NOVEMBER 1988 $4.95

stereophile

MUSIC & AUDIO MINIMALISM

:ONRAD-JOHNSON
'REMIER 7

/TL 100W
:OMPACT
/ONOBLOCK

'HE STATE
)F DIGITAL
?EPLAY

:D PLAYERS
)N TEST

'ASHKENAZY
NTERVIEWED

'CHAIKOVSKY'S
/ANFRED SYMPHONY

11
71896 43500 9

Definitive.

conrad-johnson design, inc.
2800R Dorr Ave. • Fairfax, VA 22031
703-698-8581

stereophile

CONTENTS

NOVEMBER 1988 **VOL. 11 NO. 11**

COMING ATTRACTIONS

In August, as well as getting soaked to the skin by Shamu the killer whale, I had the pleasure of talking to members of the San Diego Audiophile Society at the premises of local dealer Stereo Unlimited. Boy, they are a bright bunch down there in the left-hand corner of the US, and gave me a hard bunch of questions to field. The evening proved stimulating in the extreme, and among the suggestions made was one which has also been featuring in letters from *Stereophile* readers: Why don't we extend our irregular "A Matter of Taste" series, which examines the rooms, systems, and musical tastes of the magazine's record and equipment reviewers, to readers? Of particular interest, the San Diegans felt, would be to see how fellow enthusiasts coped with the acoustics of their listening rooms and how they arrived at systems which worked optimally together. Over time this would result in a large body of anecdotal information to back up the more specific stuff featured in the magazine's reviews.

I think it's a great idea. So, how to kick the series off? If you would like the chance to have your system featured in *Stereophile*, write to me at PO Box 5529, Santa Fe, NM 87502, clearly marking the envelope "A Matter of Taste." Your missive should include as much as possible of the following information: a rough diagram of your listening room, indicating the positions of the hi-fi components and complete with dimensions and details of furnishing; how you solved the acoustic problems of your room (if any), and how you arrived at the optimum speaker placement; a complete listing of the components in your system, together with a brief history outlining how you arrived at your current lineup of components; a brief biography, outlining your tastes in sound quality and in music, and how these affected your choices of equipment; and finally, as many photographs as you care to include for possible publication (ideally, these should be black and white, 5" by 7"). As good dealers are hard to find, it would also be interesting if you mentioned where you found the best service and advice in buying components.

To return to what's likely to appear in the next issue, the December *Stereophile* features the return of Lewis Lipnick, fresh from a European tour with the National Symphony. His subject? Martin-Logan's Sequel loudspeaker. We can't get away from high-end Compact Disc: J. Gordon Holt will be tackling the $8000, two-box, CDP-R1/DAS-R1 CD player from Sony; and George Graves has been listening to the 16-bit, *16*-times oversampling Cambridge CD2. And I will be looking at three inexpensive solid-state preamplifiers. **—JA**

STAFF

Publisher Larry Archibald

Founder and Chief Tester J. Gordon Holt

Editor John Atkinson

Assistant Editor Richard Lehnert

Contributing Editors (hardware)
Arnis Balgalvis, Martin Colloms, Gary Galo, Alvin Gold, George M. Graves II, Ken Kessler, Peter W. Mitchell, Bebo Moroni, Thomas J. Norton, Dick Olsher, Markus Sauer, Don A. Scott, Bill Sommerwerck, Stephen W. Watkinson, Peter Van Willenswaard

Musician in Residence Lewis Lipnick

Contributing Editors (records)
Leslie S. Berkley, James Berwin, Christopher Breunig, Kevin Conklin, Robert Deutsch, Gordon Emerson, Mortimer H. Frank, William A.C. Furtwangler, Robert Hesson, Barbara Jahn, L. Hunter Kevil, Igor Kipnis, Gary S. Krakow, Robert Levine, Richard Schneider, Bernard Soll

Business Manager Gail Anderson
(505) 982-2366

Circulation Director Reba Scharl
(505) 982-2366

Advertising Representatives
East of the Mississippi & Foreign:
Nelson & Associates (Ken Nelson)
(914) 476-3157
Yonkers, NY

West of the Mississippi & National Dealer:
Nelson & Associates (Laura J. Atkinson)
(505) 988-3284
Santa Fe, NM

Production Manager Rebecca Willard

Production Andrew Main, Janice St. Marie

Ad Copy Manager Martha Payne

Art Director Michael Motley

Cover Illustration Jim Wood

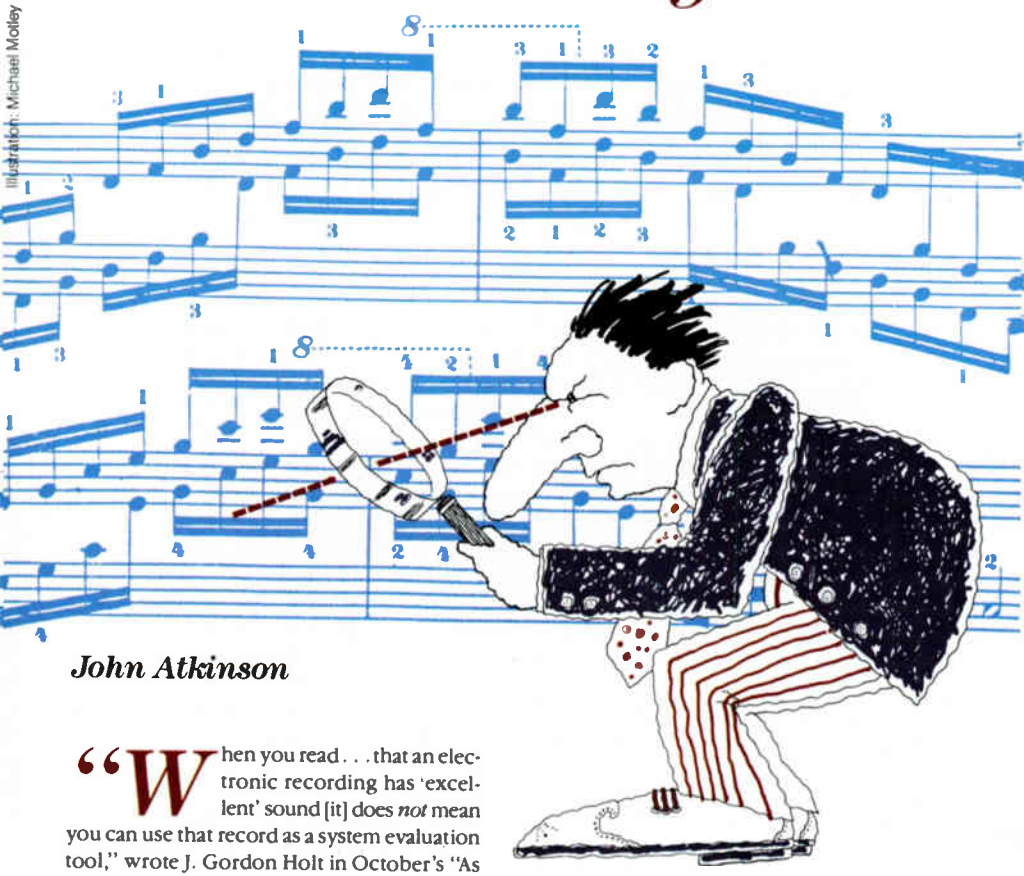
Typesetting Copygraphics

©**Stereophile** - Vol. 11 No. 11, November 1988, Issue Number 106. Stereophile (ISSN #0585-2544) is published monthly, $35 per year for US residents by **Stereophile**, 208 Delgado, Santa Fe, NM 87501. Second-class postage paid at Santa Fe, NM and at additional mailing offices. POSTMASTER: send address changes to **Stereophile**, PO Box 364, Mount Morris, IL 61054.

Subscriptions
US residents (800) 435-0715,
(800) 892-0753 (Illinois).
From outside US call (505) 982-2366.

FAX:
(505) 989-8791

A Tale of Two Systems



John Atkinson

"When you read . . . that an electronic recording has 'excellent' sound [it] does *not* mean you can use that record as a system evaluation tool," wrote J. Gordon Holt in October's "As We See It." Yet, if you are a regular reader of *Stereophile*, you will be aware that the magazine's equipment reviewers *do* make use of a considerable number and variety of recordings, including many which would appear to be totally electronic, to reach value judgments about hi-fi components.

"The pursuit of realism," Gordon continued last month, "requires that the pursuer make certain value judgments about the rightness and wrongness of reproduced sounds . . . You can use a musically accurate system to evaluate the sound quality of an electronically produced recording, but you cannot use an electronically produced recording to evaluate a system unless you are already familiar enough with what the recording really sounds like to make such a judgment."

There is an apparent paradox here, in that while I would not disagree with any of Gordon's statements, it would seem that I, and other reviewers, routinely disregard their implications. Read, for example, my reviews of two CD players in this issue. Richard Lehnert and Larry Archibald—as well as Paul Tatman, the winner of the *Stereophile* survey drawing in the summer—took part in relatively formal listen-

Designed by Keith Johnson for a Lifetime of Listening.

With Precise Loudspeakers, noted inventor and recording engineer Keith Johnson has added still another notable achievement to his long list of industry credits.

Precise embodies the finest sonic characteristics of the hand made studio monitors Keith uses at Reference Recordings. They are a testimony to his dedication, persistence and uncompromising ideals.

The design signatures Keith has brought to Precise create a speaker capable of a truly wondrous performance. Indulge yourself today with a listening session at your Precise dealer.

Precise

Acoustic Laboratories

Suite B, 200 Williams Drive, Ramsey, N.J. 07446 201-934-1335

ing tests where, in contrast to the point made by Gordon, the recording used, Steve Winwood's "Higher Love," was both totally artificial and unknown in absolute quality to any of the listeners. Yet not only did each listener find the differences between the four CD players being auditioned to be obvious, particularly that between the unmodified Magnavox CDB472 and the rest, they had no trouble in independently reaching a consensus value judgment concerning those differences. In addition, this artificial recording proved far more efficacious in this respect than did the new DG recording of Mahler's Symphony 5, a recording which supposedly *would* fit JGH's definition of suitable program material with which to judge hi-fi components.

But to quote Gordon again: "Harmonic correctness. . . is at the core of sonic fidelity. . . This is the *only* criterion by which the fidelity of sound reproduction can be assessed."

Hmm. Harmonic correctness, by which I assume Gordon means that instrumental timbre should be reproduced correctly, is undoubtedly a part of the concept of fidelity—but it can't, surely, be all of it? Plenty of hi-fi components do meet JGH's criterion of being able to reproduce the "sound" of live, unamplified classical music, but nevertheless fail miserably at conveying the musical content of that sound. Yes, if your system tells you that David Abel's violin on the Wilson Audio coupling of the Beethoven and Enescu violin sonatas is a Guarnerius, then you can say that that system sure is tonally accurate. But if you don't get to hear the sound of shufflin' feet with Little Feat's "Rock and Roll Doctor," it just doesn't cut it.

To repeat a point I made in my review of the Mark Levinson No.26 preamplifier in May, if "accuracy" is the only criterion of goodness and such accuracy means that you can no longer listen to records, then something else is wrong. Take CD players. (Please.) These cunning little machines have always superficially conformed to timbral accuracy, Gordon's criterion for goodness, to a greater extent than even excellent LP turntable/tonearm/cartridge combinations. Reading Hans Fantel in a recent *New York Times* article: "For the first time, the phonograph is able to embrace all the main physical attributes of music. . . puts more of the musical reality right before us."[1] you could be forgiven for thinking that perfection has been achieved by the little silver devils. As noted by Richard Schneider, however, in his review of the new Bernstein Mahler 2 in this month's record reviews, "A considerable number of audiophiles believe that digital recording and CDs are antithetical to music or to sound which one can relate to as a musical experience. . ." I am sure that many readers will also agree with Martin Colloms (in his review of digital processors in this issue) that it takes a great CD player to equal mid-priced LP playback. To be timbrally correct is but a part of a much wider definition of "fidelity," which is that the sound of a recording when played back should be true to the *music*, a definition that I was first made aware of by Rega's Roy Gandy more years ago than I care to remember.

A hi-fi system's fundamental role is to enable its user to enjoy recorded music in the home. In this context, tonal accuracy may be desirable, but only if the system can convey the emotion within the music, "raise goosebumps," as Gordon has phrased it on many an occasion. And if that system *can* raise goosebumps, is tonal accuracy to an original event even always relevant? Shouldn't it be admitted that the record and live music have only a coincidental relationship?

The late Glenn Gould, for example, held that a good recording enables the listener and performer to have a closer relationship than is possible in the concert hall. The intimacy made possible by the microphone, stripped of the exaggerated performing necessities dictated by a concert-hall performance, allows a work to be laid bare. The microphone "dissects and analyzes" the music, which is why "the microphone has managed to rediscover an audience for Mahler," he said in a 1968 interview recorded with producer John McClure. Gould held so strongly that concerts were a poor substitute for recordings that he abandoned the concert hall totally, and went on to echo Mahler's trust in later generations of conductors pragmatically modifying his work to suit altered performance circumstances: "Dial twiddling is in its limited way an interpretative act . . . Today the variety of controls made available. . . requires analytical judgment. And those controls are but primitive, regulatory devices, compared to those participational possibilities which the listener will enjoy once current laboratory techniques have been appropriated

[1] October 2, 1988

The
Worldwide Standard
for
Excellence
in
Digital Playback.

California Audio Labs
7231 Garden Grove Boulevard #6F
Garden Grove, California 92641
(714) 894-9747

by home playback devices," he was quoted as saying in Geoffrey Payzant's thought-provoking *Glenn Gould: Music & Mind*.[2] To thus allow the listener to tamper with a recording's virginity is anathema to the audiophile creed. As Keith Yates says in this issue when promoting the Gould-like vistas opened by the advent of digital signal processing, "Playback hardware is [currently] properly judged by how little it does to the signal rather than how much; that nothing you can do to 'enhance' a signal will be as musically compelling as just getting out of its way and letting it unfurl itself, unhindered by 'enhancers' and unsmudged by the latest 'miracle processor'."

When it comes to the music, however, George Szell felt that there was nothing wrong in altering scores to achieve balances more in tune with modern-day needs. Sir Thomas Beecham, too, felt that the interpreter had a duty to adapt music to suit its circumstances in order to be true to its needs. "What largely distinguishes good music from bad is the beautiful sound of the one as compared with the ugly sound of the other," he stated in the first volume of his autobiography, *A Mingled Chime*, and went on to ask the rhetorical question: "Does music which is beautiful when played exactly in accordance with its composer's intentions, and which is made to sound ugly by being played under totally different conditions, remain good or turn bad?"

Mahler, however, in his humility assumed that those who would alter his scoring would be his intellectual and musical equals. And Beecham emerged from a milieu where it was routine for performances of Handel to feature casts of thousands and where Bach's keyboard music, so sublimely suited to the harpsichord, was exclusively the province of the bombastic Steinway. In these days of urtextual honesty, where a new generation of musicians is intent on presenting the listener with what Johann Sebastian's, or Wolfgang Amadeus's, or, soon I am sure, the mighty Gustav's contemporaries would have heard, such attitudes strike many as arrogant beyond belief. To echo the distrust of such arrogance, many recording engineers now feel that it is their duty to preserve an honestly portrayed version of an *event*, not to overlay that original sound with an artificial sonic framework in a doomed attempt to "improve" over that which the composer felt sufficient. Telarc's Jack Renner, for example, feels strongly that the engineer's job is to capture the sound of the orchestra with the minimum number of microphones, almost as though it were being heard from the ideal seat in the house; having determined the mic positions, he then has an obligation *not* to touch the controls, leaving matters of balance and proportion to the conductor and musicians.

This, in fact, is what distinguishes purist engineers such as Renner—and J. Gordon Holt (and myself)—from those revisionist engineers working for the mainstream companies, who, horrified by such an archival philosophy, point out that a recording which can only preserve the *sound* of the performance totally ignores the event's visual and social aspects. Even the sound is compromised, according to Hans Fantel in his above-mentioned article: "even the most carefully contrived stereo recording cannot do justice to the spatial aspects of an actual concert situation." The sound *must* be contrived, must be larger than life, concluded London's Paul Myers in 1978, then with CBS, in order to compensate for these failings.[3] "There's a danger in talking about a record as though it were a reproduction of a concert . . . they are different media. For record purposes you shouldn't limit yourself with the problems of the concert hall." "Art," said Ayn Rand, as quoted by Mark Fishman in the *BAS Speaker*, "is the selective recreation of reality."

Evan Eisenberg, in *The Recording Angel*,[4] also argues that to attempt to capture the sound of an original event is doomed to failure on philosophical grounds. Stripping a concert from its cultural context bestows a sterility from which it can't escape. The butterfly may be pinned to the disc but it sure don't fly no more. For a recording to make the grade as a work of art, more is needed, a fact recognized in practice because, as Eisenberg points out, "In the great majority of cases, there is no original musical event that a record records or reproduces. Instead, each playing of a given record is an instance of something timeless. The original musical event never occurred; it exists, if it exists anywhere, outside history."

We have a choice, therefore, between two kinds of commercial recording: a small num-

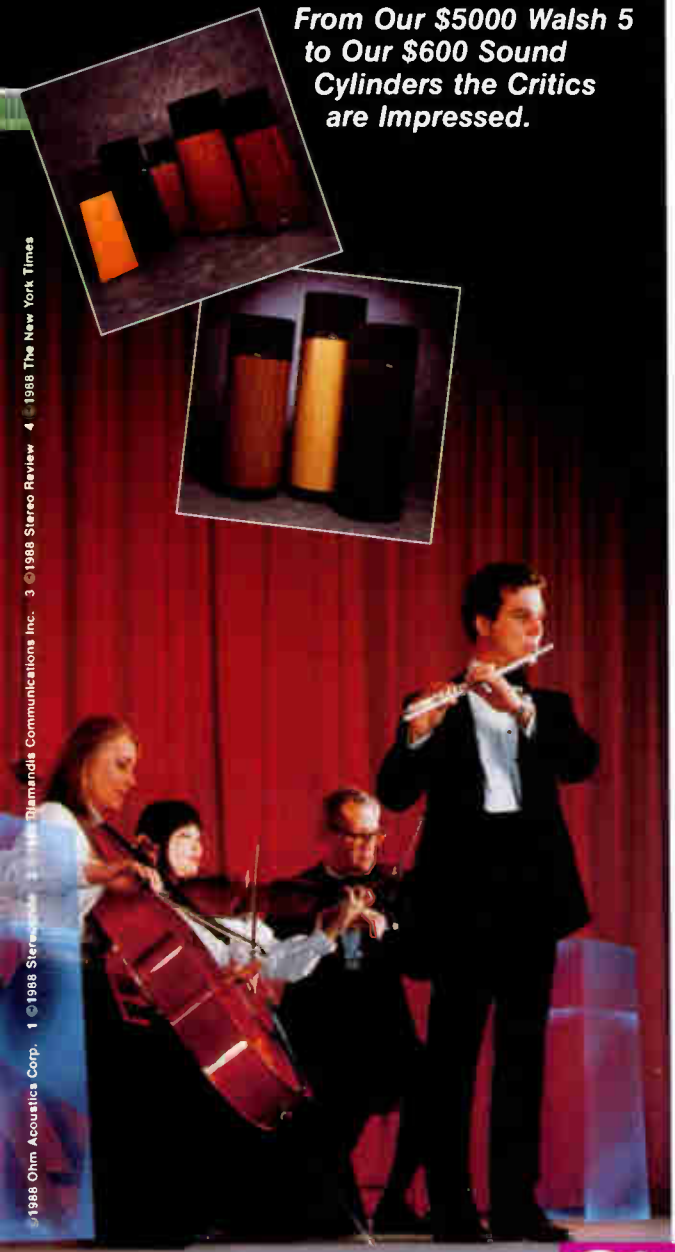
2 Van Rostrand Reinhold, 1978

3 *HI-FI News & Record Review*, August 1978

4 McGraw-Hill, 1987

Ohm CLS Drivers Make Your Speakers Disappear

From Our $5000 Walsh 5 to Our $600 Sound Cylinders the Critics are Impressed.



Stereophile Vol. II, No. 8

"So the bottom line is quite favorable: the Walsh 5 is a full-range speaker that is quite clean and images very well." "Soundstaging is another strength and joy, and at their best the 5s can set up a very palpable illusion of the original performing space." "In its present incarnation, it is one of the few dynamic speakers that my jaded electrostatic taste buds could live with."[1]—Dick Olsher

Audio 6-88

"The Walsh 5 is one of the cleanest speakers available. . . I perceived remarkable depth and spaciousness to music well recorded in a concert hall. This spaciousness did not result in a vague mass of sound: image location is sharply defined and accurately placed. . . They are a masterpiece of the speaker designer's art."[2]

Stereo Review 1-88

"The sound of the Ohm Sound Cylinders was smooth, balanced and thoroughly enjoyable, well beyond what anyone would expect from such a small, light speaker. Its dispersion was subjectively complete, and we were never aware of the speakers as distinct sound sources, no matter how much we moved around the room. . . these speakers certainly offer impressive value for their price and size."[3]

New York Times 3-88

". . . the various frequencies emerge in their natural phase relationship—more than in conventional designs. To what extent this accounts for the speakers fine sound may be debatable, yet there is no question that the Ohm Sound Cylinders represent an excellent bargain, with a clarity and richness of sound rarely found in a speaker of this size and price."[4]

Find out about buying, directly from the factory by calling toll free 800-221-6984

Ohm

For Those Who Care to Listen

©1988 Ohm Acoustics Corp. 1 ©1988 Stereophile 2 ©1988 Diamandis Communications Inc. 3 ©1988 Stereo Review 4 ©1988 The New York Times

ber intended to be archival transfers of acoustical events, from such audiophile companies as Sheffield Lab, Reference Recordings, Performance Recordings, and Wilson Audio; but a large majority, whether classical, new age, or rock, that only incidentally have any relationship to an original "event." These are what people vote for—these are what they buy! So, if the majority of classical recordings are no less artificial than that Steve Winwood track, then they too would fail Gordon's criteria for being used to reveal the sonic performance of a hi-fi component.

But, of course, it *is* possible to apportion merit to recordings intended to stand on their own as art. To condemn them on the grounds that they do not sound like the work would have sounded in real life—something that I have done too often in the past—is to miss the point. To equate quality just with what you *like*, as JGH implied last month, is both arbitrary and insufficiently discriminate. What remains, therefore, is to throw the listener back on his or her own resources. The whole point to music is that it can communicate concepts and emotions non-verbally. Well then, the listener can decide whether to condemn or praise totally on musical grounds, on the basis of that communication. In the case of genius John Culshaw and his productions of the *Ring*, or, at the extreme, Strauss's *Elektra*, the recording can stand on its merits despite not sounding like the work could ever sound in the opera house. But when an earthbound individual takes the same amount of liberties, as in the case of the 1974 John McClure/Leonard Bernstein/LSO Mahler 2, recently reissued on CD (CBS M2K 42195), then the continuous procession of seemingly arbitrary decisions about instrumental levels and balances detracts from the musical whole rather than enhancing it, places stumbling blocks in front of the listener's ears, and must be condemned.

If it *is* possible, then, to make valid value judgments concerning a recording-as-art, then, even if there is no absolute reference (you don't know ultimately what the record *should* sound like), surely it can still be used to make value judgments about hi-fi components? To insist otherwise is to take too narrow a view. The LP grooves and the CD pits have no memory of their genesis: the construction of a reproduced soundstage, with the images of instruments and voices hanging in space, is an illusion. It is as complete an illusion whether it resembles an original acoustic event or whether it springs totally from the genius of the artist and producer. Consider, for example, a recording that I use as a reference for judging a system's abillty to present a tightly focused soundstage. Clannad's "Newgrange," from the album *Magical Ring* (RCA RCALP 6072), is a typical modern rock recording in that it is totally artificial. Nevertheless, on a good system it possesses considerable depth of field, just as effectively producing the illusion of a consistently well-defined soundstage, for example, as the simon-pure Sheffield Lab recording of *The Firebird*.

What is important is *not* the recording's pedigree; rather, it is that the listener hears in the illusion of an image what he or she interprets as a direct sound from an instrument or voice associated with reverberation. When that reverberation is coherently reproduced, then the listener's brain will interpret the soundsource as being set further back in the soundstage than one with less reverberation. A lesser system can destroy the coherence of that reverberation, fouling the correlation between the apparently direct sound and its reflections and therefore reducing or even destroying the sense of depth. A superlative system can have sufficient resolving power to reveal when the reverberations associated with individual sources within the mix are disparate, giving the listener a multiplicity of views superimposed. When such differences are reduced in magnitude, then, by inspection, the system must be less good. The fact that the recording being listened to never had any prior reality is outside this process. What the critic is listening for is as transparent a window into the *illusion* of musical reality as possible, and the origins of the recording are, to quite a large extent, irrelevant.

Which brings me at long last to the subject of this essay. Returning my daughter Heather to the UK in September so that she could start her schooling, I took advantage of the trip to visit friends and magazine contributors I hadn't seen for a while. Martin Colloms seemed the same as ever: sentences falling over themselves as he attempted to bring me up to date on where he found himself standing on digital, loudspeaker design, the state of recording, and —most importantly—the sound of his system. His system? Front end was either a much-modified Cambridge CD1 (the original version with three time-shared 14-bit DACs per channel) or

WHEN ONE IS NOT ENOUGH

CARNEGIE
TWO

The Carnegie Two is designed by and manufactured exclusively for
Madrigal Audio Laboratories, P.O. Box 781, Middletown, CT 06457 ITT TLX 4942158

a Goldmund Studio turntable, its ST4 arm carrying a Koetsu cartridge. Preamplifier was the British Fidelity MVX, driving two Goldmund Mimesis power amplifiers, while the loudspeakers ostensibly were bi-wired Celestion SL700s. I say "ostensibly," because these very much were unique speakers. I have asked Martin to go into some detail in a future *Stereophile* article, but briefly, the drive-unit voice-coils had all been wound with a high-purity solid-core conductor, the tails of which were long enough to act as the speaker cables. The crossovers were placed adjacent to the amplifiers and internally wired with the same cable, as were all the inductors. As far as possible, all the interconnects and internal amplifier and CD-player wiring were also of the same cable, resulting in both a minimum of metal-to-metal contacts and a homogeneity of conductor—"five-nines" pure (99.999%), single-conductor silver, insulated with Teflon.

The sound? Whereas stock Celestions belong in *Stereophile*'s Class B category, Martin's system verged on Class A. Though lightweight, the sound was seamless from the low bass to the highest treble. It was also more musical than I can ever remember hearing in Martin's room. The accuracy of the imaging reminded me of the very first time I heard Quad ESL-63s, but with much better sources and amplification freeing the sound from its chains. Not only were the individual instrumental and vocal images in the soundstage precisely positioned, it was possible to detect different coloration signatures associated with each of those images, also nicely localized. In effect, the accuracy of the imaging allowed you to more easily detect the colorations at the recording end of the chain: you could hear that one voice in an operatic duet had been recorded with a different microphone from the other, for example.

The wealth of detail was almost overpowering: it was like nothing so much as the vista you get looking down on a city from a plane on a clear night. It seemed that whatever recording we played, CD or LP, the end of Martin's listening room opened up into the appropriate acoustic. On went the Nimbus recording of Britten's *Frank Bridge Variations* (NI 5025): there was the cavernous Great Hall of the University of Birmingham, the site for all those spectacular (if overblown) Louis Fremaux recordings for EMI in the early '70s. (Remember his Massenet *Le Cid*?) It was skewed a little bit to one side by the UHJ surround-encoding, but it was real! On went the Sheffield Shostakovich Symphony 1 from *The Moscow Sessions* (CD-26). Now the end of Martin's room was a long, thin hall, the Moscow Philharmonic having an unbelievably deep staging. Appropriately for this issue, on went the Ashkenazy Rachmaninov Symphony 1 on London (411 657-2): there was the Concertgebouw acoustic, atmospheric in its tangibility.

Yet there was something lacking. I can best categorize it as the "sense of scale," the feeling of unlimited dynamics possessed by something like the Infinity IRS V or Wilson WAMMs. Like the vista unfolding before our aerial voyeur, the image may be apparently unlimited in terms of resolution, but it is perfection in miniature. You are looking through the wrong end of a telescope.

We went out to dinner: Beijing Duck. Excellent.

The next evening I went to pay my respects to Ricardo Franassovici and his wife Francoise. Ricardo, a friend for nearly 10 years and who, like me, came to audiophilia from the music business, runs an import company called Absolute Sounds (no relation) that distributes Apogee, Krell, Koetsu, Magnepan, PS Audio, Kinergetics, Goldmund, Air Tangent, Jadis, Sonus Faber, and Audio Research in the UK. (Can you believe that list? Where are the dogs?) Yet his current system was as strange—no, idiosyncratic—as Martin's. Ricardo owns a Goldmund Reference—enough said! An aged Koetsu, however, was amplified via the phono stage of a Jadis JP-30 preamplifier—"rather a fat-potato sound," said Ricardo—which in turn fed a Counterpoint SA-9 line controller. Power amplification was a pair of Jadis JA-80 monoblocks; loudspeakers were Sonus Faber Amators (the least expensive in this Italian manufacturer's range). The only consistent items from my last visit were the Goldmund and the Sonus Fabers. Last time the amplification had been a PS 4.5 driving a Counterpoint SA-12—an impressive sound. This time, the sound was even more impressive. On went a Chess blues collection: rare Muddy Waters; vintage Howling Wolf. We toyed with more recent recordings, but then on went early Nina Simone: her reading of Bricusse and Newley's "Feelin' Good." I mentioned that I had used the Traffic version in my recent review of the SL700s. That went on the Goldmund next. Record effortlessly led

to record, association to experience.

The sound from the tiny Sonus Fabers was *big*. A wide, stable soundstage; fullthroated low frequencies; highs that were ragged compared with the SL700s; but, overall, while almost as different as could be from Martin's, this sound was equally as intensely *musical*. As untidy as the other was pristine, it did make an attempt at presenting the scale of the music. It made you forget what limitations the speakers had; it made you forget the equipment. This is hardly surprising: when I asked Ricardo what he felt to be essential to a system's performance, he replied that "Fluidity, the flow of the music, is most important to me."

We went out to dinner: Beijing Duck. Excellent. (And a superb Fume Blanc.)

The third night, I drove down to Canterbury to see Ken Kessler. Ken has a new listening room, part of a small industrial complex and one of the most suitable environments for critical listening I have ever seen. I say "seen" rather than "heard," because unfortunately Ken's system was down when I visited, his two regular loudspeakers, Apogee Divas and Wilson WATTs, being temporarily joined by Infinity IRS Betas—none were set up! Joined by Infinity's Arnie Nudell and Rotel's Tony Mills—Rotel UK being the new Infinity distributors—we went out to dinner: Beijing Duck. Excellent.

I was reminded about the contrast between Martin's and Ricardo's systems upon my return to New Mexico when I read Gary Gay's discussion about the apparent division of our writers into those who write about hardware and those who are tied to just records (see "Letters"). "Sometimes," writes Mr. Gay, "I wonder if us technocrats get too analytical—so much that we can never 'pass the goosebump test'!"

Analysis *and* goosebumps: that's what this game is all about. The ultimate high-end system would have both the intense disclosure of detail and nuance of Martin's sound *and* the bighearted sweep of Ricardo's. Both systems were true to the music, but each needed the other to be whole. That synthesis is what the goal of the high end should be, not a set of restrictions defining what is and what isn't acceptable. As Keith Yates says in his article on "audio verite" in this issue, "If the appellation 'high end' describes a musical result, not a code of behavior, then we won't be abandoning the high end, we'll be elevating it."

The CD-BOX shown in light oak.

Dimensions: 6 1/4" w, 12 3/4" h, 14 3/4"d.

The CD-BOX™

Elegant, Efficient CD Storage

The CD-BOX. A stand alone unit, it fits the space intended for records in most audio-video furniture and wall systems perfectly! Finished in your choice of light or dark oak, walnut, or black, its two smooth-sliding drawers hold up to sixty CDs (single, double, or triple), with dividers that keep discs upright and organized.

To order call Hills Products: 1-800-247-2018.

Money-back, satisfaction guarantee.

The CD-BOX $64.95 to $69.95

Dark oak | Walnut | Black lacquer

Designed and manufactured in the USA by Hills Products Inc.
PO Box 1015, Hillsboro, NH 03244, 603-464-3999

Ultimate Power.

With a worldwide reputation for sonic excellence, the new Luxman Receivers also deliver more power than before. . .

LUXMAN

Ultimate

R-117 AM/FM Stereo Remote-Control Receiver.

For over 60 years, Luxman components have earned the highest accolades for their musical warmth and transparency. In the past, however, Luxman's receivers were designed to deliver optimum results with analog source material and conventional loud-speaker designs. Now, the increased popularity of the compact disc format has created a new demand for higher performance.

The digital era.

Compact discs have a dynamic range that far exceeds that of phonograph records and cassette tapes. This requires receivers with greater reserve power to smoothly handle the most intense volume levels.

In addition, the clarity and wider dynamics of CD's have encouraged speaker manufacturers to introduce new designs with improved sonic performance. However, several of these new speaker designs expose receivers to extremely low impedance loads that demand higher current output.

Plus, the CD's remarkable sonic realism has also ignited a whole new interest in listening to music that, in many households, has resulted in multiple speaker arrangements and multiple-room speaker installations. These combined loads pose additional threats to the stability and clarity of a receiver with insufficient reserve power.

The new Luxman receivers.

To ensure the sonic integrity of CD's into a variety of speaker loads, Luxman has incorporated massive power supplies with high energy reserves to ensure distortion-free transients. High-current, bipolar transistors are then carefully selected in matched pairs to preserve total sonic integrity at high dynamic levels.

This rugged design technique accommodates the highest demands of both digital software and low impedance loads. But high power is only half of the story. . .

Ultimate fidelity.

The heart of a Luxman receiver is still the warm, musical feeling that has resulted from decades of research on how vacuum tube amplifiers reproduce music so faithfully.

To achieve this same type of "tube-like" transparency and naturalness, Luxman receivers employ transistors in a voltage-driven amplification configuration that performs the main current conversion only at the output.

In addition, sophisticated circuit designs, including Duo-Beta circuitry, STAR circuit patterns and LED bias circuitry, are utilized to obtain that extra degree of musical purity that conventional receivers ignore.

Power.

R-115 A.M/F.M Stereo Remote-Control Receiver.

R-113 A.M/F.M Stereo Receiver.

Ultimate power.

The best of both worlds. It's the purity and musical warmth of the original source, *plus* high dynamic power output. These combined ensure total sonic integrity at all volume levels. In today's Luxman receivers, we call it "Ultimate Power".

"Ultimate Power" Receivers.

The R-117, rated at 160 watts per channel is capable of supplying up to 600 watts of dynamic power into 4-ohm loads, and 700 dynamic watts into 2-ohms. The amplifier section is backed by a massive triple-shielded high-energy power transformer and fast recovery rectifier diodes to maintain high energy reserves under all load conditions.

Similarly, the R-115, rated at 70 watts, can provide up to 200 dynamic watts into 4-ohms, and 270 watts into 2-ohm loads. And, with its heavy, double-shielded power transformer and high efficiency, it provides a full 3dB of dynamic headroom.

Both incorporate a new 5-gang varactor, dual-gate MOSFET FM front end, with automatic hi-blend circuitry, that ensures clean, distortion-free FM performance.

The R-113, the most affordable model in Luxman's new line of receivers, includes a high-speed dynamic amplifier that delivers up to 100 dynamic watts into a 2-ohm load. And a high-efficiency toroidal power transformer is coupled with high energy storage capacitors to provide the dynamics and steady-state reserves necessary for the most demanding musical transients.

All three receivers employ voltage amplification circuitry that ensures the "tube-like" musical warmth of traditional Luxman amplifiers. In addition, CD Straight circuitry routes the input signals past all signal processor and switching functions to provide optimum accuracy, imaging and impact when listening to compact discs.

Complementing this performance are an array of advanced features that lend versatility and precise control over a wide range of functions. Both the R-117 and R-115 even include a hand-held remote that can operate a complete system of components.

Technology Perfected, by Luxman

LUXMAN

For your authorized dealer, call:

1-800-4 LUXMAN


MATRIX
801
SERIES 2
WE'LL CHANGE YOUR IDEAS
B&W's Model 801 – the recording industry's Reference Standard Monitor – was the inspiration for innovation. Dramatic developments in technology and enclosure design have lit the fuse. B&W's Matrix 801 Series 2 personifies the state-of-the-art ten years on. This magnificent successor sets the new standard for professional and home user alike. With no commercial compromise. Rich in Matrix technology, 801 Series 2 registers accurately even beyond audibility. Phenomenal sound. Clean and utterly uncoloured. Outstanding imagery with tight unbooming bass. An instrument destined to occupy a special place in world esteem.
The MATRIX Revolution
B&W Loudspeakers of America. PO Box 653, Buffalo, New York 14240 (416) 297-0595

LETTERS

We regret that resources do 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.

Slam & the Heretic's Art

Editor:

One night last week my girlfriend and I went to Shea Stadium to see the Mets play the Chicago Cubs. After the game we crossed the parking lot to my car and drove away without incident—except that, when we got in the car, she closed the passenger-side door with enough force to rattle the window glass (this is a '79 RX-7 with over 103,000 miles on its aging frame). I asked her, sweetly, if she'd please not ever slam the door like that again.

That was possibly the only time in the last couple of years that I've used the word "slam." Which reminded me of Sam Tellig's curious little dig at us *Heretics* in his July Cheapskate column. A quick check through all my back issues of *Hi-Fi Heretic*, in fact, failed to turn up even one appearance of that word in the magazine. While the same cannot be said of quite a few other journals, *Stereophile* included.

Don't get me wrong: it's a perfectly nice word, and (I think) I understand what's meant by it in an audio context. But it's not a word I would ever use that way, mostly because I can't imagine coming away from the real thing (read: concert) and using that word to describe the music I'd heard. ("Gee, Tommy Stinson's bass playing had a lot of slam tonight, didn't it, Dear?") I should be fair and point out that I feel pretty much the same way about lots of other hi-fi words. Like "transparency." And I'm assured that Kent Bransford and Rob Doorack, the other *Heretics*, feel the same way.

Sam, you're right about a lot of things, and I think you're a nice guy, and I enjoy reading your column. (And, by the way, I do own an AT-F5.) And I won't mind if you ever take us to task for something we actually *do* say; just please don't slam us for something we *didn't*.

Art Dudley
White Plains, NY

The Cyborg Cheapskate

Editor:

With regard to the photo on p.51 of Vol.11 No.8: Isn't Tellig's head supposed to be screwed on

to the *top* of his shoulders?!?

Donald J. Ford
Anaheim, CA

Cheers for the Cheapskate

Editor:

Three cheers for the Cheapskate! After reading many of his articles, I decided to purchase a Dual CS5000 turntable and Shure V15-VMR cartridge. He was right on both counts. I got a worthwhile improvement in my musical enjoyment for a minimal investment. That is what a good audio magazine is all about (or should be). While I would love to see more "Cheapskatish" articles, please continue to cover the high end also. Even though I cannot afford much of what is reviewed in the higher price range, I have learned a great deal about how to listen and what to listen for by reading these reviews.

Regarding the great Digital *vs* Analog debate, I have decided (finally) that I am in the analog camp. I am certainly no digiphobe (is there really such a word?[1]). I heartily embraced CD at the outset and quickly built a large collection of CDs to play on my Magnavox CDB650 (not an audiophile player, but no slouch either). What eventually led me to question my commitment to CD was seeing my last LP rack fill to overflowing. I started to think about why I was still buying (and listening to) so many LPs when the ultra-convenient CD player was close

1 There is now. —RL

OLOGRAPHIC SOUND

image

CLOSE YOUR EYES

tep beyond a fourth dimension where picture perfect sound is the only reality. Experience
e ultimate live performance in your own living room.
troducing HOLOGRAPHIC SOUND from IMAGE! Your doorway to great musical perfor-
ances of past, present, and future has finally been opened. From the threshold of Sound
ngineering Excellence, IMAGE captivates you with brilliant performances of listening pleasure.
-IMAGE— a product so special that simply owning it says you recognize the utmost in quali-
. The objective of the IMAGE Acoustical Engineers was to create a line of loudspeakers
at would further the integrity of reproduced sound. Our **Commitment to Excellence** with
onstant improvement and innovation is the driving force behind IMAGE.

THE HOLOGRAPHIC "IMAGE"

stead of taking a back seat to the live musical performance, HOLOGRAPHIC SOUND from
MAGE makes you feel like a participant. Music has been given a 4-Dimensional depth and
arity that is unwavering both on and off-axis. True, vibrant sound 'appears' in your listening
indow right out of thin air. HOLOGRAPHIC SOUND from IMAGE - for musical coherence
d accuracy the name says it all!

135 Torbay Road, Markham, Ontario, Canada L3R 1G7
(416) 475-0050 Telex: 06-986689 Fax: (416) 475-8643

image

at hand. I did some critical listening and came to the following conclusions: the "minor" faults of CD are the spine-splitting screech of upper string notes (even on some recent recordings), the flat and monotonous presentation of male voices, and reproduction of female voices which is poor in virtually every respect. However, the two major faults which I simply cannot abide are the shallow soundstage (it seems to hit a brick wall about two feet in front of my speakers) and the tremendous fatigue I feel after listening to an hour or so of CD. On the plus side, no one can fault the convenience features of CD players. In addition, I have about six CDs that are absolutely superb in their musical presentation (though even these do not image very well). This leads me to believe that the problems are not so much in the medium as in the disc-production process. Who knows? Perhaps in a few years these problems will be conquered, but in the meantime the "perfect" medium will have to take a back seat in my listening room.

Bill Hamilton
Address illegible

You win some!. . .

Editor:

Thanks for your wonderful publication! I've been reading *Stereophile* for 15 years and it just keeps getting better. (I quit subscribing to *TAS* in 1978.) Although I read many other audio publications, yours is by far the most reliable and informative. I especially like the reviews by J. Gordon Holt, the Cheapskate, and John Atkinson. Mass-market publications tend to say very little, and high-end underground ones often become the ravings of egomaniacs. Your reviews actually describe the equipment in such a way that I can make informed decisions on what to audition. I find your recommendation list helpful. I'm pleased you are doing classical music reviews. Your budget recommendations help me to direct non-audiophile friends to decent equipment, while your high-end reviews allow a glimpse at the state of the art, however unaffordable. And, best of all, you are now a monthly publication. Keep up the great work!

Thomas R. Jones
Napa, CA

PS: I've had excellent advice and service from Audio Advisor, as well as from Illinois Audio and Wisconsin Discount. All of these were recommended by you some time ago.

. . .you lose some. . .

Editor:

Please cancel my trial subscription immediately and refund my money. Although I found your magazine's contents interesting to read, especially "Letters to the Editor," *Stereophile* has more to do with the study of neurotic/compulsive behavior than with any belief in the validity of your judgments of stereo equipment.

Henry Byrd
Los Angeles, CA

. . .you lose some . . .

Editor:

I think you have misprinted the title of your magazine: shouldn't it be *Stereopinion*?

The only impression I get from reviews in *Stereophile* is that the reviewer looks at the brand name, then the price, and then tells readers what he *thinks* the quality of the sound *should* be, regardless of what he *hears*.

None of the equipment you review is cost-effective. I consider my ears quite good, yet if I win the lottery, I still won't spend more than $10,000 on a complete system. I have found that a fully appreciable improvement in performance from my $1500 set-up (with only CD as the source) would cost about ten grand. After that, you're spending money for notes you'll never hear.

Kelley J. Myers
Wadsworth, OH

. . .and then you lose some more

Editor:

I have never been so disappointed with a product as I have been with *Stereophile* magazine for the last couple of years.

First it was the color ads, then the expanded size and number of issues.

Finally, the discounter ads in the back and spread throughout the magazine.

Now, as to the contents, reviews of products I never thought I'd see in a magazine like *Stereophile*. My God, the very reason I left the mass-fi mags was showing up in *Stereophile*: Walsh speakers, come on!

All I have to say is: *Good riddance!*

Dr. J.T. Fredrickson
El Segundo, CA

Let me see: As I understand it, Mr. Byrd and Mr. Myers feel insulted by the fact that sound quality so often seems to correlate with price,

MONITOR AUDIO

With discerning appreciation for the experience of good listening, music lovers in 18 countries have demanded Monitor Audio loudspeakers for excellence in engineering and esthetics in sound and form.

Monitor Audio has earned its enviable reputation as one of the world's premier creators of audio loudspeakers with accolades such as the 1987 Loudspeaker of the Year Award.*

Manufactured in England and designed to reproduce the stunning reality of compact disc and digital recordings, Monitor Audio loudspeakers employ the world's most advanced metaldome tweeter technology matched to closely toleranced components.

Cabinets are finished in the finest real-wood veneers, among them mahogany, oak, walnut, rosewood, teak and the uniquely stunning Kenya Black.

"Best Buy"** recommendations show Monitor Audio to have the added virtue of value for money.

Audition the entire line for its breathtaking accuracy, wide dynamic range and unparalleled clarity.

Speaking volumes for an audiophile's pride of possession since 1972, Monitor Audio loudspeakers are a superior sound system's voice.

* Model R352, best loudspeaker' *What Hi-Fi?* Awards 1987

** *Hi-Fi Choice* 1986/87 "Best Buy" Awards

Symbol of quality

Made in England

FOR FURTHER INFORMATION ON MONITOR AUDIO LOUDSPEAKERS, PLEASE CONTACT:

KEVRO ELECTRONICS INC.

In Canada: 1755 Plummer Street, Unit 20, Pickering, Ontario L1W 3S1 Tel. (416) 831-4741

In U.S.A.: P.O. Box #1355 Buffalo N.Y. 14205 Tel. (416) 831-4741

as evidenced by the reviews in Stereophile, *whereas Dr. Fredrickson, as well as resenting the increased contents we give him, has absolute knowledge concerning what companies can produce designs capable of high-quality sound and feels insulted when we recommend a "blue-collar" component. Are these correspondents* really *talking about hi-fi components' abilities to play music, or are social-attitude—based viewpoints taking precedence?* **—JA**

Gobbledygook

Editor:

I've been an enthusiastic reader of *Stereophile* for quite some time, and look forward to receiving each issue. Some time ago, you published the method by which we could determine how long our subscription would last based on some numbers on the mailing label. I've looked through all my back issues and cannot find that method. Can you please republish it? Thanks!

Chuck Gerlach
Norcross, GA

The first full line of gobbledygook on the label (the one that starts just above your name) can be understood as follows: the first five digits are your zipcode, the sixth, seventh, and eighth characters are the first, third, and fourth letters in your last name, then come the first three numerals of your street address followed by the first and third letters of your street name. More importantly, to the right and above *the last-mentioned letters is the number that will allow you to figure out how many issues are left in your subscription; it will be something like "107" or "114." Since at* Stereophile *we don't use a decimal system for numbering issues, the subscription service has assigned us one for each issue. The number by itself on the top line of the label is the last issue you will receive unless you send us more money; the current issue is indicated by the last three numerals of the line of gobbledygook (this number also appears inside each issue, with the postal information, on p.4). Subtracting the current issue from your expiration issue will tell you how many issues you have left.* **—LA**

Staff commonality?

