study of that period's vocal styles. In fairness, I must say that Simpson's is not a voice for everyone. Although she can be meltingly sweet and liquid in unornamented singing, her vibrato—very tight and fast—takes some getting used to, and her strictly Baroque ornamentation will likely be unfamiliar as well. Nevertheless, if you give this disc a few hearings, I do not believe you will be disappointed.

Barbara Strozzi is, after all, the real "star" of this recording. Feminists, faced with the lack of truly notable women composers, have often felt forced to stretch a point and artificially raise the status of merely competent women to that of genius. In Strozzi's case, no such intellectual game is necessary. Her songs are sometimes delightful and witty, sometimes genuinely affecting, and very often exquisite. They are not, of course, as large in intent as the works of Monteverdi (to mention but one contemporary)—given the available resources and the nature of her culture, they could not have been—yet many of them are jewels of vocal writing. Glenda Simpson, with very able support from the group which she helped to found, is a most persuasive champion for these almost-forgotten works. As the authentic-performance movement reaches out for less familiar material from earlier periods, some genuine treasures are unearthed. These are surely among them.

Engineer Tony Faulkner turns in another excellent performance for Hyperion with this CD. (You will remember that it was he who engineered the famous *Feather on the Breath of God*.) Balance is excellent, instruments are well-placed and -focused, and timbre, especially that of the plucked strings, is both accu-

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—Les Berkley

Show Music

BLOOD BROTHERS: 1988 London Cast

Rod Edwards, cond. Willy Russell, music & lyrics
First Night CAST 17 (LP only). Jon Walls, eng.: Jon Miller,
prod. AAA? TT: 49:08

BODYWORK: Original British Cast

Richard Stilgoe, music & lyrics
First Night CAST 15 (LP only). Gary Thomas, Andy Warwick, engs.: Richard Stilgoe, prod. AAA. TT: 46:39

The British incursion into the "Broadway" musical-theater realm has not escaped the attention of observers of the theater scene, the modern British musical typically being seen as a spectacle on a grand scale (and budget). *Blood Brothers* and *Bodywork* do not fit this stereotype. Both feature small casts, and the combined costume budgets would not pay for even one of Christine's gowns in *Phantom of the Opera*. (Actually, *Bodywork*, from what I can tell, doesn't even have a costume budget.)

Blood Brothers is by far the more important of these works, at least in its aspirations/pre-tensions. Described as "an angry parable about blood and death and betrayal and social corruption," it is said to deal with "the urban blight of Thatcher's Britain" in a manner that recalls *The Threepenny Opera* and *Sondheim's Sweeney Todd*. The show received its first London staging in 1983, but achieved little popular success. Re-staged in London in 1988, critical and audience reaction have been very positive, and the show is now bound for Broadway.

I suppose I should withhold judgment until I see the show,² but, on the evidence of the record, *Blood Brothers* seems an uneasy mix of melodrama (ie, brothers brought up separately, not knowing their true relationship, one killing the other at the end—shades of *Il Trovatore!*) and gritty realism (the aforesaid urban blight). The music (by Willy Russell, best known for *Educating Rita*) is in the familiar pop/rock style, with, to be fair, some quite haunting tunes (eg, "Tell Me It's Not True"). Ironically, in view of the accusations of plagiarism that have been leveled at Andrew Lloyd Webber, the recurring "Marilyn Monroe" theme in *Blood Brothers* sounds an awful lot like "First/Second/Third Letter Home" from Lloyd Webber's *Tell Me On A Sunday*, written years previously. (Of course, for all I know, both may derive from the same English ditty.) The cast generally sounds as if they're actors who sing rather than real singers (this is a frequent peeve of mine in modern musicals), but Kiki Dee does well in her num-

bers. Sound quality is up to First Night's usual high standards.

Bodywork is, in many ways, as far from *Blood Brothers* as one can get. Unpretentious, playful, non-realistic in the extreme (no urban blight here), it was written by Richard Stilgoe, Andrew Lloyd Webber's collaborator on *Cats*, *Starlight Express*, and *Phantom*, for Britain's National Youth Theatre, who performed it at the 1987 Edinburgh Festival. The action takes place inside the body of Dominic, with all the actors playing parts of the body (eg, brain, heart, lungs, skin, hormones, etc.)—except for the soul and Sally, the girl Dominic falls in love with. It's a bit like a cross between a PBS educational program and Woody Allen's *Everything You Wanted To Know About Sex*, but somehow avoids being too cutesy or predictable. Stilgoe has written some catchy tunes to his own rather clever lyrics, and the performances have a spontaneous, intimate quality, as if these people are all Stilgoe's friends who got together to perform for their own amusement. The attitude of refusing to take oneself too seriously (evident in the music, lyrics, and the performances) is one that I found to be a refreshing contrast to the *Sturm und Drang* of *Blood Brothers*. No, *Bodywork* is not a Great Musical, but it is an oddity charming one, and it deserves to be performed on this side of the Atlantic. Sound quality is adequate.

—Robert Deutsch

Jazz

MEL TORMÉ/MARTY PAICH DEK-TETTE: In Concert Tokyo

Concord Jazz CJ-382 (LP), CCD-4382 (CD*). Hatturo Takazami, eng.: Carl Jefferson, prod. TB: 44:15, 47:17*

Although such fruitful collaborations as Sinatra/Riddle and Cleo Laine/Dankworth have received wider and more consistent exposure, neither has produced more meaningful results than the synergistic working relationship intermittently enjoyed by Mel Tormé and Marty Paich over the past 34 years. Their first recording together—*Lulu's Back in Town*—dates from 1956, and it remained for Concord Records President Carl Jefferson to finally bring the two together again last year for a release appropriately entitled *Reunion*. This latest offering, recorded in Tokyo at the Fujitsu-Concord Jazz Festival in December of 1988, marks their first joint effort in front of a live audience. And what an effort it is.

It's not that the two studio-made forerunners of *In Concert Tokyo* are routine; indeed, the first is a classic, and both would be treasured by anyone who enjoys inspired singing and sensitive, swinging arrangements. But Tormé was clearly turned on by the enthusiastic Jap-

² I saw *Blood Brothers* in London since having written this review; if anything, my impression of the show is now less favorable. It's just too heavy-handed dramatically

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Rock & Pop

LADYSMITH BLACK MAMBAZO/DANNY GLOVER:
How the Leopard Got his Spots
Windham Hill WD-0715 (CD only). James Cassidy, eng.;
Cookie Marengo, Doris Wilhoucky, prods. ADD. TT:
46:47

anese audience, generating some of his most spontaneous yet masterfully controlled performances ever. Add to that a voice that has become more richly burnished and expressive over the years—along with an artistic personality that has continued to flower—and you have a set of standards that should alternately have you smiling, tapping, holding your breath, and feeling just plain good. When Tormé caresses such lovely and literate standards as “More Than You Know” (haunting verse and all), and Harold Arlen’s neglected gem “When the Sun Comes Out,” you’ll probably feel more than a little wistful as well.

Anyone familiar with past Tormé/Paich collaborations knows that Paich and his 12- to 14-piece Dek-tette provide more than merely sensational accompaniment. For starters, Paich’s arrangements imaginatively blend rich, interesting harmonies and contrapuntal sophistication with an unerring sense of Tormé’s free-wheeling vocal style. With an emphasis on low instruments (including two trombones, tenor and baritone saxes, and tuba), the Dek-tette’s mellow but full-throated sound is modeled after the Gerry Mulligan/Miles Davis ensembles of the ’50s associated with what was then known as the “West Coast” or “Cool School.” But this music transcends geography, time, and labels. And as performed here by such stylistically sympatico sidemen as drummer John Von Ohlen, pianist Allen Farnham, veteran trumpeter Jack Sheldon, and valve trombonist Bob Envidson (the only member of the original Dek-tette), does it ever swing. Everyone gets a chance to blow, alto saxist Gary Foster providing some particularly strong solos.

Given such riches, it’s impossible to single out high points, though five-alarm renditions of “Sweet Georgia Brown,” “The Carioca,” and “On the Street Where You Live” certainly qualify, as does the tortured “When the Sun Comes Out.” The singer leaves center stage to play drums on “Cottontail,” joining clarinetist Ken Peplowski for several choruses patterned after the classic Goodman/Krupa duet on “Sing, Sing, Sing” from the Goodman Band’s 1938 Carnegie Hall Concert. The CD contains one extra cut in the form of Tormé’s own “The Christmas Song.”

Happily, the sound retrieval from Tokyo’s Kan-i-Hoken Hall is superb on both LP and CD—crisp and clean as the music, with just the right amount of ambience. An all-instrumental version of Ellington’s “It Don’t Mean a Thing if It Ain’t Got That Swing” opens and closes the proceedings. If you happen to agree with that assertion, run, don’t walk, because it and everything else on this album has got it and then some.

—Gordon Emerson

Consider if you will, O Best Beloved, this happy scene: Danny Glover hunkered down in the ’clusively tall, dry, sandy-yellowish-greyish-brownish grasses of the ’clusively hot, bare, shiny, yellowish-greyish-brownish High Veldt of South Africa, telling the story of how catty-shaped Leopard got his splotchy brown pants. But he’s talking English because you and me, we’re white. Not far away, Joseph Shabalala sits under a baobab tree telling the same story to his Mambazos in their own language; they sing back to him in choruses of laughter, wonder, and perfect rhythm.

So the sound became a dramatic stage as I listened to this wonderful story and Shabalala/Ladysmith’s even more wonderful music. Anyone who’s ever seen documentaries of traditional African tale-tellers holding forth, or had the privilege of hearing and watching them in person, will immediately recognize what Danny Glover does here: each word slowly savored, wrung of meaning, hyper-expressed and -articulated. His strangely uncatlike Leopard is not very bright, but full of energy; Leopard’s friend, the prolix Ethiopian, never says anything simply; and their prey are wiser than both of them.

Ladysmith Black Mambazo’s music is the best I’ve heard from them: like a force of nature, clear, happy, full of light and laughter—a long, cool drink of clear, pure water after a day on the High Veldt. Remarkable stuff. And the rhythms. . . ! Grooves within subtle grooves, with none of the often justifiably angry insistence of black American beats—what a difference!—songs like “Asambeni” and “Mabalabala” sound like they could be sung all day and leave the singers more rested and refreshed than when they began. And the music is repeated without the story at the end of the CD. The warm, detailed, reverberant sound (Ollie-wood Studios, London) supports whatever sonic illusions you’d care to project.

A delight. You owe yourself this one. It just might surprise you out of your jumpsome life.

—Richard Lehnert

VAN DYKE PARKS: *Tokyo Rose*
Warner Bros. 25968-1 (LP), -2 (CD). Douglas Botnick, eng.; Andrew Wickham, prod. AAA/AAD. TT: 46:45
VAN DYKE PARKS/JODIE FOSTER: *The Fisherman and his Wife*
Windham Hill WD-0714 (CD only). Douglas Botnick, eng.; Van Dyke Parks, Mark Sotnick, prods. ADD. TT: 50:07

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RANDY NEWMAN: *Parenthood* (Original Soundtrack) Reprise 26001-1 (LP), -2 (CD). Shawn Murphy, eng.; Lenny Waronker, Randy Newman, prods. AAA/AAD. TT: 28:31

The polar-opposite careers of Van Dyke Parks, the ultimate LA aesthete, and Randy Newman, once and future minimalist, have intertwined for a quarter of a century. They've played on each other's albums, the first cut on Parks's first LP was Newman's arrangement of his own "Vine Street" (which Newman himself has never recorded), and they've worked on film scores together (though not *Parenthood*).

Warner Bros. used to pound itself on the back for deigning to keep in its stable such "critics' favorites" (read "egghead music" and "no sales") as Newman and Parks, while letting lapse three albums each of these less-than-prolific artists' sparse back catalog. Edsel Records has licensed most of Parks's old LPs, but remember that, other than some non-descript film scores,³ *Tokyo Rose* is only his fifth album in 21 years. However, even with as much as nine years between releases, as Parks took between 1975's *Clang of the Yankee Reaper* and 1984's *Jump!*, the last four albums *together* don't begin to equal the out-of-left-field genius of the 1968 *Song Cycle*. Like most mathematicians, VDP seems to have shot his wad sometime in his mid-20s.

Yes, *Tokyo Rose* has Parks's trademark chromatic string arrangements, his snide leprechaun voice, endless puns both musical and verbal, calypso charts and rhythms, Ivesian musical quotations, and wry, sidelong paraphrases of history, but it all adds up here to little more than clever, and probably should have been published as a poetry broadside. *Song Cycle*, on the other hand, with all the same ingredients, remains one of the most musically funny, exciting, all-levels-at-once oddities of pop/classical-based weirdness from the '60s or *any* decade I've ever heard. In fact, soon after I was introduced to *Song Cycle* in 1969, I began hearing the album as a set of poetic essays on the American condition, as if Wallace Stevens and Gore Vidal had collaborated on writings in the American grain, with music by Ives, Mahler, and Spike Jones. (I used to play it for tripping hippies, who would stumble from the room holding their heads. Heh-heh.)