Editor:

I'm a subscriber of several years, and I'm curious about the staff. It's true that all your hardware editors are totally exclusive of your software (records & CDs) editors. Wouldn't a healthy dose of "sameness" be comforting? Lewis Lipnick's resident musician status is important, but I think there should be more reviewer commonality in a magazine which strives to offer equal weight to both the feeling of the performances as well as the accuracy of content of music. Sometimes I wonder if us technocrats get too analytical—so much that we can never "pass the goosebump test!"

Anyway, you guys are batting over 1000 in my experience—I've listened to many audio systems which you've lauded and all of these achieve exciting subjective results. However, I bet the average avid reader's net cash outlay for hi-fi is still in $3000-$7000 range (maybe less), so I bet your "reader relevance factor" is in the $500 to $2000 per component category. Please review more equipment in this price range.

Gary R. Gay
Andover, MA

A problem

Editor:

If microphones are able to capture the full sound of an orchestra, why is it that we cannot easily reproduce the actual size of an orchestra using stereophonic equipment and a pair of loudspeakers? Similarly, why is it not possible for stereophony to create a solid, dimensional, focused image of an instrument or a voice located 10' away from the outer sides of the loudspeakers, in the same plane of the speakers?

Yip Mang Meng
Singapore

A blow for the music lover

Editor:

Thanks for striking a blow for the music lover. It is nice to see reviews of equalizers appearing in *Stereophile* again. As JGH said in Vol.11 No.7, a music lover who values great performances, even on less-than-perfect recordings like Edison cylinders, welcomes the aid of signal processors. To my knowledge, *Stereophile* has never reviewed *parametric* equalizers. Is it possible that those of us who have the Heath spectrum analyzer recommended by Bill Sommerwerck in Vol.9 No.3 might find the parametric the most advantageous? How about a review of the Rane SP 15 or PE 15?

The loudspeaker reviews are carefully writ-

At last, high-performance audio comes down to earth.

High-performance audio by Rotel has arrived. With remarkable sonic quality you've previously associated only with esoteric equipment selling at other-worldly prices. Now, however, at prices you'll find very down-to-earth.

At Rotel, our engineers avoid gimmicks and flashing lights. Instead, they concentrate on audible performance. All critical parts are carefully hand selected on the basis of how they sound when producing music. Direct signal paths – from inputs to outputs – assure highest accuracy and resolution. And our renowned amplifiers, for example, use massive power supplies, along with discrete output transistors rated many times their actual load. As a result, they can produce high-current output *continuously* – not just for a few milliseconds. Our 50-watt amplifier actually plays louder and sounds better than many with 100-watt specs – and 100-watt prices.

This pursuit of affordable sonic perfection may explain why Rotel outsells most other specialty hi-fi brands in Great Britain. And why hard-to-please British audio critics consistently give Rotel components rave reviews.

For reprints of these reviews, and a brochure on our receivers, Compact Disc players, tuners, integrated amplifiers, power amplifiers, preamps, cassette decks and turntables, just send your name and address to Rotel Audio of America Inc., Department ST, P.O. Box 653, Buffalo, NY 14240.
Or call us at (416) 751-4525

ROTEL®

High performance. Down to earth.

ten, and anybody who reads them carefully should be able to form a pretty good idea of the *character* of a speaker. However, suppose a reader wants to go the route of subwoofers and small speakers in an ambience system. Can he predict the change in character (outside of increased bass) of the small speaker when used in such a system? For example, TJN described the Snell Q in Vol.11 No.6 as having convincing ambience, a mid- to rear-hall perspective, and a HF that leans to the analytic. Now, is it predictable that with subwoofing and time delay, the Snell will have too much ambience, a rear-hall perspective, and a sweeter high end? I hope to see this discussed in the mag.

Richard Karnette
Long Beach, CA

A straight defence

Editor:

Despite being a long-time reader of *Stereophile*, I have never written a letter to the editor. However, I feel compelled to do so in response to Lewis Lipnick's negative review of the Straight Wire Power Purifier 8 in Vol.11 No.4.

I recently had the opportunity—more appropriately, the privilege—of auditioning the PP-8 in my home stereo system. The associated components were: Rowland Research Model #7 amps, Rowland Research C-1 preamp, Denon DCD-3300 CD player, VPI/SME turntable/tonearm combination, Tandberg 2001-A tuner, Nakamichi 700-ZXE tape deck, Velodyne ULD-15 subwoofer, and Apogee Scintilla speakers wired to 1 ohm; MIT 330 cable is used throughout.

After reading Mr. Lipnick's scathing review of the PP-8, I was naturally reluctant even to connect my amplifiers to this product; nevertheless, after several minutes of discussion with my dealer, as well as a telephone call to Straight Wire, and obtaining the concomitant reassurance that my entire system would not go up in smoke, I decided to take the plunge. I started out by connecting only one #7 amp to the PP-8, and, with fingers crossed and my fire extinguisher at my side, I flipped the power switch: *Nothing!!!* No buzzing, no popping, no clicking of relay switches; just dead silence. Being somewhat encouraged by my first attempt, I proceeded to connect the other amp and the C-1 with identical results. I subsequently wired in the remaining components and experienced no ill effects: I did not even need the Di-gel I took, just in case, prior to the experiment.

I experienced absolutely none of the sonic aberrations described by Mr. Lipnick. The most obvious improvement was in the area of FM: much of the background noise was reduced if not eliminated (I live in a terrible location for FM reception), and the stage depth was obviously deepened. The improvement in overall sound quality was, in comparison, very similar to when I switched from the standard Radio Shack interconnects to the MIT 330. The amps were slightly more focused and transparent, while suffering no degradation of sound quality. My neighbor claimed to hear a somewhat greater stage depth, but I could not detect this quality. I also noticed a pronounced reduction of background noise and a widening of the upper midrange in the VPI/SME combination—the Dvorak Cello Concerto never sounded more open and alive. The Nak 700-ZXE also loved the PP-8: instrumentation was more alive and pronounced, and I was able to distinguish more clearly between instruments, especially in the late Beethoven String Quartets—the strings themselves attained a clarity and a resonance I had not experienced previously.

The PP-8 was also responsible, in my opinion, for an increased midrange quality in the Denon DCD-3300, as well as for an increase in overall focus and transparency. This was especially the case when playing a disc containing individual string or piano information. Like Mr. Lipnick, I experienced little, if any, sonic benefit from the PP-8/C-1 combination. He is absolutely correct when he states that the C-1 seems to prefer its own dedicated circuit more than anything else. Finally, one peripheral benefit I discovered when auditioning the PP-8 was the elimination of an almost imperceptible hum transmitted through my speakers. It somehow magically disappeared.

Although I do not consider myself an audiophile *per se*, I am an ex-professional musician and feel I do not possess a tin ear. (This opinion was substantiated when I read the *Stereophile* review of the ARC SP-9 preamplifier, which I felt sounded terrible compared with the C-1; but that's another story for another time.) Consequently, I am somewhat at a loss to explain my experience with the PP-8 *vis a vis* that of Mr. Lipnick with many of the same components. While I wholeheartedly support *Stereophile*'s philosophy of reviewing components on the basis of their sound qualities and performance, rather than by their measure-

THE SHAPE OF THINGS TO COME

Products recognized for their ability to reproduce music and to advance our perception of high fidelity emerge from unique companies. The community of individuals dedicated to the production of Mark Levinson components has established an unequalled tradition of excellence and accomplishment, while accepting the responsibility for refining the state of the art in music reproduction within the boundaries technology and imagination allow.

The No. 26 Dual Monaural Preamplifier introduces a new level of performance in audio system control. Until now, the most musically accurate preamplifiers have had limited control flexibility due to the sonic advantages of direct signal paths. The new generation of circuitry developed for the No. 26 provides full control flexibility, for six audio sources with two tape loops, and such refinements as absolute phase selection, all with greater sonic purity than even the minimalist preamps of the past.

The No. 26 offers two optional phono input sections for precise matching with any phonograph cartridge. Either of these circuits can be factory installed at the time of purchase, or added later by your dealer.

The No. 26 also offers the option of true differential balanced connection to associated equipment. While this superior interconnection technique has been taken advantage of in professional equipment for many years, only recently have domestic products offered it as an option. The No. 26 will allow you to achieve the maximum performance from Mark Levinson amplifiers and other products offering balanced connection capability.

All Mark Levinson products are hand-crafted in limited quantities to ensure their high standards. Visit your Mark Levinson dealer to hear how good music can sound in your home.

ments alone, I believe that Mr. Lipnick's extremely negative review of the Straight Wire PP-8 performed a great disservice to both his readers and to Straight Wire. I think a thorough reevaluation of this product, either by Mr. Lipnick or preferably by another staff member, is in order. **William E. Beuthel**
Denver, CO

Where is Foundation?

Editor:

Would you kindly direct me to the nearest US dealer for the Cliff Stone Foundation spiked speaker stands for the Magnepan MG-IC speakers? The fact is these speakers sound much better when they are set completely vertical (90° to the ground). Presently the best I have been able to do is reduce their angle of inclination through the use of washers on the upper mounting bolts of their "feet."

It would be of interest to you and your readers to know that my Adcom GFA-545 amplifier required factory modification in order to be used with Straight Wire's Teflon-12 speaker cable. According to Adcom's service department, the use of certain speaker cables may cause this amplifier to go into oscillation due to the amp's ultrawide bandwidth. The compatibility problem manifested itself in a continuous glow on the amp's "Instantaneous Distortion Alert" LEDs, and a high-pitched buzz from the tweeter section of my Magnepans. I am happy to report, however, that Adcom's service department handled the problem promptly and to my complete satisfaction (and at no charge). I was particularly impressed with their bothering to take the time to explain what exactly was wrong and what they would do about it. **Jose Luis S. Kahn**
Royal Palm Beach, FL

As far as we are aware, there is no US distributor for the British Foundation stands. Foundation Audio can be contacted in the UK at (011-44) 442-50657. **—JA**

Where is Sonus Faber?

Editor:

In Bebo Moroni's "Industry Update" column in June, I read about an Italian company—Sonus Faber—producing good audio equipment. I would like to get in contact with this Italian company to find out more about their products. **R.E. Castellanos**
San Francisco, CA

I have listened to Sonus Faber loudspeakers on a number of occasions and there is no doubt in my mind that they are serious high-end contenders. However, though small, they would be very expensive in the US, which is probably why no one has imported them. You can contact Sonus Faber at Via Gallo, 28, 36050 Monteviale (VI), Italy. Tel: (011-39) 444-617241. **—JA**

A special recording

Editor:

I'm writing to alert you and your readers to a very special new recording: Riccardo Chailly conducting the Concertgebouw Orchestra in Tchaikovsky's *Manfred Symphony* (Decca/London CD 421 441-2). Give it a listen. If after a few bars you don't agree that it is one of the best recordings of a symphony orchestra you have *ever* heard—yes, that includes those made with Colossus—then I'll be quite surprised. The performance is just as good!

C.L. Hardy
Blacksburg, VA

See "Building A Library" in this issue. **—RL**

Thank you

Editor:

This is just a short note to say thank you to *Stereophile* for the fine review of our recording entitled *Songs My Mother Taught Me* (DS0004) by violinist Arturo Delmoni (*Stereophile*, June 1988, Vol.11 No.6, p.189).

I was overcome with delight upon reading Mr. Hesson's review, as it is the finest review any of our artists or recordings has ever received. It is nice to find others who believe as strongly as we do about this fine recording and superb artist.

Richard Waterman
President, North Star Records, Providence, RI

Pseudoscience *vs* reality

Editor:

Mr. Edison Price's letter "Margins of reality" in Vol.11 No.7 alluded to a book of the same title which claimed "statistical significance" in a study that showed "humans can psychokinetically affect random micro-electronic events." This is highly questionable. Equipment like the Random Event Generator (REG) used in the cited study may sound impressive to the technically innocent, but as I understand it, the random events generated by these machines are

ARISTON

The Affordable Hi End Alternative

Born out of a tradition of fine craftsmanship in Scotland, Ariston Acoustics is proudly introducing the Ariston System, a sophisticated yet elegantly simple expression of technology at the service of music. The Ariston System was designed to produce superb sound quality and offer maximum convenience by means of a full function remote control that comes standard with our amplifier.

Founded in 1969, Ariston Acoustics has enjoyed a steadily increasing reputation over the years for their innovative, quality products. Ariston components have been critically acclaimed for their sheer musicality by reviewers on both sides of the Atlantic. Ariston's commitment for the future is to develop new components which both complement and expand upon the existing system while maintaining the concept of true music reproduction at eminently affordable prices.

Visit your nearest authorized Ariston dealer and hear our complete line of turntables, speakers and electronics.

ARISTØN ACØUSTICS LTD.

12 Rte 17 N., Ste. 309 Paramus, N.J. 07652
(201) 845-9265 Telex: 4970296 SAP Fax: 2018450719

predicated on prescribed mathematical formulas, and most of the microelectronics in these machines operate at voltages far above "micro" voltages. I suspect that claiming "humans can psychokinetically affect random micro-electronic events" would sound more plausible to the uncritical ear than, perhaps, claiming that humans can psychokinetically affect a simple 5V electric door bell, with only two events (on and off), attached to an electronic switch. I don't think it should be any more difficult than psychokinetically affecting the thousands of electronic switches in the form of flip-flops and logic gates in the Random Event Generator (REG).

What was even more ludicrous was Mr. Price's assertion that "the possibility of psychokinetic effects in high-end audio is not a new idea" by quoting a letter by John Crabbe to *Stereophile* in Feb. '88. Mr. Crabbe was obviously being facetious when he wrote: ". . . I even suggested that there might be a psychokinetic process at work whereby listeners unconsciously affect the behavior of audio circuitry" A prime example of how a mind like Mr. Price's, when on a particular track, can even distort a joke.

If Mr. Price is really so open to "ESP phenomena" and other hocus-pocus, why not exploit and even verify some of these "speculations" in practice? Why not affect the slot machines in Las Vegas or Atlantic City, which are increasingly run by microelectronics, to generate random events that have "statistical significance?" Still better, by cancelling his subscription to *Stereophile*, he can save his money and completely dispense with the occasional dilemma of whether one should purchase this particular expensive amp with the incredible "air" or that preamp with the pinpoint "focus." He can simply take a hike to his neighborhood Radio Shack and indiscriminately purchase a $499 rack system and, according to him, ". . . *improve* the sound of music by an unwitting *telekinetic* effect on electronics and transducers, which is instigated by the minds of the believing listeners" (my emphases). With his $299 rack system, Mr. Price can then claim to give a whole new meaning to the term *subjective evaluation*.

But extraordinary claims also require extraordinary proofs, and the book Mr. Price alluded to, *Margins of Reality*, seems long on speculations and hypothesizing but *really marginal* (no pun intended) on hard evidence and fact. The main concerns of this book appear to be religion, magic, and various mysteries, with "philosophy" thrown in for good measure. The main methods for the "explanatory model" of this book, according to Mr. Price's long referral, relied heavily on speculating and hypothesizing from "modern physics," and quoting from famous scientists of household recognition. Initially, the speculations are intertwined with a few selected scientific facts or data, but they're not even remotely adequate as *direct* support when compared to actual scientific research. The remaining preponderance of *unsupported* suppositions usually go unquestioned by most unsuspecting "inquiring minds," after the initial mini-dose of scientific allusions (not much unlike the old-fashioned "bait and switch" scheme used by unscrupulous car dealers in their advertising). All of these familiar approaches have the stench of the standard genre and mode of operation employed by regular pseudoscience merchants.

If these pseudoscience peddlers ever decide to do some objective and even original research on their pet subjects, with enough demonstrable hard evidence and data to qualify their results for publishing in *any* reputable journal for all to scrutinize, then Mr. Price can "*highly* recommend it to anyone with an inquiring mind," and come out proclaiming something "that may prove *pivotal*" (my emphases). Otherwise, I'm not in an "open" frame of mind to believe in anything and everything.

Tom Wong
Alhambra, CA

One man's pseudoscience is another's belief structure and I certainly do not want to get involved in arguments over the existence of ESP. However, as a long-time colleague of John Crabbe's, I must point out that, far from his allusion to a possible psychokinetic process affecting the behavior of audio circuitry being a joke, Mr. Crabbe put forward this hypothesis (in HFN/RR, ***January 1978, p.61) as a possible explanation for people hearing differences when there should be none. He later expanded on the topic to suggest that this would also explain why a listening test could give a null result in the presence of a strong-minded but skeptical observer when there*** should ***be an audible difference. The parallel of the latter with the inconclusive results thrown up by***

The McIntosh XRT 22 Loudspeaker System delivers

Extra Realism
Extra Depth
Extra Spaciousness
Extra Smoothness

The McIntosh XRT 22 is the purest expression of the loudspeakers scientist's endeavors. It is the one *right combination* of component parts that has eluded the diligent searcher for the loudspeaker bridge to the dominion of reproduced musical reality. The high-frequency radiator column is an illustration of the *right combination*. The 23 tweeter elements can reproduce 300 watts sine wave input power at 20 kHz, with the lowest measured intermodulation distortion. Because each tweeter mechanism handles a small quantity of the total power, extremely low quantities of distortion are developed. The total column radiates the energy in a half cylindrical time co-ordinated sound field. The low distortion, transparency of sound, coherence of sound images, definition of musical instruments, and musical balance is simply a revelation that you must experience.

For information on the McIntosh XRT 22 SPEAKERS and other McIntosh products write:
McINTOSH LABORATORY INC.
P.O. Box 96 EAST SIDE STATION, DEPT. S28

Handcrafted with pride in the United States

scientific investigations into the paranormal is obvious. —**JA**

CD blemishes

Editor:

First, I would like to thank TJN for his review of the VMPS Tower II/R in Vol.11 No.5. I purchased a pair as well as the Superphon combo. They sound spectacular.

Second, I just read JGH's update of CD Saver in the August issue and feel compelled to tell you of a product I've been using to remove blemishes from my CDs.

Of the 400+ discs in my collection, only three have given me any problems due to scratches. My solution was to use a tissue and a small amount of Soft Scrub, a mild, abrasive household cleanser made by Clorox. The result of one application was perfect tracking all three times. The cost of Soft Scrub is about $2.95 for 39 ounces!

Try it, you'll like it. **Bob Loewenthal**
Rockville Centre, NY

Import anomalies

Editor:

Having been in the market for a pair of budget speakers, I found the recent reviews by TJN and JA to be very useful. I ended up buying a pair of British Fidelity MC-2s shortly before TJN's review appeared in the July issue. I think TJN was right on the mark in assessing the speaker's strengths and weaknesses. Unlike him, however, I have found bi-wiring, especially with solid-core cable to the tweeters, to be quite beneficial.

As TJN noted, the MC-2 is very reasonably priced for an import, despite the recent price increase from $550 to $595. It really baffles me why the Epos ES-14, which sells for roughly the same price as the MC-2 in the UK (about £300, according to ads in *Hi-Fi Answers*), sells for nearly twice the price here. Mr. Hall's profit margins may be as narrow as ever, but exactly how narrow are they? The same can be asked of the importers of Monitor Audio speakers. The R852/MDs sell for about £80 more than the MC-2s in the UK, but cost $554 more here!

Although one may argue that the imported speakers are being priced with their domestic competition in mind, I find this hard to believe. From a reading of such British press as *Hi-Fi Answers* and *New Hi-Fi Sound*, I certainly get the impression that the American Spica TC-50 and Snell Type J/II speakers are considered at least as worthy as the above-mentioned Epos and Monitor Audio models. Yet the Spicas and Snells cost less than $700 here. (And sell for about twice the price of the Epos ES-14s in the UK!)

Although these apparent contradictions could be explained by arguing that British and American audiophile tastes in speakers differ dramatically, I think the main reason why importers get away with their extravagant pricing policies is because consumers (reviewers included) are much too given to using price as an indicator of quality. **Arun Malik**
Washington, DC

Intelligent video?

Editor:

In *Stereophile* Vol.9 No.8, December 1986, there was an ad for *Videofax* magazine. I am interested in a good video magazine. Is it still being published? If so, please send me a sample issue, or advise me as to the cost for a single issue, as well as the subscription rate.

James Jackson
Tacoma, WA

Videofax, *edited by Marc Wielage, was briefly published by J. Gordon Holt, from 1986 to 1987 (though it had no connection, financial or otherwise, with* Stereophile*). It is now published by Videofax Ltd., PO Box 481248, Los Angeles, CA 90048-9743; a four-issue subscription costs $26. The other intelligent video publication I can recommend is* The Perfect Vision, *edited by Harry Pearson. A subscription costs $22 and is available from The Perfect Vision, PO Box 6384, Syracuse, NY 13217.* —**JA**

Build quality

Editor:

I enjoyed JGH's point of view in "As We See It" in the August issue. The same can be said for the eventual buyers of the hardware, and I have certainly had similar experiences with units I have taken home to evaluate. I would like to see more concrete information in the reviews about the construction of components other than those which eventually find themselves in Class A or B, where construction had *better* be a selling point. With the exception of equipment which has motors, I leave my equipment running 24 hours per day on a regulated and filtered AC line, and I prefer it when I can have some faith that the MTBF (Mean Time Between

OUR ANALOG IS BEAUTIFUL . . .

AudioQuest believes in the merits of analog sound and is proud to introduce its newest performance value, the PT-5 tone-arm. It not only sounds and looks great, but is affordable too!

To further enhance your analog system add an AudioQuest cartridge, like our newly improved and highly acclaimed AQ 404i. They are known for their detail and definition, yet retain analog sweetness and warmth.

With low, and high-output models and prices ranging from $95 to over a thousand, it's easy to add the beautiful sound of an AQ cartridge to your system.

At AudioQuest we are into Analog . .

. . . AND HERE TO STAY!

For further information or the number of the dealer nearest you call or write

aq

audioquest

P.O. Box 396
San Clemente
CA 92672 USA
Tel 714 498-277
Fax 714 498-511
Tlx 20586

Failures) of the components used is longer than the warranty period.

Most recently, I had a Luxman LV105u integrated amplifier in house on a gracious loan from Western Audio, one of Palo Alto's most friendly shops. While the sonic integrity befitted a kilobuck integrated, a look inside confirmed that the front panel was laid out by marketing and the rest by engineering, without a sufficient amount of integration testing. There was a great deal of wiring which could have been eliminated; I did not have much faith in the pushbutton switches; and the filter caps for the power supply were physically small, indicating to me the likelihood of a high Effective Series Resistance from the power supply.

Something that I can say for Sony's ES lineup is that, regardless of how they fare sonically, they appear to be built well. This holds not only for the CD players, but their other units as well. I used to have a Threshold power amp which spent a good deal of time being fixed (under warranty and without charge), but the experience has taught me that operability is ontologically prior to all other considerations.

George Flanagin
Menlo Park, CA

Apogees & accuracy

Editor:

In looking at the frequency-response curve for the Apogee Diva in Arnis Balgalvis's review (Vol.11 No.8), I see an elevated midrange relative to the treble, a hole in the upper bass (centered at 100Hz), and a grossly exaggerated lower bass (13dB greater at 40Hz than 5kHz). If this speaker wore the name Polk, we would hear that it's all bass, but since it says Apogee, we hear that it's ". . .a clear-cut Class A component." Whatever happened to accuracy of response as an important criterion for a component? AB's statement is especially puzzling when he admits that the Diva does not have the bass impact of some dynamic speakers. Maybe the reason for this lack of impact is due to a bad woofer-panel rattle when fed a 32Hz, 30W sinusoidal input (according to *The Audio Critic*, Vol.11). Surely such a speaker does not deserve the praise AB lavished on it.

Gene D. Robinson
Harrisonburg, VA

From my own auditioning I reckon it does, Mr. Robinson, in that it achieves greatness through being accurate to the spirit of the music, though I would hesitate to call the Diva tonally *accurate.* **—JA**

Speakers can so produce DC

Editor:

Okay, I'm going to have to take issue with JA in his interpretation of DC as it applies to sound (DCM Time Frame review, Vol.11 No.6).

A) Speakers *can* produce "DC."

B) That DC component is not a fan-driven stream of air.

In reality, a speaker can't produce "DC." This is due to the fact that rooms leak air. If a speaker is driven with a step input (assuming no capacitive coupling of the signal), the speaker will move from its resting position and stay at its extended position until the signal is removed. The excursion of the driver will increase air pressure in the room. This air pressure will be restored to ambient atmospheric pressure because the room is leaky, giving the acoustic step response the appearance of a step input looked at through a capacitor. However, assuming the speaker is driving an adiabatic enclosure, the speaker, when driven with the same step input, will raise the pressure in the room above ambient, and the situation will remain so until the step input is removed. This permanent rise in pressure is the "DC." Assuming the drivers have additional excursion capability beyond that introduced by the DC offset, a signal can be imposed on this offset and one will have an acoustic signal and offset as measured by a microphone in our adiabatic room. And of course this works in the negative offset case, with the pressure offset below ambient. Presumably, if this enclosure is driven by a step input, one would actually record an increase in pressure, with some damped ringing (due to the lossy springiness of air, air being springlike in much the same way water is not) followed by a static increase in pressure in the enclosure and an increase in temperature due to vibration energy being dissipated as heat.

Which brings me to contention B. Sound is not produced by the transport of air, but by the shaking of air. Speakers shake air, lips shake air, and streams of air rushing by shake air adjacent to them. Presumably, with the fan analogy, "AC" sound is produced by the rapid reversal of direction of the blowing stream of air. If air were an ideal spring, upon removal of the sound the air molecules would all be back at the position they were at prior to application

Mastery. Reliability. Convenience.

A new hybrid from Audio Research leads the way in amplifier technology.

The Hybrid Lineage
Audio Research has been a leader in developing innovative hybrid audio circuits combining the linearity and harmonic accuracy of vacuum tubes with the low noise and long service life of field-effect transistors.

You'll hear that lineage in the D125's ability to produce musical dynamics with palpable authority, and low-level information with a transparency and lack of grain that mimics reality. Given a first-class program source, the D125 brings to the soundstage a three-dimensionality and precision unique in this price range.

The D125 Stereo Amplifier

Unparalleled Convenience and Reliability
The D125 was also designed to provide day-to-day reliability and convenience.

Sophisticated protection circuitry assures that potentially damaging input signals won't stress the eight 6550 output tubes.

Routine maintenance couldn't be easier. Tube balancing is controlled automatically. Plate Current Controls on the front panel allow the owner to keep performance optimized as tubes age.

By occasionally checking the Low Current Monitor LEDs on the main circuit board, the owner can determine whether individual tubes need replacing, and do it himself. Quickly, economically.

And installation convenience? Music lovers who are looking to reduce the visual impact of their amplification can tuck the D125 out of sight in a cabinet or closet, thanks to its moderate dimensions and quietly efficient fans.

20 Years of Quality
Of course, the quality of components and construction is as you would expect in a component from Audio Research. And D125 owners can rest assured their amplifier will have parts and service support for as long as they own it. That's a commitment to customers Audio Research has upheld for 20 years.

Audition the D125 at your Audio Research dealer soon.

HIGH DEFINITION® MUSIC REPRODUCTION

audio research corporation

6801 Shingle Creek Parkway
Minneapolis, Minnesota 55430
Area Code 612/566-7570
Telex: 290-583

of the sound. Let's take a 100Hz sinewave, its wavelength roughly 10'. This means that air molecules have to move several feet to pack close together for the amplitude peaks or to spread apart for the amplitude troughs. Given the lossiness of air, these molecules will be relocated. This movement is on an individual molecular scale, however, with the average pressure over the whole room returning to ambient upon removal of the driving signal.

If a speaker was completely airtight when it was put together in Santa Monica, it would have a positive DC offset when relocated to Santa Fe due to the ambient pressure differences. So (in case my point got lost), the acoustic equivalent of a DC component is change in pressure from whatever happens to be the prevailing conditions. Which neatly segues into a joke I wish I could take credit for.

Q: What do you call very low frequency sound?

A: Weather.

Stephen Coyne
Burke, VA

Briefly, despite Mr. Coyne's persuasive arguments, I was taught that the mechanical analog of the voltage change in an electrical signal input to a speaker is not *directly a change in air pressure. Rather, it is a change in particle* velocity *which is proportional to the drive-unit piston velocity, which in turn is proportional to the electrical voltage. Thus DC would be represented by a stream of air with constant velocity,* ie, *that produced by a fan.* —**JA**

Accessories

Editor:

For audio accessories of all kinds, I highly recommend "The Tweak Shop," 3700 Montecito Ave., Santa Rosa, CA 95404, Tel: (707) 575-8626. The Tweak Shop stocks many hard-to-find items, sells them at reasonable prices, and gives *excellent* service. Moreover, most items may be tried for ten days, with a full refund guarantee.

Marc Richman
Washington, DC

THEY DON'T PLAY DIRTY.

THE ELITE M-91 AND C-91 REFERENCE COMPONENTS.

Hum, crosstalk, vibration: distortion in your audio signal.

Graininess, specks, flecks: extraneous noise in your video image.

Impurities.

The Elite C-91 pre-amp and M-91 power amp are no-compromise components designed to give you more of the pure signal and less annoying noise. By keeping critical signal paths as short as possible. By providing honeycomb construction throughout to reduce excess vibration. By using separate twin cast-iron transformers to eliminate stray magnetic flux and dissipate heat quickly.

The C-91 not only controls up to six video components, its video-enhancing circuits actually improve your video image. You'll find unique processing controls like video noise reduction, sharpness and detail. To maintain audio and video signal purity, the C-91 includes a shielded, motorized volume control and three separate audio and video power transformers. There are also two Y/C inputs and three outputs to help you get the most out of the latest video technology, including S-VHS™ and ED Beta®.

A sophisticated high-end A/V system wouldn't be complete without remote capabilities. The C-91's powerful Smart Remote™ unifies your existing components into a complete A/V system.

Where the C-91 takes off, the M-91 takes over. With 800 watts/channel into 2 ohms* and 200 watts/channel into 8 ohms,** and remarkably high current capability (47 amps) for driving low impedance reactive loads. And for unprecedented purity, the M-91 includes its own volume control for direct connection to your CD player.

The Elite M-91 and C-91 Reference Components. The difference between playing dirty. And playing great.

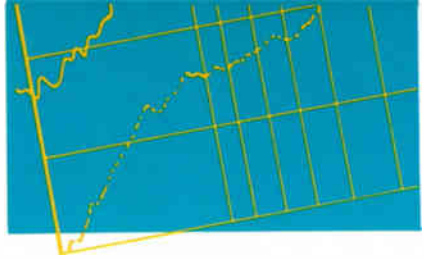
For more information, call 1-800-421-1404.

ELITE
BY PIONEER

*Measured by EIA method. **Based on FTC rules regarding measurement of amplifier power ratings. Super VHS is a trademark of Victor Corporation of Japan, Limited. ED Beta is a registered trademark of Sony Corporation.

© 1988 Pioneer Electronics (USA) Inc., Long Beach, CA

INDUSTRY UPDATE



USA: Peter W. Mitchell

Of the three basic audio media (disc, tape, and radio), two have been substantially converted from analog to digital. The vinyl LP is rapidly being supplanted by the CD, and many recording studios now use digital tape machines instead of analog recorders. Broadcasting lags behind: there has been no fundamental change in the technical quality of FM radio since the advent of stereo a quarter-century ago.

Digital broadcasting is the next step. Digital radio is on the air now in Boston and will begin to become available nationally during 1989. It won't use the FM band, of course, because 16-bit digital audio occupies a bandwidth of nearly 1MHz per audio channel, or 2MHz for stereo—ten times wider than the bandwidth of stereo FM. There is a broadcast medium that handles a 2MHz bandwidth; it's called television. NTSC TV signals occupy a 4.2MHz bandwidth, and even the cheapest VCRs have a usable 2MHz bandwidth. Any video medium can easily accommodate a digital audio signal in place of the picture.

Indeed, the rapid growth of digital audio over the past decade was stimulated by video technology. Early digital tape recorders from Denon, Soundstream, Decca, EMI, *et al* were custom-built at the rate of only a few machines per year; they needed a full-time technician to keep them running, and used large amounts of very costly tape (nearly $100/reel). Then Sony and JVC introduced PCM recording processors that employed a U-Matic video deck to store the digital code. Being mass-produced for TV news, U-Matic decks were relatively cheap, adequately reliable, and available everywhere, as were the blank tapes. Video-based hardware made digital recording so practical, easy, and cheap ($20,000) that major record companies couldn't afford not to do it. The digital revolution was further hastened by Sony's PCM-1 (1977) and PCM-F1 (1981) processors that were designed to mate with home VCRs; they could record two hours of digital stereo on a $5 video cassette. The CD itself is based on technology that was originally developed by Philips for the

LaserVision video disc.

A digital audio signal could be broadcast to home listeners via any unoccupied television channel (VHF, UHF, or cable). That idea became a reality two years ago at WGBH in Boston, which has experimented with digital processors for several years. WGBH uses a Sony PCM-F1 for location recording and a dbx 700 digital processor to relay live BSO broadcasts from Symphony Hall through a microwave video link to the station. So when the Federal Communications Commission indicated a willingness to explore alternate uses for unoccupied UHF channels, WGBH applied to broadcast digital audio. The FCC approved a three-month experiment which has continued for over two years.

The output from WGBH-FM's master console is fed both to the FM transmitter and to a Sony PCM-701, which converts the audio to digital code and formats the code as an NTSC video signal. This is fed upstairs to the control room of Channel 44, one of two noncommercial TV stations affiliated with WGBH. The PCM code is broadcast for two hours each day when Ch. 44 is not being used to air educational TV programs and the sessions of the state legislature. Listeners at home receive the Ch. 44 broadcast via the tuning circuits in a VCR, whose Video Out signal is fed to a PCM-F1 or equivalent processor for decoding. (Boston has the nation's highest concentration of privately owned digital processors.) Anyone who tunes a TV set to Ch. 44 during the PCM broadcast sees the digital code itself on the screen: a dancing pattern of black-and-white lines, bars, dots and dashes—a high-tech version of Morse code. Each horizontal scanning line contains three left/right 16-bit code pairs followed by a string of error-correction bits, and each video frame contains 490 lines of code.

In addition to the usual FM fare (music played from LPs and CDs), the digital broadcasts have included live in-studio performances of chamber music and PCM-F1 recordings of Boston-area concerts (remaining in their original digital form until they were received and decoded in listeners' homes). For one concert in Tokyo the signal from the mikes was PCM-encoded in the hall, relayed by a satellite video link from Japan to Boston, and re-relayed to homes on Ch. 44 still in digital form. (A spare PCM-F1 decoded the digital signal at WGBH for FM transmission and for distribution to other stations via satellite.)

How does digital radio sound? Generally speaking, it's as good or bad as the miking. If the Ch. 44 video signal is marred by ghosts or other reception problems, the F1's error-correction circuits may be unable to cope, muting the signal or producing bursts of noise. But if the video signal looks good on a TV screen, it is likely to decode without difficulty. So we're left with the sound of the PCM-F1 itself. By high-end standards, it is good but not flawless; like most digital recorders, it brightens and hardens the sound of strings. In my experience F1 recordings sound better than most CDs but not better than the very best CDs.

(PCM-F1s vary slightly from sample to sample; JGH, who suffers from reviewer's bad luck, has the worst-sounding F1 I've heard outside of a repair shop. During the *Stereophile* contributors' conference in Santa Fe in August, we made brief test recordings on his F1 and mine in JA's living room; Gordon's sounded grundgy by comparison. In a future column I hope to investigate that disparity and discuss methods of upgrading the performance of the F1 family of digital processors. By the way, contrary to rumor Sony never stopped making these processors; at a recent Boston Audio Society meeting it was reported that their scarcity is due to scientific agencies such as the Woods Hole Oceanographic Institute—the outfit that found the Titanic—buying most of the available supply for data recording.)

Of course for most listeners the central question about digital radio is not whether it is perfect but whether it is dramatically better than FM. The WGBH experiment has provided an excellent lab for that comparison, since the PCM broadcasts contain the same signal that WGBH is producing for its highly regarded FM service. So the comparison is not with garden-variety FM, which is pretty awful at most stations, but with FM broadcasting done with skill and attention to quality. What I found when comparing the digital and FM versions of the same signal agreed with what I have heard when FM stations have broadcast my own concert recordings. (I tried several good FM tuners, and the reception conditions at my Massachusetts house are nearly ideal, with an unobstructed 10-mile line-of-sight path from my outdoor Finco antenna to the transmitters.)

In music the most obvious difference is the crisp clarity of the PCM sound. All FM stations

© 1987 Museatex

The **Meitner** ST 50 amplifier and PA 6 pre-amplifier. Musical. Transparent. Powerful.

Together they promise flawless music reproduction.

A Total System Approach: **Meitner** Electronics, CD Players, the AT 2 Turntable and Museatex Accessories.

Museatex Audio Inc. (514) 333-6661.

MUSEATEX

employ 75 microsecond pre-emphasis followed by a limiter to prevent overmodulation, so that high frequencies are invariably rolled off during high-level transients and loud climaxes. In the digital version the strings are slightly bright and choral sound slightly hardened, but overall the PCM sound is noticeably clearer and quieter than the FM sound, with strikingly better definition of details.

This is particularly obvious in an announcer's voice, close-miked in an acoustically dead studio. The PCM version is dead-silent, and every little vocal-cord resonance is distinct. The FM version sounds like the playback from a Dolby-C cassette, slightly veiled and accompanied by a constant low-level shushing noise. (The signal/noise spec of today's tuners exceeds 80dB, but stations need only 60dB S/N to pass an FCC proof-of-performance test. I know of no FM station that has a better S/N than 70dB in stereo, and most barely make the 60dB passing grade. The FMX system invented at CBS would improve this situation by providing about 15dB of noise reduction, but controversy about possible side effects has delayed the acceptance of FMX among broadcasters.)

If the idea of broadcasting digital audio on a UHF channel catches on, Sony is prepared to produce receivers with the required UHF tuning circuits and PCM decoders built-in, at a cost of perhaps $100 more than an FM tuner. But that's not likely to happen. Right now Boston is the only place in the country that has digital radio, and two obstacles are likely to prevent its spread in this form. One is economic: A nationwide digital radio service employing this approach would require the construction and operation of a UHF station in every locality, an impractical proposition since UHF transmitters are very expensive to build and operate. (The monthly electric bill is a killer; because of its high frequency, a UHF transmitter requires a megawatt to cover the same territory that an FM station covers with 20kW.)

The second obstacle is political: digital radio is only one of several possible uses being proposed to the FCC for empty UHF channels. Channels 70-83 have already been reassigned from TV to cellular mobile phone service. And now that the FCC has declared that all advanced television systems must be compatible with existing NTSC sets, any American broadcasting standard for HDTV will require two channels per program (the existing channel for the NTSC-compatible part of the picture, plus a UHF channel for the high-definition part). There probably won't be enough spare UHF channels for both digital radio and HDTV, and if it comes to a choice HDTV is more likely to get the space.

The ICT alternative

The practical alternative is to distribute digital radio signals through satellite relays and cable-TV systems. Now that half the nation's households are wired for cable, and newer systems offer 30 to 50 channels instead of a dozen, it would be relatively painless to assign one or two cable channels to digital audio. A new company, ICT, is preparing to do precisely that. Drawing on experience in broadcasting, records, and cable programming, ICT plans nationwide distribution of a "SuperSound" package of eight stereo digital radio signals via cable-TV systems, scheduled to operate 24 hours a day beginning next summer. One or two of the eight signals will be devoted to classical music, one or two to jazz, one or two to rock, and so forth. Programming details are still being worked out.

The key to the ICT system is a proprietary "DM" (digital modulation) scheme that accepts the digital-code output signal from a CD player or digital recorder, reduces the number of bits in the code, and scrambles eight digital programs into a composite signal that will fit into a single video channel. This is uplinked to a satellite, downlinked by local cable systems, and relayed to homes on a spare cable-TV channel. People who are out of reach of a cable system will be able to receive the signal directly using a backyard satellite dish.

If error-correction codes are removed, 16-bit mono PCM has a bit rate of 0.7MHz. An NTSC video channel is 4.2MHz wide, room enough for six PCM channels. To fit 16 PCM channels (eight stereo programs) into one video signal, ICT needs to compress the digital bit rate by a factor of 2.7, squeezing the 16-bit codes down to six bits on the average. Reduction to 10 or 12 bits is easy; even in rock music the first few bits are zero a majority of the time. In the computer field there are many squeezing programs that compress program and data files to half their original length, using code substitution tricks. (One of those tricks: whenever there is an unbroken string of several ones or zeroes in the bit stream, it is replaced by a

DENON PCM AUDIO TECHNOLOGY / COMPACT DIS

WHAT MAKES ONE AUDIO BRAND SOUND BETTER.

CD PLAYERS have always been susceptible to errors in converting digital data to analog audio. In fact, academic researchers recently declared that error in converting the Most Significant Bit is a primary cause of audible problems. Every Denon CD Player since 1983 has corrected this problem with the Super Linear Converter.

Now we're going one step further. With the new "Delta" conversion circuit, Denon's DCD-3520 and DCD-1520 represent the closest approach yet to true 16-bit linearity. Denon's 20-bit 8x oversampling digital filter joined to a pair of true 20-bit Super Linear Converters quite simply elevates digital playback to a new level of musicality.

DCD-1520

But then, Denon has long recorded digital master tapes of unsurpassed musical accuracy.

It's simply easier to make digital audio sound more like music when you know what music sounds like.

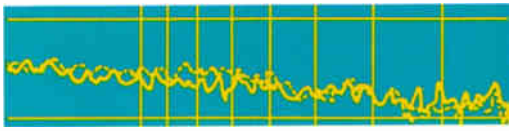
DENON

count; *ie*, a code representing 1x6 is sent instead of a string of six ones.) A complementary "unsqueeze" program restores the original codes at the receiving end.

In the home, the cable will connect to a converter/decoder that tunes the cable channel carrying the radio service, unscrambles the DM code, and selects one of the eight PCM signals for decoding. The final decoding is like that in many new CD players, employing dual 16-bit D/A converters with 4x over-reading digital filters. The cost to the consumer: a monthly subscription fee similar to that charged for premium cable-TV channels ($10/month), which includes the rental of the tuner/decoder. If you choose to buy the tuner (for perhaps $150), the monthly fee would be less. You can't cut the cost by selecting only the channel that carries the type of music you like; all eight signals will be delivered as a package.

In my view the principal value of the ICT plan is that it could provide a cost-effective way to preview the sound and performance of new CDs before making a buying decision. Of course you can judge performance qualities pretty well from an FM broadcast, so the real value of the ICT system will depend on the sound quality of its DM data compression and re-expansion circuit. How much quality is sacrificed when the average bit rate is reduced to 6 bits for transmission and restored to 16 bits at the receiving end? In a June 1987 ICT demonstration, the digital-code output of a Magnavox CD player was fed through the DM encode/decode system and compared with the direct analog output of the CD, using Magnepan speakers; the DM sound was slightly veiled but otherwise seemed identical to the CD output. In a less carefully arranged ICT demo using Bose speakers at the June 1988 CES, the DM signal had some very low-level noise and slight high-level congestion. On balance the DM system may not sound quite as good as WGBH's UHF method, but it is a far more practical way to make digital radio available everywhere.

ICT has commitments to carry the SuperSound channel from two large cable-system operators: TCI (Telecommunications Inc.) and Prime Cable, which jointly represent about 20% of all cable subscribers, especially in the Midwest and Rocky Mountain states. An Asian factory has contracted to make the DM tuners. Trial broadcasts will begin this winter, spreading across the country next summer.



UK: Ken Kessler

When British dealers were quizzed in a survey published in a recent issue of the magazine *Hi-Fi Choice*, a number said that they were enjoying an upsurge in the sales of tube equipment, due in part to the synergy created when CD signals are played through tube circuits. This revelation is not new, of course, as it was discovered during CD's early days, but it's nice to know that these dealers are armed with yet another sales pitch to use on customers needing excuses for buying thermionic products. When I wrote some months ago about the increase in activity in the tube sector (Vol.11 No.5), I didn't know that it was heading toward even more new makes or a minor revolution, but that's the way it's starting to appear.

As I write, Federal Express is collecting the Matisse preamp which I've had on loan for review. While I have a number of complaints about its ergonomics and styling, aspects of design which most British manufacturers still fail to understand, I must admit that its performance was easily of world class. It would take more than a restyle for it to win my heart—I can't live with separate L/R volume controls which operate in 2dB steps—but conceptually, if not operationally, I think the thing is a winner. To justify its high price of £3000 ($5250) in the UK, right in Audio Research territory, it has construction to rank with some of the finest components I've ever examined. Twisting the knobs reveals a feel of precision which reinforces the luxury pricing. Taking off the lid of either the preamp or its separate power supply is like a glimpse into something beyond hi-fi.

Oh, it's high-end all right, and it will go some way toward pulling British hi-fi out of its mid-fi morass, but that's just the start. What's needed is a grasp of "perceived value," that certain something which allows the Jadises and Krells and Levinsons of the world to charge even more than the cost of the Matisse without any (justifiable) cries of "Rip-off!"

But the Matisse is an exception, at least until the release of the long-awaited Musical Fidelity tube gear. The Matisse is unashamedly high-end, while most of the newly launched tube

At CES . . . *The Amrita Audio Reference Standards were making impressive sounds . . .*"

Thomas J. Norton
STEREOPHILE

At CES . . . *The Amrita speakers sounded extremely promising . . .*"

Neil Levenson
FANFARE

The Amrita monitors sounded pleasantly balanced on both rock and classical material"

Martin Colloms
STEREOPHILE

AMRITA AUDIO • P.O. Box 579 • Davenport, IA 52805 • (800) 4-AMRITA

products fall under the heading of "affordable." Indeed, only this morning I received details of yet another company following the tube path, and with a pre/power amp combination to sell for just under £3000 complete.

I can't comment on Cadence's first products, because the styling isn't finalized yet; I expect to report on these in full in next month's report from the UK's main Hi-Fi Show. Yes, the chaps at Cadence are beavering away at this very moment in readiness for their world launch in the Presence Audio rooms, so all I'm armed with is the briefest of details.

Cadence's PRE2 preamplifier is going to be a moving-magnet phono design with a moving-coil transformer as an option; a more expensive model will be launched later offering both. Other inputs will include CD, tuner, auxiliary, and tape. Unlike some still hung up on separate left/right gain controls, the Cadence will feature a single volume control plus balance control. It will not offer tone controls. In light of current interest in bi-amplification, the PRE2 will also feature two separate pairs of output sockets. Styling has been described to me as a black acrylic front panel, back-illuminated with green light. The target price is £995.

The partnering power amplifier is the MA2, a 60W monoblock to sell for £1995/pair. Again, details are slim, but I've learned that the amps will use US-made 8147 output tubes as per the original Quicksilvers, feature two "big" transformers, and reside on a mirror-black plinth. What the Cadence and every other tube amplifier is going to have to compete with, though, are some old friends in new clothing, and they're the most exciting tube products I've seen since Audio Innovations first showed that tube gear could look "different."

First, some brief history: A decade ago, Tim de Paravicini designed a handful of tube amplifiers for Michaelson & Austin and virtually created the UK tube revival. (With the exception of some vintage models from Radford and Quad and an interesting kit design from erstwhile reviewer Chris Rogers which was marketed by, of all people, the UK Videotone distributor, tubes were pretty much extinct.) Michaelson & Austin's various TVA amplifiers sold like hotcakes, but also had a tendency to blow up, eat tubes, catch fire, and generally make life hell for most of their owners.[1] Enter Mentmore Industries, who bought the remains of the company, spending the last five years undoing the damage incurred during the previous incarnation.

I always wonder what to expect when a company "goes quiet" for a few years. After much coverage in the press and a fair bit of promotion, Mentmore dropped out of sight. Two weeks ago, I received a press invitation to a design exhibition of projects created by students at the Cranfield College of Manufacturing, and all was revealed.