Tokyo Rose is "a collection of [my] unreconciled feelings about the Japanese," Parks voicing his fears that "the ugly American might yet

become the ugly Japanese." Much of the music is in syrupy 1940s Hollywood orchestra style, with the odd koto, biwa, and shakuhachi thrown in, and Very Foreign (but cute!) Far Easterners being inscrutably quaint: lilting, ingratiating, ephemeral near-melodies sung in Parks's near-voice. There's a rearrangement of "America" (I like David Crosby's better); Mari Iijima sings (phonetically?) one song about the US's great export to Japan, Romantic Love, in a song called "Calypso"; "Cowboy" ("Kau-boi") is sort of about Pearl Harbor; "Trade War" deals with the militaristic spirit of American business, "Yankee Go Home" with ugly Americanism, and "One Home Run" is about Japan's National Game, sung half in English, half in Japanese. Parks has always gone for the big picture in densely ironic, poetic ways. The lyrics, often enjambed to the point of opacity, are always playful, sometimes with a Cole Porterish twist: "As is mentioned in the Bible, Nations tend to what is tribal; Across the ocean white with foam, Spend your dollars here at home!" ("Trade War"); "Watched the palms by the sea sway, in the arms of a beautiful Nisei" ("Manzanar," named for the WWII Japanese relocation camp in California).

Though most of the instruments are acoustic, the sound is intensely electronic, as in all of Parks's work: his true instrument is the mixing board. *Song Cycle* made the impression it did partly because it so obviously—sometimes excruciatingly—strained against the limits of the recording technology of its time. I dunno—I'm somewhat bothered by the fact that such a complex, sophisticated album as *Tokyo Rose* can be made to sound so smooth (if not natural), to so little effect. There's a list of "Hi-Fi Facts" in the notes for those so inclined. The CD, which includes subcode graphics, sounds much more machine-like than the LP, though paradoxically sounding deeper, wetter, with more air.

Tokyo Rose is merely interesting; I'm hard-pressed to recommend it. Listening to it all in one sitting is like eating three square meals of the best chocolate mousse you ever had—the illusion of nourishment. I've taken this much space because Van Dyke Parks is important—sometimes. Those who've heard *Song Cycle*, *Discover America*, *Jump!*, and his very rare single "On the Rolling Sea When Jesus Speak to Me" know the best of his work by far; those who haven't should go out and buy *Song Cycle* immediately—it'll tell you all you want to know about whether you want to know more. Not for everyone.

Jodie Foster's rather flat re-telling of *The Fisherman and his Wife*, a simple tale of exponentially mounting greed, is a surprise and

³ Like his orchestrations for Harry Nilsson's *Popeye* score. Look for VDP's soundtrack to *Two Jakes*, Jack Nicholson's sequel to *Chinatown*, and his brass arrangements for Ry Cooder's *Jobny Handsome*. Parks also co-authored, with Brian Wilson, the Beach Boys' "Surf's Up" and "Heroes and Villains," and was instrumental in the making of *Pet Sounds* and the early Tim Buckley and Little Feat albums.

a disappointment. Chameleon-like on screen (compare her roles in *Siesta* and *The Accused!*), she's too understated here; her characterizations of the fisherman, his wife, and the magic flounder don't have vocal costumes, are drawn by only the slightest shifts in inflection and diction. Sometimes less is just less.

On the other hand, Van Dyke Parks's full-fledged film-score music is the richest of any in Windham Hill's Storybook Classics series, sounding very much like the Disneyesque soundtrack it is. However, in true journeyman film-composer style, you'd never know this was VDP unless someone told you; like so many filmscores, it's a pastiche of the styles of many better composers (Tchaikovsky included), and is almost that in content. Parks quotes from Saint-Saëns's *Carnival of the Animals* ("Aquarium," of course), and gives us a traditional hornpipe, a bluesy Gershwinian wail, a downright Wagnerian passage for solo English Horn, and the main theme, out of Haydn by the Beatles' George Martin. The mixture of orchestra and electronics is a bit plastic-sounding, like a waxed cucumber. Again, interesting but insubstantial. Sometimes more is just less, too.

You could count Randy Newman's soundtracks on one foot's toes, but most of them are marvels of elegance, concision, and melody, particularly *Ragtime* and *The Natural*. The

very brief *Parenthood* soundtrack is very much in the same class: busier, but unsoppily, engagingly romantic, in the neo-Copland style Newman developed for *The Natural*, and sweet without making your teeth hurt. Those who listen carefully might find more of musical substance here than anything Newman's done under his own name since *Good Old Boys*. And there's one new Newman song, too: "I Love to See You Smile," which must be making songwriters all over the country tear their hair out—how can he make something so good sound so simple? The recording gives you a good idea of what Burbank thinks an orchestra should sound like these days—something you'll never hear in a concert hall. The LP is marginally superior in every way to the CD, except for its massed string sound, which is *much* better. And the three-minute "I Love to See You Smile" is repeated at the end, so the album is actually only 25 minutes long. But if that's all there was. . . —Richard Lehnert

MAVIS STAPLES: *Time Waits for No One*

Paisley Park 25798-1 (LP), -2 (CD). Prince, Al Bell, Homer Banks, Lester Snell, prods.; J. Blaney, W. Brown, T. Luane, S. Rogers, C. Johnson, E. Garcia, S. Greco, engs. AAA/AAD. TT: 39:15

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symmetric/How interesting" breathes Mavis Staples in a track only our man from Minnesota in black leather underwear and a little red Corvette could have created ("Interesting"). Yep, the Paisley Park Prince rivals only the Stones as a talent scout or—in this case—revivor. The combination of Prince, Memphis-based Stax co-producers Bell, Banks, and Snell, and one-time gospel great Mavis Staples (of The Staples Singers) really *is* interesting. The title track sashays off with the nervous riffing, cross-rhythms, and interplay between acoustic and electrical sounds that define high Prince style, and just when you think you've got it, it quick-cuts into Mavis's down-home, no-nonsense, perfectly controlled work on lyrics straight from an R-rated *Alice in Wonderland*. Suddenly we're in a warped and relative world where it makes perfect sense that Bootsy Collins and Emmylou Harris, so to speak, are not only on the same bill, but in the same song.

Not everything melds so well into the head chef's vision of urban funk, however. The testaments to testifying—"20th Century Express" ("Screams cry out . . . from the crack house across the street") and "The Old Songs"—are ordinary, if sincere, intrusions from another era, but Prince has managed to work his graceful, loopy phrasings and dizzy swirls of instrumentation into the ballads "Come Home" and "I Guess I'm Crazy." The payoff here is that the arrangements take surprising twists and turns and so happily offset the rather ordinary lyrics. On that subject, the "take a little piece of my heart" masochism evinced on "Train" ("There's a train leaving every day. . . I won't stand in your way") is a curious point of view from the sister who stood with Aretha to develop attitudes like "Respect Yourself." Stand in his way? Honey, if he's one stone jerk who can't recognize a silk purse, throw him in *front* of the train.