Hi-fi hobbyists in the UK are familiar with the Cranfield Institute of Technology because of their involvement in the design of Max Townshend's The Rock turntable, as well as the development of Granitan, a super-dead granite/resin composite used both for the original Rock's plinth and for some Elite speakers. By happy accident, Cranfield student Paul Fearis was visiting Mentmore regarding some of their non–hi-fi activity when he espied their tube amplifiers. Before you could say "warm-up time," Mentmore had agreed to sponsor a degree project for Fearis, involving the modernization of their product line.

I quote from the exhibition catalogue:

"This product aims to widen the appeal of such equipment [tubes] for domestic use. The project has involved the redesign and development of an existing power amplifier, coupled with the launch of a new complementary preamplifier. Dealing largely with the user interface and aesthetic design the project has produced an elegant and striking visual image for the product, offering improvements in both sonic performance and safety. The visual image created is to form a new corporate identity for a family of company products, reestablishing their position and sales in this high level market."

This, my friends, is pure understatement. What I saw was not merely a restyle but a reevaluation of what domestic tube products can and should be. With the exception of the outrageous Carver tube amps and the very limited production Fine Arts from Grundig (!), no recent tube products I've seen can match the new Mentmores for visual appeal or ergonomic brilliance, and nothing even approaches them for domestic acceptability.

Dubbed the "M-Series," the new range consists of a full-function preamplifier, the TVP-1,

1 The TVA-1 was the bad boy of the bunch; I've had a 50W stereo TVA-10, a sweet-sounding amplifier, in regular use since 1979 without problems. —JA

has been personally fashioned by Nelson Pass and the Threshold appearance styled by Rene Besne. Today, Threshold products are still constructed for serious music listeners under the direction and responsibility of these corporate founders.

For a brochure describing the full Threshold product line write: Threshold Corporation, c/o InConcert, 12919 Earhart Avenue, Auburn, California 95603. Or call : 1 (800) 888 8055.

Threshold

for those who find music an essential part of life

Threshold products are exclusively distributed by

InConcert
division of
Threshold Corporation

and the TVA 50 stereo power amplifier, rated at 50Wpc. While based on existing designs, the circuits have been revised extensively for sonic improvements and reliability, as well as for easier, more consistent production. The preamp is a two-chassis unit consisting of the control unit and an outboard power supply; the same case also forms the chassis of the power amplifier. Fearis's transformative contribution is a new profile front panel with a look like nothing ever seen on tube products before.

Using structural expanded polyurethane foam, Fearis has sculpted a fascia with chamfered top and bottom edges, the front surface being the same height as the control knobs. Finished in deep charcoal Nextel, the fascia is split so that the left-hand quarter is colored in cream with the Mentmore logo. So modern is its look that it will sit with any 17"-wide components of similar hue without looking even remotely anachronistic.

The controls are extensive, offering fully adjustable moving-coil and moving-magnet inputs and a host of line-level inputs, volume, balance, and a novel muting circuit. The product was conceived to allow for either upward or downward model development, using the same fascia to maintain a family resemblance.

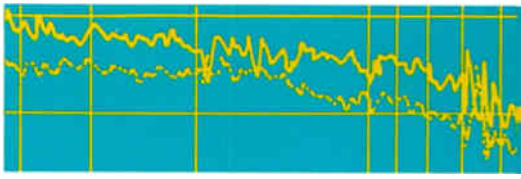
The power amplifier, though based on the same low-profile case, has to provide greater height to allow for the tallish EL34 tubes. Fearis produced a "tube cover" consisting of stepped layers of metal, designed to dissipate heat at a specific rate. While some may find the finned section a bit too futuristic, this should not present a problem; the amplifier can always be kept out of sight. At least it's a change from massive black or silver boxes with mesh cages or noisy fans.

The possibilities for the design are endless, because the split-look fascia lends itself to creating a flip-down panel for hiding minor controls. Additionally, the underside slope from the chamfering presents itself as another surface for mounting minor controls. Naturally, the power amplifier can be configured as a mono unit, so Mentmore can look forward to producing a family of distinctive products without needing perpetual chassis and faceplate restylings. As the two pieces are pegged to sell for under £1000 ($1750) each, they could fill the gap between budget UK-made products and the lower reaches of the import sector.

Sorry to end this month on a sad note, but I gather that I'm partly to blame for the closure of one of the more active high-end dealers in the UK. I received a phone call from Subjective Audio's Howard Popeck; he informed me that he had decided to pack it in. Because this is not *Investor's Chronicle*, I don't feel compelled to do an investigation of Popeck's finances.[2] The upshot of the phone call was that selling almost exclusively high-end products in the UK was a struggle of unnecessarily Herculean effort, and HP (Don't tell me that those initials are copyrighted, too. . .) had had enough. Certain personal influences were part of the decision, but the bottom line from Howard is that my article in a recent *Stereophile* (Vol.11 No.6) about the oddities of the UK market triggered the decision. He actually phoned to thank me rather than curse me, so this is the first time on record that I've actually helped someone by driving them away from hi-fi. I can think of a few others on whom I'd rather have had that effect, but nothing will change Popeck's mind.

I don't know enough about individual retailers' turnover figures, nor how they're perceived by each other within the retail community, to gauge others' responses to his departure, but I do know that I'm going to miss the ornery bastard. And it's not just a distinct personality that the UK high-end scene is losing; it's gaining something as well: indication that the UK high-end market may not be as healthy as anyone would like.

2 This is not to say, however, that they are not relevant. Four or five years back, Subjective Audio bravely attempted to sell high-end gear in a manner befitting its pretensions, investing a six-figure sum in a custom-designed, three-dem-room store in North Central London and advertising in the upmarket mass media to attract the attention of comfortably off music lovers and what were then proto-yuppies. The venture was overambitious in the days before the UK's current consumer boom, and Howard had to move to a more modest store. I understand, however, that the debt inherited by Subjective Audio from the super-store's demise proved to be too much of a millstone around the business's neck. —JA



THE NETHERLANDS: Peter van Willenswaard

South of the border. . . Antwerp may be just across the border, in Belgium, but the people

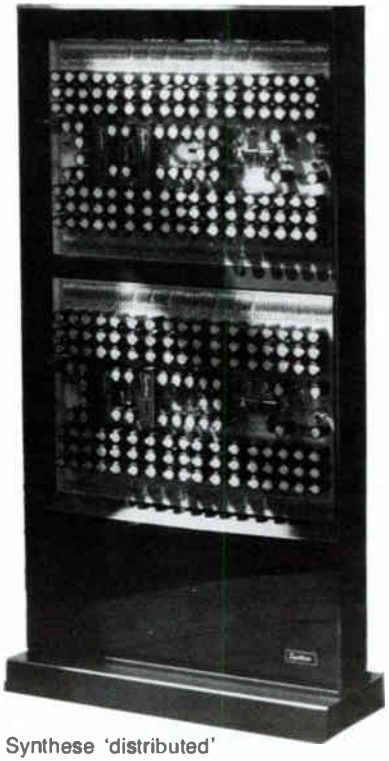

the Sequel
MARTIN·LOGAN, LTD.
p.o. box 741
2001 delaware
lawrence, kansas 66044
1-913-749-0133
telex 262817 mlesl

there speak Dutch. In fact, half of the Belgians have Dutch as their maternal language, the other official language being French. (Don't have any romantic ideas about two languages in one country, because after 150 years of existence as one nation, Belgium is splitting into two largely independent parts forming a federation.) The name of Ivan Schellekens, who lives in Antwerp, won't mean anything to you. He is one of the very few serious loudspeaker manufacturers in Belgium and has been so for 17 years. Some six years ago he founded a company called Synthese, a name which might ring a bell with a few of you. His flagship model, the Synthese 1 (see Vol.7 No.5, cover), has been on display once or twice in one of the big American shows, but due to poor follow-up the number sold in the US has been very limited.

The shape of the speaker may surprise you as much as it did me when I first saw it: a kind of triple telephone receiver mounted by pivots in a horseshoe-shaped stand. Don't be misled by the bizarre styling, though. The aesthetics were not chosen just to augment sales; rather, the form allowed designer Schellekens to mount tweeters and midrange in a minimum-dispersion environment which, as is generally accepted, requires a narrow baffle. Here there is no baffle at all! The triple telephone receiver is cast from a concrete-like material, providing the drive-units with a substantial mass right behind them, and is completely dead. The entire assembly is decoupled from the main frame by mounting the pivots in rubber. The main frame houses the woofer, both ends of the horseshoe radiating low-frequency energy.

I must have heard this loudspeaker on a dozen different occasions now, with results varying from almost disappointing to breathtaking. Like all top-quality loudspeakers, the Synthese 1 needs very good sources and amplification. Unlike most top-quality loudspeakers, the Synthese has the rare ability to locate a low-frequency sound (the only other I've heard do this was the Duntech Sovereign). Information below, say, 60 or 50Hz is usually present in a general sort of way, "everywhere" so that you can't point to it. Low-frequency instruments have overtones, especially on attacks, however, and it is because of these that we know where a bass instrument is in the stereo image. The brain is generous enough to correct our aural perception and assigns this information to the correct location. This is so common that we normally aren't aware of it. In this respect, the Synthese 1 can be quite an ear-opener.

Now to the main reason for my attention to Synthese here: the introduction of their first power amplifier, at this year's Paris high-end show. Again, the appearance is unusual, even to the point of insanity, but again the physical structure is a direct consequence of design implementations. I was so amazed by what I saw (and then by what I heard!) that I completely forgot to ask the obvious questions an audio journalist should generate when confronted with a new amplifier. I only realized this after the journey back to Holland, and called Mr. Schellekens to correct my failure, so here we go: 85Wpc into 8 ohms, almost four times as much into 2 ohms (and yes, they play happily into Apogees); rise time 500ns, indicating an almost 1MHz bandwidth; built-in protection against unwanted output like DC or oscillations, and against thermal and current overload. Nothing remarkable so far, apart from the speed of this amplifier, something attainable



Synthese 'distributed' power amplifier, the "Brilliant One"

Yamaha just solved the industry's biggest problem

All those little capacitors, resistors and semiconductors?

They make up what's known as a CD player's analog filter.

A necessary evil designed to remove unwanted digital noise. While unfortunately distorting otherwise crystal-clear sound with phase shift.

Yamaha's exclusive Hi-Bit direct out technology bypasses the analog filter, resulting in pure, crystal-clear sound.

Ahem.

Presenting Yamaha's exclusive Hi-Bit direct output technology.

A revolutionary technology we've incorporated into our CDX-910U, giving you the option of completely eliminating the analog filter with the touch of a button.

Allowing you, in turn, to enjoy improvement in music you thought couldn't be improved.

You'll also find 8 times oversampling. Giving you incredibly accurate waveform resolution and unbelievably natural sound.

Hi-Bit twin D/A converters to improve dynamic resolution and eliminate interchannel phase distortion.

And a host of features that add up to the most pleasurable listening experience yet.

Use the 46-key wireless remote, or use a Yamaha RS integrated amp, preamp or receiver remote.

Stop by your nearest Yamaha dealer today and hear the remarkable new CDX-910U CD player for yourself.

We think you'll come away sharing our philosophy that anything that comes between you and your music is definitely a big problem.

No matter how small it may be.

YAMAHA®

© 1989 Yamaha Electronics Corporation, USA 6660 Ruatan Park, CA 90620

only with difficulty using MOSFET power transistors, but practically impossible to realize with bipolar power transistors.

Synthese's amplifier, which has been baptized the Brilliant One, does not use high-power transistors at all; instead, *there are 264 small output transistors*.

The advantages are many. Such transistors can have high gain and low input capacity, making them easy to drive. If there are so many of them, free-air cooling is no problem, obviating the need for heatsinks and doing away with any parasitic capacitive loop inside the amplifier. The 264 transistors can be envisioned as "distributed power transistors," and the designer of the Brilliant One didn't stop there: he also made a distributed power supply. For each group of four output devices he installed two 1000uF electrolytic capacitors right next to them, thus optimally decoupling the power supply lines at any point. The total reservoir capacitance is an enormous 250,000uF for the stereo amplifier. Because there are so many parallelled components, individual variations should be cancelled out, implying a consistency of sound and performance for all samples of the Brilliant One.

Upstream of the output devices, we find a discrete module containing the driver function, with a local feedback loop. Between this and the input sits a second module providing the voltage amplification, having its own power supply with 10,000uF buffer capacitance and 100dB power-supply rejection ratio (PSRR). There is no overall feedback loop, and though the amplifier is said to be entirely DC-coupled, Synthese claims an unbelievable 100uV typical offset at the output. The printed circuit boards of the two channels are mounted vertically, one on top of the other, to permit natural air convection. The power transformer is on the base.

The "case" of the amplifier shown in Paris consisted of two vertical see-through acrylic covers, but black ones will become available. Mr. Schellekens told me he is reconsidering export to the US and will be looking for a serious representative. I have not been asked to write for *Stereophile* as a reviewer, so I'll be short on sound quality. To say the least, the Brilliant One sounds very promising. Though I have followed and appreciated the improvements in solid-state in recent years, my love affair with tubes persists. The Brilliant One, however, is the first amplifier that made me hesitate.

Digits

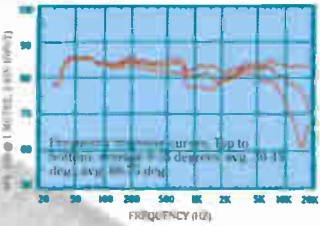
Though I still think you have to go analog to get the best sound, digital audio has improved and continues to get better. The original rancor due to the hype accompanying the introduction of CD has shrunk to harmless proportions, leaving enough free space in my mind to get busy with the theory and practice of digital audio. From a technical and philosophical point of view, however, digital puzzles me.

In January this year, George Graves reported in *Stereophile* on the beneficent effect of the Denon DAP-5500 digital preamplifier on CD reproduction. I think it was two months later that a reader in a letter mentioned that he found different results from various CD players when connected to the same DAP-5500, suggesting a symbiotic relationship between the latter and a Denon CD player. I had forgotten about this until a DAP-5500 passed through our office. My colleague complained about strange differences when switching to a CD player we normally highly respect, and asked me to listen.

I sat down and almost fell off my chair. I became rather emotional and shouted in disbelief: "Is this black magic? How can the same digital pulse-train to the same DAC sound so much worse?" I mean, when working with your personal computer (which runs at approximately the same speed as digital sound processing) you copy file after file, entire hard discs if necessary, without one error, day in, day out. In digital audio, too, information is either correct or correctable or false, and when it's false the signal is inhibited. So how on earth . . . ?

When I had cooled down, I decided to take a look at the digital output of a few CD players. Take a look at what I found. The first pulse-train shown emanated from the digital output of a Pioneer PD-91 CD player, via a 200pF coaxial cable load. Signal purity may not be entirely above criticism, but the edges are as steep as they should be and the different widths of the pulses (due to the EFM modulation used to encode the information) have no further influence on the form of the signal. Now watch the digital output of a Cambridge Audio CD-2 via the same cable. The edges are so inclined that it could be hard for a digital processor to tell where exactly the transition takes place.

Designing For Great Sound!



Paul Barton has centered his life on the real sound of music. As a symphony violinist, recording studio founder and Canada's foremost loudspeaker designer, the accurate reproduction of music is simply his highest priority.

PSB speakers are Paul Barton's signature. Therefore they must meet the high standards defined in the PSB design criteria:

Performance: accuracy, neutrality, powerful bass, freedom from resonance.

Appearance: fine craftsmanship in graceful cabinets that occupy minimum floor space.

Value: knowing through experience the balance required to achieve the best sound your dollar can buy.

Reliability: rigid quality standards, high power handling systems.

The latest PSB designs have been developed as a result of extensive studies in advanced materials and technologies including reaction injection molding and mineral filled polypropylenes. From the flagship model STRATUS to the newly introduced CIRRUS and MKII series, PSB speakers continue to be designed for one purpose and one purpose only...the real sound of music.

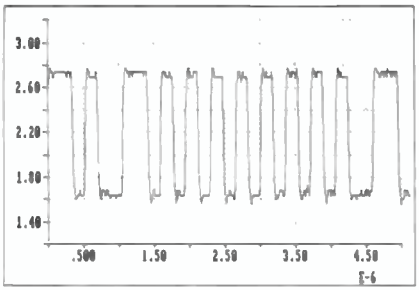
For your own copy of "Choosing and Using Loudspeakers" and the name of the PSB dealer nearest you call or write.

psb SPEAKERS

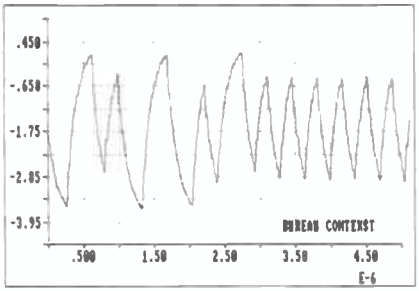
In the U.S.A. Lincolnwood Ltd. 575 University Ave. Norwood, MA 02062 (617) 762-7453

In Canada Lenbrook Industries Ltd. 633 Granite Ct. Pickering, ON L1W 3K1 (416) 831-6333

In Bermuda Sound Advice Hamilton (809) 292-5500



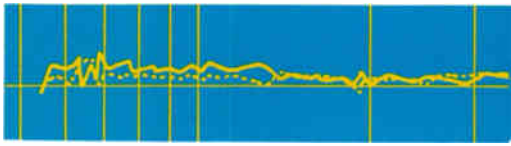
Pioneer PD-91 digital output



Cambridge CD2 digital output

Moreover, the DC-level of the signal is shifted as a function of the pulse width, creating a second source of uncertainty as to the exact point of transition. Even with no cable at all, the 1:10 probe of the Philips PM-3350 50MHz digital storage scope used connected directly to the CD-2's digital output still showed some slanting of the edges. As indicated, we appreciate the CD-2 very much when used on its own (as our reference for the past year, it has only been outclassed by the Accuphase DP-70), but its digital output apparently isn't sufficiently buffered and is not fit for feeding an outside converter.

The visual difference in my view still doesn't explain how this can lead to a different sound: I thought digital would either work or not—how can there be an in-between? The differences between the graphs shown may relate to extreme cases (the other CD players I hastily investigated that showed sonic differences), but I think the point deserves attention from manufacturers and reviewers. As for the poor consumer: if you make a digital link, don't forget to try a very short one to see if it makes any difference; geometry and materials of cables used may also very well be of influence. I feel it would help if the digital interface format would impose the use of a 60 or 75 ohm terminating resistor at both transmitting and receiving end (there now is no more than a recommendation of such a value for the transmitting side only). Until then you'll have to play around with analog.



WEST GERMANY: Markus Sauer

Writing this column turns out to have more ramifications than I originally thought. All I thought I would have to do was keep *Stereophile*'s readers up to date on developments in West Germany, introduce them to the major companies in our high-end industry, and give some indications on what should be the main point of interest: how it all sounds. So why am I ruminating on cultural differences between the US and Germany? Well, further contemplation showed that the last point, sound, was going to confront me with a (hopefully not insurmountable) problem: language and framework, or expectations. Let me explain.

Naturally, the straight translation of a sonic description from German to (American) English is possible, but the connotations of a given word will often not be identical. For example, if an American audiophile describes a speaker as having "good bass," he is probably thinking in terms of extension and power, and thus quantity; a German audiophile would probably be talking about definition and control, and thus quality. Of course, quantity and quality are not mutually exclusive, but it is very, very rare that both are satisfactory. In my opinion, the inherent compromises in any component tend to adhere to a general convention in any country, and will differ between different countries. I think that even four years ago, a typical US brand (no, I won't name names), considered in the US to be near the state of the art, would have been described in Germany as veiled, with bloated bass and muffled top end. A typical German brand would have been perceived by an American as lean, cold, and aggressive. I'm exaggerating, but you get the point. There are overtones of the tube/transistor and musicality/accuracy debates here, the latter the topic

In Science, Elegance Equals Simplicity.

The elegant CONCERT V is quite simply our statement of how a loudspeaker from Scandinavia's largest loudspeaker company should perform, sound and look. Available in black-stained ash or mahogany veneers.

Audio from Denmark.

Jamo Hi-Fi

425 North Rd Bldg 1A

of a heated discussion in these pages not so long ago (Vol.11 No.5). From a European point of view, the US seems to be the largest aggregation of bass freaks ever. Nor is this phenomenon confined to reproduced sound: American orchestras seem to employ more double basses, cellos, and tubas than their European counterparts, and the sound systems in your jazz and rock clubs have to be kept well away from the San Andreas Fault.

Fortunately, nothing is as accurate as live music, and nothing is as musical as perfect accuracy; the gulf between these schools of thought is ever narrowing. The overall standard of audio reproduction is so high these days that a less-than-tight bass, for example, tends to stick out like a sore thumb. A convergence of the design paths followed by European and American designers seems imminent. But keep the above thoughts in mind when reading sonic descriptions by foreign journalists. While I try to bring my language in line with American usage, don't take my word for anything: listen for yourself. That there are differences in sound is the basic reason for which there is an import business at all; some Germans prefer the sound of American products, and you may find in a German unit something not attainable with homegrown products. Since I do not write proper reviews, I will limit my remarks on sound quality to a workable minimum. As a rule, though, a company will not be featured in this column if at least part of its range is considered to offer sound quality inferior to *Stereophile*'s Class B. And yes, I do think you will find some Class A products in Germany.

End of preamble. Let's get down to business. Any series on the German high end has to start with Burmester, who dominates our market in both prestige and sales. With a turnover of a few million dollars, they export to seven countries but not yet to the US, not having found an importer prepared to show the high level of commitment and customer support they demand. Burmester currently enjoys the best of two otherwise irreconcilable worlds: their amplifiers are bought by audiophiles putting sound perfection above everything else, and they also do very well in the lifestyle-conscious, design- and prestige-oriented segment of the buying public. Founder Dieter Burmester is clearly a man with a vision, likening the investment in a good audio brand to buying a painting: both allow the appreciation of art in the comfort of one's own home. But even though the audio chain gives access to a whole world of music, spending $20,000 on a painting is socially acceptable, while spending the same money on audio is considered lunacy. Fittingly, the company's motto is "Art for the Ear." Burmester is open and articulate, an unofficial spokesman of the German high end to the non-audiophile media, and he enjoys a high level of visibility. And I think he really does enjoy it; in fact, he seems well on his way toward becoming a yuppie icon.

An engineer who was at one time a professional musician (like JA, he played bass), Burmester developed his first preamp in 1977 when he needed a replacement for an aging Quad unit but was dissatisfied with available offerings. This first design, the 777, was rather ugly but sounded good enough to get Burmester Audiosysteme started as a company (the usual story of friends wanting one, etc.). This first design not being suited to large-scale production, a year later he introduced the 785, which stayed in production until recently. It also set a pattern for later designs in that it incorporated innovations which would later be taken up by other manufacturers, in this case a line stage before RIAA equalization. From the beginning, a very high level of after-sales service was company policy; updating is available at very reasonable cost. To bring a 10-year-old 785 up to latest specification would cost about $200. This, and the extremely high standard of finish, must be the reasons why a Burmester tends to lose little of its value. That 10-year-old 785 will still fetch 75% of its original price today.

Burmester model numbers indicate the year and month in which the design was finalized, May '78 for the 785. (By the way, Burmester is rumored to be working, under the code name Q, on a secret project for a British government agency, scheduled release July 2000.) The company keeps its own showroom on their West Berlin premises. Feeling the need for an instrument that would enable them to compare different equipment efficiently and fairly, they developed the 808 preamp (currently in its Mk.III incarnation), a user-configurable modular preamp (six years ahead of Cello's Audio Suite) with on-board signal generator and digital voltmeter. To their own surprise, there was a considerable demand for such a flexible, high-quality product and they now make ten

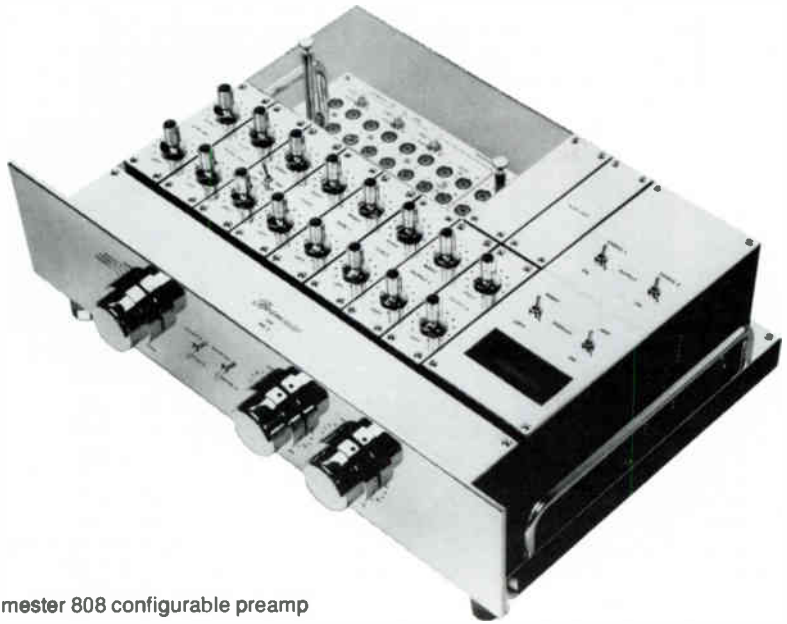
Our engineering philosophy, simply stated.

Audio Dynamics

High fidelity. Low complexity. Presenting the new face of performance art, pure and simple.

For the name of an Audio Dynamics dealer near you, call 1.800.541.5696.

Audio Dynamics Corporation, 851 Traeger, San Bruno, CA 94066
© 1988 Audio Dynamics Corporation



Burmester 808 configurable preamp

808s per month. The 828 power amp was the first amp designed from first principles for balanced operation (featuring separate toroidal transformers each for the positive and negative rails), and this has been a recurring trait in Burmester's designs ever since (*cf* the article in Vol.10 No.8).

The current lineup also includes two smaller power amps, the 850 and 878, and two preamps, the 877 and 870. These last serve different purposes: the 877 (apparently selling like hotcakes) is a "classic" preamp, unusual only in that the phono stage is an option; it makes use of what Burmester terms their X-Amp technology, even further developed for balanced operation. The 870, however, is unique in today's high end and seems to offer a glimpse of the future: it is a digital processor. The digital stage takes the digital output of a CD player and uses a single D/A converter to effect a 16-bit/16x oversampling conversion; that chip alone costs more than many complete CD players. While the mass market has been brainwashed in Germany just as effectively as in the US, the general consensus on CD in the high end is that there are areas in which digital has advantages over analog, notably in the bass and lower mids, but that ultimately analog is still superior to digital.

Burmester claims that with their new processor, he is now able to appreciate those areas of digital superiority, the failings of digital being now so unobtrusive that enjoyable listening is possible. He also feels that some of the air and ambience of good analog is actually the artificial by-product of the limited dynamic range of vinyl discs, which he gives as typically 60dB. For the same peak level, the softest overtones and ambience cues are some 20-25dB quieter with digital, often below the resolution floor of the system and the noise floor of the room. Of course, that does not mean that they're not there, on the CDs. He intends to prove his point by developing a system that would limit digital's dynamic range to the same 60dB. The rest of the 870 consists of the same X-Amp line stages as featured in the 877, thus giving a complete preamp for a system without an analog record player. A tuner is in the final prototype stage.

As a complete contrast to all this, let me introduce you to a smaller and much more low-key company, Klimo. Of Czech extraction, founder Dusan Klimo got an engineering degree in Germany and then started to work in telecommunications R&D for a while. In 1978 he set up shop for himself, his first product being tube active crossovers (still available as special orders). At the time, he was the Keeper of the Flame, the only designer still

YBA*

*Yves-Bernard Andre—quite possibly the world's finest designer of audio-electronics. For more information, write or call:

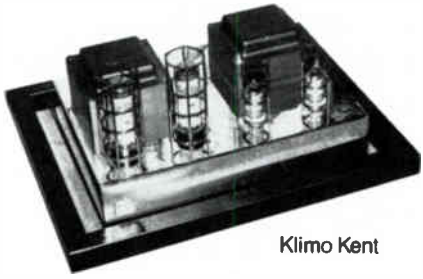
P.O. Box 5046, Berkeley, California 94705 (415) 843-4500

using tubes in Germany. Any high-end manufacturer worth his salt will tell you that the sound of live instruments is the standard against which he measures his products, but Klimo's claims carry extra credibility. His musical interests concentrate on classical music before 1800, especially baroque instrumental music. Not content with the available "software," and having met some musicians who shared his views and predilection, he teamed up with excellent *tonmeister* (recording engineer) Winfried Zahn to produce Edition Open Window, three records so far (see reviews in Vol.11 No.7, p.137), one of which won the prestigious German Disc Critics Award—for its musical excellence, a rarity among audiophile offerings. These are pure analog recordings, made through a singie tube mike, without signal processing, and recorded in natural settings, not studios. His own recordings and his long studio involvement have made Dusan Klimo intimately familiar with both live and recorded sound, and as a result he values neutrality as the essential requirement for a good audio component. He sees this as the opposite of a "philosophy" of sound, deploring the situation that a product's "story" sometimes is more important than how it actually sounds.

The company is small, most mechanical work being subcontracted out. Five employees, not all of them full-time, concentrate on R&D. Sixty percent of production goes into export, to 10 countries, the US importer being Audio Advancements (PO Box 15, Verona, NJ 07044).

All Klimo products use tubes, even the Ertanax tuner, which makes it the only all-tube tuner currently in production worldwide. Except for the Ertanax, which will be introduced in the US about the time you read this, all units feature beautiful, handcrafted wood chassis. Argo ($1350) is a tube pre-preamplifier. The traditional weakness of tubes in this application has been microphony. To overcome this problem (and to eliminate the need for a brutal selection of tubes), Klimo employs a Telefunken E288CC, a tube especially designed for audio (LF) applications, instead of the usual E88CC, which was originally an HF tube. Solid-state regulation has had to give way to tube regulation, a step claimed to give improvements in all the important details.

Klimo's most successful product is the Merlin preamp ($3500). The first thing you notice about it, apart from its stunning looks, is the power indicator: no LEDs here, a good old magic eye attests to the designer's love for tubes. There's nothing old-fashioned about the sound, though, Merlin being one of those designs that preserve the traditional strengths of tubes while rivaling transistors for bass firmness and treble accuracy. The RIAA stage is passive, and there is no overall feedback. W1MA caps are standard, but a special order can get you a version using Wondercaps throughout.



Klimo Kent

Kent is a 35W dual-mono power amplifier ($2550/pair) running in class-A up to 25W. It follows classic design ideas, but the use of top-quality modern components and some circuit refinements put it firmly into the modern age.

Lastly, there is the OTL ($6995/pair), as its name suggests an output-transformerless power amp (monoblock). This technique only really makes sense if you drive electrostatics, so it should come as no surprise that Klimo is also the German importer for Acoustat.

Both Burmester and Klimo serve to illustrate the first, more general conclusion about the German high end: that we spend just as much care on the exterior as on the sound of a component. You have to live not only with a component's sound, but also with its looks, so it might as well be good-looking. Immaculate finish is taken as given. German high end also provides an alternative to the more or less standardized looks of American amplification, most of which seems to hail from the Arnold Schwarzenegger School of Design: big, impressive, and ultimately boring.

Second, there is a willingness to listen to the customer. Burmester, especially, provides a custom service: within the limits of technological feasibility, you can get anything you want. But if you specify a special exterior finish, any German manufacturer will be happy to oblige. More next time.

When your horizons expand, so should your speaker system.

APOGEE DIVA VOTED "BEST SOUND" at the New York Stereophile High End Hi-Fi Show.

APOGEE DUETTA SIGNATURE VOTED "BEST SOUND" at the 1988 Santa Monica Stereophile High End Hi-Fi Show.

SIGNATURE SERIES

- NEW PROTECTIVE GRILL GUARD
- HIGHER EFFICIENCY

APOGEE ACOUSTICS, INC.

35 York Industrial Park, Randolph, Massachusetts 02368 U.S.A.
(617) 963-0124 • Fax #617-963-8567

USA: J. Gordon Holt

Robert Fulton, 1925-1988

Audio pioneer Robert W. Fulton, 63, founder of Fulton Musical Industries and Ark Records, died on September 13 of cancer. He is survived by his wife, Marilyn, two grown children, Richard and James, a sister, Mary, and a brother John.

Robert grew up in a musical family. His mother was a singer and pianist, his sister (now Mary Chamberlain) is a concert pianist well-known on the Minneapolis/St. Paul music scene, and Bob himself played a mean trumpet.

An audiophile since his early teens, Bob designed amplifiers while in high school and at the Illinois Institute of Technology. An active Baptist, he started recording local church and school music groups during the early '60s, and issued a number of discs on his Christian Dynamics label. In 1968, the name was changed to Ark Records, the label was "discovered" by the underground audio press, and Ark records soon became the standard by which the musicality of others were judged.

In 1975, Bob founded Fulton Musical Industries, eventually creating an extensive line of loudspeaker systems that were widely acclaimed for their naturalness. In subsequent years, he outraged audio conservatives by *demonstrating* that passive components like speaker cables, platter mats, and loudspeaker plugs aren't passive at all, that they *do* affect the sound. Conventional wisdom today, this was heresy in the '70s.

Bob was fiercely dedicated to music—the real kind, played on instruments—and he had the charisma of a true mahatma. He conveyed the impression that he alone, of all audio manufacturers, was seeking the true spirit of music, and this inspired passionate loyalty among his many followers. But you didn't argue with him, because you never knew when he was putting you on. He'd come out with some absolutely outrageous statement, and look at you completely straight-faced, waiting for you to take the bait. Then you'd see that twinkle in his eye that said "Gotcha!" A non-smoker and non-drinker, Bob was far from the stuffy moralist; he was fun to be around. He will be sorely missed.

After I heard of his death, I phoned FMI to get some details. I don't know who I thought would answer the phone, but I was shocked when I recognized Bob's voice. It was, of course, his answering machine, but I was so nonplussed I forgot to leave a message. After I hung up, still a bit shaken, I had a mental image of that straight-faced look and the twinkle in his eye that said "Gotcha again!"

Right on, Bob.

A NEW stand for the OLD QUAD

• RIGID • INFINITELY ADJUSTABLE FOR HEIGHT & TILT

In answer to numerous requests for a good stand for the original (classic) Quad we are pleased to offer the Q-2 Quad Stand. Rugged, tubular steel construction. Satin black finish. Can be filled with sand or lead shot. Comes standard with carpet-piercing spikes or optional Simply Physics' 2" Tone Cones. Easy assembly. Height adjustment from base: 0" to 18". Tilt adjustment from vertical: 0° to 15°.

Send check or M.O. for $195 + $10 S&H. Tone Cones are $75 additional.

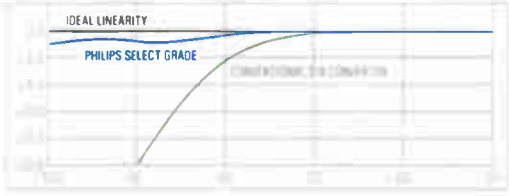
ARCICI MARKETING COMPANY
2067 Broadway, Suite 45, New York, NY 10023
Tel: (212) 724-6021

NATIONAL REPRESENTATIVES FOR:
Arcici, Inc., Convergent Audio Technologies, Inc., Dimensional Optics, Discrete Technology Labs, Inc., Morel Acoustics, U.S.A., Simply Physics, Inc.

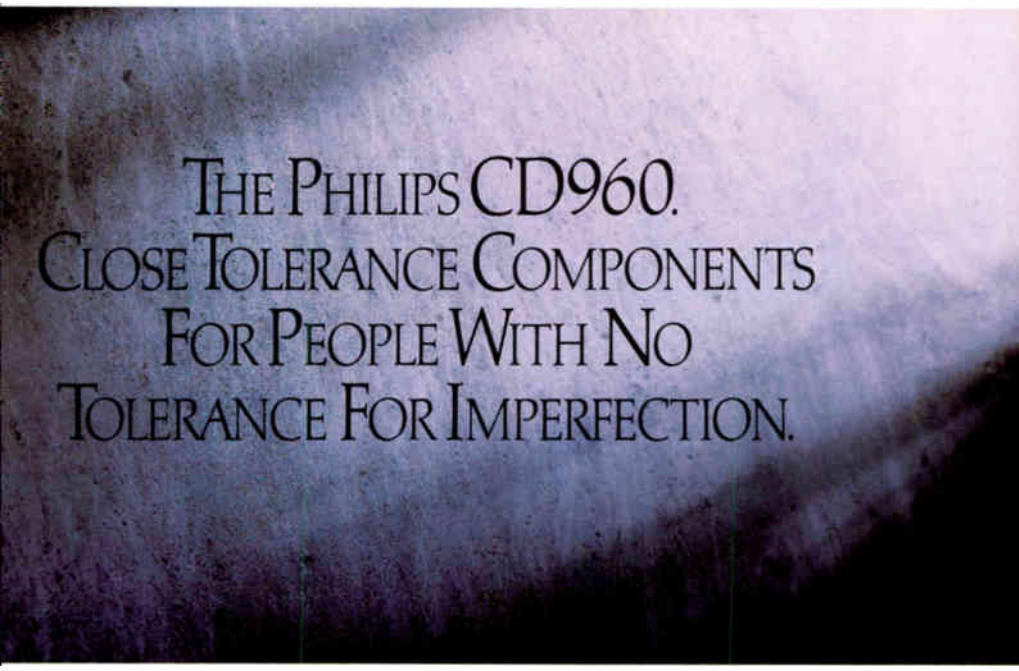
DEALER INQUIRIES INVITED

© 1988 Philips Consumer Electronics Company A Division of North American Philips Corporation

Philips superiority is clear, from this graph showing deviation from ideal linearity (dB) vs. recorded level (dB).



The heart of the CD960 is the Philips dual 16-bit D/A converter chip, the TD 1541 select version. So refined it flawlessly reproduces even the quietest passages with a clarity never before achieved. This exceptional D/A converter is mated to a Philips 4X oversampling digital filter for superior performance. Philips pioneered 4X oversampling and our experience with digital filtering is unequalled.



The CD960 compact disc player incorporates only the most uncompromising components because it has been designed by the world's most uncompromising audiophiles: Philips engineers. The same engineering experts who invented compact disc technology.

- Broadcast standard "Radialinear" transport. Philips commitment to exacting specifications is also evident in the CD960's mechanical construction. It features a high-grade cast alloy chassis. A linear-design motor was chosen to drive the radial pivoting arm for fast track access and exceptional resistance to external vibrations.
- Multiple power supplies. To eliminate cross talk, the CD960 incorporates no ess than four separate power supply sections. And the 100-watt main transformer s partitioned to further shield against magnetic and power line interference.

From the company that created the compact disc, Philips proudly offers the CD960 for those who won't tolerate anything less than perfection. To audition he CD960, call 1-800-223-7772 for your nearest Philips audio specialist.

WORLD-CLASS TECHNOLOGY. EUROPEAN EXCELLENCE.

PHILIPS

AUDIO MINIMALISM

Keith Yates looks at the impact of digital technology on that which audiophiles hold most dear: the purity of the signal chain

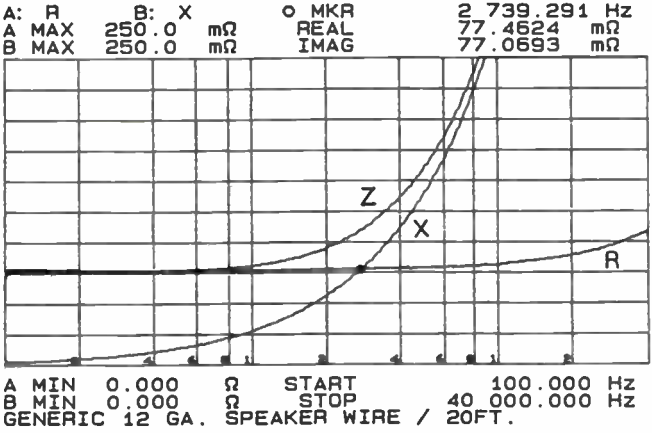
Five or six years ago I wrote a breezy, introductory-type piece on mid-fi "knob-surfing," winding up with a reprise on the old line that the number of the knobs, lights, and tattoos on the faceplate is often inversely proportional to the quality behind them.

A few weeks ago my store got in a knob-surfer's dream of a signal processor, and it reminded me, disturbingly, of that long-forgotten article. You see, after I'd listened to it carefully for a couple days, I began to question the no-knobs-is-good-knobs philosophy that underpins high-end audio—and what I have been calling *audio verite* for these last eight or nine years. Based loosely on its cousin in the film world,[1] the central premise of *audio verite* is a familiar one to *Stereophile* readers, *viz*, that playback hardware is properly judged by how little it does to the signal rather than how much; that nothing you can do to "enhance" a signal will be as musically compelling as just getting out of its way and letting it unfurl itself, unhindered by "enhancers" and unsmudged by the latest "miracle processor." In short, it is only through a steadfast commitment to minimalism that we can glimpse the fullness and magic of the real thing—live music. Although my *audio verite* is not yet 10 years old, the minimalist ethic itself has been around for decades: Indeed, for the last 30 years or so the preferred audiophile system has pretty much revolved around a simple manual turntable, a straight-line preamp, no-frills power amp, and a single pair of speakers.

That's a far cry indeed from those now-ubiquitous rack systems whose faceplates threaten to buckle from the knobs, levers, lights, and joysticks riddling their surfaces. Closer in spirit to the penny arcade than to the concert hall, these silkscreened monuments to electronic jiggery-pokery offer a nearly limitless scope for sonic mischief: Consider that out there in countless department stores, stereo chains, and living rooms lurks a veritable

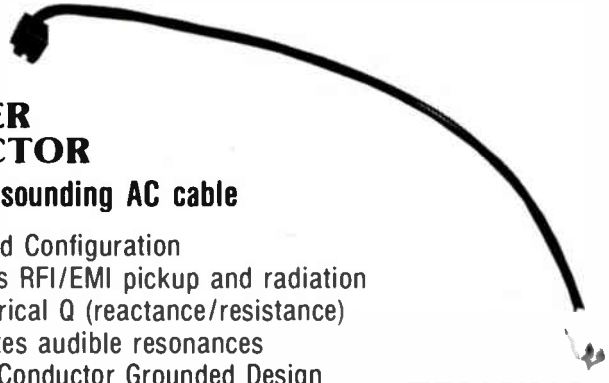
1 A French translation of the Russian *Kino-Pravda* "*cinema truth*," *cinema verite* originated with Dziga Vertov and others in the 1920s. It is based on the notion that the filmmaker's proper role is to record life in its rawest, freshest state—exactly as it exists and happens—without editorial packaging or manipulation. The *cinema verite* "trademark" is the hand-held camera and the absence of scripts, writers, stage, professional actors, "directors," or retakes. *Cinema verite* was an element of the American avant-garde film movement in the 1950s.

SEE THE EVIDENCE...HEAR THE DIFFERENCE



R - Resistance - The cable's tendency for power dissipation. The deviation is caused by skin and proximity effects.
X - Reactance - Opposition to changes in signal current.
Z - Impedance - The cable's total opposition to signal flow (Resistance + Reactance).

FINALLY . . . you can see why you hear such dramatic differences in audio cables. Their sonic effects are explained by their basic electrical characteristics. Ask us or your dealer for **"THE WHITE PAPER ON CABLES"** by **STRAIGHT WIRE** which contains and explains the measured data on many popular cables.



The POWER CONDUCTOR

The cleanest sounding AC cable

- Fully Shielded Configuration prevents RFI/EMI pickup and radiation
- Lowest Electrical Q (reactance/resistance) eliminates audible resonances
- SAFE Three-Conductor Grounded Design preserves component warranties

6 ft. - $149 10 ft. - $199

TRIAXIAL POWER CORD

Call or write for FREE BROCHURE on Interconnect & Speaker Cables

STRAIGHT WIRE
THE MUSIC CONDUCTOR

1909 HARRISON ST., HOLLYWOOD, FL 33020
(305) 925-2470

arsenal of analog equalizers, filters, expanders, compressors, sonic hologram generators, autocorrelators, aural rototillers, and sonic bilge pumps—all just waiting to sink a steely hook or a turgid hose into some nice fresh music.

The rather clear distinction between audiophile and nonaudiophile ethics is reflected in our separateness from the mid-fi culture. While hardly monolithic, we are our own "community," replete with creed (call it minimalism, noninterventionism, purism, or *audio verite*), vocabulary (soundstaging, grain, transparency), established icons (old Mercurys and shaded-dog RCAs; Goldmunds, WAMMs, and glowing tubes), disseminators (select salons and a handful of magazines), and at least an implied roster of who's who and who's not.

Oh, my, but how the times are a-changing! Our growing acceptance of digital technology portends a wrenching rethink of what we mean when we say we're "audiophiles." Within a few years the dividing line between "us" and "them" may well be blurred to the point where it could unravel us, at least as we are presently constituted. I am not leading up to a dat-ol'-debbil-CD tirade here: I did that five or six years ago, before the first wave of CD players darkened these shores, in what was part of the opening salvo that heaped obloquy on CD's "perfect sound forever."[2] What I'm here to say now is that the most salient feature of a digitized audio signal—to wit, the fact that it can be processed, equalized, expanded, compressed, filtered, stored, delayed, recirculated, and so on with utter sonic impunity—means that the relevance of minimalism will soon be, well, minimal. I think we're going to be twiddling a lot more knobs—and without guilt.

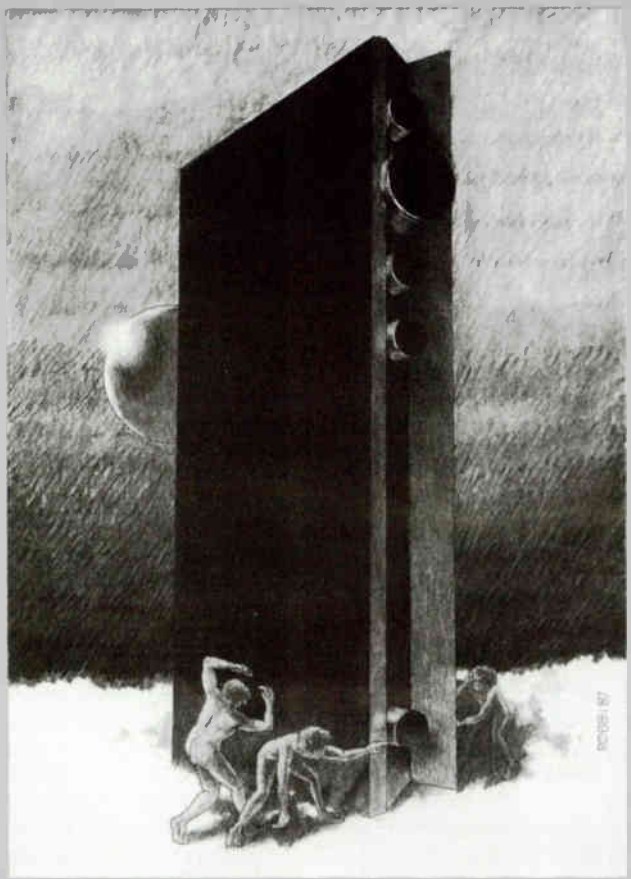
Let's back up. The notion that you can manipulate a signal without somehow mangling it is a hard one for most of us to swallow, accustomed as we are to a world in which we can't even pass a signal down three feet of good wire without somehow losing precious musical information along the way. In analog, there is a price to be paid for each of our little detours through ancillary components, or even a single capacitor or connector. That price is exacted in the form of increasing the background noise, blurring transients, skewing tonal balance, smudging the rich silent spaces between notes, warping dynamic scaling, bleaching out harmonic structures, coarsening instrumental textures, disrupting imaging, collapsing soundstages, bludgeoning the hall's delicate reverberant tail, and so on—and all of it moves us further from, not closer to, the immediacy and tactility of the real thing. That you-are-there freshness is soon displaced by a good-gawd-it's-gone vagueness. In short, there's no such thing as a free ride in the analog world: Every time you want to try the roller coaster or the merry-go-round, you dig into your musical pocket again, and often deeply.

Amounting to a stream of ones and zeroes, or on and off pulses, a digital signal can readily be manipulated without generating *any* untoward side effects—no blurring, distorting, skewing, smudging, corrupting, *nothing*. Apply a mathematical formula or algorithm to that bit stream and what you get is just a different stream of ones and zeroes; note carefully that in digital there is no such thing as a two or a three or anything else that could be considered an unintended byproduct. The new stream of ones and zeroes is converted into analog and the operation is complete. Surely, with digital signal processing (DSP) the potential for sonic mischief remains as high as with the mid-fi rack system: You may alter the signal in ways that do violence to both the letter and spirit of the performance. But it is necessary to distinguish between pure and simple bad musical taste, which has been around for as long as there have been logs to beat on, and what have been the noisome and inescapable side-effects of analog signal processing, which functionally disappear in a purely digital topology. If not quite a free ride, this new digital adventure is closer to buying a master pass to the whole amusement park: You pay the one-time entrance fee (read, whatever might be lost in A/D and D/A conversions), then climb aboard whichever rides spin your prop.

"Ah," I hear the confirmed minimalists pipe up, "but how much was that entrance fee again?" Good question. In a way, nothing: You're paying it now, every time you play a CD, a digitally recorded, mastered, or processed LP, or—surprise!—many of your treasured "analog" recordings which, usually unmentioned in the liner notes, relied on digital processing (probably *cbez* Lexicon) in the studio to get that nice sense of depth, ambience, and space. Which brings me back to the component that

2 See my "Slipped Discs," *Sacramento Magazine*, May 1983; "Digital Discontent," *Rolling Stone*, September 15, 1983; and "Digital Digs In," *Gentlemen's Quarterly*, May 1984.

Prehistoric Pre



YOUR INSTINCT WILL TELL YOU IT'S RIGHT
YOUR EXPERIENCE WILL TELL YOU IT'S IMPOSSIBLE
THE ARAGON 24K PREAMPLIFIER

You hear the music, the instrument timbre, the depth of stage, and you know it's right. The instinctive response to sound and music that existed from the beginning tells you so.

You see the metal sculpture, the perfectly machined metal planes, the ergonomics of the controls, and you know it's right. The instinctive response to form and function that existed from the beginning tells you so.

You know the cost. Experience tells you it's thousands of dollars.... a price of under a thousand dollars you know is impossible.

When the impossible becomes reality, history is made. The Aragon 24K Preamplifier.... don't take our word for it — Experience it for Yourself.

MONDIAL DESIGNS LIMITED
Two Elm Street, Ardsley, New York 10502 • (914) 693-8008

sparked this rethink—Lexicon's new "environment" processor, the CP-1. It enables the user to retrieve or digitally generate spatial cues and steer them to the parts of the room—front, sides, and rear—where they properly and naturally belong. Used sensibly, it already represents a significant advance in bringing the concert hall into the living room. Doubtless, future generations of DSPs from Lexicon, Yamaha, and others will pack more processing power for more sophisticated algorithms, more memory registers for storing the user's own customized programs, and perhaps a calibration program (noise source, microphones, diagnostics, and signal shaping) to tailor your system to your acoustical environment.

It won't stop there. Digital equalization is already turning up in select recording studios: "Flim & the BBs" engineer Tom Jung of DMP is experimenting with various prototypes in place of his usual bank of Cello Audio Palettes. Sometime fairly soon there will be audiophile-grade processors for touching up or de-noising old recordings, mollifying an aggressive tweeter or power amp, taming musical crescendos to keep late-night peace with the neighbors, fine-tuning pitch to match your piano's, dynamically applying Robinson-Dadson curves to preserve correct timbre at lower volume levels, and otherwise massaging music in ways that heretofore set off a jerking fit among our minimalist knees.

If today's audiophile clings to minimalism in this dawning DSP age, he or she will be compelled to do so on grounds other than sonic purity and/or musical realism—say, nostalgia or some moral imperative. Nostalgia is an end in itself, not a means to somewhere else like, say, believable sound; thus, it's a waste of time to argue about it. Morality? We probably won't be spared the pitiful and divisive spectacle of a few audiophile "opinion leaders" mounting their hind legs and braying that minimalism remains relevant because it is karmically or astrologically wrong to tamper with what musician, conductor, composer, and engineer have so painstakingly wrought. If you're ever tempted to make or accept that plea, you might wish to remind yourself that, a) the recording was almost certainly digitized to begin with, meaning the signal has no analog virginity left to protect; and, b) the musicians, conductors, producers, *et alia* would likely consider you daft to leave the playback totally as is, when you can get a better "fit" to the behavioral idiosyncrasies of your room and system without losing musical information or overlaying any unwanted artifacts. Maybe tomorrow's minimalist will proclaim his system so good that DSP cannot improve it; if so, I'd like to hear those WAMM-slaying speakers, and acoustically map that private little Carnegie Hall of a listening room.

Most of us arrived at audio minimalism because bitter experience argued that the alternatives bled the very life from the music we cherish. We know minimalism is reliable because it has rarely led us to plainly unmusical sound, and often to extraordinarily compelling sound. Our future as music lovers, however, lies not in minimalism, but in something very close to its opposite—the maximum exploitation of digital processing power. And although a fair number of our present club members may drop out in paroxysms of ideological revulsion, the rest of us will remember that minimalism was never more than just a suitable and temporary means to an end. And if the appellation "high end" describes a musical result, not a code of behavior, then we won't be abandoning the high end, we'll be elevating it. We may be employing ten-channel systems, while our mid-fi friends use but four; we may have five or six outboard digital processing devices driven off our computer keyboards, while the "non-audiophile" has but one or two and fumbles with a simple handheld remote; our microchips and software code may be designed by the "Einsteins of silicon," while our neighbors probably settle for cruder, offshore knock-offs; and we'll probably gravitate to some familiar high-end names—Levinson and Krell have been pouring serious money and talent into digital; Theta is already out with the DSPre—while the herd makes do with its Kenwoods and Fishers.

Admittedly, it is more than a little disturbing to contemplate viewing our prized recordings not as archives to be revered, but as raw stuff to be processed and molded to suit our purposes. And it is more than a little disturbing to contemplate elevating hardware to "audiophile" status not by dint of how little it does to a signal, but by how much. But technological upheavals are often disturbing affairs, and as the dust settles on this one, we'll have taken a few steps closer to what our minimalism was all about in the first place. S

ES

After inventing the Digital Compact Disc we weren't about to entrust its reproduction to anyone else.

© 1988 Sony Corporation of America Sony The Leader In Digital Audio G Chassis Remote Commander and Super Bias are trademarks of Sony

The New Sony ES Series: Superior Audio Components To Which We Proudly Entrust The Reproduction Of Digital Sound.

As the inventor of the Compact Disc format, Sony continues to expand the limits of digital reproduction. Yet, the Sony ES engineers have been equally conscientious about designing analog components that fully realize the potential of the digital era. This uncompromising commitment defines the entire ES Series.

The CDP-707ESD:
Simply stated..."the reference against which to judge" others.–*Len Feldman, Audio Magazine.*

The CDP-707ESD is the world's first CD player to incorporate dual 18 bit linear D/A converters, along with a proprietary 8X oversampling digital filter. This technology brings the listener closer to the theoretical limits of digital performance, and delivers more faithful reproduction of musical depth and detail.

And there's more to the ES Series than the CDP-707ESD, and its host of sophisticated features. You'll find our advanced 8X oversampling filter technology in the less costly CDP-507ESD, as well as the CDP-C15ESD, which combines 18 bit linear D/A converter performance with 10-disc changer convenience.

The STR-GX10ES:
The quality of separate components in a fully integrated design.

Traditionally, few receivers have offered the performance necessary to meet the demands of digital sources. That's why Sony created the STR-GX10ES, with 150 watts-per-channel. It, along with our full line of ES receivers, achieves unsurpassed musicality, thanks to a unique Spontaneous Twin-Drive amplifier stage. Add such refinements as discrete outputs and a non-resonating G-Chassis™ design, and you have accurate reproduction of music detail and dynamics.

The STR-GX10ES also comes with a Remote Commander™ unit that allows for control of virtually any infrared audio or video component, regardless of brand.

The TC-WR11ES:
Finally, a level of performance never before achieved in a dual-deck design.

Accurate reproduction of digital source material places a heavy burden on the finest analog cassette decks. A burden compounded in dual-well designs, where compromises are often made for operating convenience.

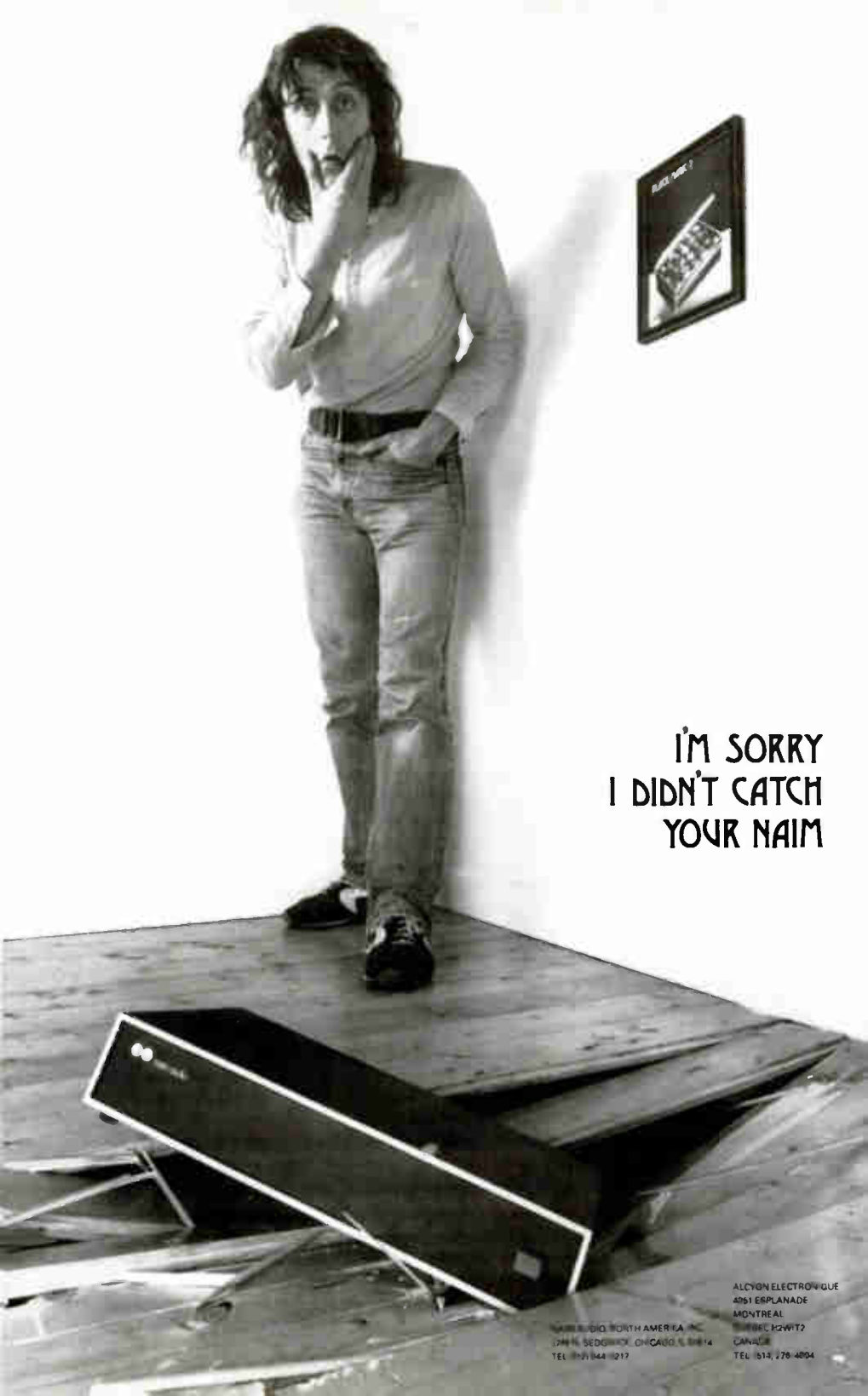
The uncompromising new Sony TC-WR11ES rises to the digital challenge by combining superb music reproduction with ultra-sophisticated operations. With a unique 210 kHz Super Bias™ circuit, the TC-WR11ES achieves clean, transparent recordings with the same astoundingly uniform 20-20,000Hz (+/– 3dB) frequency response found on all ES cassette decks. Add to this the patented Laser Amorphous heads and 4-motor transport, and the TC-WR11ES demonstrates the technical refinement needed for the digital age.

The Sony ES Commitment.

The Sony ES Series is a skillfully crafted line of components, all doing full justice to the ES engineers' exceedingly high standards. This excellence is also reflected in the 3 year limited warranty that backs every model (see your authorized Sony ES dealer for details).

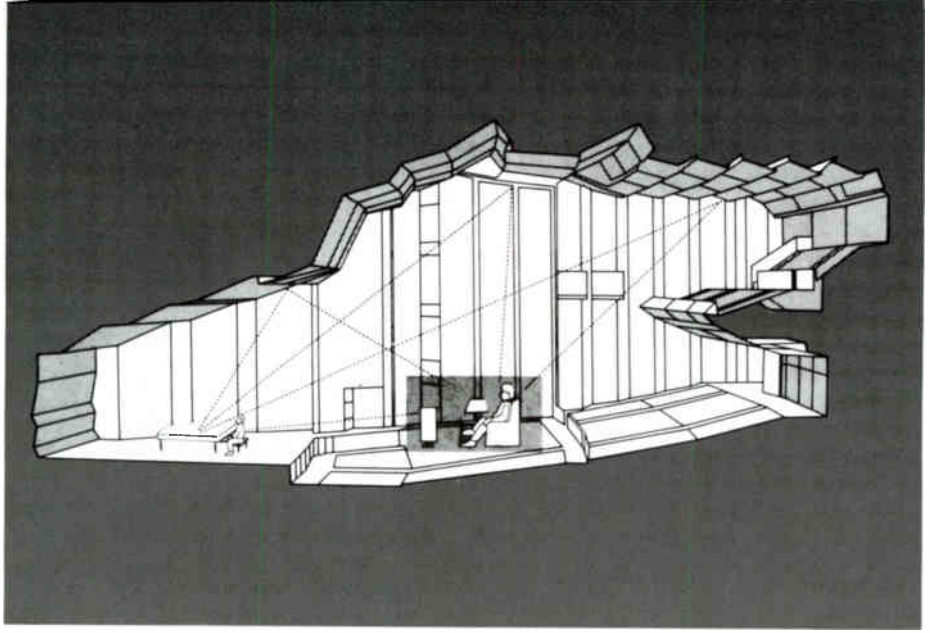
For information on where you can audition the full line of Sony ES components, call 201-930-7156.

ES SONY
THE LEADER IN DIGITAL AUDIO™



NAIM AUDIO NORTH AMERICA INC.
[illegible] CHICAGO IL [illegible]
TEL [illegible]

ALCYON ELECTRONIQUE
4061 ESPLANADE
MONTREAL
[illegible] H2W1T2
CANADA
TEL 514, 276 4004



EXTRACTION VS GENERATION

Robert A. Katz takes an alternate look at ambience boxes

Many years ago I bought the first model of the Audio/Pulse ambience synthesizer. Like many audiophiles, I was convinced (and still am) that the standard two-speaker stereo experience provides an unsatisfying concert-hall impression. But the Audio/Pulse didn't remain long in my stereo system. At best, the unit provided a fair reproduction of the sound of my upstairs bathroom, topped off with a nasty flutter echo. I already get that sound every morning in the shower.

Between 1973 and 1978, after escaping the execrable sound of the Audio/Pulse, I auditioned various other "ambience generators" but never bought another, finding that not a single home unit designed during that period had sufficient echo density or freedom from coloration to sound decent. Sure, some sounded pretty good when masked by typical orchestral music emanating from the front speakers, but when I played such music as solo harpsichord, solo voice, or almost any music with spaces in it, the reverberation was revealed to be what it really was—*artificial*.

Then, at a New York Audio Society Meeting, former president John Marovskis (designer/developer of the Janis subwoofer) clued me in to a wonderful process he was using called

ORIGINAL MASTER RECORDINGS™

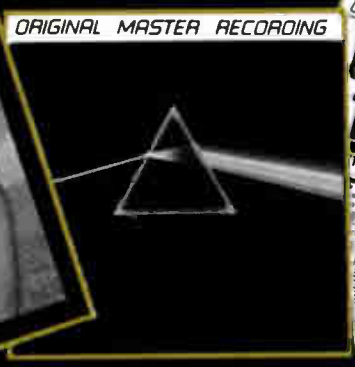
ULTRADISC™

The 24K Gold Limited Edition Collector's Series

The most advanced compact disc in the music industry today! Since 1983 Mobile Fidelity Sound Lab has been committed to creating the ultimate audiophile version of commercially produced compact discs. The years of research and investment have resulted in the development and release of the ULTRADISC compact disc. The 24K Gold ULTRADISC is a dramatic breakthrough in the consumer music market.

Capable of generating music far above current audio standards, it is setting new highs in listening pleasure. **Current releases on ULTRADISC:** Pink Floyd – *The Dark Side of the Moon*, Huey Lewis & The News – *Sports*, Joe Jackson, David Grisman, Power & Majesty, Jethro Tull, and The Allman Brothers. **Upcoming releases include:** Blind Faith, Cream, Moody Blues and more.

The Audiophile Standard



For a complete, FREE catalog
write or call TOLL FREE 800-423-5759

mobile fidelity sound lab
a division of MFSL, INC.

1260 Holm Road • Petaluma, CA 94952 • 707-778-0134

"ambience extraction," also known as "ambience recovery" or "ambience decoding." As John explained it, his ambience extractor uses a single wide-bandwidth delay line of approximately 30 milliseconds (to the effects speakers). There is no recirculation or multiple echo or reverberation effect; that is, no artificial ambience generation. The ambience extraction device works strictly according to the psychoacoustic Haas effect. In other words, a correlated sound (such as the direct sound from a musical instrument) leaves the front speakers and arrives at the listener's ear. Then, 30ms later, the repeat of that initial sound arrives from the location of the side speakers. Fortunately, the Haas effect lets the listener totally ignore the second sound; his ear/brain successfully locates the source of the sound at the front loudspeakers. The net result is an apparent increase in sound level but no change in image location. The Haas effect remains valid for delay times up to about 40ms (depending on the percussive nature of the material), and the effects loudspeaker may be up to about 10dB louder than the main speakers. If these limits are exceeded, the fusion breaks down and the listener hears a discrete echo from the effects loudspeaker(s).

But what does the Haas effect have to do with ambience? Well, the delay line is quite ecumenical—it treats the direct sound and the ambience in exactly the same way. Except, since ambience is *uncorrelated*,[1] the ear/brain combination does not recognize its delayed replica as a distinct repeat, the ambience is not masked, and the brain detects (extracts) the ambience coming out of the delayed loudspeakers.[2] It turns out that the ambience-extraction ability of the brain is a very powerful working mechanism; unfortunately, only a few manufacturers have taken advantage of it, and compared with big companies like Yamaha, they are either on the fringe of the marketplace or out of business (*eg*, Benchmark, with its much-praised ARU).

If ambience extraction boxes work so well, why are they scarce as hen's teeth, while ambience generators, even the bad-sounding ones, are sprouting up on every corner? My explanation is that it is very easy to sell and demonstrate the capabilities of an ambience generator to the average audio customer, who hasn't been to a live concert in years. The typical consumer can't resist the hyped-up sound which the generator boxes are capable of producing. On the other hand, Francis Daniel (creator of the Benchmark ARU) lamented that he could hardly find a dealer capable of adequately demonstrating the subtleties of ambience extraction. Francis's box did not call attention to itself, it just reproduced a natural ambient field when playing well-recorded stereo records. Nowadays, with the popularity of Dolby surround boxes, Benchmark could stress its audio-for-video capabilities, and let thousands of potential video-oriented sales support the few sales to quality-minded audiophiles. But the box was very expensive to produce, and Benchmark will probably not go back in business.

The Marvels of the Benchmark

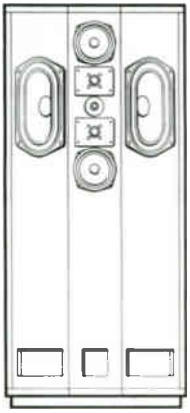
The unit John Marovskis told me about was a Sound Concepts modified for extended bandwidth (about 12kHz) and no recirculation. These are two of the keys to ambience extraction. If the Benchmark had not appeared I probably would have bought a Sound Concepts and modified it. But the Benchmark ARU (ambience recovery unit) had everything: six outputs, 12kHz bandwidth, and a L-R (Hafler) matrix, another important contributor to its sound. Its two rear outputs were derived from the mono L-R signal, but Francis inserted a polarity-inverting amplifier on the left rear output, having discovered that placing rear loudspeakers out of polarity (phase) with each other enhances the ambient effect.[3] Its two stereo "side" outputs were simply delayed replicas of the front left and right channels. These, plus other features (including remote control), helped to justify the Benchmark's original premium list price of around $900.

The Benchmark box worked very well in my system until I started playing Dolby Stereo movies at home. Its signal/noise ratio, which

1 When used in audio, the term "cross-correlation" is a mathematical way of describing the degree to which a sonic event is related to another event occurring at a previous or succeeding moment in time. Ambience has a very low degree of cross-correlation. Mathematically inclined readers will find a discussion of cross-correlation in Madsen's article in the October 1970 *JAES*.

2 Bill Sommerwerck describes the brain's ability to extract ambience in his June 1987 DSP-1 review. But since he prefers ambience generation to extraction, I have provided my own explanation of the latter.

3 He could have specified that the user install one loudspeaker out of polarity, but Francis did not want to complicate the instruction manual.


REFERENCE STANDARD TLS


MONITOR TLS


STUDIO 3 TLS


STUDIO 2 TLS


SUPER-COMPACT


COMPACT

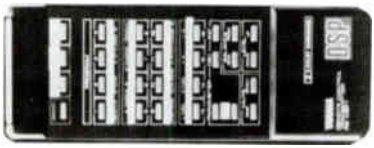
bass obbligato . . .

Developing a driver for optimum performance under transmission-line loading requires lateral thinking. The TDL bi-radial unit has the power handling to withstand this acoustic environment, yet the speed to provide more articulate bass. As John Borwick remarked in 'Gramophone', "the effect with programme material containing really low frequencies is impressive and musically rewarding", whilst "the bass had a tightness which added definition all the way up the scale . . .". Also reporting on the TDL Monitor, Martin Colloms in 'Hi-Fi News' stated that "the bass remained clean at full power, and well differentiated from the mid and treble. Cathedral organ could be reproduced at impressive levels, with fine weight accorded to the pedal registration; but by contrast, its reggae performance was not to be sneezed at." In conclusion, he suggested that "if extended bass is important to you, then you owe it to yourself to hear this speaker".

TDL ELECTRONICS **transmission line speakers**

Transducer Developments Limited
PO Box 98 High Wycombe Bucks HP13 6LN England Tel: (0494) 41191 Telex: 838050TDL-G Fax: (0494) 461803
652 Glenbrook Road Stamford Connecticut CT 06906 USA Tel: (203) 324 7269 Telex: 643678 CONSORT Fax: (203) 356 1586

Yamaha's seminal DSP-1



was good enough for classical music, proved to be inadequate for movie sound effects, which are played at a higher level than ambience. After those jet planes stopped flying around my living room, I noticed a field of hiss, unfortunately not part of the intended sound effect.

The Rise (and Fall) of the Phoenix

I've finally settled on a little-known device costing only $250. It is the Phoenix Systems P-250 Delay Enhanced L-R Decoder—and that's exactly what it does. Phoenix Systems used to sell it as a kit, but since designer John Roberts sold Phoenix to Rhoades, I don't know what will become of that company. That's sad, because the box is cheap, very quiet, and has almost a 20kHz bandwidth. All in all, the Phoenix is a good compromise for the audiophile who wants the best in ambience extraction and also watches Dolby Stereo movies. You'd have to spend over $800 to get a superior ambience decoder, such as the Yamaha DSP-1 in "Surround 1" mode. A better unit for the Dolby films is the Shure HTS, whose extended logic circuits exhibit great channel separation, but poor ambience extraction, in my opinion, compared with the other boxes.

Listening tests: Yamaha's DSP-1 as Ambience Generator

Which brings us to a sonic evaluation of the Yamaha DSP-1, recently obtained on loan. Bill Sommerwerck has already described the unit's superior ambience-generation capabilities in his review last June. I was familiar with the DSP-1's potential for reverberation synthesis, having used its first cousin, Yamaha's "professional" SPX-90, in the recording studio. Frankly, the experience with the studio unit prejudiced me against the Yamaha. In one 24-track studio I have numerous digital reverberation processors, many costing over $10,000. One of them, Lexicon's new model 480, uses 18-bit processing and sophisticated room modeling to produce a very convincing ambient field. In that studio, we only use the SPX-90 for special effects: flanging reverb, multiple echo, pitch change, and so on. As a standard reverb, however, the Yamaha's artificial space is less convincing than that of the Lexicon, which in turn is still distinguishable from a good acoustic chamber.

In studio use, we depend on a reverberation generator to create the entire ambience of the recording,[4] but in home use (as BS stressed), we will be using the Yamaha in a subtle manner to supplement the natural reverb already on the recording and spread it around the space of the listening room. So I tried not to be prejudiced during listening tests of the DSP-1's ambience generator, hoping that its sound would be masked by the natural ambience on the original recording.

After a few hours of listening in ambience-generation mode, I found the Yamaha to be a mixed bag—its coloration is successfully masked when playing large orchestral works, but on much chamber and folk music, that distinctive Yamaha sound could not be escaped, no matter how it was adjusted. In fact, I cannot agree with BS that it is worth an audiophile's

4 This is generally true for pop music recording, where we usually use multi-mike techniques, and (hopefully) less true for classical music recorded in natural spaces with simple mike techniques. Bernstein's recent *West Side Story* recording was made in a relatively dry studio with multiple microphones and artificial reverb. Do you think this a natural-sounding recording?

Ride with Valkyries, or Soar on CLS

Audio Research
Audible Illusions
B & K
Cal Audio
CWD
Eminent Technology
GNP Loudspeakers
Klyne
Luxman
Martin-Logan
Magnum
MIT
Mitsubishi
Monster Cable

GNP AudioVideo doesn't sell ordinary loudspeakers – mostly because we expect speakers to produce the impossible: the sound of *LIVE* music. Ordinary speakers produce sound that's clouded and muddied. We are seeking sound that's faithful to every delicate nuance of melody, harmony, tempo, rhythm, timbre, and dynamics. We're so picky, we only carry two brands of high-end speakers: GNP Loudspeakers and Martin-Logan.

If we at GNP are a little more critical of loudspeaker performance than other hi fi stores, it's only because we have been designing, building and marketing truly state-of-the-art dynamic speaker systems for eight years.

The GNP Valkyrie has gained recognition as a world-class performer from independent tests conducted by several of the more respected hi fi journals. Its modular design gives the advantages of driver isolation and cabinet optimization. Unique to the Valkyrie is the "Lead-lined" midrange enclosure which eliminates cabinet resonances through the most critical frequencies. The result: sound that's smooth and dynamic without the signature of a wood enclosure.

The Valkyrie is so good that for years we were unable to find another speaker company with products that offered sonic advantages. Recently we discovered Martin-Logan, a company that designs and builds just what we were looking for. Their CLS is a full-range electrostatic that offers the *ultimate* in musical transparency. The CLS is a classic – a standard of musical accuracy, electro-mechanical simplicity, and physical beauty.

Nakamichi
Nitty Gritty
Proton
PS Audio
SME
Stax
Threshold
VPI
Well Tempered

So, it's easy for Robert Grant to smile — as a consultant for GNP AudioVideo, he has the best electrostatic and dynamic speakers to recommend. He has a superb turntable technician (Brooks) to set up the best turntables. He has the finest electronics to sell, not to mention CD players and cassette players. Add to that the finest cartridges, cables and accessories and it's easy to see why Robert loves his work.

We're open seven days a week for your convenience.

GNPAudioVideo **1244 E. Colorado Bl., Pasadena, CA 91106 (818) 577-7767**

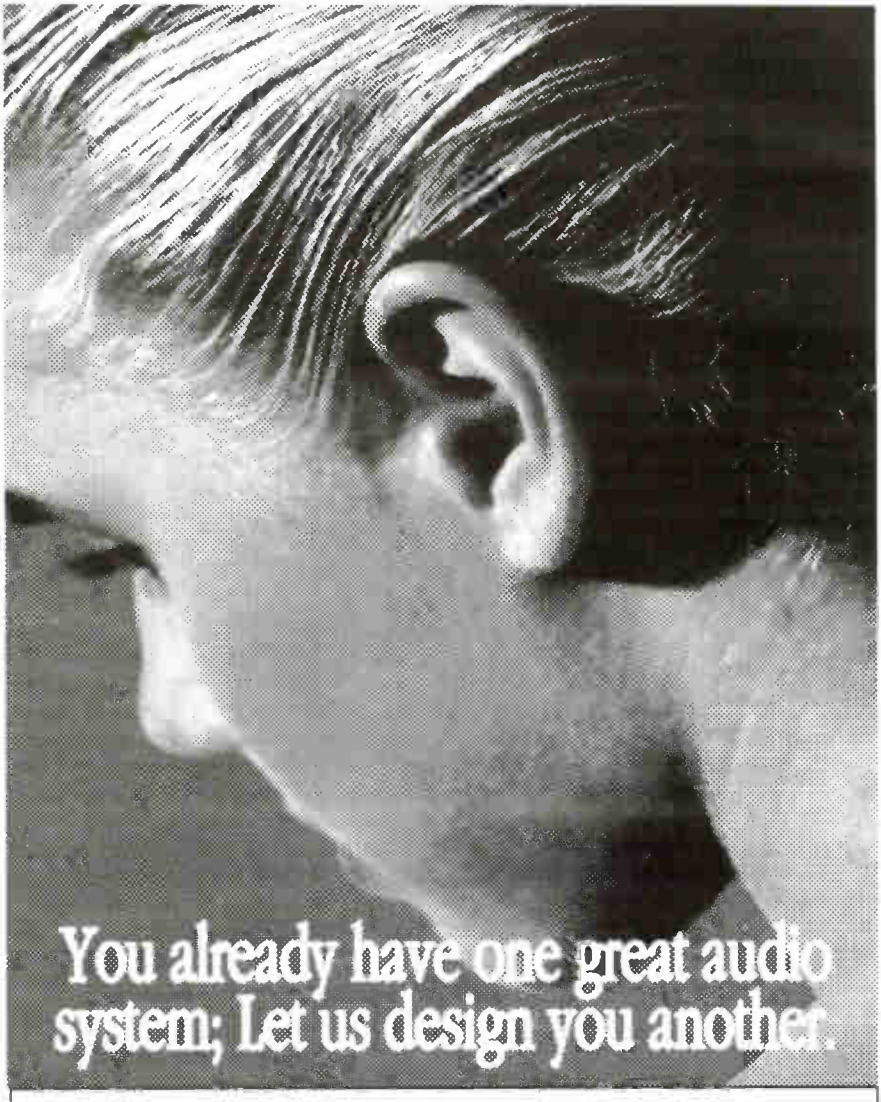
time to fine-tune hundreds of potential Yamaha permutations until it closely matches the ambience on an original recording. This strikes me as audiophile masochism, especially when there is an alternative available: ambience extraction.

By the way, even in ambience-generation mode, the Yamaha already provides a degree of ambience extraction by virtue of the initial delay. In other words, artificially generated ambience always gets a free ride on the coattails of extracted natural ambience. How well the two ambiences mix is a function of how well you can adjust the Yamaha.

The DSP-1 as an Ambience Extractor

Experience with the Benchmark and the Phoenix boxes has taught me that if a single initial delay enables ambience extraction, a few properly timed additional delays can increase that ability.[5] So I was excited by the potential of the Yamaha for ambience recovery, provided that a program setting could be found to accomplish it. Not to keep you in suspense, I am pleased to announce that the Yamaha DSP-1 turns out to be a formidable ambience decoder. Its well-engineered, wide-bandwidth digital delay provides purer sound, and freedom from aliasing and low-frequency IM distortion products. The latter problems were

5 Recent psychoacoustic research has revealed that the Haas effect can be extended to more than 60-90ms with carefully placed delays at approximately 25ms intervals.



PARIS AUDIO

For people who take their music seriously.

Classé Audio, Linn, Duntech, Apogee, Meitner, KEF, Mondial, Nakamichi,
Meridian, Lurne, Accuphase, Stax, Quad, And much more.

Woodland Hills • 20037 Ventura Boulevard (at Winnetka) • 818/ 704-7677
West Los Angeles • 12401 Wilshire Boulevard (4 blocks west of Bundy) • 213/ 820-2578

occasionally audible in the Benchmark and the Phoenix.[6]

Recommended DSP-1 Set-up for Ambience Extraction

If you follow this recommended set-up, the only active adjustment during use will be the ambience volume! First, for best ambience extraction, use the six-speaker mode (four speakers also work, but you'll never know what you're missing). Next, use a program that has a L-R (L minus R) matrix. This helps to keep center-channel information out of the effects speakers, increasing your ability to raise their volume without hearing an echo effect. The L-R signal also contains a large proportion of ambience. DSP-1 programs that use L-R matrices are Dolby Surround, Surround 1, and Surround 2. I would have liked to try the "Presence" program, which supplies four independent delays to the effects speakers, but that program lacks a L-R matrix. Don't bother with the Dolby Surround Program, which has a 7kHz cutoff in the surrounds as well as a modified Dolby-B chip. In fact, I don't even recommend the Dolby program for use with the movies; you'll discover wonderful natural ambience in your film music if you use the Surround 1 program instead.

Our goal is to regulate the Yamaha's Surround program for minimum artificial ambience effect. To that end, set the hall type to "On Stage" (which primarily contains early reflections), liveness to about 0.4 (anything lower and the rear speakers produce a phasey effect), and room size to minimum. I discovered that the artificial stereophonic effect of Yamaha's left and right effects speakers is superior to the Phoenix's or Benchmark's monophonic output. At the minimum settings, the DSP's pseudo-stereo outputs produce a spatial spread without significant artificial coloration. (The Shure HTS uses similar processing to create its stereo surround outputs.) Because of the Yamaha's pseudo-stereophonic processing, it is no longer useful to connect the rear speakers out of polarity with each other.

The high-pass filter should be set to Thru (flat). Set the low-pass filter to somewhere between 12 and 16kHz, depending upon the treble response, placement, and orientation of your effects speakers (I have great success bouncing my rear-side speakers off the ceiling). Adjust the initial delay to about 30ms. However, if the effects speakers are much farther from you than the main speakers, subtract 1ms for each foot of difference. Be approximate; this is not a critical adjustment (*eg*, if main speakers are 8 feet away and effects speakers are 12 feet away, use 26ms delay).

Interconnect Method

I agree with BS about the recommended interconnect method of the DSP: You may have sonic reservations about passing your preamp's signal through something called "Yamaha" on its way to your Krell amplifier. One way to get around that is to use a preamp with two main outputs, feeding one to the Yamaha and the other to your power amp, thus losing the remote control's ability to control the main speaker level (a small compromise; plus, you won't need the optional four-channel remote unit). Lacking two main outs, you can build a high-quality Y-adapter box, using the most esoteric cables, of course. You should then be able to sleep at night knowing you haven't compromised your sound.

The Listening Experience

With the above settings, the Yamaha DSP-1 decodes the ambience in the original recording and spreads it around the listening room in a very natural manner. You will truly be able to discern the quality of the performing hall. When playing good recordings, I found the effect to be much more pleasing than any of the ambience-generation modes of the unit. In addition, it is possible to switch from chamber music to pop, orchestral, folk, or whatever, without having to reset numerous Yamaha parameters, a distinct advantage of ambience extraction mode. Just adjust volume to taste; one way to determine a proper ambience level is that it is unnoticeable. . .until you turn the unit off or mute its output. This ambience is so seductive that muting the DSP will cause withdrawal symptoms. Then you will know you have joined the ranks of audiophiles addicted to ambience extraction.[7] **S**

6 I found that fast high-frequency transients (castanets, applause) could cause the Benchmark to produce low-frequency IM products. The Phoenix's problem is less evident, and can be audibly eliminated with a graphic equalizer.

7 Recommended further reading: "Extractions of Ambiance Information from Ordinary Recordings," by E. Roerback Madsen, *JAES* October 1970. Explains the Haas effect, and makes a scientific case for ambience extraction using the methods outlined in this article.

Reserved for purists,

At this level, beyond mere commercial practicalities, Infinity seeks to find its own: The few for whom music is an obsession, for whom price is no object in attaining the absolute perfect re-creation of sound.

The speaker system we've named the Infinity Reference Standard Beta was really built to prove to ourselves, after building the legendary $50,000 Infinity Reference Standard V, that lightning could strike twice in the same place.

We designed the IRS Beta as a true point source, capable of generating an incredible 15Hz to 45kHz response with effortless (and seamless) musicality.

Four 12-inch injection-molded polypropylene/graphite woofers are servo-controlled for state-of-the-art bass reproduction.

A new lower-midrange driver, the Large-EMIM, was created. This push-pull planar driver reproduces the critical frequencies from 70 to 700Hz—that vital area containing most of the musical fundamentals (an area ill-served by virtually all speaker designs, with attendant loss of the natural warmth of instrumental voices).

Two L-EMIMs optimally cross over to an improved EMIM with new high-gauss neodymium magnets and lighter diaphragm, for impeccable midrange transient response and detail.

And an EMIT and SEMIT (Super EMIT) produce the upper octaves and overtones to 45kHz with a transparency and openness that is airy and "live."

In total—a speaker of unprecedented overall musical accuracy. The IRS Beta. A speaker whose performance

extremists, and the obsessed.

can leave you breathless.

Its cost is under $11,000.

We also offer the equally incomparable IRS Gamma and IRS Delta, at about $7,000 and $5,500 respectively. Both are two-speaker versions of the Beta, although the Delta does not include a servo-control unit, which can be added later to upgrade the Delta into a Gamma.

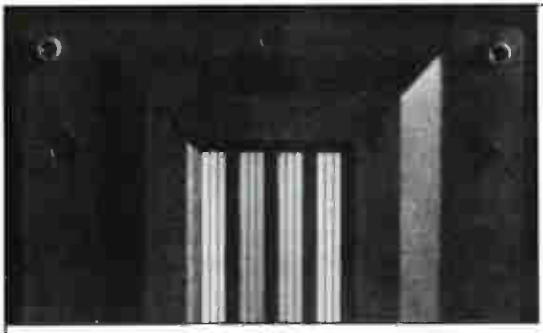
We encourage you to audition the remarkable IRS Beta (as well as the Gamma and Delta) at any one of a select group of Infinity dealers catering exclusively to the audiophile.

To the dedicated—even obsessed—lover of music, it is the stuff dreams are made of.

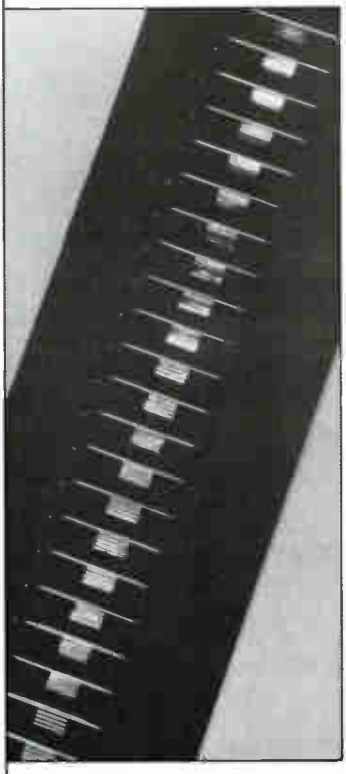
Infinity®

We get you back to what it's all about. Music.

© 1988 Infinity Systems, Inc. 9409 Owensmouth Avenue, Chatsworth, CA 91311, (818) 709-9400 A Harman International Company In Canada: H. Roy Gray Ltd. 14 Laidlaw Blvd., Markham, Ontario Canada L3P1W7, (416) 294-4833

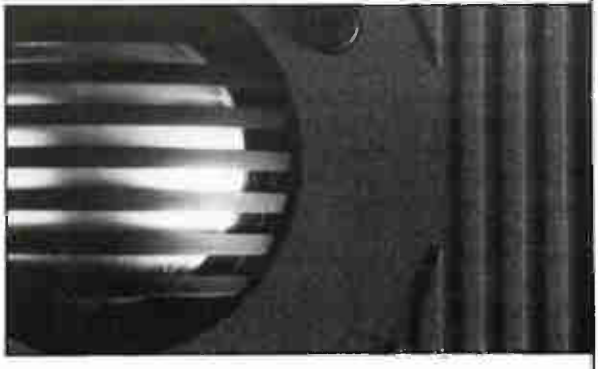


THE SPEAKER SOURCE



At Lyric, you'll find more loudspeakers to choose from. And along with all the brands and models on display, more knowledge and experience. More service, too. Which explains why more people around the world make Lyric their source for quality audio components.

Come in and audition speakers from B&W, Boston Acoustics, Cabasse, Celestion, Duntech, Entec, Goldmund, Infinity (including IRS), JSE Infinite Slope, M&K, Magneplanar, Meridian, Mirage, PSB, Quad, Rogers, Sonance, Synthesis, Velodyne, Wilson Audio and others. All models are available for export.



Lyric
HiFi&Video

1221 Lexington Ave.
New York, NY 10028
212-439-1900

2005 Broadway
New York, NY 10023
212-769-4600

146 East Post Road
White Plains, NY 10601
914-949-7500

PURE GOLD

Alvin Gold

I heard a neat story from a colleague which follows naturally on my discussion of the Acoustic Energy AE-1 loudspeaker in the August issue. Apparently—and I'm afraid the personalities will have to remain anonymous—a reviewer in one of the hi-fi magazines wrote about the AE-1 in generally favorable terms, but, probably in a desire to score points, railed against the use of twin pairs of terminals for biwiring, going on to describe in disparaging terms certain hieroglyphics around the terminals themselves. The "hieroglyphics" concerned were no more nor less than bass- and treble-clef symbols.

Let's light briefly on a subject which has been exercising my attentions for much of the last month—cassette decks.

The temporary eclipse of digital audio tape has had beneficial spinoff benefits for cassette decks, which seem to be going through a second golden age (but I never could count—it may be only their first). Major Japanese manufacturers had put together their most talented teams to get DAT up and running, only to see the results of their handiwork put the backs up of the entire world record industry, hotly followed by the US and European legislatures' retreat into blind xenophobia. Result: instant hiatus, and it looks very much like there's little immediate prospect of improvement. The biggest balls-up ever in the hi-fi industry—Elcaset has nothing on this one.

The rest of you need only imagine. It's as though the Manhattan Project to produce the atomic bomb had been followed by instant worldwide peace and goodwill between all men: what would they have done with the scientists? Well, the Japanese were never ones to sit on their backsides when they could be doing something productive; a number of Japanese manufacturers decided that their cassette decks needed some serious rethinking.

From a batch of 25 cassette decks I've just been looking at for one of the UK magazines, I was particularly intrigued by the approach taken by JVC, who over the years seem to have almost consciously distanced themselves from any contact with high fidelity, preferring instead the greener pastures of mass-market audio and video. Obviously, someone has decided that a return to roots wouldn't be a bad idea, perhaps to give the name a touch of the kudos it has lacked since the early '70s. Their TD-V711 is a case in point. Among this model's particularly dense paraphernalia of gadgetry, I was particularly struck by the fact that when Dolby noise reduction and HX-Pro is switched off, it is totally removed from circuit. It's not often realized that this isn't generally the case; normally just the side-chain processing is switched out, leaving the Dolby circuitry in the signal path.

This is added to features that include a fine dual-capstan transport to ensure ultra-low modulation noise, three heads with automatically switched off-tape monitoring, and auto tape-type recognition and a fine bias-adjustment facility, giving the JVC a typical specification for a modern up-market cassette deck. There are all sorts of added features too, stretching from high-grade metering and elaborate tape-search aids to PC-OCC windings in the heads and a physical structure designed with microphony in mind. It's a far cry from the bad old days when audiophile criteria had no place in cassette-deck design, which was strictly concerned with the mechanistic parameters with which we are so familiar: frequency responses, noise levels, and distortion.

Great, but there's something missing, though the missing factor may not be immediately apparent except to those who have used some of the recent very-high-energy tapes (the top Sony and TDK metals, the high-energy Triad Type IIs, and so on). The missing feature is variable record sensitivity. Almost every self-respecting deck has variable bias to help determine the frequency-response shape, but altering bias does nothing to vary record sensitivity, and uncorrected errors here will result in Dolby mistracking on replay. The effects of this are to rip the guts out of the music. Tonally the sound stays much the same, but all the internal proportions that define loudness values of individual instruments—their positioning, their dynamic behavior and interrelationships—are scrambled.

I recently spent a couple of hours with the head of Sony's tape-development team, and

asked him why modern decks nearly all lack this essential requirement for Dolby compatibility. "It's because we don't really go a bundle on Dolby." He didn't use those words exactly, and he had a Japanese accent which I can't reproduce here, but the gist of his argument was clear enough. The Japanese audiophile on the whole tends to shun manipulative noise-reduction circuits, evidently because he doesn't like the things that Dolby noise reduction does. Ditto dbx, but more so. (Incidentally, he also told me that about 20% of the time spent developing audio tape formulations involves listening to them. Apparently Whitney Houston is a great favorite.)

That's the Japanese position, and there's no avoiding the conclusion that most of the decks I've been testing sounded audibly superior when used without Dolby and dbx noise reduction. dbx which, happily, was fitted to very few, sounded worse, but Dolby-C was also a lot poorer than Dolby-B on the whole, the more powerful system tending to sound inconsistent, muddled, and compressed, and frequently subject to some rather peculiar HF aberrations that were not apparent with Dolby-B. It must be said, however, that some recorders were worse affected than others, and that the best installations (Nakamichi was predictably in the vanguard here) were much closer to sonic transparency.

Of course, tape is a hiss-bound medium at the best of times, and it's not always practical to manage without Dolby. It has been my contention for some time that Dolby has been used by deck and tape manufacturers as an excuse not to look for fundamental improvements in their products. If Dolby could be relied upon to clean up afterward (as it were), why bother trying to do it right at the outset? It's ironic that this spiral is in danger of being broken, not by the manufacturers of esoteric cassette decks (Nakamichi again), but by the mass-market companies who manufacture cassette tapes.