The best songs—"Jaguar" and the title track "Time Waits for No One"—are perfect interactions of composition, lyrical content, and performance. Both stand out in their cool, loping, sensual explorations of sex and love. Mavis is from gospel, and her earthiness is joy; Prince is urban, and his eroticism is from the street; they're both class acts. If you're tired of dancing to Ident-i-kit Whitney Houstons and if you wonder if rapper Kool Moe Dee, Mike Tyson, and Eddie Murphy really do speak for all young black men ("Nah, I ain't got no girl friend. All they want's your money. All they got is (unprintable)"), this album is hot, and cool, but hardly prurient. The CD sound sparkles, and although the affair is a little skimpy on time, ironically, the three top tracks demand a listen.

—Beth Jacques

BOOK REVIEWS

Acoustic Techniques for Home and Studio, Second Edition

F. Alton Everest.

344 pages, \$15.95 paperback. Published by TAB Books Inc., P.O. Box 40, Blue Ridge Summit, PA 17214.

For anyone who has ever opened a serious acoustics book (*Acoustics* by Leo Beranek, for example) for a little practical information and been shocked by the complexity and heavy mathematics of the subject, *Acoustic Techniques for Home and Studio* is for you. Rather than dwell on the theoretical aspects of acoustics, F. Alton Everest has written a down-to-earth, easily understandable treatment of a subject that has heretofore scared away all but the most scientific-minded audiophiles. Although some theory, essential to understanding any technical subject, is included, the emphasis is definitely on real-world application. The author has taken a sometimes arcane topic and translated it for the layman [*although sometimes in somewhat curious English—Ed.*].

I first discovered *Acoustic Techniques* in 1978 when I was a recording engineering student and knew that one day I would build my own studio. When I did design and build a studio, the book was an invaluable source of information. My copy quickly became dogeared and worn, always the sign of a good book.

This second edition is vastly superior to the first. Much more technical background is included, and at least some of the more recent developments in acoustics are discussed. The first section is devoted to basic principles of sound behavior, the decibel scale, and human hearing, all important topics for the audiophile. Chapter 6, "Standing Waves in Listening Rooms and Small Studios," clearly explains the physics behind room resonance modes, how they interact with each other, and their effects on music. The importance of optimum room length/width/height ratios for best modal distribution is discussed, and charts indicating preferred ratios are included. In addition, information on how to calculate your own room's resonance modes is presented. This chapter should be required reading for everyone who takes music playback seriously. After reading this section and realizing how profound an effect room modes have on music reproduc-

tion, I suspect many readers will take action to improve their listening rooms.

Many misconceptions about on the subject of isolating a room from external noise (or the rest of the house from the listening room!). Although not a comprehensive treatment of the subject of noise isolation, Chapter 8, "Control of Interfering Noise," dispels many myths and provides the essential fundamentals of noise control.

The next major section of the book deals with acoustical materials and structures, and the decay of sound in small rooms. Everest explains the frequency-dependent effects of common materials (carpets, drapes, windows, etc.) and "acoustic" materials (ceiling tiles, fiberboard, Sonex, etc.). A table listing many materials' absorption coefficients is included. For anyone attempting a do-it-yourself room-treatment project, this chapter will undoubtedly see the most use. Plans, drawings, and graphs are provided that detail how to build low- and mid-frequency panel absorbers, quarter-wavelength bass traps, polycylindrical diffusors, and slat absorbers. Graphs and formulas allow tailoring these structures to the specific room requirements. Actual measurement data of these treatments are also presented.

The need for these types of low-frequency absorbing elements becomes evident in Chapter 10. Methods of calculating reverberation time across the audio band (at 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz) are presented. These calculations dramatically demonstrate a typical room's problems and the need for low-frequency absorption to balance high-frequency absorbers like carpet and drapes. The frequency-dependent nature of reverberation is stressed, along with the effect of room modes on reverberation time. Although there has been some debate recently about the validity of reverberation calculations in small rooms, the chapter nevertheless provides a rudimentary understanding of the subject. The chapter finishes with a fascinating example of the acoustic characteristics of an untreated room and at various stages of acoustic treatment.

Further examples of room treatments are provided in the following chapters, but with the emphasis on the specific requirements of recording studios and control rooms. Addi-

tional chapters cover adjustable acoustics, tuning the listening room, and evaluating room acoustics, both with test instruments and by ear. The book concludes with a group of photographs, called "A Pictorial Tour of Studios Around the World," that enables the reader to see the treatments discussed previously in actual use. An appendix lists many building and acoustical materials and their absorption coefficients at various frequencies. This information will be invaluable to those designing a room.

Acoustic Techniques is an excellent first book on acoustics. It provides just enough theory for the non-technical reader to comprehend the subject without burdening the reader who wants practical information. The book is filled with excellent graphs and charts that explain the ideas developed in the text.

One major fault, however, is that, in light of recent advancements in acoustic measurements and treatments, even the second edition seems dated. Many acoustic concepts developed in the past decade are either ignored or given cursory treatment. These include LEDE (Live End Dead End), the ETC (Energy Time Curve), TEF (Time Energy Frequency) analyzers, and the RFZ (Reflection Free Zone) concept. In addition, useful treatments such as RPG Diffusors and ASC Tube Traps are not mentioned. Looking at the second edition's publication date of 1984 reminds one of the enormous advances made in acoustic science in the past five years.

With that minor *caveat*, I can enthusiastically recommend *Acoustic Techniques for Home and Studio*. It is a wealth of information and insight into a subject that deserves more attention.

—Robert Harley

Killer Car Stereo on a Budget

Daniel L. Ferguson

128 pages including preface, softcover (ring-bound), \$19.95 (plus \$1.75 shipping). Published by Audio Amateur Publications. Available from Old Colony Sound Lab, P.O. Box 243, Peterborough, NH 03458-0243. Fax credit-card orders: (603) 924-9467.

If you're like me, the prospect of cutting into your car's metalwork and upholstery to install a better in-car sound system is sufficiently daunting that you never actually get around to it. Of course, there are many specialist auto-sound installers who have all the necessary tools and, more importantly, the skill and expe-

rience, to help turn your freeway hours into something a little more entertaining. But many auto-audiophiles either like to have some hands-on involvement or can't afford the services of a specialist, and it is for them that this book from the publisher of *Audio Amateur* magazine is intended.

In seven succinct chapters, Dan Ferguson takes the would-be autosound enthusiast step-by-detailed-step through the stages of putting together a better full-range speaker system and adding an appropriate subwoofer for owners of sedans, hatchbacks, and pickup trucks. Specific drive-units are recommended, together with full installation instructions, and a full list of suppliers—Madisound, Old Colony, Crutchfield, etc.—is given as an appendix. Full installation information is also given in the last chapter, including hints on how best to route the necessary cabling through your car's firewall and interior.

The heart of the systems described is a line-level electronic crossover capable of being customized (crossover frequency, Q, and level) for the particular drive-units chosen. This crossover sums the left- and right-channel signals to provide a low-pass filtered mono signal to supply to an amplifier/subwoofer combination. The reader will need some experience with electronic assembly to put this crossover together. Fortunately for those with a horror of soldering, Old Colony Sound Lab can supply units assembled, tested, and guaranteed.