It's surprising and gratifying to find out what can be done with a really high-grade tape like the aforementioned Sony ES-Metal and a cassette deck with first-class heads and plenty of headroom. That JVC wouldn't be a bad place to start. Nor would the new Aiwa standard bearer, the XK-009K, which represents a belated return to form for Aiwa, and which incidentally is one of the few decks that does have a simple and effective built-in method for adjusting record sensitivity as well as bias. Both are capable of making ultra-sharp and clean-sounding tapes of a standard that would surprise many cassette detractors.

Cassette decks are progressing then, but the same doesn't appear to hold with amplifiers. A particular kind of amplifier, anyway. I've been looking at a group of four so-called digital amplifiers from Sony, JVC, Akai, and Technics, and this is one innovation I think I can do without.

The UK has tended to remain a closed market to up-market Japanese hi-fi, an area that has been the preserve of indigenous and US-based manufacturers for more years than I can remember. CD broke the pattern, of course. There are expensive non-Japanese CD players, but there are expensive Japanese ones too, some of which are extremely good (have I told you about the Pioneer PD-91? No?) and which sell in respectable numbers. But not amplifiers. With a few honorable exceptions (Marantz springs to mind), the electronics multinationals have never understood or catered to the very particular brand of hairshirt minimalism that drives the audiophile end of the British market.

The master plan now appears to be to try to sell amplifiers by stuffing digital converters into them and calling them "digital." In doing so, these manufacturers further the dream of the all-digital hi-fi system by extending digital processing one stage further downstream. Only they don't, of course. It's all baloney. While one section of the industry plugs the benefits to be had by separating analog from digital—ultimately by putting them in separate boxes with sufficient screening and filtering around the digital areas to avoid RF pickup elsewhere in the chain—another takes the very same DACs and stuffs them in the same box as all the sensitive low-level analog circuitry. That way, the analog section can bathe in MHz-range RF while drawing on the same power supplies.

Predictably, the converter section of these amplifiers sounds no better than those in separate CD players, and generally worse than the ones in dedicated digital converter boxes, even cheap ones like the A&R Arcam Black Box (which, incidentally, is a cracker—the best I've heard so far at anywhere near the price). The analog sections are worse. I can only hope that this new species of electronics is seen for what it is, and that it receives an appropriate reception from the great buying public.

GET WITH IT!

SUBSCRIBE NOW
STEREOPHILE

For U.S. and Canadian residents, one year is just $35 (save $24.40), two years $65 (save $53.80), and three years $95 (save $83.20). Call toll-free to order by credit card 1-800/435-0715 (Illinois residents, toll-free 1-800/892-0753). From Canada call 505/982-2366. Or, send check, money order, or credit card information with the form below to:

for U.S. residents: **Stereophile,** P.O. Box 364, Mount Morris, IL 61054; Canadian residents: **Stereophile,** P.O. Box 5529, Santa Fe, NM 87502.

Overseas subscription rate is $75 per year; send orders to: **Stereophile,** P.O. Box 5529, Santa Fe, NM 87502.

☐ One year $35 ☐ Two years $65 ☐ Three years $95 ☐ Overseas $75

Name _____

Address _____

City, State, Zip _____

☐ U.S. ☐ Canada ☐ Overseas/Country _____

☐ Visa ☐ Mastercard ☐ American Express Exp. date _____

Card No. _____

stereophile

BACK ISSUES WHILE THEY LAST!

VOLUME I (1962-1965), VOLUME II (1966-1972)	out of print
VOLUME III, 1972-1976	each
Issues 3, 5, 6, 7, 9, 11, 12	$5.00
Issues 1, 2, 4, 8, 10	10.00 *
VOLUME IV, 1977-1981	
Issues 3, 6, 10	5.00
Issues 1, 2, 4, 5, 7, 8, 9	10.00 *
VOLUME V, 1982	
Issues 1 through 10	5.00
VOLUME VI, 1983	
Issues 1, 2, 4, 5	5.00
Issues 3, 6	10.00 *
VOLUME VII, 1984	
Issues 3, 5, 8	5.00
Issues 1, 2, 4, 6, 7	10.00 *
VOLUME VIII, 1985	
Issues 1, 2, 4, 5, 6, 7, 8	5.00
Issue 3	10.00 *
VOLUME IX, 1986	
Issues 1, 2, 3, 4, 5, 6, 8	5.00
Issue 7	10.00 *
VOLUME X, 1987	
Issues 1 through 9	5.00
VOLUME XI, 1988	
Issues 1 through 10	5.00
EVERYTHING ABOVE NEATLY PACKAGED	325.00

** Photocopies*

ORDER NOW, ORIGINAL COPIES ARE LIMITED

Send me the following back issues:
(List Volume and Issue Numbers of copies available at $5.00 each)

_____

_____

Total: _____ Original copies × $5.00 per issue = $ _____
(List Volume and Issue Numbers of copies available at $10.00 each)

_____

_____

Total: _____ Reproductions × $10.00 per issue = $ _____

Add shipping and handling: 1 to 5 issues $2.00
6 to 10 issues $3.00
11 issues and over $4.00 _____

FOREIGN ORDERS, Please write for Shipping Charges _____

Total $ _____

Name _____

Address _____

City _____ State _____ Zip _____

☐ Check ☐ MC ☐ VISA ☐ AM EX

No. _____ EXP. DATE _____

RETURN THIS FORM TO STEREOPHILE, P.O. BOX 364, MOUNT MORRIS, IL 61054

OR CALL 1-800-435-0715

CONRAD-JOHNSON PREMIER SEVEN PREAMPLIFIER

J. Gordon Holt

Conrad-Johnson Premier 7 preamplifier

All-tube dual mono preamplifier. Controls: Source (Phono, Tuner, CD, Tape 1 & 2), Record (Phono Tuner, CD, Tape 1 & 2), Level, AC Power. Inputs: Phono (MC or MM), Tuner, CD. Outputs: Main 1 & 2. Gain: 40dB phono, 29dB line. Phono load resistances: 70, 100, 150, 250, 470, 1k, 2k, 5k, 10k, and 47k ohms. Phono overload: 150mV at 1kHz. Max output: 20V RMS. Frequency range: 2Hz to more than 100kHz (bandpass). RIAA EQ accuracy: ±0.25dB, 20Hz–20kHz. Hum & noise: –80dB ref. 10mV input (phono), –88dB ref. 2.5V out (line). Output impedance: less than 200 ohms. Distortion at 1V output: less than 0.25% THD and IMD. Dimensions: Audio section 7″ H by 19″ W by 16″ D; power supply 3½″ H by 19″ W by 15¾″ D. Shipping weight: 60 lbs. Price: $7850. Approximate number of dealers: 150. Manufacturer: Conrad-Johnson design, 2800R Dorr Avenue, Fairfax, VA 22031. Tel: (703) 698-8581.

Whenever an audio high-ender thinks about tubes, he usually thinks about Audio Research. This is only natural, because Audio Research Corporation was almost single-handedly responsible for saving tubes from oblivion in the early '70s when everyone else switched to solid-state. But ARC was soon joined in its heroic endeavor by an upstart company called Conrad-Johnson, which entered the fray in 1977 with its PV-1 preamp, priced at an affordable (even then) $500.

Today, Conrad-Johnson is firmly established as the second most highly regarded manufacturer of tubed audio products. (In fact, ARC's recent ventures into hybridization—the combining of tubes and transistors—may have disqualified that firm from being counted as a "tube-electronics manufacturer," in which case C-J must now be considered the preeminent name in the field.[1])

Until 1983, all of Conrad-Johnson's products were designed as "best value for the money," to provide much of the best that tubes had to offer at less-than-princely prices. Audio Research, for its part, has tried with each new product to redefine the state of the art in tubed

1 Dark horse Vacuum Tube Logic is probably C-J's real competition in the tube field now, but limited production and availability hinder VTL's recognition as a Name in the tube electronics field.

design, as well as the amounts of money perfectionists would pay for it. But then C-J entered the no-holds-barred arena in 1983 with their first Premier product, the Model One power amplifier, which was very well received by critics. (When I reviewed this behemoth in Vol.6 No.5, I felt it to be the best amplifier at that time for driving big electrostatic panels.) The Premier Seven is C-J's latest cost-no-object product. It's also their most expensive preamp to date, and the costliest one on the market, apart from the most expensive version of the Cello Audio Suite. (As I write this, I'm mulling over the recent announcement of ARC's latest no-holds-barred, cost-no-object preamp, the SP15, which is expected to sell for $10,000. Where, oh where, will this madness end?)

Bill Conrad and Lew Johnson have pulled out all the stops in designing the Premier Seven. It appears that nothing which could possibly have improved its sound has been omitted. For example, we all know that so-called dual-mono circuitry enhances soundstaging, but the Premier Seven is dual mono like no other preamp I've seen. The power-supply "unit" contains two completely separate supplies—each on its own chassis, each with its own line cord and on/off switch, and each containing separate power transformers for the tube heaters and the B+ supply.

Even the volume-control circuitry is completely isolated. There is no master volume control, and no balance control; each channel has its own volume control, and there is not even a mechanical coupling between them. Of course, this means that there is also no mono operating mode. The volume control in each channel is a 22-position detented rotary switch. Under each volume knob is a horizontal row of LEDs, with panel markings indicating decibels of attenuation from 0 (at the far right) to infinity. (Unlike the usual LED bargraph, which displays a lengthening line of glowing lights as the signal level increases, only one light on each of these is lit at any one time.) The volume increments are in 2dB steps down to –32dB, below which the steps become increasingly large. One set of contacts on each volume switch connects the appropriate voltage-divider resistors, while the other set draws from a DC power source to light up the appropriate LED on the volume indicator array.

There are 12 gold-plated signal receptacles at the rear, connected to the appropriate traces on the glass-epoxy circuit board by short lengths of 300-micron linear-crystal, solid-silver wire. The Source and Record selector switches are at the rear of the chassis, near the circuits they control, with long shafts coupling them to the front-panel knobs. Power-supply connections are via hermetically sealed, collar-locking MIL-spec connectors and a pair of fat, 4' umbilical cords sheathed in black braided nylon sleeves.

The main circuit board in each signal chassis is shock-mount "floated" from the external case by rubber grommets, and all the 6GK5 tubes are fitted with damper rings. (Actually, they're large rubber grommets.) All of this is intended to minimize modulation of the signal by tube microphonics in response to external vibrations, but while I can see how the rings around the tubes might help here, the subchassis suspension seems too stiff to give effective isolation. The tubes are, in fact, incredibly free from microphony; at normal volume settings, even tapping them with a fingernail elicited nothing more than a dull and very brief "thunk." I suspect, however, that this is more a matter of their construction and the way they are used than of vibration isolation and damping.

The Circuitry

Each signal channel in the Premier Seven consists of three gain blocks (C-J's nomenclature), each comprised of a triode and a cathode-follower. The 6CW4, the first tube in the phono preamp stage, is a nuvistor—a thumbnail-sized tube introduced for ultra–high-frequency radio applications just when transistors were taking over electronics design. The input of the 6CW4 is bridged by a small 10-position rotary switch that provides a choice of pickup loading resistors, ranging from 70 to 47k ohms.

RIAA equalization happens between the first cathode follower and the second preamp gain stage, and is entirely passive. The second cathode follower feeds the Source and Record switches, and also provides a low-impedance source that should be immune to the loading effects of long signal leads to the recorders.

There is no negative loop feedback anywhere in the Seven; just the local feedback which occurs "naturally" in all cathode follower circuits. All stages but one are resistance/capacitance coupled, via fat (1½" diameter) 2uF/250V polystyrene caps, custom-made for C-J, and the associated resistors are large nonin-

ductive metal-foil types. Even in the power supply, there are no electrolytic capacitors in audio-rated circuits; the B+ filter caps are polystyrenes and polypropylenes. (B+ power-supply capacitors aren't exactly in the signal path, but they *are* in the circuit which supplies the voltages the tubes are modulating with audio signal. And they *do* affect the sound—as anyone can attest who has tried bridging small-value polypropylene caps across power-supply electrolytics.) The only large electrolytics in the Premier Seven are a pair of 4700uF ones which help to filter residual AC from the DC heater supplies.

Setting Up

Installation of the Premier Seven was not your usual lead-pipe cinch. You have to take the top off the upper preamp chassis and the bottom off the bottom chassis, then extract several foam-plastic blocks which serve to immobilize the floating inner circuit platforms during shipping. The screws on my sample were torqued down so tightly they were very difficult to remove. (In fact, one on my sample *was* unremovable; the screwdriver slots stripped before I got it to turn loose. I drilled it out.) Then two of those foam plastic blocks were found to be wedged under a turned-back lip of the chassis behind the front panel, making it necessary to squeeze them to half their thickness in order to get them out. Doing this was rather like trying to pinch mercury, and I was cursing a navy-blue streak before I finally tore them loose, in several jagged pieces, with a pair of long-nosed pliers. My advice is, if you buy this preamp, let your dealer prep it first.

Equipment used for my tests included the Ortofon MC-3000 cartridge in the Versa Dynamics 2.0 arm and turntable, Ortofon's T-3000 step-up transformer (for some of the tests), the Stax Quattro CD player, a PCM-F1 digital tape system, a pair of VTL 300W monoblock power amps, and Sound Lab A-3 full-range loudspeakers. Audio interconnects were LiveWire Emeralds, while the audio cables were Monster M1, which I still like despite DO's put-down in Vol.11 No.7. The listening room is extensively treated with ASC Tube Traps, and program material was some of my own and others' PCM tapes, and CDs and analog discs from Sheffield, Opus 3, EMI, Bainbridge, and Reference Recordings.

Conrad-Johnson recommends "several minutes" of warmup before listening to the Seven. I allowed my sample to cook for 48 hours before auditioning, and found subsequently that, after being off for a day or two, its sound continued to improve (becoming smoother and sweeter, with greater depth) for almost half an hour after being turned back on.

The owner's manual is adequate, but not much more. Apart from some advice about absolute phase (the Seven's line section inverts it) and AC-plug polarity, there is little about how to use the preamp. There is no circuit description, and no suggestions about how to set the phono load switch, how to take advantage of the stepped level controls, or how to cross-copy between tape machines. There is, however, a warning about not setting the Record switch to the output of either tape recorder when it is recording. We are told this "may generate a howling sound." It may indeed! Or, it may generate a thunderous roar capable of doing serious amplifier or loudspeaker damage, depending on the recorder's gain-control setting.

There are two selector switches per channel on the Premier Seven. One of them (Source) selects one of the five inputs, the other (Record) allows you to feed any source to the tape recorders. This arrangement makes it possible to listen to one signal source while taping another, and to cross-copy from either tape deck to the other without changing the cable lashup. The only trouble is that, if you switch the Record selector to the input of a tape machine that is passing signal through it, its output gets routed back to its input, resulting in the possibility of fearsome feedback (see sidebar). Nor does the deck have to be in Record mode for this to happen. If its own monitor switch is set to Source and its playback level turned up, it will happen. You don't even need to have a tape deck in-circuit. Any signal processor plugged into a tape loop will do the same thing, and the feedback may be even stronger because most processing devices have no volume control; they are fixed at unity gain.

This is not sensible design. Consumer products should be bulletproof, not booby-trapped. That one-sentence warning message in C-J's manual can only postpone the day when a Premier Seven owner blithely flips the Record switch from Tape recorder 2 (turned off) to CD, passing over Tape recorder 1 (turned on and up) on the way.

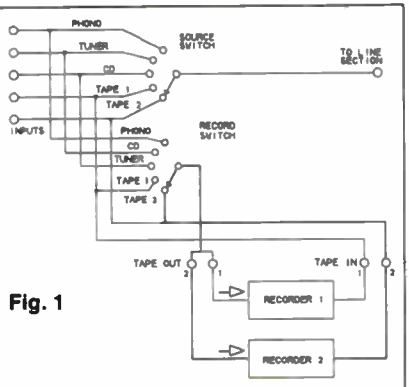


Fig. 1

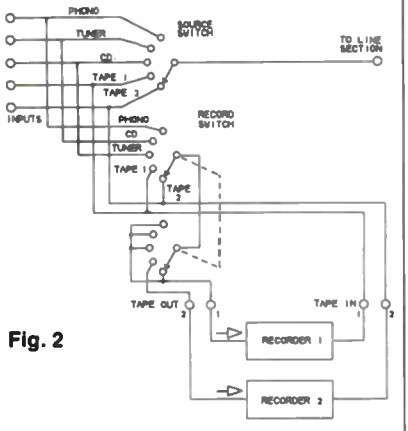


Fig. 2

Tape Loops

Conrad-Johnson's tape-input and tape-recorder circuitry is shown in fig.1, with heavy lines tracing one of the two signal routes by which a tape recorder's output can get back to its input.

Fig.2 is an alternative switching method, which would require only one additional set of ganged contacts on the Record switch. This would offer all the flexibility of C-J's present configuration, without the risk of potentially destructive oscillation. Its only limitation would be the inability to record from other sources (CD, Tuner) onto Tape 2.

What amazes me is that C-J has been using this Tape circuit in every one of their preamps since as far back as I can remember (I've been railing at it for just as long), but apparently no-one has ever complained. Or suffered from a coronary brought on by the ear-shattering roar that this design idiosyncracy can generate.

The separate volume controls were not too hard to get used to, but I'm just lazy enough to be irritated at how complicated they make the usually simple act of changing volume. In order to maintain channel balance, you must either count the detent steps as you rotate the first control, then repeat that number for the other, or you must peer at the LEDs to ensure that both rows are giving the same indication. The very small lettering next to each LED means you may have to peer quite closely, but level matching is made easier by the fact that the arrays are one above the other; when channel gains are matched, a vertical pair of the indicators will be lit.

I was not delighted with C-J's choice of attenuator increments. Not only were the 2dB steps quite unsubtle, they were large enough that there were many occasions when I felt that the "right" volume would have been halfway between two of the steps provided. The choice had to be between a bit too loud and a bit too soft. With a detented volume control, you can get intermediate levels by maneuvering the detent ball onto the top of the hump between two detent stops; the potentiometer wiper will then be at an intermediate position on the resistor element, and friction will usually keep it there. You can't do this with a switched attenuator.

The level-switching increment problem becomes worse when using high-gain power amplifiers, very sensitive loudspeakers, or unusually high-level signal sources. With my slightly-less-sensitive-than-average Sound Labs, and unusually sensitive VTL amps, much of the time I was operating the level controls dangerously close to the point where the level steps start incrementing by 3dB or more. The Stax Quattro pushed it over the edge, its 2.1V output (with no level control) forcing the controls back to the point where the steps were between 4 and 6dB in magnitude.[2] This just won't cut the oleo. What the Premier Seven needs is another control in each preamp unit, perhaps a simple pushbutton like its present Mute switch, that would reduce line-section gain by 10 or 15dB. Or, provide 10dB more

2 The VTLs are approximately 6dB more sensitive than Conrad-Johnson's Motif MS100 power amplifier. However, according to Bascom King's measurements in the August 1986 issue of *Audio*, they are only 3dB or so more sensitive than the C-J Premier Five and, according to C-J's own figures, less than a dB more sensitive than the C-J MV50. It seems reasonable, therefore, to criticize the Premier Seven on this point.

available (switchable) gain in the phono stage and 10dB less in the line section.

The Sound

The recent crop of top-priced tubed preamplifiers, from such firms as Audio Research and Counterpoint, has redefined the meaning of "tube sound." No longer can we generalize that tubes sound warm, fat, glassy-bright through the upper midrange, and soft (sweet) at the top. Lately, tubes have been sounding more and more like the best solid-state, and *vice versa*. The Premier Seven is another one.

It is, in fact, about as close as any tubed preamp has come to being perfectly neutral in sound—in nearly all respects. The high-level section has a gorgeous top end—effortlessly sweet, open, and airy, yet immensely detailed. Nothing I have heard has bettered its high end, although some have equalled it. Resolution of detail is excellent across the board, as are (almost naturally) all aspects of soundstage presentation. So phase-coherent is it that it can present a very specific, tightly bunched image, and also produce convincing images 'way out beyond the locational limits of the speakers when suitably phased signal is delivered to it.

There is no forwardness and no tubelike "glare;" the midrange is an essentially perfect replica of whatever you feed into the preamp. Only at the low end does the Premier Seven stray from Ultimate Truth, with a slight thinning-out of bottom which sounds like a gradual frequency-response rolloff setting in at 50Hz. It's a fairly subtle thing, but even a slight error in this direction will be less well received by most audiophiles than would an equal amount of low-bass exaggeration. (Of course, there was no point in running a frequency-response test; the high-level sections of all current high-end preamps measure perfectly flat down to the 20Hz limit of my signal generator. And please do not write to suggest that I could use CD test discs as a signal source, because my dB meter rolls off below 20Hz anyway.)

The lack of a mono A+B operating mode is, I feel, a significant shortcoming (albeit not a serious one); without it, the playback of mono recordings is compromised. (Mono A+B blending suppresses the distortion and surface noise arising from spurious vertical motions of the stylus.) I suppose the reasoning here is that no one who cares enough about sound to spend $8000 for a preamp is ever going to play old mono recordings, but most serious music lovers know that many definitive performances were recorded in mono, and they doggedly persist in listening to them occasionally. The Premier Seven will not serve them well in this regard.

I found the Premier Seven's phono section to have extremely low noise: negligible hum, only some very-low-level muted hiss. There was barely enough gain to allow the use of the extremely low-output Ortofon MC-3000, at moderate listening levels with the gain controls wide open, but the MC-2000 was beyond its capability, just as it has been with every other active preamp I've tried with the exception of the Vendetta Research SCP-2s. It is obvious, though, that the Premier Seven will be able to handle practically any MC cartridge, and the 150mV phono overload spec would seem to ensure compatibility with any MM cartridge, too.

Spectrally, the phono stage was extremely neutral—more so than the line stages, inasmuch as it does not seem to thin out the low end at all. Nonetheless, the extreme bass range does not have quite the impact and extension of the John Curl-designed Vendetta. Again, definition was excellent, and soundstaging was not diminished in comparison with the line stages.

So far, then, the Premier Seven appears to be a definite contender for inclusion in the Class A category in *Stereophile*'s "Recommended Components." But I have not taken its price into consideration. At a price approaching $8000, a preamplifier must be beyond reproach, both sonically and ergonomically. It should stand head and shoulders above any less-expensive competition.

How, then, does the Premier Seven stack up to that competition? Except for the slight low-end deficiency, the Seven is among the most neutral- and *ingratiating*-sounding preamps money can buy. The others are the Krell KRS2, the Mark Levinson No.26, and the Threshold FET-10. However, the Seven costs considerably more than the most expensive of these, and is, in my opinion, inferior to all of them in terms of user convenience.

All three solid-state preamplifiers fall into the category of being neutral enough that a simple bypass test reveals no differences. Only prolonged listening does. The Premier Seven is not quite that nearly perfect, due to its thinned-out low end.

Just three years ago (before the introduction of the ARC SP11, in fact), even the "best" tube

preamps were obviously inaccurate—much, much more so than the Premier Seven. But their imperfections were of a kind which tended to glorify the sound of music—to make it richer, rounder, fatter, sweeter, warmer, and more spacious than the signals fed into them. Tubeophobes used to call that cornucopia of colorations "euphonic distortion," but tubeophiles would pay a premium for it, even while acknowledging that it was probably less accurate than the pristine coldness of some top transistor amplifiers. Designing a tube preamplifier as uncolored as the Premier Seven is a *tour de force*, but in doing so, Conrad-Johnson has effectively eliminated the Premier Seven from consideration by those who crave that tube sound.

Tube equipment, however, *must* cost more than solid-state, if only because capacitors and power transformers have to be much bigger in order to handle the much-higher operating voltages required by tubes. And as long as tubes had "the tube sound" and solid-state had "the transistor sound," consumers who heard the difference were happy to pay the premium. But as transistors become less transistory and tubes less tubey, it's increasingly difficult to justify the ever-widening price differential.

For example: Except for its low end, the Premier Seven is sonically comparable with a stock Threshold FET-10, which is one hell of a good preamp that costs $3550, rather than the Seven's $7850. (After borrowing my stock FET-10, Dick Olsher refused from then on to use anything else. He now has his own.) But now compare the Premier Seven with my reference preamp combination, the FET-10L line stage beefed up with the John Curl power supply, coupled with the Vendetta Research SCP-2 phono preamp, and there's not much contest. While the Seven does almost everything right, the customized FET-10 combo is a shade better in almost every respect. It has slightly better inner definition, a very slightly more open-sounding high end, and a low end that is definitely better. Only in image depth—front-to-back perspective—does the Premier Seven outshine it, but only by a small margin. The truth is, the beefed-up FET-10 is hard to fault.[3] On top of that, the FET-10 has a mono mode, a foolproof tape-loop circuit (two, in fact), a stereo reverse switch, and two more line-level inputs than the Premier Seven. The total cost of the beefed-up Threshold? $4595.

There is no question but that the Premier Seven is a superb preamplifier, ranking sonically among the best. The question is, is it worth almost twice as much as its sonic competition? I don't believe it is. **S**

3 I say "hard to" merely as a sop to those who would jump down my throat wearing chain mail if I dared admit that, after six months, I *still* cannot hear anything the matter with the Threshold/Curl combination. But I must come clean: I can't.

VTL 100W COMPACT MONOBLOCK POWER AMPLIFIER

John Atkinson

Monoblock tube power amplifier: nominal rating: 100W RMS into 8 ohms. Tube complement: 12AT7/ECC81/6201 input, 12AT7/ECC81/6201 phase splitter, 4xEL34 output. Output impedance: 1.1 ohms at 1kHz (standard factory output transformer tap). Distortion at rated power: 0.1% Harmonic, 0.1% IM. Input impedance: 137k ohms. Sensitivity: 750mV RMS for rated output. S/N ratio: 90dB (unweighted), 96.5dB (A-weighted). Dimensions: 13" W by 9" D by 7" H. Weight: 42 lbs. Price: $2650/pair (protective cover grids cost $60 each). Replacement tube costs: 12AT7, $10; EL34, $16 (Chinese), $20 (US, British), $10 pair-matching charge. Approximate number of dealers: 30. Manufacturer: VTL of America Inc., 4774 Murietta St. #9, Chino, CA 91763. Tel: (714) 627-5944.

The last time I was in England, I happened to be rummaging through some boxes in my mother's garage, boxes containing photographs, my old school books, concert programs, diaries, postcards—all the bric-a-brac you collect throughout your life that you'll never have a need for and can never discard. If anything, such rubbish is perhaps the nearest thing to roots that anyone can have these days. Among the boxes was an amplifier that had been an everyday companion of mine for many years, the vintage Vox AC100 I had used to

Vacuum Tube Logic 100W Compact monoblock amplifier

amplify my Fender bass when on the road. Nowadays, musical instrument amplification is a whole new, apparently Japan-dominated world, with MIDI this and FX boxes that, and, apart from classics like the Fender Twin Reverb which soldiers on regardless, there is hardly a tube to be seen. Yet to this baby-boomer, it seemed that the whole British music explosion of the '60s was powered by just one thing: the EL34 high-power pentode. With the exception of the Fender, which I believe used 6L6s, it was the EL34-powered Marshall and Vox guitar amps which fueled the Beatles (till they were seduced by transistors around the time of *Rubber Soul*), the Stones, the Who, the Animals, Hendrix, and Cream. Take my Vox AC100, to which I had graduated after using first a Marshall 50, then a Marshall 100. Packing four push-pull EL34s into a tiny chassis to put out 100W, it ran hot enough to fry eggs on, yet, apart from having to replace tubes every six months or so, when they became sufficiently microphonic to reproduce your voice if you shouted loud enough (and we all had to shout loud enough when the average PA power was only 100W), it was the most reliable *and* the most musical amplifier I have ever used.

I gave up playing the bass professionally when I joined *Hi-Fi News & Record Review* as what was in effect the office junior in 1976. Though I continued to play regularly, the one career inexorably took over from the other and the Vox, long since retired, disappeared into the bowels of my mother's garage when I moved to the States. The hankering for tube sound stayed with me, however, despite an almost total dependence on transistors for playing records, and when Vacuum Tube Logic's David Manley offered to lend me a pair of his 100W Compact Monoblocks, I didn't need to be asked twice.

The "Compact" series of monoblock tube amplifiers from VTL, available with 50, 65, and 100W output ratings, differs from the De Luxe models, such as the 300W Mono reviewed by JGH last month, in that they have somewhat smaller power supplies and lack the more expensive models' regulated B+ supply for the input tubes. Otherwise the circuitry is very similar. The input signal is taken to the grids of both halves of a Sylvania 12AT7 twin triode running in class-A, the output being taken from the two plates connected together. Though the voltage gain remains unchanged with this arrangement, the transconductance doubles (doubling the change in plate current for the same grid voltage change), lowering the noise level and halving the tube's output impedance. The amplified signal is then fed via a series capacitor to another 12AT7 (this the equivalent 6201 tube in my samples), the two halves of which operate as a long-tailed-pair phase-splitter; *ie*, this stage outputs identical in-phase and antiphase signals from the two plates. These are taken, again via coupling capacitors, to the output stage, which consists of four EL34s, two "pushing" and two "pulling" the primary of the output transformer.

David Manley echoes my old Vox in opting for "fixed-bias" operation for his output stage, whereby a separate winding on the power transformer is used to derive an independent DC voltage supply to maintain the output tubes' grids at a negative potential with respect

to their cathodes. (The alternative is to stand the cathodes on resistors, the so-called "cathode-" or "self-bias.") According to Manley in his book *The Vacuum Tube Logic Book*,[1] the disadvantages of fixed biasing—a slightly increased circuit complexity and a need for a heftier B+ power supply—are more than outweighed by its giving greater power with lower distortion from the same tube lineup, coupled with its bestowal of longer life on those tubes. There is another downside to fixed bias, only obliquely referred to by Manley, in that if ever the separate bias supply fails—very unlikely—or is cancelled out by, say, very low frequency signals, the control grid rises to ground potential, becoming positive with respect to the cathode, and the tube first glows cherry red, then fails, perhaps with catastrophic effects on the rest of the circuitry. With traditional high-power amplifiers running with fixed bias, such as the classic GEC design handbook's KT88-based 100W design,[2] it was recommended that a cathode resistor be automatically switched into circuit if the bias supply went down, allowing the output tubes to stay alive. The VTL designs have no such provision, though to be fair, neither do any other modern fixed-bias amplifiers of which I am aware. However, it explains why the VTL warranty only covers tubes if a VTL preamplifier is used. If the preamp develops DC on its output—possible with a servo-type, direct-coupled, solid-state design—or very-low-frequency oscillations—as can happen with a regulated single-rail tube preamp when the regulation starts to fail[3]—the pulse from the former and the AC from the latter will be passed to the VTL's output stage by the design's extended LF response and will swamp the fixed bias supply, leading to tube failure.

The EL34s in the VTL 100W Compact Mono each have a standing bias of between 26 and 29mA, which should be sufficient to minimize any crossover distortion, the tubes running then in what is termed class-AB1 mode (the "1" meaning that no grid current flows). VTL actually refers to it as class-A1, meaning that for a significant proportion of the amp's dynamic range (said to be 66%), the tubes are effectively working in class-A. The bias measurement for each tube is via color-coded sockets on the front panel.

The EL34 being a pentode, the designer has a choice about the biasing of its screen grid: either to connect it to the B+ voltage to give conventional pentode operation,[4] or to use the "Ultralinear" connection thought up by David Hafler and H.I. Keroes in 1951. (Manley points out, however, that this was predated by D.T.N. Williamson's use in the UK of the very similar "partial triode" operation in 1948.) In this topology, the screen grid is connected to a tap on the output transformer primary winding somewhere between the appropriate end, where the plate is connected, and the midway point, which is connected to the HT supply. When this screen tap is between 30% and 45% of the way toward the center, the tube's output impedance is lowered compared with pentode operation, enabling it to more easily hang on to the output transformer, and the output power is roughly doubled compared with triode operation. The penalty is said to be a slight rise in distortion unless the two tubes pushing and pulling the transformer primary are carefully matched.

Regarding the output transformer itself, rather than supply a number of secondary taps, for example labeled "2," "4," "8," and "16" ohms, VTL's David Manley prefers to provide the 100W mono with just one, hardwired to the output terminals and set to a nominal 7.5 ohms impedance.[5] The reason is eminently sensible: with conventional multiple taps, the negative

1 Price $10, including postage and handling, from the address given in the heading.

2 GEC, now one of Europe's largest defense electronics companies, was the parent company of the now defunct M-O Valve Company, manufacturers of the classic KT series of beam pentodes. Co-authored by MO-V's Graham Woodville, published in 1957, and entitled *An Approach to Audio Frequency Amplifier Design*, this slim volume was the bible for those who participated in the first UK tube revival about 10 years ago.

3 This happened with my SP10, supposedly contributing to the failure of a Krell KSA-100 power amplifier. Unlike a conventional dual-rail solid-state preamp, where such fluctuations on the voltage rails will have a minimal effect on the audio signal due to the circuit's common-mode rejection, a single-rail design can't help but pass them on to the output.

4 Audio Research uses a variant on this mode in their all-tube designs, whose screen grids are connected to separate, regulated HT supplies. Their recent hybrids, however, go a different route altogether, though one which faintly echoes the Ultralinear topology, by connecting the screen grids to the outputs of power MOSFETs carrying the audio signal floating on HT.

5 The output transformer has four 7.5 ohm windings, normally wired in series/parallel to give a 7.5 ohm tap. These can also be wired all in parallel to give a 1.8 ohm tap, or all in series to give a 32 ohm tap. (Though I can't for the life of me think of one modern speaker suitable for driving from this latter tap!) 4, 6, and 16 ohm strappings are also available. These custom versions must be specified in advance by the customer, as the negative feedback network needs to be altered accordingly to optimize the amplifier's overall voltage gain and output impedance.

feedback taken from the secondary will only be optimum for one tap; for the others, a small series impedance will exist between the amplifier's output terminal and the point where the feedback signal is derived. The back EMF from the loudspeakers will thus cause an error signal to be developed across this impedance which will then be fed back to the amplifier's input via the negative feedback network. With the VTL arrangement, the loop feedback (about 15dB) is always taken from the most direct place, the output terminal.

The housekeeping circuitry of the VTL 100W Mono is high-quality. The input stage heaters are DC-powered via a full-wave diode bridge from a separate winding on the transformer, this also feeding AC to the output tube heaters. The HT power supply is where the biggest differences between a modern tube amplifier and those of 25 years ago lie. The B+ rail of the VTL 100W Mono, cruising at a high 490V or so, is derived from a full-wave-rectified winding on the transformer and smoothed by four 1000uF electrolytic caps. According to the schematic in *The VTL Book* and confirmed when I took the bottom cover off, these are connected in series/parallel, which results in a combined total of still 1000uF, but with twice the voltage rating of course. This gives a total energy storage, therefore, of 120 joules; while not quite as high as the 250 claimed by VTL, this is still considerably higher than a typical 100W solid-state amplifier's 32 joules.

Internal construction is based on a single, large, double-sided printed circuit board, which carries all the audio circuitry apart from the transformers, the filter caps, and the latter's associated bleed resistors. Component quality is excellent—coupling capacitors are either WIMA polypropylenes or polycarbonates; shielded Cardas Cable is used to connect the rhodium-plated input jack to the circuit board; and the output tubes are from Mullard in the UK. With the exception of one or two electrolytics which seemed to have been shoehorned into available corners (VTL uses the word "Compact" advisably), and rather more solder resin in evidence on the board than I would have liked, the build quality is excellent. My only gripe is a small one, concerning VTL's choice of output connectors. Though gold-plated, and capable of taking both spade lugs and 4mm plugs, these can only be finger-tightened (though I must admit that the connections didn't loosen at all during my auditioning.)

Sound quality

The VTL 100W Monos were pressed into service for nearly three months of recreational listening (read pleasure) and reviewing service. The preamplifier was mainly the Krell KRS2 but also the Van Alstine Super PAS; loudspeakers were the Celestions SL600 and SL700, used on their appropriate stands, and the Acoustic Energy AE1s; source components included my stock Revox A77 for master tape replay, CD players from Sonographe, Precision Audio, and Meridian, and the fully loaded Linn LP player (Sondek/Ittok/Troika) sitting on a Sound Organisation table. My reference power amplifier was a 1986-vintage Krell KSA-50, it proving impossible to wrest the Mark Levinson No.20s back from Larry Archibald (where they were making every pair of speakers he tried sound like there was no need to try any other). Interconnect was either Monster M1000 or Tiare solid-core silver (an interesting cable; review to appear shortly), while speaker cable was Monster M1, two runs being used to bi-wire the SL700s. Although I was sure that microphony would not be a problem with the VTLs, I sited them on Mission Isoplats as a matter of course.

Setting up the amps proved a frustrating business in that at first I just could not rid the system of what appeared to be a ground-loop hum on the phono input. I tried establishing the system ground at either or both of the VTLs and floating the preamplifier: there was no reduction in hum. Floating the VTL mains plugs on two-pin ground cheaters didn't help. In the end, it appeared that the problem was not primarily due to a ground loop but was due to the VTLs' AC line transformers throwing out one mother of a hum field which was either being injected into the Krell's low-level circuitry or being picked up by the pickup cartridge. Moving the amps as far away as possible to the preamp's right, on the opposite side from the phono input, almost rid the system of hum, but there was still a slight residual (an inaudible –75dB on the preamp's line inputs, –60dB on the phono inputs, slightly audible in the quietest passages but only just above the Krell's noise floor) which I had no choice but to live with.

This was exacerbated by the power amplifiers' high sensitivity. With CD, the Krell's volume control had to be used in the lower half

of its range, 12 noon running the VTLs into clipping. David Manley insists that his choice of a 775mV sensitivity is to ensure compatibility with professional studio equipment; in my opinion, as American consumers are the most likely people to use his gear, he should decrease the sensitivity by 6–9dB or so, perhaps by upping the amount of negative feedback a little. This would both reduce any system hum and noise and allow audiophiles to use their volume controls at sensible settings. (Remember, as pointed out in these pages by PS Audio's Paul McGowan in September, the volume control doesn't *increase* signal level, it only reduces it, so the least amount of potentiometer track in circuit the better.) I am sure that some among you will ask why I didn't drop the VTLs' sensitivities either by feeding the Krell into an outboard stereo pot or by inserting, say, 47k series resistors into the interconnects. If the VTLs were to stay in my system, I might consider the latter, but the former I am sure is a no-no. Putting three whole 'nother sets of connections into the signal path (including the pot's wiper/track interface) to solve what, apart from the noise accentuation, is largely a convenience problem, seems like a step back to me.

Enough of the grumbles: what did the VTL 100W Monos do to the sound of my system?

First, as any power amplifier should, they did very little. I am not quite talking "straight wire with gain," but their faults were minor. Maybe a slightly forward midrange, along the same lines as that of the KRS2; maybe a slightly looser bass than the Krell KSA-50; maybe. . . actually, these don't matter. The VTLs drove all the speakers with which I tried them with authority. While not quite as iron-fisted as the Krells or No.20s, low frequencies were astonishingly tight for a tube amplifier. When the music plunges deep—the tolling 32Hz Cs in the central arch of Debussy's *La Cathedrale Engloutie* (Carol Rosenberger on Delos), for example—the VTLs provide the full measure of weight (yes, even on Celestion SL700s) without losing sight of the notes' harmonic structure. I would go so far as to say that the combination of the VTL 100W Monos and the Celestions is ideal for the reproduction of piano music. The Julius Katchen *Paganini Rhapsody* on London Weekend Classics (417 880-2), the Serkin Brahms Concerto 2 with Szell (CBS "Great Performances" MYK 37803), the superb performance from Ivan Davis of Grieg's *Holberg Suite* on Audiofon (CD72022), the James Boyk recordings, my own analog recordings of Ann-Maria Stanczyk playing Chopin. . . .one piano record kept leading to another.

This is one hell of a transparent amplifier. The high frequencies were neither granular nor dull, but held in check the slight propensity for the top two octaves of the SL700 to be too forward.

The soundstage was as wide and almost as deep as I have heard. The decoding of the totally synthetic soundstages on, for example, Michael Hedges' *Aerial Boundaries* (Windham Hill WD-1032) was totally convincing in its ersatz reality. Perhaps the similar natures of the KRS2 and VTL midranges resulted in a more forward perspective than would be desirable in absolute terms, but I didn't feel throughout any of the auditioning that I was getting too much of a good thing in this area. I would have liked to have tried the Mark Levinson No.26 with the VTLs, which is more laid-back than the Krell and might make a synergistic combination with the 100W Monos, but as with the Mark Levinson power amplifiers, LA seemed more than a little unwilling to part with it.

Perhaps the only long-term limitation concerned dynamics. Although tube amplifiers are supposed to go louder than an identically rated solid-state design, I kept wishing for just a little more urge from the VTLs with the SL700s when compared with the Krell KSA-50. But as Peter Walker always used to say (and probably still does), "You need to buy a bigger amplifier!"

Oh, and in true Columbo fashion, there was one other thing. During the testing, I accidentally disconnected the input RCA plug on one of the amplifiers while it was connected to a dummy load: as the ground connection is broken first, the result was the injection of high-amplitude garbage into the VTL's input. True to David Manley's warning, the EL34s glowed, accompanied by a sizzling sound, in the split seconds before I could flip the on/off switch. Luckily, there seems not to have been any permanent damage, but the point should be made: While you should never unplug the input lead from a power amplifier while it is turned on, with the VTL designs, you should never, *never*, NEVER unplug the lead.

Measurement

On the test bench, you could have been forgiven at first for thinking that this VTL was a solid-state design, the small-signal frequency

response (1V into 4 ohms) extending from 2.2Hz to 77kHz (–3dB). Noise levels, too, were impressively low, measuring –90dB, unweighted, with the input shorted, this improving by just over 6dB when an A-weighting network was switched in circuit ahead of the meter. Looking at the output impedance, however, revealed the amplifier's thermionic nature, with a value around 1.1 ohms at 20Hz and 1kHz rising slightly to 1.25 ohms at 20kHz. Though around 10 times the output impedance of a typical solid-state design, and a little higher than some other all-tube designs, this is still excellent for a tube design and the consistency with frequency points to the excellent nature of the output transformer. This higher-than-usual source impedance will, however, be reflected in a loudspeaker's measured frequency response, particularly if the latter is a 4-ohm design, which is something to be borne in mind when auditioning.

The high sensitivity was confirmed, 720mV input at 1kHz giving full output. Maximum power output was a little higher than spec at 125W into 8 ohms in the midband. Into 4 ohms, however, it was current-limited to 90W, which may explain the fact that audible clipping occurred earlier than expected into the low-sensitivity SL700s compared with the Krell KSA-50.

Conclusion

To say that I was impressed with the VTL 100W Compact Monoblock is an understatement. My experience of power amplifiers over the last five years has led me to believe that either a solid-state model with a massive or regulated power supply and class-A output stages—the Krell designs, for example, or the Mark Levinson No.20—or a modern, complex tube design such as the Audio Research M100 or D250 were the only guaranteed routes to sonic supremacy. Yet here is a modest-sized, traditionally designed tube amplifier with which I have experienced some of the most moving musical moments in my current system.

And at what must be considered a bargain price! Gordon has often asked in print what the point of buying a tube design is if it doesn't *sound* like a tube design; it will only be more expensive than a comparable solid-state model. Yet a pair of VTL 100W Monos costs no more than a similarly specified solid-state design, and less than its transistorized competition when it comes to sound quality and audio neutrality.

I can't see that those old bugbears of tube power amplifiers, unreliability and/or frequent and expensive tube replacement, will be factors with the VTL 100W Compact Monoblock. It seems solidly built, and David Manley appears to have been conservative in his design philosophy and selection of components.

Yes, I would like to have had a lower input sensitivity, and the fact that I couldn't quite get rid of the hum on the phono input was somewhat of an irritant. But the fact remains that I was never less than extremely impressed with the sound of this VTL amp.

Highly recommended. **S**

EUPHONIC TECHNOLOGY ET65OPX Mk.II CD PLAYER

Arnis Balgalvis

16-bit, 4x-oversampled CD player. Remote Control. Dimensions: 16½" W by 3¼" H by 11¾" D. Weight: 12.5 lbs. Price: $1295 inc. remote control. Approximate number of dealers: 5 (mostly factory direct). Manufacturer: Euphonic Technology, 19 Danbury Road, Ridgefield, CT 06877. Tel: (203) 431-6434.

Euphonic Technology has already been introduced to the readers of *Stereophile* by none other than the Cheapskate. About two years ago Sam described how his Magnavox 1040 was transformed by Michael Goldfield, a friend and neighbor, into a noticeably better CD player. Sam felt strongly about the improved sound quality of his new 1040; he described "before" and "after" in terms of "night and day."

Euphonic Technology ET650PX Mk.II CD player

Since that time, Euphonic Technology has grown significantly as a company. They now have dedicated factory facilities, and their product line has been stabilized. As Michael Goldfield tells it, Euphonic Technology devotes roughly 90% of its energies to produce the ET650PX Mk.II CD player, while the remaining 10% is spent modifying CD players sent to them. Sole proprietor Goldfield makes all the engineering decisions and is responsible for every design effort, electrical or mechanical. He points out with pride that CD-player mods are his sole business preoccupation. 80% of Euphonic Technology sales are direct; his only other marketing responsibility is for CD Rings.[1]

The ET650PX Mk.II is the only CD player Euphonic Technology manufactures. If you pegged it as yet another derivative of the Magnavox CDB650, you're right. But don't yawn—this is not just another mod. This deck has served well as the basic building block for a number of modifications, but, as you'll see, Michael Goldfield does not merely substitute a few parts here and there. This player is the culmination of two years of concerted R&D effort on his part, and includes improvements well beyond the scope of tweaked audio sections. Michael thoroughly reworks the CDB650—everything beyond the DACs is redesigned and replaced—to offer a model uniquely his own.

Michael explained that the CDB650 chassis was chosen over the more recent Magnavox '473 for very solid reasons. Even though the '473 sports a new look and lists at $100 less, Michael had misgivings about its construction quality and curtailed features. The '650 won out because it has the same proven circuitry and comes supplied with an anodized aluminum front panel.

The Making of the ET650PX

It all starts with a survival-of-the-fittest program for stock CDB650s. Each is played continuously for 72 hours, then auditioned. Units that pass are slated for dismantling; rejects go back to the manufacturer.

Michael goes to considerable lengths to attack areas where vibrations can be a problem. For starters, a steel bottom cover is added to buttress the stock plastic piece. This new part, referred to as the Stabilizer, is also available separately from Euphonic Technology. In the ET650PX Mk.II the Stabilizer is coupled to the bottom cover with a fiberglass compound.

Next, damping compound is added generously to the inside of the bottom cover to keep mechanical resonances in check. This same compound is also placed in several critical areas of the chassis. The body of the transport and the hold-down clamp for the spindle are similarly treated. Michael Goldfield has found that any vibrations, internal or external, can seriously disrupt the tracking servo's performance. When finished, the ET650PX Mk.II has been increased in weight by almost 50%, tipping the scales at 12.5 lbs compared with the stock '650's 8.5 lbs.

By the way, Michael has good news for those who cast aspersions on the flimsy Philips transport: the rejection rate due to problems associated with this component is extremely low. The reliability seems to have improved significantly in the last 18 months, and now very few units are rejected.