The book offers merely limited advice only in choosing a suitable head unit and a power amplifier to drive the subwoofer. As a glance through the Crutchfield catalog will confirm, there are so many available that it would take a dedicated in-car magazine the rest of the century just to review what is available now. A relatively inexpensive Audiovox dash unit and a Radio Shack power amplifier are recommended, however.

Obviously the reader has to take the ultimate sound quality of Mr. Ferguson's chosen speaker systems on trust. However, given the thorough way in which the author has described the design and installation processes, I would hazard a guess that those who buy this excellent little book and put together one of his auto-sound systems will be pleasantly surprised at the improvement it offers over the one that came with their car.

—John Atkinson

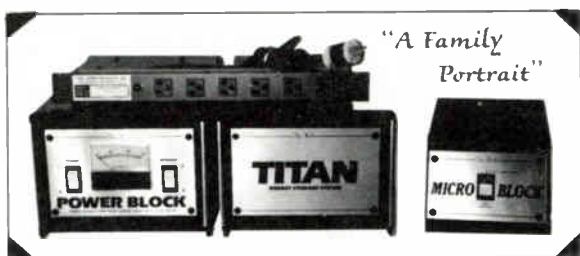
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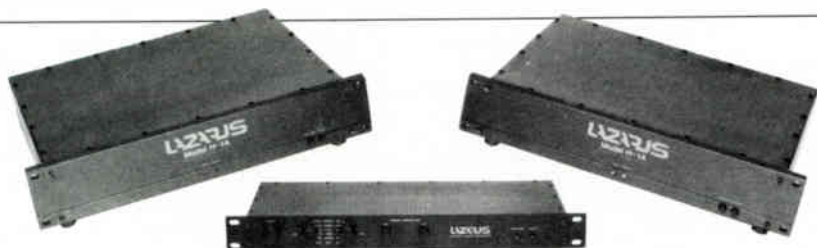
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MANUFACTURERS' COMMENTS

Armor All Protectant

Editor:

Mr. Tellig has a uniquely humorous writing style which will surely hold the reader's attention. We are excited about his discovery and this subsequent article. The following editorial change requests include technical wording inaccuracies and unacceptable corporate-positioning verbiage. We appreciate your attention to this matter.

Anywhere the phrase "... Armor Alling..." appears, it should read "... applying Armor All to..."

Please delete entirely the reference to re-packaging Armor All and selling it for ten times the price under another name.

The resemblance between Armor All and bull semen: surely there is a more tasteful comparison which can be drawn.

Armor All is referred to as "cheap." Our preference would be the word "inexpensive."

Leslie Kennedy

Consumer Relations

Armor All Products Corporation

Proceed CD player

Editor:

Thank you for your warm reception of the first product in the new Proceed line from Madrigal. The fact that it is being favorably compared, both sonically and in construction quality, to much more expensive units, is very flattering. In this context, we would have wished that the PCD had been auditioned with balanced interconnection to appreciate its maximum performance. Although we at Madrigal do not see balanced interconnection as a panacea (in fact, we are aware of some balanced implementations that degrade sonic performance), we believe the balanced output of the Proceed CD player to be the best connection for the most critical listeners.

Regarding interpolations and sound, we agree with Mr. Harley that "Interpolations are rare events on most discs" with most CD transports. We have observed, however, that a few discs on certain transports have long passages where interpolations occur repeatedly at uneven intervals of a fraction of a second for as long as several minutes. The same disc on a different transport produces fewer interpola-

tions and an improved sound quality.

We do not, in any event, mean to say that the mechanical aspects of CD transports primarily affect sound quality because of differences in data errors. We have evidence that suggests that these sonic differences are related to jitter problems, although our research is incomplete. Numerous blind listening tests, however, have demonstrated to us that there are sonic improvements related to CD-transport mechanics, and we have tried to address this issue in the Proceed CD player.

J. Michael Wesley

Vice President, Product Development

Madrigal Audio Laboratories, Inc.

Acoustat Spectra 11

Editor:

Acoustat would like to thank Thomas J. Norton and *Stereophile* for the thorough review of the Spectra 11 loudspeaker system. Mr. Norton's description of the 11s as "unfailingly 'musical'" and "a loudspeaker with 'entry-level high-end' written all over it" cut to the heart of our design goals and, therefore, make these comments particularly gratifying.

We would like to elaborate on Mr. Norton's comments concerning the Spectra 11's woofer-box construction (particle board) and cosmetics. MDF may be a superior construction material, but the use of industrial-grade particle board allowed us to maintain the desired system performance and still achieve the targeted \$999 retail price. We did, however, design in two finishes—the Black Matrix (described in the review) and an oak laminate finish which does (attempt to) satisfy the Wife Acceptance Factor.

As for the (sleeping) folks at the Acoustat factory—they haven't slept in months.

Jeff Peters

Marketing Director, Rockford Corporation

RSL Speedscreen II loudspeaker

Editor:

Thank you for your review of the RSL Speedscreen II speaker system. RSL has always stressed value and performance. Speakers that are well worth the price. We feel the review supports that assertion.

Like all good speaker systems, the RSL Speed-

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screen IIs are environment- and equipment-critical. We do, however, agree with certain criticisms that were made. It was quite a few months ago when we first contacted *Stereophile* about reviewing the RSL Speedscreen IIs. Back then, they were over a year and a half old. At RSL Speaker Systems, we have always placed a lot of emphasis on R&D. In the more than two years since the Speedscreen IIs were designed, there has been a lot of progress. Since the speakers were submitted for review, they've undergone revisions. We feel these revisions are significant and correct several of the concerns expressed by the reviewer. Yet the price has not been increased, which makes them an even greater value, in our opinion.

As stated in the review, my dislike for the "boxy" characteristics of deep enclosures resulted in the very thin design of the Speedscreen IIs. The "anti-diffraction" pad does help minimize the problems associated with the large front baffle. Unfortunately, as your review points out, it doesn't completely solve the problem. The best solution is to minimize the frontal area of the baffle, which a correctly designed deeper enclosure can do.

I am happy to report that we have come up with an elegant solution to solve the "boxiness" problems of deep enclosures. It is the subject of our first patent, which is now pending. Representative models will be in production by the time your readers see this letter.

Howard Rodgers

President, RogerSound Labs, Inc.

Fried & transmission lines

Editor:

I have noted with extreme interest the recent revival in your pages of interest in the transmission-line concept of loudspeaker design, notably in Robert Harley's reviews of the Vortex Screen (Vol.12 No.7) and the TDL Reference Standard Loudspeaker (Vol.12 No.12) . . . because, in the words of your Dick Olsher (Vol.9 No.7, p.105), "Well, Bud Fried has been instrumental in popularizing this worthy enclosure for many years, and I think we all owe him a debt of gratitude for his perseverance."