Though the stock CDB650 has four power supplies, Michael adds four more. When the dust settles, two brand-new supplies power the analog circuitry, and two more have been reconfigured for the DACs. That's after all existing power supplies have been decoupled and all filter caps bypassed. The new power sup-

1 CD Rings have been receiving some very good press lately. Briefly, a CD Ring is a circular accessory made of high-density vinyl that adheres to the label side of a CD. The outer diameter of each ring is exactly matched to fit a CD, comes 3/16" in width, and is only 0.020" thick. A centering device is supplied to position the ring properly on the CD. Besides damping the CD material itself, the main contribution of the CD Ring is said to arise from its ability to enhance the flywheel effect so that the focus and tracking servos are able to read the pits with greater accuracy. Euphonic Technology has a special CD Ring hotline dedicated for ordering this product: (800) 444-1428.

ply consists of an additional toroidal transformer which, after rectification and filtering, feeds dedicated regulators to create ±18V rails for the audio circuitry. This replaces the ±15V supplies derived from the original transformer of the 650. The new regulators consist of discrete parts throughout.

The powering of the DACs comes next. The freed-up winding on the main transformer is used to derive another fully regulated power supply to provide ±5V rails for the DAC. A third supply for this section, at −15 volts, is rebuilt and enjoys further decoupling. All power-supply components for the DACs are mounted on a separate PC board.

Special attention has been accorded the focusing and radial tracking servos. Their instantaneous current demands can be quite voracious, leading to disturbances in other areas. Supplying adequate current and additional decoupling separates these sections, allowing them to perform their tasks more efficiently. To this end, the microprocessor for these functions has its own dedicated +5V supply.

By the time Michael is done, a grand total of 22,000uF in filter caps has been installed in all of the ET650PX Mk.II's power supplies.

It goes without saying that the analog section is redesigned with similar thoroughness and care. New op-amps can be found, with special attention paid to reducing slew-induced distortion. All circuit boards for the new power supplies and analog section are of FR-4 glass epoxy. Audio signals pass through film caps only—the coupling caps are metalized polypropylenes by Rel Caps—and metal-film resistors are used everywhere. Tiffany jacks are the icing on the cake in ET's efforts to deliver a very pure audio signal to the rest of the audio system.

This new audio output stage features a very low-output impedance. At 10 ohms, it should have no problems with most loads. Obviously, passive controls have been given due consideration, and the typical preamp 10k ohm input impedance will not be a problem.

Once finished, each ET650PX Mk.II is played for another 24 hours in "Repeat" mode. No unit ever leaves the factory without an in-system listening test. The warranty period is 12 months, and includes parts and labor.

You might be concerned about recent comments regarding poor low-level linearity of the Philips DAC and Digital Filter chips. Apparently Eindhoven is aware of the problem and is correcting it. Michael tells me that new, improved generations of the culprit chips are on their way (see "Industry Update" in October).

Of course, Euphonic Technology wants to make these updates available as quickly as possible, but vague delivery dates preclude concrete promises. To get a jump on the situation, all units shipped by Euphonic Technology after September 1, 1988, will incorporate gold-plated IC sockets for the two chips in question. Whenever the new IC components are available, they can be retrofitted easily by the user to bring performance up to the latest standard. Euphonic Technology does not know the costs involved, and therefore can't quote a price. But they'll be ready whenever Philips makes their move. (See also "Manufacturers' Comments" in this issue.)

The Sound

I used the following equipment to evaluate the ET650PX Mk.II: Tandberg TCP3015A CD player; ARC SP11 Mk.II, Krell KRS-2, and Museatex PA-6i preamps; Krell KMA-100 Mk.II, Classe Audio DR-9, and Museatex MTR-101 power amps; Apogee Diva and Celestion SL600 loudspeakers; Museatex interconnects; and speaker cables from Symo and Museatex.

The sonic worth of a product is generally reflected in the amount of time one *wants* to spend listening to it. Exciting products have ways of effortlessly extending listening sessions: more and more musical favorites want to be played for their musical values, listening becomes a priority, and auditioning takes a back seat.

The ET650PX Mk.II is such a product. My experience with it has been very rewarding, contributing considerably to my musical enjoyment. The six months or so that this player was in my possession were remarkable in three respects, the first of which was utilization. This player served consistently as an input source for evaluation purposes; the associated equipment lists of the Meitner electronics, the Diva, and the DR-9 reviews confirm that. The ET CD player could also be seen devouring one CD after another during recreational moments.

Second, with the ET650PX Mk.II around, my CD library grew considerably. I can't remember when I bought this many CDs, in buying sprees of 5-6 discs at a time. Ironic, isn't

it? I have a player on loan, and it ends up costing me money anyway. In retrospect, I find it interesting to note that I concentrated on the CD side of the spectrum that much, despite having a very fine analog front end at my disposal.

Third, this player was well-received by many friends and fellow audiophiles. Most of the time, no particular component was singled out, but sooner or later the source impressed; upon finding out that a CD was in play, pleasant surprise was registered.

I had volunteered to bring the ET650PX Mk.II to one of the meetings of the NY Audiophile Society in order to round out the choices for input sources. Even though the guest speaker for that evening is not particularly enamored of CDs, he agreed.

You should have seen his response, as well as those of some of the members, when the first CD was played. As soon as a few bars had been heard, a buzz went up; a number of people in the audience wanted to know which player was being used, what CD had been played, and the guest manufacturer wrote down the title of the CD (*Tango*, a Concord Jazz release). And that's from a group traditionally inclined to prefer vinyl.

Tango demonstrates conclusively just how far digital has come; let me tell you, the ET throve on it. The music had heft, impact, and attack. Transients are etched, and decays are marvelously detailed and delicate. Gone are glare, grain, and brightness.

This same CD also demonstrated that the ET was a standout in the transparency category. The veiling between listener and music was made vanishingly small, sonic imagery was very authentic, and instruments remained locked in their positions.

One of the characteristics I look for is a sense of the uninhibited and unbridled. My *Repercussion Unit* CD (CMP Records CMP CD 31) is just what's needed. On cut five, "It's Ridiculous," the sound of the Euphonic Technology player had fewer limitations as far as effusiveness is concerned. Its ability to properly proportion dynamic contrasts along every point of the loudness scale was a definite plus. Soft, loud, louder—the ET took it all in stride, rendering all sounds crisp and clear. The soundstage suffered no distortions during climaxes, nor did fidelity. The sound was relaxed, containing fewer of the sonic aberrations usually associated with the digital nature of this recording.

Naturally, it helped to have the two other ingredients mentioned earlier: staging and extended frequency response. Handel's *Messiah* (L'Oiseau-Lyre 400 086-2) conveys considerable spaciousness and remarkably delineated performers. The sweep of choir and orchestra was depicted without diminishing the contribution of each voice or instrument. Of course, the soloists were more prominently displayed, just as intended. Here a bit of brightness intruded and some strain could be detected, but in this case I place more blame on the source than on the player.

Overall, the Euphonic Technology CD player was eminently coherent. It had an unlabored way about it, presenting music in a very tangible manner, digital vices appearing in gratifyingly reduced proportions. The main culprit, digital glare, had been tamed significantly to the point where it was only bothersome as an infrequent glistening effect.

As with most good components, the quality of the source material was very important. Some CDs are very hard to domesticate, and, while the ET performed no miracles, it fared very well. The ET650PX Mk.II readily exposed poor CDs, but fortunately this scrutiny worked both ways, allowing great CDs to provide significant sonic gratification.

Given a good CD, the Euphonic Technology player was capable of delightful performance. The sound was crisp and rendered with a relatively neutral spectral balance. Even through the pervading smoothness, the highs could be on the bright side. By no means was this a serious indiscretion, and some instruments even thrive on such added zest. Triangles, cymbals, and high hats, for example, took on an agreeable vividness, very reminiscent of the brightness perceived in live concerts. Still missing was the overt overtone structure and rapt ringing inherent in these instruments.

At the other end of the spectrum, I would like to have heard more deep-bass extension. Even though definition throughout the bass region was very good, the sense of having reached rock bottom was not convincing. Using CDs and DAT tapes from exactly the same source, Digital Music Products, playback on an Onkyo DAT player reproduced bass frequencies with more energy. It's true that the DAT machine could be the richer of the two,

but if that's true, then that's what I want.

The ET650PX Mk.II could not be characterized as a very warm-sounding product. It exhibited considerable richness and fullness, yet left a stark, analytical impression. I have little problems with a less than opulent balance, preferring it over something overtly rich. Gary Carr's double-bass rendition of Albinoni's *Adagio* (Firebird K33Y 236) brought this to my attention: While the obviously closely miked recording prominently displays vigorous bowing and woody cavity resonances, the sound was silky-smooth, though without a velvet cushion. Other than that, the presence of the double bass was stunning, especially when the very large recording space materialized. I've heard this recording many times, but the Euphonic Technology managed to give it some extra life.

But how does the 16-bit, 4x-oversampling ET650PX Mk.II stand up to a well-received component like the Tandberg TCP 3015A?

Favorably reviewed by JGH around 18 months ago, the '3015A also uses Philips components for the transport and the digital processing. Instead of modifying, however, Tandberg built their own chassis and designed their own direct-coupled, feedbackless audio circuitry. Not being helped by the present valuation of the dollar, the 3015A ends up costing $1895 *sans* remote control.

That omission, as well as other deficiencies in features (the shared display must be selected to display time *or* track, for example), puts it behind the ergonomic eightball.

The ET also had the sonic upper hand, exhibiting a more pristine and dynamic character, more transparency, and handling dynamic excesses with more control and less compression.

The Tandberg managed to recapture more overall spaciousness, but with diminished airiness around each soloist. At least that's what I heard when I listened to the Handel *Messiah* CD. My notes indicate "more air and reverb" for the 3015A, while the ET presented "more transparent" voices.

Tango was the tie-breaker. Here the impacts and dynamics were more impressive with the ET650PX Mk.II. The Tandberg had a slight tendency to bloat the sound, and transients sounded rounded off. The ET's tactile assertiveness was sorely missed.

Conclusion

Digital can only do so much—without analog it's nothing. The Euphonic Technology CD player is proof positive that carefully crafted analog circuits can do wonders to improve the sonic worth of a digital product. It acquitted itself admirably when surrounded by such established names as Apogee, ARC, Classe Audio, Krell, and Museatex (an alphabetical listing plays no favorites). Michael Goldfield has produced a remarkably open-sounding CD player which impressed me most of all with its striking transparency. That's supported by refined dynamics, fine staging characteristics, and a smooth and extended frequency response. The ET650PX Mk.II's high-end aspirations should be taken seriously, especially at $1295. I recommend it wholeheartedly. S

DIGITAL PROCESSING & PROCESSORS

Martin Colloms takes a look at the state of the CD art and listens to Denon's DAP-5500 digital preamplifier and Marantz's CDA-94 D/A Converter

Denon DAP-5500: Line-level preamplifier with inboard digital audio processor. Three high-level inputs, three direct digital inputs (one is optical), two complete tape loops (analog), outputs for DAT. No phono stage. 17.1" W by 5.25" H by 15" D. Price: $1500. Approximate number of dealers: 300. Manufacturer: Denon America, 222 New Road, Parsippany, NJ 07054. Tel: (201) 575-7810.

Marantz CDA-94: Outboard digital/analog converter. Sampling rate: Compatible with 32kHz, 44.1kHz, and 48kHz (automatic selection). Frequency response (44.1kHz rate): 2Hz-10kHz ±0.1dB (fixed outputs and variable outputs at max level); 20Hz-20kHz ±0.3dB (balanced outputs). Dynamic range: 96dB. S/N ratio: 101dB. Total harmonic distortion: 0.003% (1kHz). D/A conversion: 16-bit 4x oversampling. Audio output level: 2V RMS (fixed and balanced outputs), 4V RMS (variable

outputs). Dimensions: 3.5" H by 18.125" W by 13.125" D. Weight: 25.3 lbs. Price: $1800. Approximate number of dealers: 15. Manufacturer: Marantz Company, Inc., 20525 Nordhoff Street, PO Box 2577, Chatsworth, CA 91313-2577. Tel: (818) 998-9333.

Stereophile's publisher Larry Archibald described his reaction to the sound of CD in the February issue ("The Final Word," p.210), and related an account of a music demonstration by Peter McGrath of Audiofon Records. This concerned the sound quality of an LP and a CD, both cut from the same Stellavox analog master tape, compared with the sound of the tape itself replayed on the same Stella. Larry noted his reactions, using a base score of 100% for the tape, this effectively representing a perfect master source. He came up with an average of 90% for vinyl, played on the state-of-the-art Goldmund Reference, and 80% for CD. The latter score was arrived at using one of the better current machines, the Accuphase DP70.

I believe Larry's perception of the relative merits of the two media to have been wholly accurate, and can offer the following supporting evidence. The scoring system used as the basis of my subjective reviewing is open-ended, at present running from 0 to 30; for example, a properly matched Linn Sondek LP playing system scores 15, the Goldmund Reference 24. Most turntable examples from Thorens and other similar respectable companies score between 11 and 12. I have found that CD players do not come close to the big Goldmund: a properly aligned Accuphase DC80/DP81 player/processor, for example,[1] just hits 16, the top scores achieved by the more respectable single-unit players lie in the 9–11 range, while the average score for CD in my system is just 8.8. If, for the sake of argument, we suppose that Larry's audition with a DP70 CD would place it on my scale somewhere between 10 and 16—let's hedge our bets at 12—then my rating would place the DP70 as achieving some 40% of the performance of the Goldmund Reference, which would largely confirm Larry's present poor opinion of CD.

While it may certainly be argued that the Goldmund Reference is a rare and unusual creation, with an acknowledged superb performance, it does prove an important point for vinyl, namely that despite all the easily measured quantifiable analog errors in the vinyl replicating system, it can at present more closely approach the original source than can CD. It should also be noted how far ahead of the pack the Goldmund is, when compared with many other highly competent players, such as the Alphason, Linn, and Roksan.

In the evaluation of CD replay we have to include the encoding format, the quality of the encoding recorder, and that of the player. We still do not know the ultimate performance limits of the 16-bit, 44.1kHz CD format. All subjective tests so far reported have clearly been hamstrung by the limitations in both encode and decode quality, and I am certain we have yet to hear the performance limit of the format or the medium itself. On the second point, we know that most A/D converters and their associated filters are at present relatively primitive, and that much progress is about to be made in this area. In the coming year we can expect a continuing increase in the quality of digital encoders, particularly from audiophile labels. This will effectively improve the sound of existing CD players, much as a fine, direct-cut LP improves the results obtained from a player otherwise judged on normal records.

As regards the third point, even the Accuphase '81 combination is clearly limited by present technology, as good as its exposition is when judged by the competition. One of its strong points is the use of a discrete high-speed D/A converter which delivers very good low-level resolution when in good "state-of-the-art" tune, and clearly demonstrates the worth of a good performance right down to the 16th bit. Theoreticians could point to word-length limitations and resolution constraints in its twice-oversampling Sony digital filter, while others could pick holes in the particular execution of its analog circuitry, the ultrasonic filters, and the specific choice of passive components. (None of these are of particularly audiophile grading.)

However, the point I am trying to make is that, in general, CD is far from perfect as yet, and I do not wish to single out the Accuphase for isolated criticism. We can expect real improvements in CD sound quality in future, for example, from a later generation of the DP81 or an equivalent design, perhaps fitted with a competent 4x- or 8x-oversampling filter,

1 Reviewed for *Stereophile* by JA in Vol.10 No.6.

and featuring optimum analog circuitry; this could potentially score 18–19 on my rating scale. Add in a generous helping of discs made with new-generation "audiophile"-engineered digital encoders, and it is pretty obvious that topnotch CD replay could hit a notional subjective score of 20 or more if judged by the quoted late-1987 standard. This should be of some comfort to vinyl fans who are depressed at the rapid encroachment of CD in the marketplace. In my opinion, the CD format does have the potential to make the audiophile grade.

My figures suggest that Larry will find the best CD replay approaching the Goldmund Reference sometime in the early 1990s, and at a far lower cost, while we cannot ignore the fact that middle-bracket, high-quality CD players will achieve sonic equivalence to similarly priced vinyl players by the beginning of 1989. By the end of next year, it is likely that the "Linn-Roksan-Alphason" group will be served sonic notice by similarly priced "audiophile" CD players or processor combinations at around $3k–$4k.

One cannot guarantee, however, that CD will eventually surpass the 1988 Goldmund Reference replay standard, and it will certainly be a technological and audiophile disappointment if it never does. Yet the rate of progress in CD replay sound quality since the format's launch has not noticeably leveled off, large group tests of CD players indicating an average of 8% progress in sound quality per year, accompanied by a similarly proportioned annual price reduction. By comparison, LP players have shown an increase in price of typically 6% per year accompanied by a leveling off in sound-quality improvement, the rate of increase now approximately 3% per annum. Clearly, if this goes on, the LP will ultimately succumb to CD in high fidelity. The transition is inevitable over the next few years, except in the exclusive preserve of those few hundred Goldmund Reference systems worldwide.

To fulfill the original digital promise of "perfect sound forever," CD replay not only has to beat the Goldmund Reference but must still more closely approach the original source. This ultimate goal may not be possible for the format as it currently stands, and we may well have to look for 18- or 20-bit encoding at an 80kHz or greater sampling rate for it to be feasible. Such a format change is unlikely for decades—once a worldwide standard such as CD or LP is well established, it can endure for decades, even given the present rate of technological progress. Thus we may have to wait until the year 2010 for the genuinely higher-quality successor to CD. For the present, it is up to us to make the best of CD and take heart that significant improvement is within reach.

This preamble leads neatly into the subject of digital processing and processors, as these separate and/or add-on digital encoder units are intended to provide a route to improved CD replay quality. My reference player, the DC80/DP81—yes, it has now been returned to the distributor!—is just such a system as the DP81 is also a stand-alone processor, taking a standard multiplexed serial digital datastream as input. Other processor designs which have become established include the Sony DAS-702/703 models (*Stereophile* Vol.9 No.8, Vol.10 No.4). Two-box–processor CD replay is becoming more fashionable, with models from Marantz, Philips, Micro Seiki, Denon (the DAP 5500, reviewed by George Graves in Vol.11 No.1), Arcam, Cambridge Audio, ASC (a UK studio-oriented unit) currently, and others soon to be available. In addition, some manufacturers are beginning to offer preamps and fully integrated amplifiers which incorporate digital processor sections. These provide an interface-coded digital input and monitoring sections, clearly with a view to compatibility with R-DAT and other similar recorders. An example is the Technics SU-A60, which offers 4x-overreading and 18-bit–resolution decoding.

Typically of a new medium, many of CD's technical buzzwords mean very little even to CD engineers. The CD specification implied a player built to a standard specification with normal sampling at just over twice the highest recorded frequency of 20kHz, namely 44.1kHz, having a coded data density of 16 bits based on a set of 2 to the 16th power binary coded levels, equivalent to 65,535 amplitude steps.

The original Sony and similar players were therefore 16-bit, single-sampled, whereas Philips had gone too far in the development of their original 14-bit format and did not have an available 16-bit digital/analog converter. They therefore stuck to 14-bit D/A conversion, enhanced via the clever digital computation carried out in their advanced digital signal processor and digital filter. The point behind

digital filtering is that it can be of virtually any complexity according to the available price and specification, and in theory need not degrade the music signal at all. With single sampling, a very complex analog real-world filter with brickwall characteristics is required after conversion, and this component is potentially prejudicial to sound quality. Much of the blame for second-rate CD replay quality has been laid at this brickwall filter's door. If the digital filter can be made to operate at higher rates than the original sampling—at oversampled rates—its operation is beneficial both to low-pass filtering of the output and to resolution. As Philips had already developed a single-channel, high-speed, current-output 14-bit D/A converter and chose 4x-oversampling to give the appropriate resolution.[2] In practice, a decent 15.5-bit resolution was achieved for the overall system. Thus the Philips idea became the basis for a number of audiophile designs.

From then on, the race was on among the international manufacturers to add oversampling, digital filtering, more bits and more DACs on the crude assumption that the more techno features you throw at the public, the better the image and the more machines you sell. The fact that the sound might also be better I am sure is of secondary concern.

Technics and Yamaha were briefly in the lead with 2x-oversampling and a single D/A converter, this time-shared between the left and right channels (giving rise to that characteristic 40° phase shift between channels at 20kHz). More advanced models sported two D/A converters. Then Sony joined in with some heavyweight designs, featuring 2x oversampling, technology which has now found its way to their latest "Discman" players (see "The Audio Cheapskate in October). For a while, the Japanese lacked a fast enough 16-bit DAC for 4x-oversampling, while Philips jumped ahead with a redesigned digital filter and a fast 16-bit DAC, two contained on one chip, this arrangement still prevailing. Once again, the competition was fierce: other designers struggled to go to 4x-oversampling to match the Philips achievement. Sony took the easy way out and used the Philips DAC in their upmarket machines, accepting some loss in resolution through the use of slower DACs in their budget models.

Interestingly, the 4x Sony digital filter had its processing power oriented toward the low-level region and it can provide a high linearity from selected Philips D/A converters. Philips itself has opted for a high-level orientation said to give greater headroom or overflow margin in the processor, at the expense of low-level resolution. Thus the performance of the Philips players is weak below -84dB, *ie*, at the last bit.

In theory, sampling rates could be anything you like, within the speed limitations of the chips used. At Cambridge Audio, Stan Curtis has opted for 16x oversampling in the CD2, and 32x for the Mk.II version of the CD1. The Curtis topology is to subdivide, or multiplex, the 4x-oversampled data output from the digital filter and feed increased numbers of time-shared DACs. In the CD2, there are four per channel, each running at one quarter the 16x rate, and time-sequenced so that the summed output is equivalent to a complete 16x reconstruction. The digital switching harmonics will now be so high in frequency that barely any analog low-pass filtering is required at all. For the new CD1, eight DACs are time-sequenced per channel, each clocked at the 4x digital filter rate, making 32x in all. The sampling rate is simply the number of digital bites made at the analog cherry.

Remembering that the digital bits represent the code for the little steps making up the representation of the audio signal variations, the other side of the technohype associated with CD concerns the problem of somehow increasing the number of steps, or claiming to. More steps in replay could be taken as implying higher resolution, but the benefit here is arguable, since in theory the CD code itself cannot be better than 16-bit, aside from a small enhancement from dither on record. In any case, few recordings at present offer better than 15-bit accuracy—digital recording is a far more difficult process than digital replay.

Yamaha uses 18-bit descriptions for their Hi Bit system, but this really relates to some clever internal switching which makes their DAC work more accurately to the 16-bit standard at

2 Contrary to what you may have read in other publications, there is no sleight of hand involved here. Classic information theory indicates that a shortfall in the number of bits in the digital word length can be compensated for by increasing the discrimination in the time domain. Each doubling of the sampling rate in the digital filter means that, given perfect components and suitable data manipulation, a DAC with one less bit will still output an analog signal with the original full resolution. Thus with 4x-oversampling (or, more correctly, over-reading as Peter Mitchell explained in "Industry Update" a month or so back), Philips could get away with using 14-bit DACs but still achieve 16-bit resolution. —JA

the chosen oversampling rate, rather than producing a working 18-bit replay. Technics uses 18-bit descriptions for their digital filter, correctly implying that sufficient space is available for 16-bit digital "words" to be properly computed and processed. Even here, overflow may occur; some designers have suggested 24-bit as a good starting point for the digital filtering oversampling stage. By adopting the studio standard of 32-bit, the Mk.II Cambridge Audio CD1 aims to completely solve such questions, though it should not be immediately assumed that everyone should have 32-bit. Cambridge omits to mention in its literature the real reason for 32-bit processing studio consoles, namely the need for wide-range frequency-response equalizations, generous operating headrooms, and distortion-free, 90dB attenuator-fade operations, little of which is specifically required in a domestic player.

More important in my opinion than either the rate of sampling or the number of bits is the build and sound quality of the player, and here a good reviewing technique is more valuable in assessment than manufacturers' claims for oversampling, extra bits, or other aspects of modern hi-tech.

CD Replay Resolution

It has been stated that the CD standard provides for a 16-bit code for audio signals, and that higher resolution is not possible from the system. As it stands, pure 16-bit replay from a perfect computer-generated digital test signal will have finite linearity and resolution. Thus the sum of the first 10 distortion harmonics of a 1kHz signal theoretically lies at about -105dB relative to a 0dB reference level, while the total sum of *all* noise components and distortion harmonics will lie at around -98dB over the 20Hz–20kHz audio bandwidth. Real-life players have achieved distortion levels of around -100dB at full modulation, while replay of -89dB tones has given figures of -25dB for distortion, practically at the theoretical limit. If we explore the visual waveform and the complementary distortion of a -90dB signal, the sinewave should appear as a symmetrical representation of only three observable levels, +1, 0 and -1 (though noise often obscures the steps in practice). In theory, the correlated distortion sum can still be 15dB down on -90dB. If the recorded modulation level is reduced to -100dB, what can we expect to hear on replay? There is only one level transition available in either direction, but if it is well-centered around the amplitude axis, the -100dB sinewave will not reach a high enough level to switch it; hence, no output is possible, just digital silence.

So let us try and explain the following results. In my Sony digital recorder feature in the August 1987 issue of *Stereophile* (Vol.10 No.5), figures for Sony PCM-1630 record/replay linearity were published, which showed that with a 16-bit system, one *could* record sinewaves down to -120dB and recover them with only 2dB amplitude error. A test tone at -90dB was replayed with a wave-shape fidelity exceeding the three-bit representation (fig.1) despite, or perhaps because of, additional random noise. The DTC1000 R-DAT recorder was also tested to -110dB with a quite accurately recovered amplitude of -109dB. A recent test on an upgraded Mk.I Cambridge CD1 player using the track on the CBS CD1 test disc which has encode dither revealed an accurate -100.5dB recovery of a -100dB modulation. Moreover, the spectrum analyses of the output show only the fundamental rising from a continuous floor of random noise, the kind of result so strongly approved of for analog storage media. Fig.2, for example, shows the spectrum for a -90dB 1kHz tone recorded and

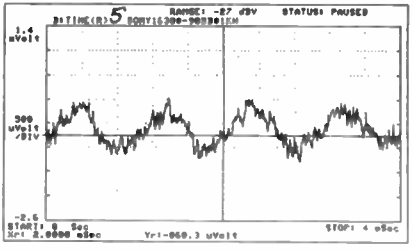


Fig.1 Sony PCM-1630, waveform at –90dB

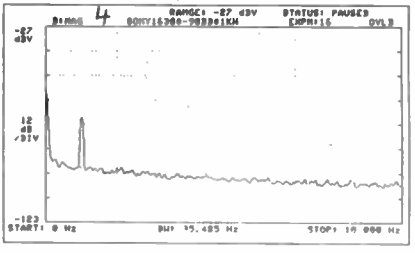


Fig.2 Sony PCM-1630, spectrum for 1kHz tone at –90dB

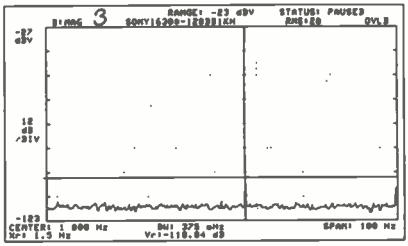


Fig.3 Sony PCM-1630, spectrum for 1kHz tone at −120dB

replayed via the PCM-1630; note the absence of harmonic spikes in the output at multiples of the 1kHz frequency. Fig.3 shows the theoretically impossible recovery of a test tone from the 1630 recorded at -120dB. (The actual replay level is -118.04dB, revealing an approximate 2dB level error.) Again note the absence of any distortion harmonics, the recovered tone rising cleanly from the noise floor.

At this point, some interesting contradictions can be introduced into the discussion. Note that the Sony 1630 has a non-oversampled encode with a 2x-oversampled replay, while the CD1 is 4x-oversampled replay with three "14-bit" DACs per channel. All three examples exhibit something approaching 18-bit replay resolution, yet theoretically conform to the 16-bit CD standard. Now consider Yamaha Hi Bit technology, as exemplified by the CDX 1100—a 4x-oversampled machine with level-switching 16-bit conversion, simulating 18-bit precision, plus 18-bit digital filtering and oversampling processing.

On test, this player delivers true 16-bit performance with a textbook three-level output waveform at -90dB. Now, when the dithered track from CBS CD1 is used, this and other replay designs exhibit higher linearity, resolution to -100dB, and purer sinewave reproduction. It would appear that the presence of dither noise on record modifies the 16-bit code words generated in such a way that additional information is encoded about signals below the theoretical resolution of the 16-bit format. If that information is present on the CD, then it follows that the enhanced resolution replay offered by oversampling or Hi Bit can recover it. In a sense, dither not only ameliorates the LSB problems in an ADC, it surpasses the 16-bit code format itself. The result is that a system resolution on the order of 18-bit is possible from CD with a desirably pure fade into noise for both encode and decode.

The application of oversampling techniques to the digital encode process is long overdue—see "Industry Update" in the May issue—and should result in the elimination of the brick-wall filter in the recording chain, and also improve the linearity resolution and intermodulation performance of the ADC process. For example, a proposal for a 4x-oversampled ADC could comprise a simple high-quality Bessel filter at 30kHz, placed between the microphone and the sample-and-hold input, the latter clocked at 176.4kHz so that alias or image distortion would only be possible for frequencies from 88.2kHz upwards. Filtering in the digital domain could be programmed to account for phase and amplitude errors originating at the microphone, and if audiophile standards were applied to the analog circuitry and all the power supplies, there is no good reason why an audiophile-quality encode should not be achieved.

Signs of genuine advance in the art of digital encoding are appearing (see JGH's report on the Colossus prototype in Vol.11 No.4 and Bill Sommerwerck's review of the dbx 700 system in Vol.10 No.5). In my report on the Sony DTC-1000ES R-DAT and PCM-1630 it was pointed out that the overall record/replay quality was nothing special, most of the blame for modest sound quality accorded to the ADC section and its brickwall filtering. It is clear enough that, starting from a modest subjective standard, considerable advances in encode quality are possible, advances which could well change our view to one favoring CD as a worthy audiophile medium.

You are entitled to ask whether resolution at -90dB or -100dB is important to fidelity. This question has, in fact, been partly resolved in the pages of *Stereophile*—for example, the correlation of the purity and evenness of fadeout of the CD1's dithered tone with low-level sound quality, ambience, and clarity. I reported in *HFN/RR* (February 1988) that a simple test had been able to establish the importance of channel-balanced high resolution at -90dB and below, this in connection with the Accuphase DP81 processor. This model has an adjustable (only by an expert!) DAC, and, when first auditioned, was found to perform very well subjectively, despite a degree of measured error at -90dB due to drift (it was an early demonstration sample). The drift was surpris-

ingly high at -12.5dB left and +7.8dB right, all the more disturbing due to the lopsided nature of the error.

Upon critical adjustment of the LSB weight, the two channels were reset to a 0.3dB accuracy at -90dB, and the decoder immediately reauditioned. The measured distortion was somewhat improved, and it was gratifying to discover a noticeable improvement in sound quality, judged to be 8 to 10%. On low-level signals, with depth and ambience available in good measure, the DP81 achieved an improved recovery, sounding more transparent and noticeably better focused, particularly toward the back of the soundstage.

As increasing demands are made on CD replay, with an expectation of higher sound quality, we will also see improvements in low-level resolution and channel balance. Performance at -90dB and below *does* matter.

If a well-adjusted Accuphase DP81 or player/processor of similar quality were to be partnered with recordings made with encoders of new audiophile caliber, the results should stand comparison with some of the top analog replay systems available today, with the exception (for the time being) of such state-of-the-art units as the Goldmund Reference. I noted in the Accuphase review that while its sonic performance was the state of the CD art, its technology and build still left considerable room for improvement. Though it is CD's fifth anniversary, much is still to be done to approach the true potential of the medium.

Note: I was disappointed to hear of an as-yet-unconfirmed report that the four-channel Colossus actually contains a pair of modified stereo Sony PCM-F1s! Perhaps this is why Gordon was not told very much about the "exciting new digital technology!" I await further illumination on this from the Colossus people. [See "Manufacturer's Comments" in this issue—Ed.]

The Digital Processor/Decoder

A stand-alone digital processor, or, more correctly described, digital decoder, is one route to improved sound quality. By separating the CD transport and servo systems, the track selection and display sections, and the central processor and error correction from the music signal-handling portions—the oversampling digital filter, the DACs, and the analog output—improvements in electrical isolation and sound quality can be made. Indeed, an increasingly popular form of coupling between transport and decoder uses an optical fiber with no electrically conducting path whatsoever between the two. This is important: CD players are riddled with fast, digitally related interference on both their ground lines and chassis returns. An international standard has been agreed upon for the interfacing of units communicating in a serial digital audio format based on a single coaxial cable, and now supplemented in consumer products by an optical fiber connection, the appropriate socketry generally made by Toshiba. This interface allows serial digital data to be readily transmitted between units almost as easily as line-level analog is transmitted between sources such as tuner or tape to a preamp or power amplifier. A long-term goal for an all-digital system would comprise a system virtually devoid of analog cabling or contact systems and their associated sonic losses. Thus the loudspeaker would operate from a built-in or local power amplifier with a very short analog section driven directly from a high-performance decoder/converter. The link to the control unit would be optical, while the control unit itself would operate in the digital domain with programmable digital filtering and tone controls, a digital volume control, and the ability to compensate for phase and response anomalies in the sited loudspeaker system. Its interface to digital tape/R-DAT and CD sources will be entirely to the international format. Full remote control goes without saying.

Advances in digital replay sound quality are to be expected from such a simplification of the analog chain. But one may legitimately inquire about the treatment of existing analog sources. One solution which the digital designer may well suggest, and which will horrify analog aficionados, is the analog-to-digital conversion of such sources as an input facility on the digital control unit. I believe that very few audiophiles would accept this, and for some considerable time full analog has to coexist with the need to make digital audio systems more logical. Speculatively, the all-digital scheme—"digital direct," if you like—could be supplemented by a parallel analog path, changeover between the two easily accomplished via the remote-control interfaces.

Digital decoders are turning up in unlikely places—for example, in integrated amplifiers (where so far they have been of little benefit),

in analog, where their value has been better appreciated (*pace* Alvin); and in an apparently growing market for accessory decoders to be used with existing CD players.

A decoder is designed to accept multiplexed stereo, serial data to the international digital format, and begins with a pulse-shaping and restoring section. The now well-formed, logic-level pulse train feeds a microchip processor, with examples currently made by Sony, Philips, and Yamaha, which carries out a number of functions. Its first job is to extract the clock signal from the complex data mix, determine its equivalent code rate (32, 44.1, or 48kHz), and lock onto it. External phase-lock loops are often used here to ensure precise, jitter-free clock regeneration. An advantage of such decoders is that only one phase-locked clock is present in the entire digital section. No other clock pulses are present to cause interference.

The input processor can also determine whether the incoming data are valid, and will keep the output muted until clean data are available. It also recognizes whether the data have been subject to pre-emphasis, and directs the appropriate de-emphasis control in the subsequent analog section. Its output is still left/right multiplexed, and an additional line controls the timing of the left/right digital words. Here two interesting manipulations are possible in the digital domain. The data are present in twos-complement form,[3] and the trivial act of digital signal inversion achieves the following results: if the word flag is inverted, left is switched for right at the analog output. If the data words are inverted, the analog output is polarity-inverted. This trick is not immediately obvious unless your command of binary arithmetic is sound.

The digital filter comes next, another processor or number cruncher whose filtering stage is generally preceded by an oversampler. This is little more than a locked, higher-frequency clock operating at some multiple of the original 44.1kHz or related sampling rate. Oversampling is a mathematical translation which allows quantization noise and distortion to be moved into the higher ultrasonic regions where they can be more easily rejected by the digital filter. Very high orders are possible for a digital filter which uses transversal principles, while a linear-phase characteristic can also be maintained over the audio bandpass. Digital filters have stretched well beyond the early versions now with 293rd order, this figure quoted for a recent example with the passband ripple reduced to an almost unmeasurably small amount, much less than a thousandth of a dB. Such is the popularity of replay oversampling that few CD players, and no processors, omit oversampling these days, thus all avoid the use of complex, high-order, analog brickwall filters. Resampling or oversampling allows the original 16-bit digital word to be read into the filter "computer" with higher accuracy, and these generally operate with an over-bit output word, usually 18-bit. Again, all this means is that the original code has been sampled and filtered with less errors impressed on it.

18-bit digital-to-analog conversion is the natural complement to the 18-bit digital filter output and, once again, the "recorded 16-bit" data is almost perfectly reproduced due to the minimal losses imposed by a higher replay resolution.

Following conversion, the high-rate oversampled signal should be low-pass filtered, requiring only a simple and audibly transparent third-order or simpler analog filter for a final cleanup. Potentially, the oversampling technique offers superior sound quality, and this is generally borne out in practice.

The Decoders

To support this feature I have put two models to test, the Denon 5500 and the Marantz CDA-94. The Marantz uses the current quadruple-oversampling, 16-bit Philips system, while the Denon is a double-oversampling design. (Accuphase uses a 2x, 16-bit topology for their DP81.) I have also included a section on a Technics preamplifier, the SU-A60, which incorporates a 4x-oversampling digital filter combined with pseudo–18-bit DACs. Although

3 For those not familiar with the nature of "twos-complement" encoding, rather than simply let the lowest analog voltage level be equivalent to 0000000000000000, *ie*, 0, and the highest to 1111111111111111, *ie*, 65,536, so-called "offset-binary coding," the digital audio code is modified by flipping the most significant bit (MSB). The MSB thus indicates voltage polarity, positive when zero, negative when set. Digital 0 then becomes the equivalent to the zero-crossing point of the AC waveform, with 1111111111111111 being equivalent to -1 and 0000000000000001 being +1. The lowest possible level is now 1000000000000000 and the highest its inversion, 0111111111111111. The reason this is done is so that the coding operates symmetrically about the mid-point of the maximum voltage swing. With offset binary, where the signal is described by only positive digital numbers, any kind of of processing in the digital domain, including storage of the data, can easily result in an increased offset and thus a loss of accuracy. An additional advantage of twos-complement encoding is that it minimizes the circuit complexity for mathematical signal manipulation. —JA

Denon DAP5500 digital preamplifier

this Technics is not currently available in the US, its DAC section appears identical to that used in the top Technics CD player, the $825 SL-P990, and its performance is relevant to US readers in that it represents what can typically be achieved from this technology.

Denon DAP5500: $1500

This review is a follow-up to George Graves's earlier subjective report (*Stereophile*, Vol.11 No.1). The DAP5500 is more than a simple processor or CD digital decoder; Denon has chosen to include a versatile line preamplifier which can interface between the processor section and the power amplifier. This both complicates the assessment and increases the range of applications for the design. (Incidentally, I have tried the matching POA 6600 power amplifier and found it to be a substantially good-sounding unit in its own right.)

Denon misleadingly calls the DAP5500 a "digital preamplifier," but taking a strict view of the matter, this is not the case. A preamplifier is traditionally held to be capable of conditioning audio signals, amplifying and attenuating, balancing, tonally modifying, filtering and impedance matching. If "digital," then these operations must occur in the digital domain, and the Denon fails the condition on virtually all counts. The only "digital" part is the processor section, converting a selection of digital inputs—satellite, DAT, and CD (several of them to boot!)—to line-level analog audio.

The rest of the unit is a solidly engineered, straight-line analog control unit. The main controls are volume and no less than three selectors; in fact, there are so many selectors that life with the '5500 is rather confusing at first. For example, there is the main input selector, logic-controlled, providing Digital 1, 2, 3 and Line 1, 2, 3. This is complicated by subsidiary features such as "preset select" (which input is automatically selected on power up), "digital direct select," "source direct select," digital (tape) monitor, and (analog) tape monitor (tapes 1 & 2). In addition, there is a mute button, a preamp audio "off" button, and a +16.5dB gain button. And let's not forget the "record out" selector which offers DAC out, off, source (any), tape 1 and tape 2. Perhaps you can now appreciate why I could not get a squeak out of the unit at first! So many switch combinations resulted in zero output. Personally, I feel that if we are to live comfortably with such products the system design and the ergonomics have got to be improved.

Technology: Denon has pulled out all the stops in this excellently engineered and finished design. Digital and analog sections are separated, not only by individual power supplies and associated transformers, but also by separate chassis sections. Opto-isolators couple the left- and right-channel digital datastreams (and the sampling clock) to the converters, without the need for any hardwired ground link across which switching or other digital noise might pass. The internal organization is worth studying, if only to better understand how to use the product. Balanced and unbalanced audio outputs are separately available, fed via a volume control and presenting a unity gain buffer. Many power amps will run to respectable sound levels without further intervention. However, if more gain is required the +16.5dB gain stage may be switched in, disengaging the "digital" and "source direct" modes. The line inputs are unbalanced, with the exception of Line 3, which includes additional balanced input amplifiers. The processor analog output may also be accessed directly without additional stages (at the "DAC output," like a CD player output), this a standard 2V for full modulation. Digital inputs include one opti-

cal and three on the coaxial format. To add analog disc to this unit, the output from a cartridge needs to be preconditioned by an additional RIAA equalizing preamplifier.

The selected digital input is fed via signal conditioning gates and buffers to the Sony CX1076P universal acquisition chip, where, in conjunction with an external phase-lock loop and IC variable-frequency oscillator, the incoming clock (32, 44.1, or 48kHz) is resynchronized and locked. This aspect endows processors with an advantage over CD players. Only one clean digital clock is present. The acquisition chip separates the audio data from the other information supplied on the input bit stream, which includes whether the signal is pre-emphasized or not. Auxiliary logic circuits recognize and indicate the incoming sample frequency. The L+R data is fed to an SM5804D digital filter and 2x-oversampling chip, whose outputs comprise left and right channels, the clock and the "latch" signal (for anti-glitch gating in following circuits). These signals are buffered/gated before reaching the high-speed couplers. A special 16-bit DAC scheme is adopted by Denon, whereby four Burr-Brown PCM-56KP serial-input converters are used in a balanced push-pull mode. As explained earlier, with twos-complement digital code, inverting the data stream is, in fact, equivalent to inverting the absolute phase. For the '5500, in-phase and inverted-phase digital signals are made available. Of the two DACs in each channel, one operates in phase, the other out of phase. The balanced outputs are summed by a conventional bi-phase input IC operational amplifier. By this means, most of the curvature of the DAC characteristic should be nulled by the balanced working, which also confers a signal/noise ratio improvement. DAC offsets are individually tuned to maximize resolution. The analog filtering which follows is seventh-order, using inductors and capacitors. De-emphasis is passive, relay-switched; the output filter is based on a Bessel function and is close to a linear-phase characteristic.

With the input selector, life in the '5500 becomes more complicated. The 16.5dB (x6.6 gain) amplifier is a subsidiary module comprising a dual op-amp with low noise and discrete FET differential inputs. If bypassed, on "Direct," the signal is led to a complementary FET follower comprising a total of 16 FETs for the two channels. This signal may be used directly at the "preamp out" terminals or fed via two more IC op-amps in bi-phase mode, working to deliver the balanced audio output. Despite the level of care taken overall, here it looks as if rather too much is happening to a simple line-level signal in this control unit. The power-supply regulators are selected low-noise '78 series IC chips.

Sound Quality: The '5500 was auditioned both as a pure processor via the "DAC out" terminals and also by assessing the complete control unit as a line preamp. First impressions were encouraging for the processor, though it was not considered specifically better than Denon's CD players, the DCD1700 or DCD1500 II, for example. It had its good points—for example, a precise, tight, even bass, showing good rhythm and tunefulness. Sounding a touch larger than life, the initially impressive quality wore off somewhat during the more extended auditioning.

The DAP made a good attempt at the recovery of depth, ambience, and transparency, but ultimately we found it wanting when compared with the references. The delivery of mid- and full-volume detail was rated highly, but some loss of low-level detail was noted, and, considering the price level, the '5500 did not sound as dynamic or as involving as it should. Separately auditioned, the line preamp section was in a similar class, sounding best on unity gain via the unbalanced outputs and worst (though not much worse) with the gain stage operative and via the balanced outputs.

This result may be contradicted if the '5500 is used to feed Denon's promising balanced-input power amps, *eg*, the POA 6600, directly. Delete your existing system preamp and, perhaps as a result of its optimized internal grounding or the absence of redundant interconnects, plugs, sockets, or whatever, the complete DAP5500 sounds better than you might expect from the preceding subjective criticisms. I still do not rate it as a great "line preamp," but when it is sourced from its own processor and drives a power amplifier directly, the sound quality steps up a notch. Focus is improved, a better sense of pace is developed, and the sound is firmer as well as more involving. However, it still does not reach the performance standard of, say, a CAL Tempest used with a front-rank preamplifier such as an SP11 II, a Cello Audio Suite Premium, or the like.

The '5500 may have provided a limited kind of reference when first judged in *Stereophile*, but it is now overshadowed in its price class by the current Marantz CDA used via its optical interface. Tried on both coax and optical modes, the latter did not significantly aid the Denon's performance.

Lab Report: A slight oddity was noted with respect to the frequency response, which suggested mild "musical" tailoring, a shade of low-bass lift and still greater treble "rounding," +0.2dB and -0.6dB respectively (fig.4). This is potentially audible to bat-eared critics! Channel balance was very good, both channels held in time alignment but, amazingly, the absolute phase was inverted (see linear phase but inverted impulse waveform in fig.5).

Regarding linearity, the DAP5500 measured less well than the latest generation of players and processors. At 1kHz full level, the harmonic distortion (excluding noise) measured -91dB, a fine result, though -100dB should be possible. This pattern was repeated at lower modulation levels, down to -80dB for example, where -17.5dB was measured. In turn, -28dB is possible (13.3% *vs* 4%). The harmonic spectrum to 100kHz of a -20dB, 1kHz tone (fig.6) can be seen to have a long series of components from 77dB down to -116dB. Few other spuriae were present, and the unit delivered excellent results for high-frequency intermodulation, the spectrum (fig.7) notably clean for the -10dB 17/20kHz mixed-tone level. At full modulation, the audible 1kHz difference tone lay at -86dB, improving to -93dB at -10dB modulation.

With signs of mild compression at full modulation, and notably increasing distortion at low levels, low-level recovery was the next test. Here the good test correlation was maintained, with the left channel 7.6dB and the right 5.86dB too loud for a -90dB low-level tone. This demonstrates a compressive curvature of the linearity slope which is the very thing the technical design aims to avoid.

It did not do well in the recovery of the undithered -90dB waveform, showing asymmetry and peak expansion, distorting the true waveshape (fig.8). (For good performance here, see fig.15 in the Technics SU-A60 report, which exhibits an almost ideal waveform recovery.) The monotonicity test, which shows the level change as the data word is incremented 1 LSB at a time, was confused by some aliasing effects (in the analyzer), but clearly showed the DC offset at the start of the stepped ramp (fig.9). No offset, of course, should be present. Overall, a resolution accuracy of only 14.8 bits was indicated. One audible consequence of the low-

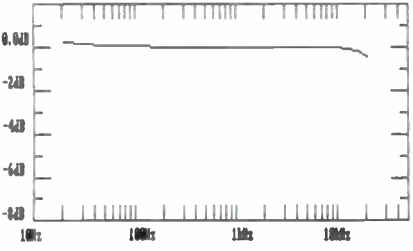


Fig.4 Denon DAP5500, frequency response

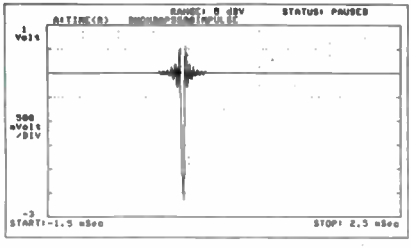


Fig.5 Denon DAP5500, impulse response (at this price, should it be phase-inverted?)