Mr. Harley's language in the TDL review (I quote): "Another basic design that has been around a long time is transmission-line speaker loading, though it's appeared in relatively few products. This is surprising, considering the concept's exceptional technical merits. Trans-

mission-line loading provides the best possible acoustic environment for the driver."

To this, I add my hearty concurrence. I also note his discussion of the virtues of midrange transmission-line loading—and I add this thought: Midrange transmission-line loading is at least as important as bass line loading, and, to my current thinking, of vital importance where midrange performance of the very highest order is desired. The reasons are patent: The energy bounceback (Mr. Harley's terminology) in the midrange is even more obvious to the auditioner in the mid region than in the bass regions, and is, I assert, the reason why so many three-way loudspeakers are harder to listen to than some two-way loudspeakers—all that energy bouncing back at the cone and through the small enclosures that pass for chambers in most three-way loudspeakers!

Many of you will remember the original IMF Monitor of 1968, for which John Wright and I were associates in design. (Some people tell me the current TDLs resemble the IMFs in many characteristics—but that is another story). In that loudspeaker, we did employ a line behind the midrange, as well as a bass line—and it is that mid line which, I assert, differentiated that original IMF Monitor from all other speakers of its day, at least as much as did the bass line!

Whenever my design goal has been to provide a pristine quality in the midrange—*ie*, since 1968—my designs have included a mid line. Whenever the goal has been to provide a pristine quality to the entire transducer, I have employed mid lines and bass lines! However, mid lines are easier to incorporate into moderately sized and priced loudspeakers than bass lines—and thus, in succeeding years, I designed the Model R/2 (1976), the Model R/3 (1980), the C/3-L (1986), the G/3 (1986), and the R/4 (1989!)—all of them being virtually a woofer and a tweeter, with a midrange transmission-line system in between.

I certainly concur with Mr. Harley's descriptions of the bass performance of properly driven, designed, and damped transmission lines; having written much the same thing since 1962, when I first heard the modern transmission line, in England, in the laboratory of Arthur Radford, and embarked on my long-term involvement in them. Mr. Harley points out their disadvantages—complexity, size, and cost. However, in this age when loudspeakers

selling for the many thousands of dollars are offered to the music lover, and when those loudspeakers so obviously are deficient in reproducing naturally the lower registers of music, I wonder why other manufacturers won't become involved with transmission lines. Here, in my company, we have worked valiantly to lower the cost of transmission-line bass loading by offering them as kits; and by developing new variants on the line, in narrower footprint configurations.

I wish to offer one final observation: Properly engineered transmission lines are so "neutral" (Mr. Harley's term) that the absolute quality of the driver and the crossover must be the very best—else you listen to their blemishes. In the old IMF days, we never could get the transition between bass and midrange correct—on voice, it was always apparent that something was "wrong"—but, of course, other loudspeakers of that day were much worse! I, looking back, believe the problem was one of drivers and crossovers—if you think about it, 1968 technology and materials were absolutely primitive by today's standards. Today, with more modern materials and crossover technology—computer-derived, if you will—the

vital voice region can be reproduced free of the obvious blemishes the old IMFs had.

To summarize: Transmission-line reproduction can be superior to any other known enclosure system. If it isn't, the problem lies elsewhere, possibly in the drivers and/or the crossover systems. If the dictates of price, size, and commerce will not permit bass line loading, in addition to mid line loading, then the use of mid line loading is indicated; *ie*, it is at least as important as bass line loading, and, in my opinion, even more important (your reviewers will agree—that pristine midrange is the preeminent qualification for musical reproduction).

I trust the above comments will be meaningful and interesting to your readers, and that the virtues of transmission-line loading will spread more evenly through the industry, which, unlike Paul Klipsch, sometimes seems to think that the "laws of physics" have been repealed (*cf* the footnote in the TDL review). Since I first heard Benjamin Olney's "acoustical labyrinth" (yes, he was an American!) of 1934, I have been looking for a better enclosure system—and found none.

Irving M. Fried

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VTL, Chinese tubes, money, & criticism

Editor:

In the December 1989 issue of *Stereophile* we much enjoyed DO's interesting review of the fine Modjeski RM9 power amplifier, as well as the Audio Anarchist's article on the ever-escalating price of high-end audio equipment.

Concerning the review of the Modjeski amplifier, we read that it seems possible to nimbly exchange EL34s with Chinese "KT88"s at will. We do hope that this will not encourage a burst of "tube rollers" among users of our brand of equipment! We would like to stress that *only* the factory-fitted tube type should be used in a given piece of our electronics. VTL equipment is exactly designed around the tubes that are factory-fitted to the various models, and the amplifiers will not perform properly with arbitrarily fitted tube types. There are such matters as anode (plate) impedance, current draw of the heaters, and of course high tension (B+), as it affects both anode and screen grid. We rate the B+ differently for EL34s than for 6550As, and it would be very wrong to try to interswap the two.

We refer the attention of VTL equipment owners to either of the two editions of the VTL book or to their manuals for elaboration.

Our second point concerns the "Audio Anarchist" article. While it is true that the trend for prices of consumer high-end equipment is always upward-bound, we admit that we are not very fashionable in this regard; we are even happy to be called old-fashioned when it comes to the issue of value for money. To elucidate:

We have held our prices constant since the brand was introduced to the American public, and in all cases have even increased the quality of our products at no extra cost. This is evident in the most recently upgraded Stereo 75 amplifier, which is now 90Wpc at the same price (\$1950).

Across-the-board upgrades are always being carried out in our products, and will not affect our prices for at least the year 1990. For example, all chassis on the amplifiers are now chrome-plated, instead of powder-coated. This bodes badly for our painter, but there must be a good reason for the fact that cars have their bumpers chrome-plated! We are also chrome-plating the "handles" on the amplifiers, and we have already made the switch to chrome-plated

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As always, we continue to strive for premium-quality tubes, always paying a premium to have our tubes delivered to a Special Test Requirement, rather than fitting any old thing. (The STR tubes are branded with our logo by the manufacturer.)

Our final point in this letter concerns "As We See It" in the same issue of *Stereophile*, wherein you pose the question of whether or not only positive equipment reviews should see light of print. We must disagree with Mr. Carpe when he states that, in his opinion, negative reviews "can be absolutely devastating to a high-end manufacturer." The only negative review that we have ever had in the US was also our first—the review of the Stereo 30/30 amplifier by DO in Vol.10 No.2. DO voiced constructive criticisms, upon which we acted. He kindly re-reviewed the amplifier, loved it, and we have gone from strength to strength since then. This may help to demonstrate that it is the *attitude* that the manufacturer adopts to criticism. Constructive criticism is highly valued by us at VTL!

We thank you for the space to give our two cents' worth, and we congratulate you on the rapid progress of your fine magazine.

David Manley, Luke Manley
Vacuum Tube Logic of America, Inc.