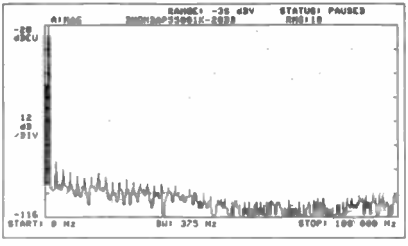


Fig. 6 Denon DAP5500, spectrum for 1kHz tone at −20dB (note sequence of high-order products)

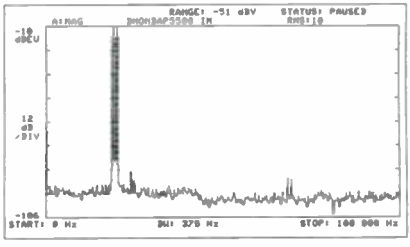


Fig.7 Denon DAP5500, 19/20kHz intermodulation spectrum (low level of out-of-band spuriae)

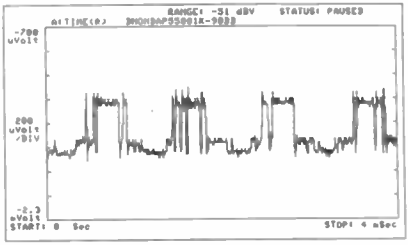


Fig.8 Denon DAP5500, undithered waveform at −90dB (note asymmetry of what should be three equal steps)

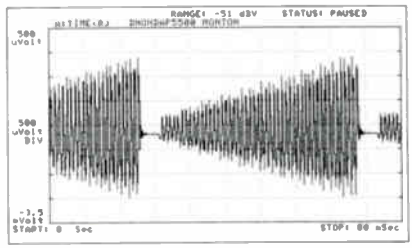


Fig.9 Denon DAP5500, monotonicity test (note DC offset at start of ramp and low-level asymmetry)

level compression can be an apparent enhancement of detail and ambience at low sound levels, which may help to account for the mixed reports received by this component.

Briefly clearing the other results, the output was almost precisely 2V from a very low 11-ohm source impedance. The de-emphasis was pretty accurate, with spuriae well rejected, and the electrical signal/noise ratios lay in the 101–108dB range, according to the measurement mode. The unweighted result of 106dB with de-emphasis was as good as any, and was considered a fine result.

Conclusion: While giving a strong initial impression, the DAP5500 was not found to be wholly rewarding on prolonged audition. However, these results were to some extent mitigated by the beneficial association with its own line controller, where a separate line preamplifier is a waste of time, particularly when the '5500 is used with the DOA 6600 amps. It is too easy to say "I told you so," yet it is clear that the lab performance is too far removed from the studied perfection of a number of recent designs. The effective bit accuracy is weak for the price, while the frequency response could so easily be arranged to be flat. Perhaps the full potential of this product will be realized in the second generation.

Marantz CDA-94: $1800

This long-anticipated heavyweight decoder is at last available in the US. Built in Japan, it sets a high engineering standard and sports a top-quality finish. Much of the delay revolved around the machinations of Philips, the parent company, and the lack of corporate will to proceed with the production of a version of a data-acquisition chip suitable for outboard processors. Ultimately, the Marantz designers chose the established off-the-shelf Sony LSI chip, while the decoding is the usual Philips 16-bit, dual-DAC, 4x-oversampled system.

Marantz chose to offer normal and balanced outputs in this decoder, though the line preamp function of the Denon DAP5500 is not provided. Like the '5500, it will accept optical and coaxial digital inputs.

Ostensibly designed to partner the fine Marantz CD-94 player (a Cheapskate favorite, also reviewed last month by Thomas J. Norton), the CDA-94 may also be used with a wide range of other players equipped with digital output terminals. While these certainly exist, the sonic differences between the digital outputs of various players, optical or coaxial, are much less than for their own decoded analog outputs. Thus the sonic identity of a good decoder is largely preserved.

The build quality of this model is topnotch,

Marantz CDA-94 D/A converter

with the unit founded on a diecast alloy chassis, sleekly paneled in satin-black aluminum (Marantz's traditional "champagne-gold" finish is also available), and set off by heavy wood-veneer side cheeks.

Inside, considerable care has been taken over the engineering and the design. Separate power transformers are used for the analog and digital sections, and the extensive, solid-state regulation comprises separate units applied to every important section. No expense has been spared with the balanced-output amplifier, a comparatively large, discrete, complementary design running in class-A. Earlier sections use the familiar Signetics NE5534 op-amp chip and its equivalents from JRC. High-end Marantz products show surprising sophistication—for example, in their choice of these ICs, fitted with copper leads instead of the usual tinned steel. Likewise, the designers' considerable expertise has led to the close specification of signal coupling and supply reservoir capacitors. As you might expect, the CDA-94 uses the current Philips chip set, the SAA7220 digital filter, and TDA1541 dual D/A convertor. Given the luxury status of the CDA-94, it is accorded high-grade selections of these chips, resulting in a performance rather above the usual Philips level, particularly with respect to low-level resolution and channel balance at low levels.

Sound Quality: Once warmed up, and with the DACs nicely settled down, the CDA-94 began to show its paces. The sound of this product has matured to something quite substantial during its prolonged gestation! Not only has the matching CD-94 deck grown into a well-rated design, but at an additional cost the CDA provides a genuine improvement, even if the increase is not as great as one might have hoped. (It was not even to the same level as the Mk.I CAL Tempest, even taking into consideration that machine's inversion of absolute phase). Nevertheless, as a processor, the CDA-94 comfortably beats all other currently reviewed models with the exception of the Accuphase '81, which in my opinion is still in a class of its own.

When used via the optical interface, with audio outputs taken via the superior balanced connection, the sound quality beat that of the Sony DAS-703, Denon's DAP5500, as well as the majority of existing "digital amplifiers." However, for this comparison, the test condition involved feeding the DAC output of the Denon to a separate line amplifier. If the Denon DAP5500 is used direct without a preamp, then its final performance in practical terms reaches that of the Marantz CDA.)

In character, the CDA resembled the superior kind of Philips-Marantz player, clearly offering that solid, dynamic effect plus a general consistency of sound quality over the frequency range, one which was maintained over a wider dynamic range than usual.

Many CD players are flawed by quality changes with signal dynamics. The CDA-94 was certainly more subtle than its less sophisticated siblings, sounding less brash and aggressive, while such usual distortions as treble gain and vocal sibilance were much reduced.

In the bass, the CDA sounded very secure—well-founded and consistently good from the low bass upward, showing a decent level of slam and extension without that unduly slack, lazy effect noted with some of the main-market prestige CD players.

Stereo staging was to a high standard, though a mild softening of fine transient definition took the edge off the ultimate impression of transparency and depth; the result was impressive, nonetheless. Stage width was good, while the CDA-94 made a serious attempt to decode the perspective layering in good orchestral recordings, and provided a strong impression of stable focus over the soundstage.

Judging by the most critical standards, the CDA-94's tonal quality remained on the lean side, though I dare say many observers would find that it was sweeter and more musical than most.[4] One quality worth mentioning was the sense of homogeneity—the sound was well-balanced and all of a piece, with no specific exaggerations or obvious failings to cause a distraction.

Such a performance puts the digital replay of the CDA-94 in the top five, in my opinion, regardless of its price or origins.

Lab Report: I shall not spend much time on this report, other than to provide the bare substance of the tests, since this machine performed very like any other of the selected-grade Philips technology decks when subjected to our lab program. The improved sound quality clearly resides in a combination of build

4 TJN felt that it was even a little too sweet. —JA

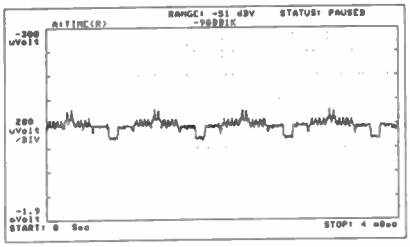


Fig.10 Marantz CDA-94, undithered waveform at −90dB (amplitude reduced by 6dB)

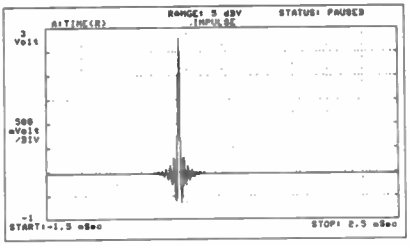


Fig.11 Marantz CDA-94, impulse response

quality, passive components, and the design of the analog sections—not in a number of specification enhancements to the digital side.

However, I can report one area of improvement, one where run-of-the-mill Philips and Marantz machines fall down. This concerns the matter of low-level resolution and linearity, as well as resolution below the 15th bit. With many Philips machines, the results are good to the 15th bit but collapse at and toward the 16th; fundamental signals often show variable replay-level errors of 8 to 14dB, different for each channel. Better build quality and the use of the latest version of the Philips chip set, selected for conversion accuracy, has resulted in a notable improvement with the CDA-94. For this sample, the -80dB record level was recovered with 0.5dB accuracy on the left channel and 0.35dB on the right. At -90dB, the recovery was 4.7dB low on the left and 6.2dB down on the right channel, giving too low a level for the undithered waveform (fig.10). This reduced error and better channel matching was significant compared with run-of-the-mill Philips-based players, even if the figures themselves do not match the current state of the art (see the data for the Technics SU-A60).

With this improved resolution performance, we also have better figures for low-level distortion; for example, -48dB, or nearly 0.3% at a -60dB undithered record level, implying a dynamic range that approaches 98dB. Careful analog circuit design has resulted in quite excellent results for high-frequency intermodulation of close to -100dB for the audible difference tone at both the 0dB and -10dB modulation levels. Full-level distortion was also pretty good, and better than the usual Philips results, now measuring -92dB, or 0.0027%. The impulse response (fig.11) can be seen to be virtually linear phase, with correct polarity. The output impedance was a low 100 ohms. All other measured parameters were to a good standard.

Technics SU-A60

This component may be seen as an odd inclusion here, comprising as it does a fully fledged, mid-priced preamplifier, a digital processor, and comprehensive digital input switching facilities. It offers moving-coil and moving-magnet inputs for analog disc, though these should not be taken too seriously. Yes, they do work, and might provide useful backup where a low priority is accorded to analog disc. The line input is rather better and would be considered quite respectable in its price class.

As Technics has at present no plans to distribute the SU-A60 in the US, the interest is provided by the digital processor itself. It did not look too prepossessing inside, constructed on a singie printed circuit board, and looking like a subsection pulled from a CD player. However, there is more to it than meets the eye, and its optically coupled location, remote from a similar Technics source player, seems to help it achieve a significantly higher standard.

Using the latest Technics player technology, the player sports pseudo–18-bit conversion using bit/gain-ranging 16-bit converters fed by 18-bit words from the digital filter. A wide range of digital inputs may be connected; it's worth considering as a digital control unit in its own right.

Technology: Built as a small printed circuit board—almost as an afterthought—and installed in a screened metal box above the main circuit section inside the preamplifier, the Technics decoder employs a sophisticated decode system which assures excellent results for noise, distortion, linearity, and spurious response filtering.

The heart of the system is the four-DAC con-

version unit, where two DACs are used per channel in a balanced mode, such that one DAC handles negative-going signals, one positive, these digitally separated.

This avoids the DAC having to work through its zero-cross area, where DC offset, low-level linearity, and MSB-switching glitches are common problems. Summing the balanced DAC analog outputs provides an improvement in linearity and signal/noise ratio. Another special aspect is the use of a ranging system, which scales the analog output gain of the converter according to the recorded signal level. In response to a code signal generated on the digital side, working in conjunction with 12dB controlled analog attenuation, the lower-level signals, (*ie*, smaller than 12dB below full modulation level) are digitally shifted up by 2 bits or 12dB, thus placing the more critical, quieter signals in a superior part of the DAC's operating range, and effectively making the system 18-bit accurate. Hence my characterization of these ranging 18-bit systems as "pseudo 18-bit" to distinguish them from true linear 18-bit converters such as the '65 series from Burr Brown.

Preceding the "4DAC" block is a high-performance, high-order 18-bit digital oversampling (4x) filter, working with so many coefficients that passband amplitude ripple is virtually at vanishing point. Low-order "quasi" output filters help to maintain a transfer function which is close to linear phase for the whole chain, at the same time preserving high rejection of spurious signals above 20kHz.

Sound Quality: While it is true that I have auditioned the disc and the line inputs of this unit, I shall only comment briefly on them. The disc input was better than you might expect, but set no audiophile standards; in truth, it did not compare with the RIAA inputs of a number of UK budget integrated amplifiers such as models from Creek, Mission, Rotel, etc. The line stage was rather better and did compare with a good budget model, but again, this did not amount to much. It clearly compromised the quality of the inboard digital decoder.

Thus we come to the processor part, which we auditioned via the optical interface, as well as its 2V rms direct output. It was compared directly with the current Technics flagship, the SL-P990, which uses much the same technology—and what a shock! The decoder was streets ahead of the player, and although my first impressions were moderated later, the initial reaction was one of disbelief, since the '60 was ranking confidently between the Mk.I CAL Tempest and my reference Accuphase DP81. While the '990 scored a modest 56% and the CAL 76%, the '60 was actually heading toward 85%! By the time the auditioning was completed, the SU-A60's score finally settled back to a fine 74%.

Key features of the Technics decoder sound were an exceptional clarity allied to a high resolution of detail. The rendition of subtle harmonic shadings and tonal color was particularly vivid through the mid- and treble registers. Stereo focus was quite exceptional, especially in the treble, while the bass had decent drive and pace, with good extension and power. It sounded lively and "open," yet without hardness, brightness, or an obvious tonal exaggeration. In addition, the commonly audible distortions—"grain," "tizz," or "edge"—seemed respectably low.

This was the basis for our initially strong response, but the final and slightly lower score was indicated by this unit's handling of dynamics. Hard to convey in words, the dynamics appeared somehow "processed," while climaxes did not build to their full expression, and the very high level of clarity seemed to step back a notch when the going got rough. Vaguely unsettling, the effect may be judged differently by other critics; after some consideration, I arrived at the 74% final rating.

Lab Report: As far as measurement is concerned, the analog sections of the SU-A60 acquitted themselves well, meeting or exceeding the fine specifications. No worries exist as to its response flatness, distortion, or overload performance in terms of lab-test results.

Concentrating on the digital section, which was measured via the direct fixed-level input, it is worth noting that the output was a high 3.14V, over 4dB louder than the usual 2V normally available from CD players. The source impedance was very low at 3 ohms, while the output showed good, if not exceptional, channel separation—excellent at low frequencies, and decreasing to 70dB at 20kHz. This was still a fine result by audiophile preamp standards. The channels were perfectly time-aligned, showing close agreement on much measured

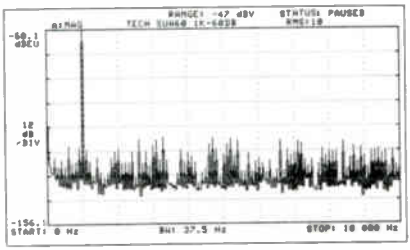


Fig.12 Technics SUA-60, spectrum for 1kHz tone at −60dB

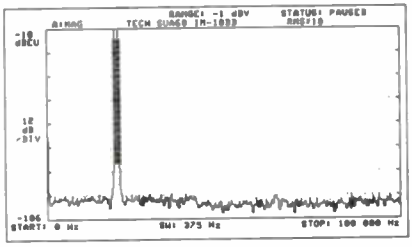


Fig.13 Technics SUA-60, 19/20 kHz intermodulation spectrum

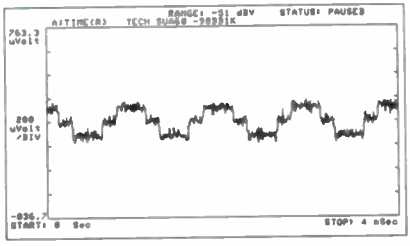


Fig.14 Technics SUA-60, undithered waveform at −90dB

data and delivering full level distortion figures close to the state of the art, measuring -100dB at 20Hz and -98dB at 1kHz, or just 0.0013%. In-band products generated by a 0dB 20kHz tone measured at -88dB, also a very good result. The remaining distortion results were for standard non-dithered tones, and were consistently some of the best measured; for example, -51dB distortion at a -60dB encode level (fig.12 shows the relevant spectrum up to 10kHz), and -28dB THD at -80dB.

However, while the full-level high-frequency intermodulation was unexceptional at -81dB for the audible difference tone (fig.13), it was much improved when the level was reduced by the usual 10dB. Here -105dB was noted, a superb result. Note also the amazingly clean high-frequency performance on this test, with no significant products present in fig.13 all the

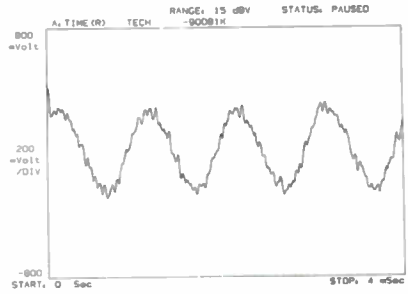


Fig.15 Technics SUA-60, dithered waveform at −90dB (note excellent sinewave shape)

way to 100kHz and beyond. For spuriae, the '60 rated 104dB down.

On dithered tones the '60 showed a high standard of low-level linearity; the beneficial effect of dither can be seen in the two -90dB 1kHz waveforms generated for the player. Fig.14 shows a near-perfect, 16-bit symmetrical three-level representation of an undithered 1kHz sinewave, the absolute accuracy holding within 1dB error limits. Fig.15, however, shows the waveshape for an encode-dithered -90dB tone. In conjunction with triggered time-averaging on the time capture, it shows the SU-A60 delivering a remarkably wholesome (with mild dither noise) sinewave whose distortion products cannot be reliably distinguished above a windowed noise floor at around -120dB down. How's that for the practical linearity and resolution of the much-denigrated CD format? In fact, the Technics processor even recovered -100dB dithered tones with substantial accuracy, doing so with an exceptionally flat frequency response measuring ±0.25dB 20Hz–20kHz, with or without pre-emphasis, and with a S/N ratio of 113dB (unweighted and without emphasis). Worst-case noise with CCIR ARM (1kHz) weighting and with emphasis was a fine 105dB.

Overall Conclusions

From the results of this report on digital audio and the decoders discussed, several points are worth making. Domestic decoders do not have to be expensive. Yes, some models, such as the Accuphase DP81 (built in limited quantities with Sony's cooperation), sell at premium prices, and both the Marantz CDA-94 and Denon DAP5500 are distinctly up-market components. But the $500 Technics analog/digital preamplifier is clearly a taste of things to

come. Putting aside the specific higher costs of audiophile components and developments, it is worth bearing in mind that Sony has managed to produce a modest integrated amplifier intended for a midi or stack system which includes a complete digital processor. This probably accounts for as little as $100 of the overall cost to the consumer.

Research into active speakers at Boothroyd-Stuart/Meridian presently concerns the incorporation of a cost-effective digital decoder into each loudspeaker system, so allowing for both optical or coaxial signal transmission right to the electronic back panel of the speaker enclosure. Here is a neat technique for sidestepping any debate concerning interconnect and speaker-cable quality. Vinyl enthusiasts are not neglected—the speakers will also have a parallel low-level analog interface.

I have examined a number of so-called "digital" amplifiers from many famous companies, and so far am unable to find any enthusiasm for these compromised integrated amplifiers. This is not to say that they will not continue to appear in increasing numbers, hopefully offering improved performances.

Of all the processor units assessed during the progress of this article, the Marantz CDA-94 gave the feeling of greatest confidence, a product one could live with for an extended period, while the Technics SU-A60 held out a tantalizing promise of still greater performance, more low-level detail, greater transparency, and amazing specific focus. Unfortunately, this was accompanied by a mild feeling of insecurity, reckoned to be associated with an adulteration of neutral musical dynamics. With the Technics, the replay hinted at an edge-of-the-seat effect: you felt that you could not quite settle back. Nevertheless, the fascinating aspect of the SU-A60 was its trouncing of the same maker's complementary high-end CD players, which employ the same replay technology.

From the Denon DAP5500 we learned that a decent processor, allied to a decent line-control preamp and built as one unit, results in a product whose performance exceeds the sum of its parts. It is to be expected that analog/digital control units will become increasingly important, and are likely to show significant sonic performance advantages for digital replay. Once really good replay decoders are in circulation, the CD transport market will open up, and we may be faced with the evaluation of a number of CD "turntables" feeding their digital signals to a reference decoder chain "preamplifier" and on to the power amplifiers.

The general view is that some improvement does occur when the decoder section is separated from the CD transport and its error correction and servo mechanisms, much as top-line amplification separates the preamplifier from the power amplifier, and long before that had separated the phono preamp from the turntable motor.

Personal research has indicated that the present attainment of digital replay systems is some way behind the true potential of the medium; we may anticipate radical sonic improvements from separate decoders in the future. This is a field where any good amplifier manufacturer can legitimately make a claim.

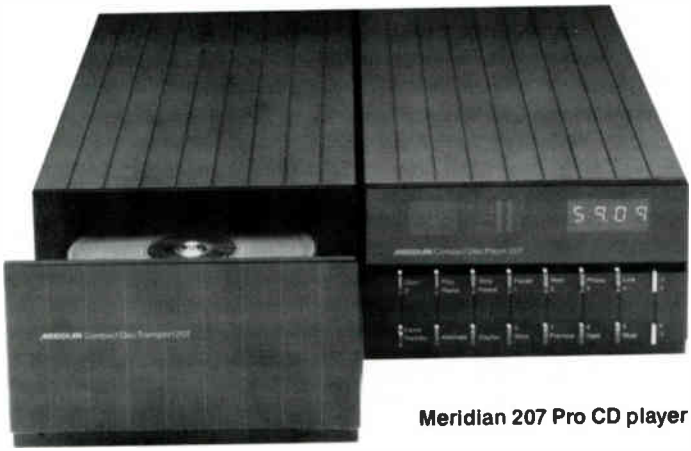
It is now clear that the more recent high-performance digital decoders can provide exceptional dynamic range and linearity. A dynamic range of 100dB is not to be sneezed at, nor can we complain about -114dB noise floors, -106dB effective distortion floors, or, with a properly dithered recording, a replay linearity which looks more like analog tape than a sampled, quantized system. Pure tones may be recovered with good accuracy, heard and measured at -110dB relative to 0dB or full scale (though in the presence of fairly benign background noise), signifying a high effective resolution for the whole encode/decode process.

With oversampling and/or related delta-modulation schemes appearing in the near future for recording, we have the prospect of near-filterless front ends for digital recorders, thus avoiding the known sonic disadvantages of today's complex, brickwall input filters. Oversampling is well-established for domestic CD replay, and has already provided considerable benefits in sound quality over those first-generation machines of five years ago. Better replay is already helping to stimulate interest in better recording technology; now that the 16-bit/44kHz CD standard is clearly not seen as the limiting factor it once was, the future of audiophile digital audio looks far more promising than it did two years ago.

High-end manufacturers can embrace the concept of digital audio separates and make their own unique contributions based on their long understanding of the complex relationship between audio engineering and sound quality.

MERIDIAN 207 PRO COMPACT DISC PLAYER

Thomas J. Norton



Meridian 207 Pro CD player

Solid-state CD player with integral line-level preamplifier. Phono stage (moving-coil/moving-magnet) optional. D/A Conversion: 16-bit, 4x oversampling. Frequency response: unspecified. S/N: greater than 90dB. THD: less than 0.004%. Dimensions (each, transport and control unit): 6.3" W by 3.9" H by 12.6" D. Weight: 18 lbs. Price: $1990. Phono stage: $250 (option). 209 remote: $150 (option). Approximate number of dealers: 55. Manufacturer: Boothroyd Stuart Ltd., 13 Clifton Road Industrial Estate, Huntingdon, Cambridgeshire, PE18 7EJ, UK. Imported by Madrigal, Ltd., PO Box 781, Middletown, CT 06457. Tel: (203) 346-0896.

In a way, you could say that Meridian started the now epidemic practice of modifying stock CD players (usually of the Philips-Magnavox species). The original Meridian player, the MCD, was a reworking of the first-generation Philips and was praised by JGH in these pages in his 1985 review (Vol.8 No.2). The Meridian Pro (Vol.8 No.6) won similar plaudits, and is still to be seen lurking in JA's system. And the original 207 was well-received by MC in Vol.10 No.3. The latter was designed around the Philips 14-bit, 4x oversampling technique (as the earlier Meridian players had been), and managed to hit the market just as the new 16-bit, 4x oversampling chip set started a boomlet in new players. Meridian retained the 14-bit design briefly, but had to rework the 207 for the new 16-bit devices when Philips discontinued the 14-bit chips. The new 207 Pro—the model under evaluation here—is built around the latest 16-bit Philips digital technology. The original 207 incorporated a line-level preamp—including one additional high-level input plus tape facilities (one tape loop)—and an electronic, stepped volume control; fixed outputs were also provided. The updated 207 retains these features, and adds an optional, plug-in phono stage with internally selectable moving-coil/moving-magnet input. What we have in the 207 is not just a CD player, but a CD player combined with a full-function preamp, including phono preamplification should the buyer opt for the phono stage. It's not entirely unexpected that Meridian should produce such a design; combine the 207 with one of several available Meridian active loudspeakers, and you have a relatively compact, fully remote-controlled, CD-based system.

Externally, the latest 207 is identical to the original—a well-finished, two-box player. The separate transport section is connected to the control section by a parallel interface cord;[1] the linkage is quite short and only permits enough

1 Computerese for a "D" connector with parallel rows of small pins.

separation between the two chassis for direct side-by-side or stacked mounting. The front-loading transport and its control board are Meridian designs (the original 207 used Philips mechanicals), though the drawer physically resembles that of the Revox player. The control panel is divided into two sections: the glass-faced upper portion is used for all numerical indications, the lower section houses a double row of control switches. All of the inputs and outputs are mounted on the rear of the control unit, including a headphone jack, multi-pin sockets for interfacing with other Meridian components,[2] and a digital output. All standard CD programming facilities are provided. In addition, a number of the control keys have alternate functions, triggered by an "alternate" switch which operates like a typewriter shift key or computer Control key—except that you don't need to hold this "shift" key down. The most unusual of these alternate functions is an absolute-phase inverting switch which operates in the digital domain and is operative *only* on CD. I found one quirk with this feature: when the unit is first powered up, it starts in normal phase, but as soon as you open the CD drawer, the absolute phase automatically reverses and must be reset with the function switches. Once reset, it stays that way until manually changed. But if you turn off the power, you must repeat the cycle. This should be only a minor problem, as the 207 is designed to be left on at all times (the main power switch is on the rear panel). But if your local power is prone to interruptions (I get one or two a week), you'll have to monitor the absolute-phase indicator more closely.

The ergonomics of the 207 are a bit different from those of the Philips-based CD players I have used of late. I found the differences maddening until I got used to them. To move to the next selection you push "play," not "next." You *can* push "next"—more than once if you wish to move ahead several bands—but then you must subsequently push "play" to actually play the selected band. Most players I have evaluated simply move forward one band for each press of the "next" control. To move back a band or more, the 207 requires you to press "previous" until you reach the desired band, then push "play." On other Philips-based machines, you need only press "play" to repeat the present selection. I eventually got used to the 207's unusual functional design, but I still consider Philips's ergonomics more intuitive.

When used in the variable-output mode, or as a full-function preamp, the 207's level is controlled by a 64-step, FET-switched resistor array and is indicated on a numerical display. The gradations between steps were small enough—varying between 1 and 2dB—to provide adequate control; settings between the steps were, of course, not possible. No balance control is provided in the preamp section. In some situations the lack of this control may be a problem; users will have to judge the need for it for themselves. Of course, if you're using the fixed outputs into another preamp you won't have to make the sacrifice. I usually prefer having the facility to make fine balance adjustments, but managed to get along without it when testing the 207 with its own line stage and variable output *sans* exterior preamp.

The manual supplied with the Meridian is thorough, but fails to explain the function of several of the six LEDs configured in two columns in the center of the display panel. The first indicates the selection of CD absolute-phase reversal. Below that is a display indication which lights up on selection of any of the special display modes. Repeat play selection is indicated by the third LED. The second column gives unique information not provided by most players. The top light (EQ) indicates if the disc was recorded with pre-emphasis (used in a distinct minority of recordings, if my experiences are any indication[3]). The remaining two lights, E1 and E2, indicate fully corrected and interpolated errors, respectively.

The *only* time indicator E1 gave any indication other than the very start of a selected track, where it flickered momentarily—probably to indicate adjustment of the laser—was when an audible mistrack occurred. E2 *never* lit up during my tests, implying that all errors were fully corrected. I didn't exactly stare at it during the auditions, but did spot-check extensively during my post-audition, pre-emphasis survey.

2 This includes a tuner and optional facilities for control of a multiple-room installation.

3 I sampled 36 CDs and found pre-emphasis used on 7, including two samplers on which it was used on some (but not all) tracks. Commonly available recordings on which it is used include all tracks on the *Creme de la Creme* Sheffield sampler *except* tracks 8 and 10, the Bainbridge Steven Kates cello recording, and two Telarcs, *Two Gentlemen Folk* and the Previn *Alexander Nevsky*. Of the nine Telarcs sampled, these were the only two with pre-emphasis.

There is, in my judgment, one important feature missing from the 207 control panel—forward and reverse scan. It *is* available from the 209 remote control, a $150 option. If you elect not to purchase the remote, you will have no way of searching for a particular passage. This will be of more than casual concern to classical music listeners, and, to a lesser degree, might be missed by pop listeners as well. I did not receive a 209 remote along with my review sample, unfortunately, so cannot comment on it here. But I *was* able to activate the major remote functions with a remote I had on hand for another Philips-based player. The activation of the scan function using this remote revealed that the 207 has a silent scan—unlike most current scans in which snippets of sound can be heard. The lack of an audible scan makes finding a specific passage more difficult.

I found two additional problems with the 207, one of which was likely (I hope) a sample defect, the other probably endemic to the species. The latter was electromagnetic radiation, which *will* cause interference on some channels of a nearby television with an indoor antenna—a potential irritation, especially for apartment dwellers who refuse to succumb to cable and prefer to leave their Meridian Pro on at all times. The other problem was a tendency for the loading drawer to stick. This was a frequent annoyance during my early auditions, but improved later in the evaluation. In the last few hours of use, it has recurred only twice. When the drawer did stick, it could be encouraged manually with a gentle (but firm) push or pull, but that shouldn't have been necessary. While I have no way of knowing if this problem was an isolated defect, it should be noted that I have not had this difficulty with any other CD player I have tested.

Internally, the 207 has its own share of high-tech wrinkles: Sorbothane-sprung isolation of the transport as well as an acoustically sealed environment for the spinning disc, shielded digital circuits, several individual power supplies driven by separate power transformer windings, passive analog de-emphasis and filtering, and fewer active stages than the original 207. The optional phono stage is based on a new ultra-low-noise IC op-amp dedicated to audio reproduction (the Linear Technology LT1028). Those who have sworn off ICs for the duration may take their recess during the discussion of the phono-stage sonics. Phono equalization incorporates a non-defeatable IEC-standard low-frequency filter—3dB down at 20Hz.

The 207 did have minor tracking problems. It never lapsed into the familiar, full-blown CD stutter-step (aba-dee-aba-dee-aba-dee—that's all, folks) known and loved by all, but *was* prone to loud snapping noises (noted on several other machines I have tested) when unable to perform full error correction. This could usually be traced to a large speck of dirt stuck on the CD surface—removing the offending party cured the problem—but you can expect similar glitches from large, non-removable scratches. While the problem was infrequent, any owner of the 207 should be prepared for tracking difficulties greater than the norm on scratched or otherwise mistreated discs. For more on disc tracking, see the addendum lurking in the vicinity of this review.

The Sound

The 207 was auditioned in a system consisting of the Klyne SK-5a preamp, Motif MS100 power amplifier, Monster interconnects (Interlink Reference X and M1000) and loudspeaker cables (M1), and B&W 801F Matrix loudspeakers (mono-wired, without equalizer) on Sound Anchor stands. The PS Audio 4.6 preamp (with M-500 power supply) and California Audio Labs Aria Revised, Tempest II, and Audio Concepts/MSB Silver CD players were also used for comparisons. The 207, despite its preamp capabilities, is primarily a CD player, and must succeed or fail on that basis. My first (and major) objective was therefore to evaluate it *as* a CD player, using its fixed outputs into a known high-quality preamp—the Klyne.

Reviewers who do not wish to be misunderstood are almost required to preface a CD-player review with this cautionary note: "Despite any praise here, the best analog performance is still superior." The 207 is one of an increasing number of players which almost (but not quite) do away with the need for that caveat. It had a tough act to follow in being reviewed immediately after the CAL Tempest II (see Vol.11 No.10). While it could not match that player's palpable, three-dimensional midrange, nor duplicate the feeling (provided by the Tempest) that here was a player even digiphobes might enthuse over, it nevertheless impressed me immediately with an effortless, natural quality. I noted an occasional fine grain

in the extreme high end, but it was elusive and not evident on all recordings; its upper range was consistently unforced yet detailed, never overetched or hard, and never veiled.

Its reproduction of choral recordings was typical of its overall performance. *Star of Wonder* (Reference Recordings RR-21CD) is as good as such recordings get; played back on the 207, it could not match the open, airy quality of the equivalent LP, but was nonetheless first-rate. Individual voices within the chorus were well-differentiated, but not to the extent of dominating the choral blend. Depth was well-defined. The harp solo on the same recording (Britten's "Interlude" from *Ceremony of Carols*) was superbly delicate and refined; the bass's solo on "What Child Is This?" had a believable natural timbre and warmth.

The bass performance of the Meridian was tight, deep, and well-defined, with just a slight upper-bass fullness. I don't want to make too much of the latter; it was barely evident on voices, providing a pleasant (and not unnatural) body and weight—just enough to put the overall balance on the warm side of neutral.

Perhaps more than any other characteristic, the 207 excelled in the ability to extract a natural sense of the performing soundspace from the best CDs. I've used (and referred to) *Two Gentlemen Folk* (Telarc CD-84401) frequently in the past. The two audience sing-alongs on this recording ("The Leaving of Liverpool" and "Waltzing Matilda"[4]) are good indicators of depth and ambience. Through the 207, the audience on both of these selections was spread wide and deep behind the soloists. This is an artifact, of course; the audience should actually be positioned around and behind the listener—a clear impossibility in normal two-channel reproduciton. The natural sense of ambience—of a believable acoustic environment—was the most striking I have yet heard on this recording. I noted the same effect on other recordings: *Christmas in Leipzig*,[5] a superb (with the exception of some glare in the brass) choral/vocal/instrumental compilation performed by the Bach Choir of Bethlehem, provided an even more impressive sensation of a real performance taking place in a credible soundspace.

Listened to on its own, the Meridian was difficult to fault. Two other players were pressed into service to get an idea of the 207's merits when compared with quality competition: the CAL Aria (roughly competitive in price), and the Audio Concepts/MSB Silver, a considerably less costly player which has not been embarrassed by comparisons with expensive units. The Meridian proved strong competition for the Aria. The latter had a bit more life in the upper midrange/lower treble—its open, lively sound was initially more impressive. But the 207 scored points for its subtle neutrality. On *Star of Wonder* the Aria had an excellent soundstage, with vocal choirs easily differentiated in width and depth. Counterpoint between the various portions of the choir was clear and effective. Sibilants were slightly prominent, but not spitty or distracting. The 207 was slightly less analytical, with less (but still effective) detailing within the choir, cleaner sibilants, marginally more effective depth and overall soundstage, and noticeably better rendition of subtle ambience cues. The Aria had slightly better control of high-level digital glare, although the difference here was small. The two players were closely matched in overall quality without sounding the same; the Aria excelled on those recordings which depended for their effectiveness on sparkle and detail, the 207 pulled ahead where the ambience and overall integrity of the soundstage were of primary importance. Neither player decisively bettered the other. Since the Aria has been (and continues to be) a player I strongly recommend, the 207's showing was a convincing one.

The Audio Concepts/MSB Silver excels in low-end tightness and definition, clean (though slightly cool and clinical) HF response, and fine depth and soundstaging—a remarkable under-$1000 performer. It was not driven to cover by its comparision with the 207. The latter definitely excelled in the expansiveness and spread of its soundstage, better depth layering, and retrieval of ambience. It was, altogether, the more *subtle*, more natural performer. But the MSB had the tigther low end, leaner and more natural midbass, and more sparkling and slightly finer-grained extreme high end. It was, in fact, the comparison with the MSB that revealed the 207's occasional program-dependent high-frequency grain.

4 If you've ever wondered just what a "swagman," "jumbuck," and "billabong" are, not to mention a "Waltzing Matilda" (hint: it isn't the hero's girl back home), this CD's booklet will tell you. Sorry, I won't give it away here.

5 Available from Dorian Recordings, 17 State Street, Suite 2E, Troy, NY 12180.

What about the performance of the 207 as a line-level preamp? Removing the Klyne from the system and driving the amplifier directly from the Meridian's variable output resulted in only a slight reduction of the 207's CD performance. Solo voices, instruments, and chorus on *Christmas in Leipzig* were still effective in timbre, lateral and fore and aft placement, and sense of space. The main difference was in degree: the depth and sense of ambience, previously almost stunning in their naturalness, were now merely very good. High-frequency response was now just slightly brighter, less sweet than before. But the low end, surprisingly, was now definitely deeper, tighter, and notably more striking in its impact. The "beast" on *Dafos* (Reference Recordings RR-12CD) was incredible in its near-subterranean, wall-shaking power—easily the best I have heard it through the B&Ws. It was no surprise that the 207's high-level stages were no match for the Klyne's in high-frequency subtlety and overall naturalness; it *is* notable that the fall-off in performance was small—and the performance in the low end actually *bettered* that of the Klyne.

To test the 207's optional phono stages, a VPI HW 19 Mk.II with Well-Tempered Arm was brought into play. A van den Hul MC One moving-coil and a Grado MCX were shuttled alternately into the Well-Tempered. The 207/phono was compared not only with the Klyne, but also with the PS Audio 4.6 with M-500 power supply—the latter a more logical price competitor. Moving-coil performance of the 207 was good, though short of the best. Moving from the Klyne to the 207 resulted in a loss of subtlety—I had the vague sensation that the VTA had somehow been slightly detuned, somewhat hardening the high end, most noticeable on recordings with strong high-frequency contents. Returning to the Klyne put the high end back into focus. The effect was not severe, especially considering the price spread, but I did miss the Klyne's refinement; the MC One did not fully reveal its abilities through the 207. And while the low end of the 207/phono stage was respectably clean and detailed, that IEC low-frequency filtration did result in a reduction of bass impact and solidity through the B&Ws. I would not expect the loss to be significant through most loudspeakers and with most program material.

Matching the 207's moving-coil phono stage against that of the PS Audio 4.6/M-500 proved to be a more reasonable comparison. The PS is a clean, detailed, slightly crisp-sounding unit, a bit etched in sound but never bright or hard. Its bass is detailed, its midbass a bit lean but very clean. The 207 was a bit warmer sounding, with less crispness to the extreme high end—although that slight hardness noted in comparison with the Klyne remained. The midrange of the PS was more laid-back, the 207's slightly more forward. The PS had more high-frequency air and openness, with better inner detailing, but tended to more emphasis on sibilants. Both preamps were effective in the reproduction of depth, with the PS marginally superior. Overall, I felt the PS outperformed the 207 with a moving-coil, but some listeners are likely to find the slightly less clinical, warmer sound of the 207 more at home in their systems.

The moving-magnet input of the PS had been its particular strength when I reviewed it (Vol.11 No.9), and it came through again in this comparison. The general balance between these two preamps remained as in the moving-coil comparison, the PS being slightly more open and transparent, the 207 a bit warmer. The slight hardness noted in the 207's moving-coil section was not evident in its moving-magnet stage. Until I switched over to the PS, my listening notes on the 207 were full of favorable, though not dramatic, adjectives. Depth, not just in the center but across the soundstage, was effective. High frequencies were clean and delicate, with high-hat on well-recorded jazz particularly notable, though lacking the ultimate in speed. The percussion on *Uakti* (Verve 831 705-1), a sonically excellent and musically, ah, interesting recording (a small, experimental Brazilian instrumental group is as close as I can come to a succinct description), was clean but slightly lacking in drive and punch. The PS had a superior sense of transient speed and impact. Voices, however, were sweeter through the 207; the superb new Miriam Makeba LP, *Sangoma* (Warner Bros. 9 25673-1), had a natural warmth and presence compared with the same recording's slight brashness through the PS. On balance, though, I consider the PS to be the superior preamp. The 207, as a phono preamplifier, is in my judgment a solid, mid-Class C performer (certainly a strong showing for a $250 option); the PS belongs near the top of the same class. (Given a sweeter, more refined high end, the 4.6/M-500 might well make the jump to Class B.)

Conclusions

The 207 is a superior yet complex product, and simple conclusions are not possible. I wish it were available without the line-level features; they are redundant for many, and probably add $200-$300 to the cost of the basic player. But that must be balanced against the fact that the Meridian Pro, as a basic CD player, is competitive with the best I have auditioned—easily Class B. Even if you don't require or plan to use the added line circuitry, the 207 merits serious consideration. And the phono-stage option, while less impressive, is nonetheless an excellent value for those who need it—although I suspect that anyone investing $2000 in this will have, or soon want, a top-rank preamp. The 207 deserves the best associated equipment; it's one of the best CD players around. **S**

CD Player Tracking and Error Correction

A useful test CD has recently come my way, courtesy of the *Stereophile* editorial staff in Santa Fe (a copy was provided to each of the contributing equipment editors). *Digital Test* was produced in France by Pierre Verany (PV.788031/788032, 2 CDs), and is distributed here by Harmonia Mundi. It provides a wide variety of tests and useful musical selections, but the subject of special interest here is its test bands for evaluation of laser-tracking and error-correction capability.

There are two interrelated parameters which, in the absence of drop-outs or information gaps—we'll get to them shortly—can affect the ability of a player to track the CD "groove" (or "whorl," as the quaintly translated disc booklet calls it): linear "cutting velocity" and track pitch. The standards for the first establish a range of 1.2 to 1.4 meters/second (the rotation speed of the disc varies from 500 to 200rpm from the inside to the outside of the disc to maintain this *linear* velocity); for the second, the spacing between adjacent tracks, from 1.50 to 1.70 micrometers (um). Manufacturers adjust these on a given disc to accommodate the required playing time; those rare 70+-minute discs use the slowest velocity (1.2m/s) and smallest "groove" spacing (1.50um). Several tracks are provided on these test discs with various combinations of these parameters. In addition, 25 tracks are recorded with a wide range of dropouts to check for a player's error-correction capabilities. Many of the dropout tests are in excess of the CD standard but still within the system's theoretical error-correction capabilities. None of the tracking tests require instruments, although a number of other bands on *Digital Test* do.

I ran six players through these error-correction and tracking tests: the Meridian Pro 207, Marantz CD-94, Mod Squad Prism, CAL Aria Revised and Tempest II, and Audio Concepts/MSB Silver. All of the players sailed through the cutting velocity/track pitch tests. The dropout tests were another matter. All passed up to and beyond the required standard, but ran into various degrees of difficulty beyond that. *None* passed *all* of the test bands. Interpreting the results required a degree of judgment; in the ratings I have subjectively balanced passes, failures, and marginals (where a player mistracked at the very start of a band but stabilized after a second or two). I don't intend to go into all of the details here; suffice it to say that the Aria ranked best, followed closely by the Prism and the Tempest II. In practice, I have never encountered any tracking glitches from *any* of these three machines, and consider them practically equivalent and fully satisfactory in their tracking and error-correction abilities. The MSB measured in the same league; but in practice it has shown a (rare) tendency to mistrack with a loud, static-like snapping. The 207 and CD-94 were both dramatically worse in their measured ability to correct for dropouts. Both players met and even slightly exceeded the standard; yet both failed to correct for 1.5mm and larger dropouts (the other players, in contrast, corrected single dropouts of 2.5mm). Both were unable to correct anything beyond a 1.0mm dropout at the minimum (1.5 micrometer) track pitch; the other four players corrected up to 2.4mm dropouts at this same pitch.

The bottom line? *None* of the six players, in actual use, mistracked enough to be rated unsatisfactory. But, as stated in the 207 review, you can anticipate that the Meridian (and the Marantz) will be much more sensitive to disc flaws and, especially, disc damage. As to the possible effects of dropouts on the sound quality of these machines at a pre-mistracking level, the jury is still out. The poorest of them sonically, the CD-94, was a mediocre tracker. But so was the Meridian, one of the best-sounding.

One other unusual test on these recordings is worth mentioning. Two bands permit a

listening evaluation of the functioning of a player's de-emphasis circuits. A musical selection is recorded with and without pre-emphasis (a kind of "equalization" analogous to LP equalization but not used in most CDs; see the 207 review for more on this). If the two sound the same, the player de-emphasis is functioning properly; all of these players passed.

This test disc is readily available to the general public (I saw it in a Tower Records in Los Angeles) at a reasonable price—roughly the same as two ordinary CDs. You could, conceivably, bring it along on your CD-player shopping safari. But be careful. A number of the bands are potentially hazardous to equipment (there are warnings in the booklet). Using only the relatively harmless tracking and correction bands will likely cause your dealer's face to turn interesting shades of amber; blowing the woofers of his favorite demo speakers across the room will not be nearly as much fun. **S**

THE MUCH-MODIFIED MAGNAVOX

John Atkinson reviews CD players from Sonographe & Precision Audio

Sonographe SD1 Beta: 14-bit, 4x-oversampling CD player. Output voltage: 1.8V rms. Output impedance: 650 ohms. Dimensions: 3.5" H by 18" W by 11" D. Weight: 8.5 lbs. Price: $795. Approximate number of dealers: 130. Manufacturer: Sonographe Division of Conrad-Johnson Design Inc., 2800R Dorr Avenue, Fairfax, VA 22031. Tel: (703) 698-8581.

Precision Audio DVIC-471: 16-bit, 4x-oversampling CD player. Output voltage: 2V rms. Output impedance: 300 ohms. Dimensions: 3.5" H by 16.5" W by 11.8" D. Weight: 8 lbs. Price: $700. Approximate number of dealers: 5. Manufacturer: Precision Audio, 223-47 65th Avenue, Bayside, NY 11364. Tel: (718) 631-4669.

It's been over a year since I reviewed CD players for *Stereophile*, when I spent time with the ultra-expensive Accuphase DP-80/DC-81 combination, the merely expensive Stax Quattro, and the relatively affordable Mission PCM7000 (Vol.10 Nos.6 & 7). A year is still a long time in the CD-player world, and much has happened since the summer of '87 when I carried out listening tests on those three players—mainly that my LP player is *still* capable of giving more musical pleasure! It's long past due that I return to the sound of digits, therefore, so for this issue I thought I would listen to the latest version of a player that has proved to offer continuing good sound quality since its introduction in 1986, the Sonographe SD1. In addition, I recently received one of the many modifications of the late-'87 generation of Magnavox machines, this the DVIC-471 from Precision Audio, a company based in the shadow of that baseball shrine in Queens, Shea Stadium.[1]

For reference, I bought a stock Magnavox CDB472, recently discontinued but widely available at a heavily discounted $199; I also borrowed the sample of The Mod Squad Prism that had so impressed Tom Norton in the May issue of *Stereophile*. Comparisons between the four CD players were performed with the levels matched to within 0.2dB at 1kHz. Other source components used for comparison purposes included an absolutely normal Revox A77 for master-tape replay and the top Linn LP player (Sondek/Ittok/Troika) sitting on a Sound Organisation table.