Muse/Dynavector

Editor:

A recent development in our company is that we have been selected to handle US distribution for the products of Dynavector Systems Ltd. The first change that we are implementing is revised pricing on all of the pickup cartridges. The XX-1, recently reviewed and subsequently included in "Recommended Components," has been made considerably more affordable at \$1000. I feel that readers of *Stereophile* may find this price decrease quite interesting.

Another bit of news is the low-output version of this cartridge, the XX-1L. It puts out 0.25mV with a 5 ohm source impedance, and, in systems with adequate gain, offers improved performance over the XX-1.

Michael Goddard
Muse Electronics

B&W 801 Xover Xtalk

Editor:

Regarding our letter to you dated November 7, 1989 (published in Vol.13 No.1, p.263): It involved the B&W 801 Matrix crossover crosstalk "problem" described by Tom Lewitt in the October 1989 "Letters" column in *Stereophile*, and we must offer our apologies to Mr. Lewitt. He is correct in noting that a crossover crosstalk problem exists and we were in error in suggesting that the problem did not exist when an amplifier is connected to the undriven circuit.

Unfortunately, we based our observations on the crossover schematic published by B&W in their replacement parts manual for the speaker, while in fact the 801 Matrix Series 2 is not built exactly in accordance with that published schematic.

The speaker as actually manufactured has the wiring to the protect-circuit LED relocated to keep the LED from flickering when activated, attaching this common wiring to a different point in the circuit than shown in the schematic. Mr. Lewitt is correct in his observation that reversing the polarity of two amplifiers driving the speaker in a bi-amp mode with the crossover "bi-wire" jumpers removed can blow the protection circuit zener diodes, and that the wiring arrangement does cause some crosstalk between sections. The two jumper wires on the PC card near the terminal block should be removed. This will isolate the LED to the mid/high section only, eliminating the crosstalk path. Both protect circuits will still work, but the LED will light only when the mid/high circuit activates. Obviously, two separate LEDs could be used if there was a good place to locate them.

However, *most of the observed crosstalk is not through the protect circuits, but is magnetic coupling between two of the crossover inductors.* The first inductor in the bass crossover (L6) is directly in line with and close to the last inductor (L5) in the midrange crossover. At 2001Hz with an amp connected only to the woofer crossover, a dummy 8 ohm load connected to the midrange crossover, and the input to the midrange crossover shorted, the signal out of the undriven midrange crossover equaled the signal out of the woofer crossover! You couldn't get much better coupling if the two coils had been wound on a common core!

There is an easy fix—remove the L5 coil from the PC card and relocate it in the corner

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of the enclosure bottom as far away from L6 as possible (and at right angles to L6). When we did this to my pet 801 Matrix units, the crosstalk dropped from 6V out of the midrange section (with 6V into the woofer section) to 200mV out—a 30dB reduction!

Probably a more eloquent solution would be separate PC cards for each section of the crossover and magnetic shielding between the sections. I will be interested to see what Mr. Lewitt proposes.

Oh yes—then there is that other question—can one actually hear the difference relocating the L5 inductors makes? Yes, you can! There is a difference in tonal balance obvious on both white noise and on music. Is the difference “better”? Well, I am not changing mine back to the old configuration. We suggest you try

it too!

Finally, it is important that your readers should keep in mind that the 801 Matrix is a great speaker right out of the box, without anything done to it at all. But we perfectionists are never satisfied, and are always searching for ways to make audio components more faithful to the source. It is a compliment to B&W that so many people are researching the 801 Matrix so carefully. A lesser speaker would simply be ignored.

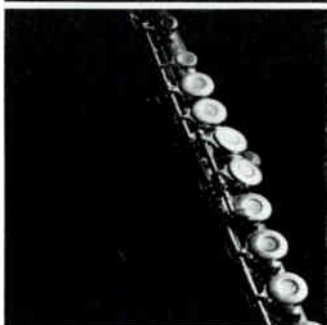
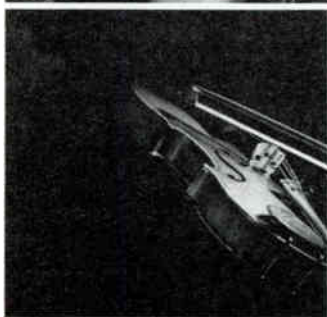
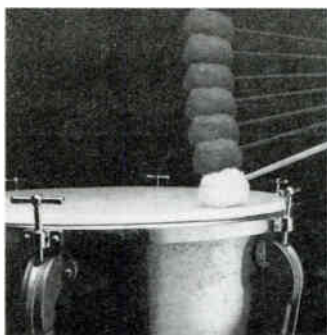
Frank Van Alstine

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1 Readers who wish copies of drawings showing the original 801 Matrix crossover schematic, the schematic as the speaker is actually built, and the schematic with Mr. Van Alstine's proposed “fixes,” should write to *Stereophile*, marking the envelope “B&W 801 crossover: For the Attention of the Editor,” including \$3 to cover postage and handling.

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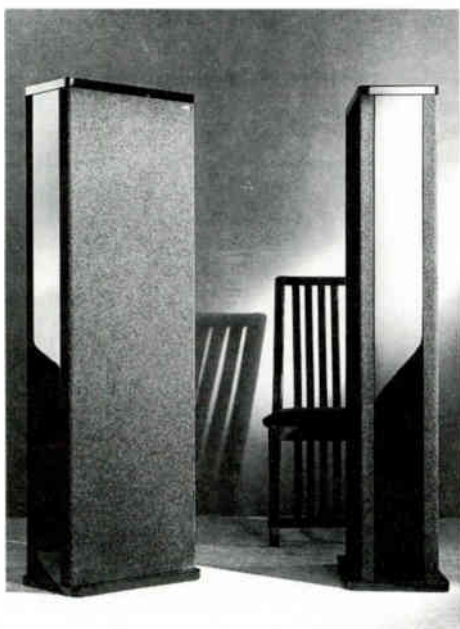
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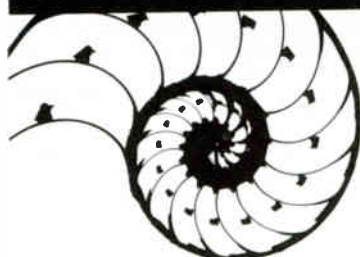
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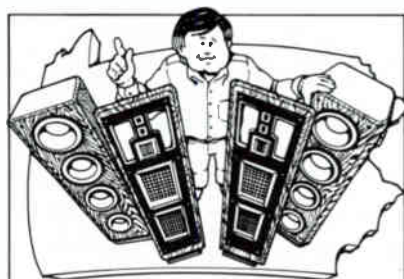
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THE FINAL WORD

Listening in Exotic Climes

Bebo Moroni, our reporter-on-the-scene in Italy, has given a succinct account of Milan's Top Audio Show in this month's "Industry Update." I also attended the show, and I'm happy to say that my attendance raised more questions than it answered.

First, how can Italian audiophiles afford such expensive equipment? Practically every American brand was there, along with much of the most expensive gear from France, England, Germany, and Japan. And it costs! Italians pay two to three times as much for a piece of US equipment than do you or I. Nor do they restrict themselves to Adcom and PS Audio; Mark Levinson, Krell, Audio Research, Rowland, and Conrad-Johnson have excellent distribution, and stratospheric prices. I mean, even after reading JA's rave of the Levinson No.20.5 last September, would you feel tempted if the price were \$22,000/pair? Although some of the price difference comes simply through an added distributor plus air freight, the biggest chunk goes to the Italian government in the form of duties and value-added tax.

Second, what does every non-Italian journalist know that I didn't know? Had they been forewarned of the fog that enshrouds the Po Valley every fall and winter? Or perhaps they knew that my friend Enrico Tricarico (Italy's Levinson and Thiel importer) *wasn't* playing opera throughout the show, as he had in 1987. (Nothing better distinguishes Italian and American hi-fi shows than the response to a steady diet of opera as demonstration material. In the US, *any* classical music will empty the room in five minutes, while in Italy devoted listeners will audition equipment with opera for *hours!*)

These were, in fact, the only reasons *not* to attend this Show, but I was the only journalist hailing from other than Italian shores. After all, the food in Milan is better than in any place in the world (except, perhaps, carefully selected restaurants in Tuscany)—and nothing is dearer to a journalist's heart than the availability of excellent food. Not only that, the Top Audio Show is well organized, and the listening rooms had at least a chance of sounding good. The general level of sound quality was quite a bit higher than I'm used to, and the ability to spend

significant amounts of time in each room was unparalleled.

Perhaps most important, when my energy flagged I needed only to stop at one of the bars located throughout the show for a perfect *espresso* or *cappuccino*. Does this emphasis on food betray my truest interests?

But why didn't *every* exhibitor use the Tube Traps which were evident in the best-sounding exhibits? (And why don't *our* Hi-Fi Show exhibitors do the same?) Considering the time and expense of doing a show, shouldn't you do at least the minimum to overcome predictable room problems? One exhibitor explained that attendees functioned as tube traps, but my observation was that his room could have sounded a lot better. Interestingly enough, Tube Traps are manufactured in Italy by *Stereophile's* importer, Sound & Music, under license from ASC.

And why can't Richard Vandersteen produce as good a sound from his 2Ci speakers as did Sound & Music? Maybe the problem is that Richard doesn't use the excellent Audible Illusions IID preamp and S-120 amplifier. (Recently, no one uses them at shows; Audible Illusions has been maintaining a subterranean profile. I hope we see them more prominent soon.) Or perhaps Richard hasn't tried the Townshend Rock Reference turntable that I saw for the first time in Milan.

Sound & Music wasn't the only importer showing off its equipment to maximum advantage (though they did produce the best sound I heard). Enzo Natali, as mentioned by Sig. Moroni, produced great results from the Apogee Stage speakers driven by Audio Research electronics. The Stage, in my opinion and in that of a number of high-end dealers who sell it, is the most-finished product ever introduced by Apogee—at its introduction, that is.

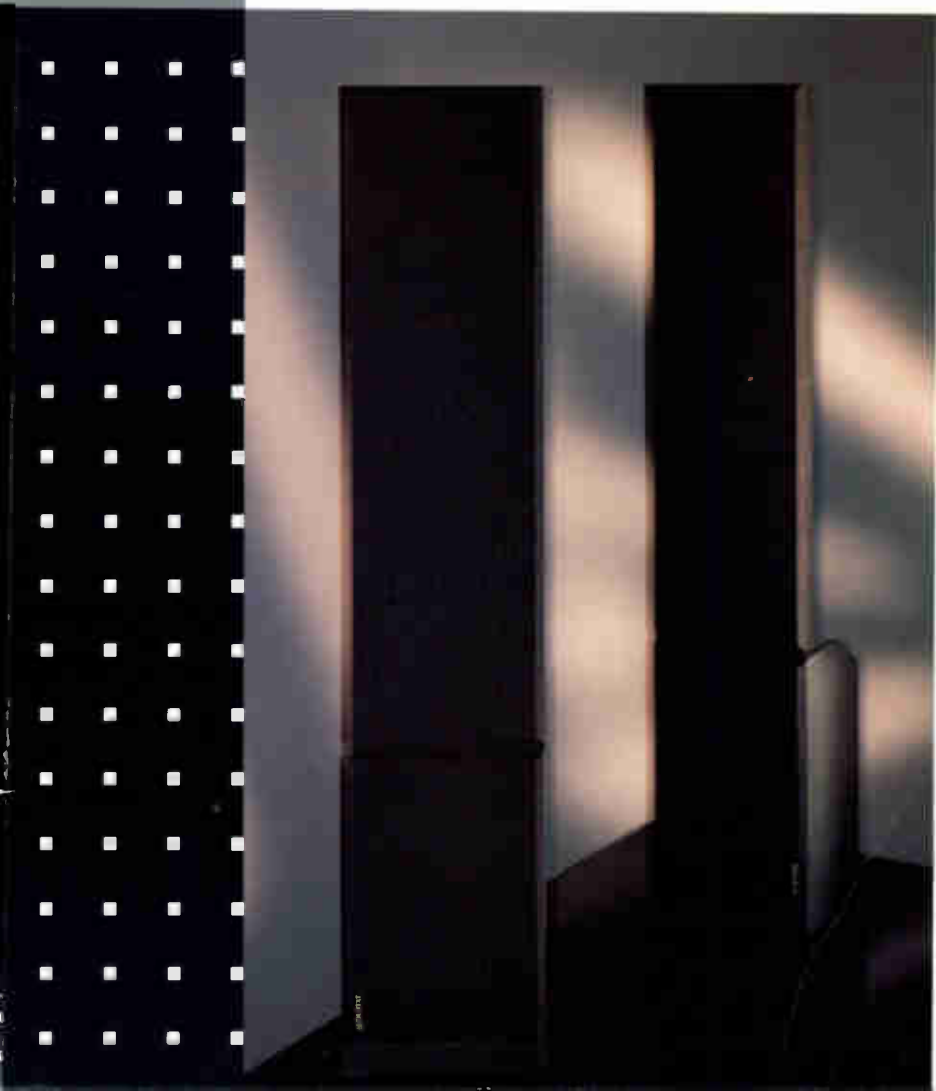
Why don't more US manufacturers show up at these premier events? They miss seeing the excitement that their products generate in a totally different environment. (They may even miss hearing their products sound better than they've ever heard them.) As you can see from my enthusiasm, missing the best foreign hi-fi shows isn't a mistake that *Stereophile* will be making.

—Larry Archibald

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