The preamplifier used during the review period was mainly the Krell KRS2, but the Van Alstine Super PAS saw some action; I also pressed into service the prototype of Ben Duncan's PAS-01 passive preamplifier[2] to provide maximum clarity and signal resolution. Power amplification was provided by a 1986-vintage Krell KSA-50 as well as a pair of VTL 100W Monos sitting on Mission Isoplats. The VTLs proved especially useful with the passive preamp, due to their high sensitivity. Loudspeakers were mainly the Celestion SL700, used on their matching stands, though I also racked up some mileage with Celestion SL600s and Acoustic Energy AE1s. Interconnect was Monster M1000,

1 Let's go, Mets!

2 Described in full in the February 1988 issue of *Stereophile*, a kit of parts is now available from The Audible Difference. See "Audio Mart" in this issue for details.

Sonographe SD1 Beta CD player

while speaker cable was Monster M1, two runs being used to bi-wire the SL700s. All the CD players were auditioned sitting either on Mission Isoplats or on Audioquest Sorbothane feet, in order to isolate them from environmental vibrations. (Aren't you aware that I habitually wear suspenders *and* a belt?)

Sonographe SD1 Beta: $795

Earlier versions of this reworking of the now-long-in-the tooth, 14-bit, 4x-oversampling Magnavox FD 2041 chassis have been covered in depth in *Stereophile*, Anthony H. Cordesman writing about it in Vol.10 No.1, Martin Colloms in Vol.10 No.3, with The Audio Cheapskate chipping in his two-cents-worth in Vol.10 No.6. AHC regarded it as a "best buy" in January '87, commenting on its superior imaging and ability to render CD playback musical. Martin was equally impressed, feeling that at that time, the Sonographe was one of the top four players he had heard and agreeing with AHC about the SD1's accurate presentation of instrumental tonalities and soundstage depth. His measurements, however, revealed a slightly rolled-off nature to the treble, something that the Cheapskate also noticed in the Fall of '87, feeling that it sounded "dark." Sam Tellig, however, noted that while he would have given the Sonographe a rave review a few months earlier, he no longer could.

The reason for his downgrading was the appearance both of players based on the more recent 16-bit, 4x-oversampling Magnavox chassis and of the late '87 generation of Sony players. In addition, the sonic performance of the Stax and Accuphase machines and the latest versions of Magnavox modifications from Kinergetics, The Mod Squad, and Euphonic Technology, have raised reviewers' expectations of CD sound quality. The result of this peer pressure on the Sonographe has been the application of some sonic Geritol by its designers, Bill Conrad and Lew Johnson, resulting in the SDI Beta.

Still based on the FD 2041, of which Sonographe has a good supply of chassis, the Beta's internal modifications basically consist of the addition of two extra boards. A small one comprises an improved power supply for the analog circuitry and the DACs, using Conrad-Johnson Design's proprietary polystyrene-dielectric capacitors for smoothing. The much larger board carries new output circuitry, based on discrete FETs with, again, much use made of C-JD caps (though a couple of ERO polypropylenes can be found lurking in the final low-pass filter section). The audio outputs are taken by twisted-pair wiring to the output sockets, these the original Philips components. Apart from the extra boards, some additional smoothing for the supply to the two TDA 1540, 14-bit DAC chips, and the application of damping goop to the CD centering clamp, modifications of the stock digital electronics are not immediately apparent.

Externally, the Sonographe remains one of the more finished-looking Magnavox-based players, featuring a new fascia and oak endcheeks. I know that *Stereophile*'s reviewers are only supposed to be concerned with sound quality, but I find it reassuring that the SD1 Beta is about the least "kludge"-like of the Magnavox modifications I have experienced apart from the original CAL Tempest; the internal layout, like that of The Mod Squad player, has the feel of a finished product. I would hope that this attention to detail is reflected in long-term reliability.

Oversampling & information loss: A word about Sonographe's sticking with what, on the face of it, appears to be a numerically inferior technology, the 4x-oversampling digital-filter/14-bit DAC chip set: A number of commentators have gone into print expressing doubts

over this system's ability to resolve the CD's 16-bit data words. For example, in his article on PCM encoding and decoding in the July/August 1987 issue of *The Absolute Sound*, pp. 108-111, John Monforte questions the resolution possible from the Philips system: "[The Philips] set uses only 14 of the 16 bits. . . ," he writes, and goes on to say that "These players ignore the least two significant bits. . . the 16-bit machine is the most accurate." He repeats this statement, which I will show is erroneous, in a reply to a reader's letter in the Spring 1988 issue of *TAS*: "[The Philips oversampling technique] only adds more samples, it does not add more resolution (in the amplitude dimension). . ." He concludes his reply by stating that oversampling must take place at the original time of sampling and asks two questions—how *can* oversampling generate more information than originally existed about the original waveform, and how *can* a 14-bit DAC be used to perform D/A conversion on 16-bit data—to reinforce his argument.

These questions were obviously intended to be rhetorical. However, while it is true that oversampling can't generate information that isn't there, I hope I can reveal that the correct answer to his second question is that this so-called 14-bit system *does* have 16-bit resolution.

Information theory predicts that the product of a digital system's bandwidth (related to the sampling rate) and signal/noise ratio (related to the word-length in bits) will be a constant. In theory, therefore, by doubling the sampling rate, the noise can be doubled (reducing the S/N ratio by 6.02dB, equivalent to truncating the word-length by one bit) without losing any information. The Philips digital filter achieves a sampling rate of 176.4kHz rather than the CD's 44.1kHz by repeating each sample three times at four times the clock rate. This oversampling, or more correctly, over-reading, gives the filter four digital bites at each analog cherry, as Martin Colloms quaintly puts it elsewhere in this issue. Now imagine this digital filter followed by a 14-bit DAC rather than the expected 16-bit. If the filter just throws away the last two bits of what would be each final 16-bit word, merely outputting the 14 MSBs (Most Significant Bits) to the DAC, then quantizing distortion will be added, information *will* be lost, and the resolution will effectively be identical to that from a 14-bit DAC running at normal speed. But the digital filter does more than this simple truncation. Before outputting the 14-bit data to the DACs, it modifies each sample with the round-off error from the truncation of the previous sample—the missing two bits. (A quarter's worth?) Confusingly termed "noise-shaping" by Philips (who were more interested in looking at their system from the point of view of effective S/N ratio), this modifies the 14th or least significant bit (LSB) of each sample in just the right way so that, when the output of the 14-bit DAC is averaged by the analog low-pass filter, the result is resolution of the full 16-bit information.

This realization slapped me in the face like a Zen *satori*—"Ho!"—but I can see you don't believe me. OK, let's examine an example using 3-bit words and a 1-bit DAC given by John Watkinson in *The Art of Digital Audio*.[3] For convenience's sake, we'll look at 3-bit data (I hope your binary arithmetic is not too rusty) and one sampling period. (We must also ignore the difference in MOL produced by this oversimplification.) Let the data input to the over-sampling circuit be the 3-bit binary code representing the analog number 3; *ie*, 011. The 4x-oversampling thus produces four identical samples at the digital filter's input: 011-011-011-011. When the first sample is truncated by the two LSBs, the output to the DAC for the first sample is zero: 0. The truncation error is, therefore, 011−000=011, which, when added to the second sample, gives a total of 011+011=110. Stripping the two LSBs from the new sum results in a binary 1 output to the DAC. The round-off error is now 110−100=010, which, in turn, is added to the third 011 sample to give 101.

I'll leave it to you to confirm that the fourth sample also results in a 1 being fed to the DAC, meaning that in place of a singie 011 representing the number 3 being fed to a 3-bit DAC, we now have, in the same time period, a 000 followed by three 100s; *ie*, the codes equivalent to the analog numbers 0, 4, 4, and 4, fed to a 1-bit DAC (which can only respond to the MSB) at four times the usual rate. When averaged by the low-pass filter, the final analog output from either DAC will be the number 3: either 3 itself with the 3-bit DAC, or the average of 0 and 3x4; *ie*, 3 in the second case. In theory, this is a number below the resolution of the 1-bit

3 The best book I am aware of on the theory and practice of digital audio, this is published by Focal Press, 80 Montvale Avenue, Stoneham, MA 02180, and costs $49.95.

DAC, which without oversampling and "noise-shaping" would not be able to distinguish between 0 and 4 in this example.

By analogy, therefore, use of a 14-bit DAC and 4x oversampling will theoretically give full analog resolution of the 16-bit words retrieved from the CD. (If you *still* don't believe me, then turn to the "Measurement Section" in this review, which confirms that the ostensibly 14-bit Sonographe can recover a signal below what Mr. Monforte would have you believe is its resolution limit.)

The skeptic, of course, will point out that this *is* all theory and that the practical implementation is prone to error, engineers being only human. This is true, which is one reason why Philips went from this system to one using 16-bit DACs. With the theoretical increase to 18-bit resolution offered by 4x-oversampling and *16*-bit DACs, there was now some headroom to account for practical errors and electronic inadequacies and still get full 16-bit resolution. The main reason, however, *I* believe for Philips' abandonment of the 14-bit DAC system had more to do with marketing than with the need for better replay: their salesmen were tired of explaining to consumers that if the CD was a 16-bit system, Philips' 14 bits *were* as good as the Japanese competition's 16.

When they went to a full 16-bit DAC system, as well as combining two DACs on one IC to reduce the chip count and increasing the system RAM from 2k to 16k to improve the player's ability to cope with errors, Philips took the opportunity to redesign the Finite Impulse Response (FIR) digital filter, increasing the number of coefficients from the SAA 7030's 96 to 120.[4] As well as flattening the response, thus minimizing the amplitude ripple in the passband, this also reduces the filter's "dispersion," whereby passband amplitude ripples are equivalent to ripple in the time domain (*ie*, pre- and post-echoes which muddy the audio signal). Dispersion, the effects of which were first described in 1936 but were more recently described in an AES paper by Dr. Tom Stockham and Roger Lagadec (so don't tell me it's new to you, David Ranada[5]), can also result from phase nonlinearities and the filter's ultimate low-pass rolloff—the steeper the rolloff, the greater the dispersion. However, it became apparent that there was an error in the new chip set, either in the DAC or the digital filter,[6] which resulted in a loss of resolution at the LSB level. This appeared on measurements as an apparent downward shift in level at –90dB, and meant that the much-heralded Philips 16-bit chip set didn't offer any practical improvement over the original 14-bit. Only this Fall has Philips made available 16-bit chips that offer nearer the promised performance (see Peter Mitchell's "Industry Update" in the October *Stereophile*).

Which is why Sonographe chose to stick with the tried-and-tested 14-bit circuitry.

The sound: "Hello old friend," I felt like saying the first time I loaded a CD into the Beta's tray. The 2041 mechanism always emits a qualnt but reassuring squeak as the clamp lowers over the disc, and this machine still has it. Once the disc was playing, the SD1 Beta immediately impressed me with its wide, deep, well-focused soundstage and the sheer musicality of its sound. However, after a few days' use, some—but not all—CDs started to sound very dim. Measuring the player's frequency response with the spot frequencies on the CBS CD-1 test disc revealed it to be 1dB down at 2kHz and 10dB down (!) at 20kHz, though paradoxically the correct amount of de-emphasis was being applied to pre-emphasized discs. The only conclusion to draw was that the de-emphasis was not being switched out with CDs not requiring it, resulting in the severely depressed treble. The first sample of the SD1 Beta was replaced in its box, therefore, and all my subsequent listening was done with a second sample. Which was somewhat of a shame, as the second sample never quite achieved the optimum balance between retrieval of information and musical integration of the sound managed by the first.

This is not to say that I was unimpressed with the sound; it was just that it was a little more ragged and untidy than both The Mod Squad Prism and the Precision Audio player. Perhaps this aspect of the sound could be laid at the feet of the 14-bit system's digital filter. However, the sound of the SD1 Beta was considerably more refined than that of the stock 16-bit Magnavox, which presented very flat images. In fact, it came as rather a shock to hear how much better the Sonographe player was at decoding the

4 See *Audio*, June 1987.

5 See *High Fidelity*, October 1988, p.61.

6 The fact that Sony has achieved successful sonic results using the Philips TDA 1541 dual-16-bit DAC chip with their own oversampling digital filter, used in Gordon's reference CDP-705ES, suggests that the Philips SAA 7220 noise-shaping and 4x-oversampling filter chip is the culprit.

ambient and reverberant clues on a recording compared with the newer but unmodified CDB472. One of the standard test tracks I used for these tests, and one to which I subjected both Larry Archibald and Richard Lehnert, was Stevie. . .sorry, *Steve* Winwood's "Higher Love" from the *Back in the High Life* album. Featuring heavy synthesizer bass, this track starts with an assortment of shaken and struck percussion instruments, all of which, to judge from the varying degrees of reverberation associated with each one, should be set back in the soundstage to varying degrees. Yet on the Magnavox, while you hear the reverberation, it just doesn't gel with the direct sounds of the instruments, resulting in a flat image with little depth. The Sonographe presents the instruments at a number of different distances from the listener, the player correctly melding the associated ambience with each instrument. When Steve's voice enters, too, on the Magnavox he just hangs there in center-front, whereas on the Sonographe, he is set back a ways.

Tonally, this track on the Magnavox sounds pretty bright, to the extent that that renowned digiphobe LA, for example, had very little patience with its sound. Yet on the SD1 Beta, Steve's voice took on rather a more natural presentation, still bright but now acceptably so, even to LA. This wasn't just a matter of equalization, though I admit the Beta is similar to its predecessor in having a somewhat dark nature. Rather, it is a matter of resolving aspects of the recording sufficiently well that they can be tuned out. On the Magnavox, Winwood's voice was a bright, fatiguing mess; on the Sonographe, you could hear that the engineers had used quite a lot of treble boost on his voice but it was no longer a mess. It made musical sense.

As I implied earlier, the Mod Squad Prism was even better in this aspect, holding the threads of the music more completely apart and endowing the music with more "slam." Tonally, the Prism was brighter than the Sonographe, being closer to the standard 16-bit Magnavox, but exceeded both it and the stock machine in its ability to outline musical detail. On the double-dotted trumpet opening of the new live Mahler 5 from Bernstein (DG 423 608-2—great performance; good sound for DG though not particularly "you are there"), the trumpet sounds generic in tone and vaguely sits at the front of the stage on the Magnavox; on the Sonographe it moves back to the appropriate position within the orchestra and takes on more of an individual tonality; played back on the Prism, you can now also hear that it has a characteristic acoustic associated with its sound.

Measurement: Low-bass response was as extended as it should be, at –1dB at 4Hz. In the high treble, the first sample of the SD1 Beta measured 0.6dB down at 16kHz, and a hair under 1dB down at 20kHz before it broke; the second also drooped a little in the treble, being 0.6dB down at 16kHz, –1.6dB at 18kHz, and –1.2dB at 20kHz. This mild response tailoring is not particularly bothersome; in fact, it will make system matching a little easier with amplifiers and speakers having an exaggerated top end. It should be borne in mind when A/B-ing the SD1 Beta with other players, however, as should the output level, which is lower than usual at 1.8V (1kHz, 0dB). Martin Colloms had been a little disturbed by the earlier Sonographe's output impedance, which was high for a solid-state design at 2600 ohms, implying a higher-than-usual interconnect sensitivity, as well as a loss of low bass into low-impedance preamplifier inputs. I measured a much lower 650 ohms for the first sample of the SD1 Beta and 685 ohms for the second, which should make it more universally simpatico.

In his recent writings for *Stereophile*, Peter Mitchell has emphasized the importance of low-level DAC linearity for good sound quality. Replaying the undithered tracks on CBS CD1, the first sample of the SD1 Beta featured excellent linearity down to –70.31dB (exactly 10 LSB modulation), any level error being below the tolerance of my test set-up. The –80.77dB tone suffered slight compression, however, being reproduced 5dB higher in level, and the –90.3dB tone came out around 8dB higher (though this is only an approximate figure as the background noise also measured around –90dB). The second sample was identical, apart from having slightly less very-low-level compression, –80.77dB being replayed as –79dB and the –90.3dB tone measuring approximately –83dB in level.

Despite the use of 14-bit DACs, which, as I pointed out above, could lead the unwary to assume that this machine will be unable to resolve all the information, note that the Sonographe *can* recover the –90.3dB tone on CD-1.

This signal is equivalent to the waveform being toggled between the codes representing the levels –1 and +1 through its zero-crossing point, digital zero, and would not be recoverable by a non-oversampled 14-bit DAC. The waveform from the Sonographe at –90.3dB, though noisy, could be seen to have three distinct, symmetrical, equal-sized steps—as it should. Without the averaging offered by a digital storage 'scope, there was too much noise to determine whether the dithered –90dB and –100dB tones had vaguely sinusoidal waveforms, but at least they could be distinguished visually on the 'scope as well as being (just) audible. On CBS CD-1's fade of a dithered 500Hz tone from –60dB to noise (Track 20), the tone could initially be heard surrounded by a cluster of harmonics, rather higher in level than with the more modern players. Apart from the third harmonic (an octave and fifth higher than the fundamental) becoming predominant about halfway through the fade before the tone became buried in noise, the tone faded cleanly with no glitches or bursts of HF garbage, implying reasonably good low-level performance for the Sonographe's DACs. The compression of the lowest-level information, however, may be associated with the subjective impression of good ambience retrieval: if the low-level reverberation is too high in level, then it will both be more easily heard and won't appear to decay as quickly, both things which move sound sources further back in the mix.

As can be seen from some of the other CD-player reviews in this issue, we are using the Pierre Verany Test Disc set (PV.788031&2) as *Stereophile*'s error-correction benchmark. A perfect player should not be fazed by any of the 50 tracks on the second disc, which test to the utmost the laser's ability to follow the pit spiral under the most adverse conditions. The first sample of the SD1 Beta performed in exemplary manner up to Track 37—a 3mm dropout—when it produced three glitches, and Track 38—a 4mm dropout—when it clicked repeatedly. (Theoretically, any dropout greater than 2.4mm mandates the player to interpolate for the missing data.) However, when the dropout tests were repeated with the minimum 1.5um track pitch, where it is much harder for the servo to keep the laser focused on the pits, the SD1 failed at the first fence, the 1mm dropout. This is still excellent performance, however, the CD standard requiring nothing more than the ability to cope with a 0.2mm dropout. The second sample of the Beta was less good, however, failing to cope with Track 33, a 1.5mm dropout, and refusing to play any of the more demanding error-correction test tracks. While error performance is not as good as that offered by players using more modern technology, I am sure that it will not be a factor in determining sound quality.

Conclusion: I must reiterate that all the listeners to whom I demonstrated the comparison of the stock 16-bit Magnavox with the latest version of the 14-bit Sonographe were shocked at the degree of the audible difference between them. The Sonographe managed to present stereo images with appreciable depth and excellent recovery of recorded ambience, whereas the standard player featured a flat, poorly differentiated soundstage. Though some might find the SD1's presentation of instrumental tonality a little dark, and despite its sound being a little less transparent than either the more expensive Mod Squad player or the Precision Audio 471 modification, it is true to the music. (The problem with a designer going for the maximum retrieval of information is that it then becomes all too easy for the sound to take on an oppressive edge.) I can confidently recommend the Sonographe SD1 Beta as a mature design and as an "entry-level" high-end player. Forget the specification and enjoy your CD collection afresh.

Precision Audio DVIC-471: $700

One of the beauties of the various generations of Magnavox machines is that the box is always pretty empty, leaving plenty of space for third-party modifiers to add their own analog circuitry. Precision Audio is a new name to me, though they have been advertising in *Stereophile*'s classified section, for the last three months or so, a $450 add-on analog board for any machine using the Philips TDA 1541 dual-DAC chip, including current Magnavox players and the Sony CDP-910 and CDP-505ES. The DVIC-471 is the least expensive of their complete Magnavox modifications, the others being the '472- and '473-based players, costing $750 and $850, respectively.

According to a covering letter sent with the player, Precision Audio's design team consists of "professional, degreed electrical engineers

Precision Audio DVIC-471 CD Player

who. . .have designed data conversion and signal-processing integrated circuits as well as power semiconductors. . .all members are long-time audiophiles and music lovers."

Appropriate credentials, right enough; how about the fruit of their labors?

The CDB471 is the least expensive of three almost identical plastic-chassis Magnavox players that feature the latest Philips plastic transport, differing from the '472 in lacking a remote control and the ability to access index points, and from the '473 in not having a headphone socket or "Favorite Track Selection." Externally, the Precision Audio version is distinguished by a small badge on the lower left of the fascia, under the loading tray. Internally, there are a number of mods made to the single Philips board, mainly to beef up the existing power supply with additional electrolytic capacitors, as well as adding bypass caps, these being Matsushita plastic-film types. On the right of the chassis is a large printed circuit board carrying Precision Audio's proprietary "discrete transimpedance amplifier." This board, featuring a heavy-gauge ground bus on one edge, is somewhat untidy, in that some components appear to have been added on the track side as an afterthought, many capacitors are doubled up, and some of the wiring is less than neat, with a number of jumpers used on both sides of the board. (If you think that I am over-fussy about these things, I grew up regarding components like the Quad pre- and power amps, with their elegant, minimal wiring looms, as the norm in this area. And when I design pcbs myself, I regard a jumper as as much of an aesthetic failure as an over-convoluted track.)

The Precision Audio board carries its own dual-rail voltage supply in the form of a familiar pair of LM317/337 IC regulators from National Semiconductor, and the audio circuitry is completely discrete. Precision Audio's designers argue cogently against the use of op-amps to amplify audio signals, mainly on the grounds that the very high loop gains involved automatically involve high levels of loop negative feedback, with very little local feedback, this leading to increased dynamic distortion. They also point out that virtually every op-amp chip operates with its output stage running in class-AB, something considered undesirable in *any* low-level audio circuitry, let alone that intended to be of high-end quality.[7] The only chips on the new board are one each of LM833 and NE5532 dual op-amps, which I assume comprise a low-frequency servo. (The circuit is said to be direct-coupled, with no series capacitors in the signal path.) Relays are used to mute the outputs upon turn-on and turn-off.

Flying leads soldered to the appropriate pins on the TDA 1541 (the premium A version in this machine) carry the left and right DAC current outputs to the Precision Audio board: what, then, is special about its "transimpedance" circuitry?

Transimpedance what? The DACs in the TDA 1541 use low-noise, temperature-stable current sources on the chip to feed a complicated arrangement of switches controlled by the 16-bit serial input words. The six MSBs control diode-transistor switches, with Philips' "dynamic element matching," in which, rather than the manufacturer trim on-chip resistors with a laser so that they are identical, the same resistor is switched at a 240kHz rate to the places in the DAC circuit where and when it is required. The remaining 10 bits, in groups of four, then six, control current dividers. The output from each DAC is therefore a *current* (I) proportional to the input word rather than a conventional voltage (V), and needs to be converted to a voltage before the final analog filtration and switchable de-emphasis circuitry.

7 The expensive OP-37 single-op-amp IC from Precision Monolithics and its LT-1037 equivalent from Linear Technology appear to have output stages biased very heavily into class-A. See also Walt Jung's article in the June 1987 issue of *Audio*. In addition, the 1/1988 and 2/1988 issues of *The Audio Amateur* have a thorough pair of articles by Walt Jung and Hampton Childress on getting the best performance from Magnavox CD players, including a detailed discussion on the principle of operation of the TDA 1541 and how to bias the output stages of the ubiquitous NE 5535, NE5534, NE5532, and LM833 dedicated audio op-amps into class-A operation. *The Audio Amateur* is published four times a year; a subscription costs $20 and is available from PO Box 576, Peterborough, NH 03458.

Both for this I/V conversion to be optimally carried out and for the D/A conversion to be ideal in terms of settling to a consistent value, the DAC output needs to see a very stable I/V input with a very low impedance to ground, and Precision Audio correctly points out that conventional op-amp circuitry (not to mention the tube current/voltage converter used by the California Audio Labs models) is less than ideal in this respect.

Yes, you would be right in saying that in theory, when an IC op-amp's non-inverting input is grounded, the inverting input acts as a "virtual" ground and thus would appear to be suitable for use as a I/V converter. However, real-life op-amps have real-life problems in keeping their inverting input at ground potential when fed with the staircase current waveform from a DAC, which has a considerable content well above the audio band due to the staircase "corners." As Jung and Childress pointed out in *The Audio Amateur* earlier this year,[7] "there may be only a couple of op-amps on Earth that can adequately keep up the fast D/A current steps, while maintaining sufficient resolution and high linearity."

In effect, Precision Audio's discrete circuit places a desirably constant short-circuit across the DAC output, senses the current flowing in that short, and outputs a corresponding voltage. Precision Audio's designers feel that the low loop feedback inherent in this approach is beneficial regarding amplifier slew rate and settling time, and that if an op-amp were used in this topology, there would be a plethora of slew-rate– limiting problems and dynamic distortions.

Enough techno-babble, Atkinson! What does this player *sound* like?

The sound: In a word, excellent.

The Precision Audio was similar in treble tonality to The Mod Squad Prism, the latter being nearer still to the unmodified 472 in the quantity of treble (though certainly not in quality). Where the Precision Audio scored, also in comparison with the Sonographe, was in its ability to keep quiet details within the soundstage from being swamped by other, louder events. Returning to the Bernstein Mahler 5, for example, it was easier to discern the individual strands within the orchestra at the big climax after the solo trumpet intro when compared with the non-modified Magnavox. The stock 472 sound degenerated into a massed roar, sounding like nothing so much as a giant harmonica at this point, the soundstage also narrowing. This muddying of the sound from the stock 472 was similar to the sound from power amplifiers clipping, except that careful monitoring of the output level showed that they weren't. While both the Sonographe and Precision Audio modifications better hang onto the scoring's complexity, with a considerable degree of cleaning up of the sound, it was just that much better focused with the Precision Audio. Though more clinical, its upper midrange was less hard than the SD1's.

Compared with the Mod Squad Prism, the two main differences lay in the slightly more recessed nature of the midrange, placing Steve Winwood a little further back in the soundstage, and in the bass, where the upper bass was just a little more congested, the Prism having a slightly more open quality and presenting the kick drum on the "Higher Love" introduction with a slightly lower pitch center. The bass is extended, though not quite as powerful as that of the West Coast player.

The differences in resolving power were made apparent in the famous Act III quintet of *Die Meistersinger von Nurnberg* (one of the most sublime moments, I feel, in all of Wagner). Though I have long enjoyed the 1976 Solti recording on London—Norman Bailey has, for me, the largest vision of Hans Sachs's character—Richard Lehnert recently lent me the 1971 Karajan version with the Dresden Staatskapelle (EMI CDCD 49683), which he felt had better, more natural sound. During this intensely moving ensemble, which sets the atmosphere for the song contest, Wagner occasionally doubles the male voices with the lower strings, in particular covering the two tenors, Walther (played, as in the London recording, by Rene Kollo) and David (Peter Schreier), with the violas. On the standard Magnavox, you can hear that their voices are "thickened," but by what you can't say, the machine rendering a Beckmesser version of the original's perfection. On the Precision Audio, as with the Prism, you can distinguish the viola lines from the men's voices at the same pitch, yet without the two becoming too disparate.

To put this performance into perspective, playing the LPs of either the London *Meistersinger* or the live recording from the 1974 Bayreuth Festival (Philips 6747 167; again an RL

discovery—except that he was *there*, in the audience) revealed that even excellent CD players still have a way to go before combining digital's apparent analytical power with LP's ability to play the music.

Measurement: I measured the output impedance as being pretty much on spec at 295 ohms. This player will have no problems driving either long cables or a passive preamplifier. The Precision Audio's response was slightly more extended in the very low bass than the Sonographe, being only –0.7dB at 4Hz. It also didn't droop as much in the high treble, being only 0.3dB down at 20kHz, and lacked the obvious ripples in the top octave possessed by the 14-bit machine. De-emphasis was absolutely correct.

Low-level linearity was identical to that of both The Mod Squad Prism and Magnavox CDB472, both of which use identical digital electronics, in being spot on down to –70.31dB. The Precision Audio showed slightly more compression than the other two 16-bit machines at –80dB, +1.2dB *vs* +0.8dB, but although the –90.3dB level on the Prism and Magnavox appeared on my 'scope (actually Dick Olsher's) as being expanded downward by at least 5dB, there was too much noise on the Precision Audio's output at this level to make a meaningful measurement. However, the –90.3dB waveform was not as cleanly defined as when played back on the Sonographe machine, there being noticeable asymmetry on the Precision Audio, the negative-going peak being split distinctly into two.

This odd behavior was confirmed by listening to the fade to noise on the CBS test CD. Though relatively clean at the start of the fade (–60dB), the 500Hz tone could be heard to double in pitch after the first third or so of the track. This idiosyncrasy has been noted by Stanley Lipshitz[8] as likely to be due to an MSB error swamping the change in LSB at this level. Unfortunately, unlike Japanese players which use the Burr-Brown 16-bit DAC (which can be trimmed to eliminate this behavior), you have to live with any such errors in the Philips TDA 1541 dual-DAC chip. (To be fair to Precision Audio, I should point out that this defect is a characteristic of this particular sample of the Philips chip.)

The efficacy of the error correction as indicated by the Pierre Verany disc was superb! The DVIC-471 ploughed through every track until #34 without a hiccup. Track 34—a 2mm dropout—featured just one glitch at the end, the player then handling #35—2.4mm—without a hitch, and even on torture tracks 36, 37, and 38 (2.5mm, 3mm, and 4mm dropouts respectively), there was only a modicum of clicks. (It was interesting to note that the longer the gap in the data, the longer the player's muting took to lift at the start of each track, as though it needed more time to work out what was going on.) The remaining tracks, where dropouts are combined with minimum track pitch or are repeated in close succession, gave the Precision Audio no problems, apart from the very last, Track 50, where two 3mm dropouts follow closely on one another's heels, exceeding the ability of the standard Reed-Solomon code to fully correct the error. Even so, this player only blipped six times throughout this track, showing that it was successfully interpolating for the missing data.

Conclusion: Presenting a soundstage as deep as the similarly priced Sonographe, the Precision Audio DVIC-471 closely approaches the more expensive Mod Squad Prism in its ability to successfully decode the fine details in a complex recording. It is less of a finished product, in my opinion, than either machine, as is only to be expected from such a young company, but the costs of both of the modified players and of the Precision Audio board alone are low enough that any risk will be worth the price of entry. Recommended, therefore, and I look forward to seeing what Precision Audio's next product will be. **S**

8 "Are D/A Converters Getting Worse?," AES Preprint 2586, available from the Audio Engineering Society, 60 East 42nd Street, New York, NY 10165.

DUAL CS-5000 TURNTABLE

Gary A. Galo[1]

Belt-driven turntable with four-spring suspension and integrated tonearm. Price: $500. Approx-

Dual CS5000 turntable

imate number of dealers: 300-400. Manufacturer: Dual, Germany. Importer: Ortofon, 122 Dupont St., Plainview, NY 11803. Tel: (516) 349-9180.

At a list price of $500, the CS-5000 is the highest-priced turntable in Dual's current line of products—the shipping carton bears the slogan "New Tech!" The '5000 is fitted with Dual's OPS tonearm and features a laminated hardwood base along with a plastic dustcover, which is supported by two hinges at the rear of the base. Although Dual makes a few direct-drive models, it has continued to promote the belt-drive principle in its highest-priced turntables. (The story has it that the '5000 evolved after Dual's designers spent two days locked in discussion with representatives of the UK hi-fi press.)

Dual's implementation of the belt-drive concept is somewhat unusual. The CS-5000 employs a spring suspension, but, unlike most turntables of this type, uses four support springs instead of three (the rationale behind the standard three-spring approach is that three springs can be easily balanced; you can't rock a tripod). The four springs are part of the main feet assemblies which support the turntable at its four corners. Four plastic threaded posts protrude from beneath the wooden base, and the four cylindrical springs slide over the plastic posts, supporting the floating subchassis housing the works. Four plastic feet screw over the threaded plastic posts and provide the support for the springs.

The subchassis is made of plastic reinforced with a rectangular piece of metal. Another departure from convention is the manner in which the motor is mounted, here attached to the subchassis with four very compliant rubber grommets in order to isolate the platter from the motor's vibrations. (Usually, the motor of a subchassis turntable is isolated by mounting it on the plinth.) The motor appears to be unshielded, since four coils are clearly visible. The user should exercise care when installing the platter, since the delicate wires of the motor coils are close by and the coils can be easily be damaged if contacted by wandering fingers.

The spindle/bearing combination is supported by a plastic well fastened to the center of the plastic subchassis. The spindle is made of stainless steel and the bearing sleeve appears to be made of brass. Whatever lubrication is needed is apparently permanent, since no oil is supplied with the turntable. The platter is

1 Gary Galo is the audio engineer at the Crane School of Music, State University College of Arts and Science, Potsdam, NY, where he also teaches courses in sound recording and audio technology. During the summers of 1981 through 1985 he was also on the faculty of the Saratoga-Potsdam Choral Institute, having taught courses on high fidelity, opera, and the history of sound recording. Mr. Galo has a BM in Music Education and an MA in Music History and Literature from SUNY Potsdam.

Mr. Galo is a Contributing Editor to *Speaker Builder* and *Audio Amateur* magazines. He has also written for *ComputerSmyth* and *Antique Phonograph Monthly*, and has been a staff reviewer for *High Performance Review*. He has a large record collection consisting of 5000 LPs, 78s, and CDs. Mr. Galo is also active in performing music, having recently conducted the Crane Opera production of Purcell's *Dido and Aeneas*, and the "Lied der Waldtaube" from Schoenberg's *Gurrelieder* on the Crane Faculty Artist Series.

He is a member of the Audio Engineering Society, the College Music Society, the Association for Recorded Sound Collections, the Pi Kappa Lambda National Music Honor Society, and the Gustav Mahler Society.

light (3 lbs.) and appears to be made of aluminum. Dual has wisely avoided platter mats with concentric rings or ribs which do not provide adequate support for the record. Instead, the Dual mat has a completely flat surface, except for an indentation for the record label. The mat is made of fairly hard rubber, is about ¼" thick and rather heavy, bringing the combined mat/platter weight to 4 lbs.

The motor speed is controlled by a microprocessor and quartz reference oscillator, with the associated circuitry contained on a small circuit board mounted on the plastic subchassis. Although not specified in the owner's manual, I suspect that the motor is of the low-voltage type. The turntable features three speeds (33⅓, 45, and 78rpm), and the speed changes are accomplished electronically. The turntable does not feature variable pitch, which will limit the usefulness of the 78 speed, since most so-called 78s were recorded at speeds other than 78rpm. (Prior to 1935, speeds varied widely, from below 70rpm to as high as 80rpm. It was only during last 20 years of the 78rpm disc that the recording speeds were closely regulated at the "standard" speed of 78.26rpm.)

Dual's tonearm is unusual. The detachable cartridge shell (fabricated from carbon fiber in the most recent version) contains a moving platform to which the cartridge is fastened, the platform position being controlled by a plastic thumb screw on the top of the shell, which allows adjustment of the vertical tracking angle (VTA). The arm is a straight, tubular design, made from aluminum and featuring a double-gimbaled suspension.

The counterweight tube hangs well below the arm tube. According to Ortofon, this is part of the OPS, or Optimum Pivot System design. OPS changes the pivot point of the tonearm to the exact plane of the stylus/vinyl interface, the purpose of which is to eliminate warp-induced wow. Dual specifies wow and flutter at 0.025%. Weighted rumble, according to the DIN 45 500 specification, is –80dB. Unweighted rumble is claimed to be –56dB.

Dual's cueing system is designed to make the turntable immune to the dangers of damaging the stylus by, say, lowering the arm on to the stationary mat. The turntable will not revolve until the arm is positioned over the record, and the cueing system will not lower the tonearm until the platter has come up to full speed, after approximately seven seconds. Nor will the cueing device lower the arm if the power is off. Cartridge alignment and setting the downforce therefore requires some lateral thinking. I forced the cueing post down with a screwdriver in my right hand while manipulating the tonearm with my left. I found this less than desirable. However, Ortofon later recommended that the belt be removed, the arm automatically dropping 15 seconds after this is done. The turntable will now be "on" as far as the cueing system is concerned, but the platter will not revolve.

The Dual manual makes no mention of this whatsoever, and I did not initially think to try it since many turntables with similar cueing systems sense platter rotation in order to activate the cueing device. Many also allow the arm to be lowered if the unit is unplugged.

The manual is really quite poor. It is 20 pages long, but only a fraction of those are devoted to English-language instructions. Ortofon's Steve Portocarrero has informed me that Dual will write an improved manual, but it will not appear until all of the turntables containing the old manual have been sold. I'd like to see the manual replaced as soon as possible, before an unsuspecting user damages his stylus trying to set it up.

To adjust the downforce, Dual suggests setting the spring gauge at zero grams, then moving the counterweight so the tonearm floats in mid-air. The spring gauge is then rotated so the cursor indicates the correct tracking force. Ortofon claims that the tracking force adjustment is accurate to within 0.1 grams. This accuracy is, of course, dependent on how close to zero grams the arm is when the initial balancing is done. I prefer to use a Shure stylus-force gauge to set the correct force. My method is to first set the spring cursor to the correct setting, then move the counterweight until the stylus-force gauge indicates the correct weight.

Even with the belt removed and the new sturdy cardboard alignment protractor installed, cartridge alignment is somewhat difficult. The CS-5000 features automatic arm lift and turntable shutoff at the end of the record. This is a slight nuisance, since the arm lifts as soon as it is set down on the protractor. In 15 seconds it drops back down, but in another 15 seconds it is raised again, a slight inconvenience. The manual makes no mention of any of this.

The anti-skate adjustment is straightforward. The method I prefer involves placing the stylus on a revolving blank disk and adjusting the

anti-skate compensation until the arm remains stationary. As is the case with many tonearms, the correct adjustment is a compromise: the amount of skating force varies with the arm's position on the record. I opt for a correct setting midway through the playing surface.

Sample One

This review is based on evaluation of two samples of this product, the first of which had many problems. The plastic subchassis, for example, provided insufficient support for the platter and bearing well: with minimal pressure applied to the platter's outer edge, the platter could be rocked back and forth relative to the tonearm. I expect to find this in $150 turntables, but not in a product in this price range.

The low-mass OPS arm seems best suited to high-compliance cartridges (the Ortofon VMB-20, recommended for use with the CS-5000, falls into this category). My Shure V15-MR proved to be a good match, although I initially had great difficulty aligning it in the headshell. The alignment protractor supplied with my first sample was a flimsy paper affair, cut from the last page of the manual. The protractor was scarce on details regarding its exact positioning, and as a result I was unable to bring the stylus any closer than ⅜" from the mark on the template.

I had hoped to try this turntable with at least two different cartridges, and was particularly interested to see how it performed with one of my Grados, though I suspected that the unshielded motor might cause hum problems with the unshielded Grado cartridges. Much to my surprise, the headshell design prevented my mounting of a Grado cartridge. The moving platform under the top of the headshell, to which the cartridge is mounted, slides under a lip at the front of the headshell. This lip prevents the mounting of most cartridges with flat tops, since the front edge of the cartridge hits the lip, forcing the cartridge too far back to mate with the mounting holes.

At the beginning of my listening evaluations, the CS-5000 showed a tendency to break into a low-frequency oscillation whenever I walked across my listening room. This was surprising in view of the fact that I installed the CS-5000 on my wall-mounted isolation shelf, which has proven to be completely effective in isolating every three-spring belt-driven turntable I have used from the most severe floor-stomping. Thinking that perhaps there was some incompatibility between my isolation shelf and the CS-5000, I removed it from the shelf and set it on my floor-mounted equipment rack. (This, no flimsy mail-order affair, is ruggedly built from ¾" plywood, and, as it holds three large power amplifiers—my reference system is triamped—and about 200 records, is quite massive.) The situation was now much worse. Not only did the low-frequency oscillation problem intensify, but the stylus was now prone to groove skipping.

The manual mentioned tuneable shock absorbers, which can be adjusted to minimize the effect of footsteps. Sure enough, there were four such devices in a plastic bag, which I promptly installed. The manual gives no indication as to *how* to install them, but it seemed easy enough to figure out. The shock absorbers consist of plastic rings which extend about halfway up the sides of each spring. Each plastic ring contacts three soft, adjustable rubber dampers which extend downward from the top of each spring. The amount of contact between the rubber dampers and the plastic rings can be varied. I found little, if any, actual difference between the two available settings.

With the tuneable shock absorbers installed and the suspension re-leveled, the turntable exhibited none of the low-frequency oscillation problems I originally observed. However, the suspension was now much stiffer, and the turntable's susceptibility to acoustic feedback was greatly increased. Even the slightest tap on either the turntable's base or my isolation shelf produced loud thumps through the loudspeakers. My experiences with turntables, from the standpoints of both builder and evaluator, have shown that a well-isolated turntable will render even hard raps on its supporting platform virtually inaudible through the loudspeakers.

Sample Two

After receiving a preliminary copy of my review of the first sample for comment, Steve Portocarrero of Ortofon raised several points. First, he claimed that the spindle mount was normally very rigid and should not flex any more than other turntables'. Second, he concluded that the tuneable dampers must have been installed incorrectly, therefore rendering the suspension less effective. In addition, we were told that a sturdy cardboard alignment protractor should have been included with the

turntable. Also missing was a headshell spacer which would have allowed the mounting of Grado cartridges and others of similar dimensions. We both concluded that not only was the first sample not performing up to par, but that a few essential accessories were missing.

This particular sample had been sent to several reviewers, including the Audio Cheapskate. Along the way, some shipping damage could have occurred, and parts lost or misplaced. I requested a second sample, which Ortofon soon provided. What I fail to understand is why Ortofon allowed the first sample to be sent out in such poor condition. I would think that they would want to inspect each review sample upon return to them to insure that the next reviewer receives a factory-fresh product.

My second sample was considerably better in several respects. With the tuneable dampers properly installed, the turntable's suspension was noticeably more compliant than before. The suspension also became noticeably stiffer when the tuning adjusters were moved from Position A to B. Position B is recommended for unsteady floors where footfalls might cause groove-skipping or other instabilities. I do not recommend this position unless absolutely necessary, since it greatly reduces the effectiveness of the suspension. With the dampers set to Position B, tapping on the base while playing a record produced a rather loud resonance centering around the note F below Middle C, and lasting for a second or two. Moving the adjusters to A lowered this resonance to around a C#, the resonance decaying much faster.

Mr. Portocarrero disputes the validity of tapping on the turntable base as a means of judging isolation. I agree that tapping on the base will not indicate the effectiveness of isolation at all frequencies, but it can point out obvious resonance problems with the base and/or the suspension. Ideally, no energy should be transmitted from the base to the subchassis. Tapping the base may produce an audible "thump" through the loudspeakers, but no distinct pitch should be audible. The CS-5000 could be better in this respect, although it is no worse than other turntables in this price range.

The rigidity of the platter/spindle mounting was also improved over my first sample. There was less flexing of the plastic subchassis when the platter was rocked back and forth relative to the tonearm (though there was still some). The plastic bearing well appears rigid enough, but the subchassis to which it is fastened is still capable of some flexing. Similarly, the tonearm mounting is not as rigid as it might be, and the main arm pivot support can be flexed relative to the platter.

Some type of VTA-adjustable headshell is apparently necessitated by the Optimum Pivot System design. In order to eliminate the wow heard when playing warped records, the stylus must be in the same horizontal plane as the arm pivot point. Moving the base of the arm up and down, which is the more conventionally accepted method of VTA adjustment, would not maintain this relationship. The warp wow problem is very effectively solved with this approach. I played a few badly warped discs and detected no wow of any kind. The OPS tonearm is exemplary in this regard.

The caveat here is that there is no way to rigidly couple the cartridge to the headshell. In fact, the moving platform in the headshell effectively decouples the cartridge from the rest of the tonearm. The cartridge shell contains an Allen setscrew which will clamp the front edge of the platform to the shell, but most of the platform remains unsupported and, therefore, capable of independent vibration. I am open to new ideas, but too much previous experience has shown that the cartridge and tonearm must be rigidly coupled to each other in order to produce one arm/cartridge resonance point. Otherwise, the cartridge will vibrate independently of the tonearm, producing relative movement between stylus and record, which prevents accurate retrieval of information from the record groove.

I found the sound of the CS-5000 to be unimpressive with the VTA headshell. Most records I played sounded much noiser than usual, and lacking in inner detail. Bass was poorly defined and not very well controlled. The turntable could not seem to reproduce any sense of soundstage. Not only was the soundstage two-dimensional, but it was rather narrow as well. Ambience information was also lacking on this turntable.

Normally, I do not use the damper brush on the Shure V15V-MR. When set up in a tonearm reasonably free of resonance problems, the V-MR's performance is degraded by the brush. When installed in the VTA headshell, however, the brush actually improved the sound.

There are two alternate ways to facilitate VTA adjustment when designing a tonearm, the

most desirable of which is to allow adjustment of the arm height at the base of the tonearm, in which case the arm can be clamped in place with one or two setscrews. As mentioned above, this method is not compatible with the OPS tonearm design. A second method allows the installation of spacers between the cartridge and the headshell, which is the method employed by Thorens in their TD-320. Although spacers will also provide some decoupling of the arm from the cartridge, it is still a more desirable method than that which Dual has chosen. Dual does have an optional headshell which allows the use of spacers. Though not standard on the CS-5000, it is available at no extra charge.

Believing that the VTA headshell might well be the limiting factor in the CS-5000's performance, I phoned Ortofon and was promptly sent a sample of their fixed carbon-fiber headshell. This headshell is supplied with one spacer to facilitate setting the VTA for various cartridges, and the spacer provided was a very close match for the V15V-MR. Users may have to find alternate spacers if other cartridges are to be used. The fixed headshell will not compromise the Optimum Pivot System, since the stylus/vinyl contact is still in the same plane as the pivot. The fixed headshell transformed the sound of the CS-5000 and made it a respectable performer.

The Sound

I don't, by any means, consider the V15V-MR to be my favorite cartridge, but it is a good match with this arm and was used for all listening evaluations. I did try a Grado MCE+1 in this arm only to find that the cartridge was not electrically compatible with the CS-5000. The unshielded Grado cartridges are notorious for hum problems in some turntables, the most common source of that hum being unshielded AC synchronous motors, with power transformers in turntables with regulated DC supplies coming in a distant second. Neither of these were case with the CS-5000, and with the turntable unplugged the Grado still hummed. I reversed ground leads, etc., but nothing helped. I should note that I use a Grado Signature 10MR in my own turntable, which normally sits in the same location, and have no hum problems. This rules out the possibility of the hum originating from other sources, such as power amplifiers.

I am very familiar with the sound of the Shure V15-VMR when installed in high-performance arms and turntables. The Shure is not the most revealing of cartridges in terms of inner detail, high-frequency extension and depth, but it normally sounds very clean. Mounted in a rigid tonearm on a well-isolated turntable, the highs can be quite smooth, if not exceptionally detailed or extended. It is in the context of what I know the V15 to be capable that I make the following comments on the CS-5000's sound. All comments refer to the fixed carbon-fiber headshell, with the V15's damper brush disabled.

The CS-5000 reproduced a soundstage which varied from rather narrow to moderately wide. Leinsdorf's "Ride of the Valkyries" on the Sheffield Wagner disc revealed a rather narrow soundstage, particularly on the strings. Shaw's Stravinsky *Firebird*, on Telarc, was reproduced with a wider soundstage and a competent stereo image. On the Sheffield recording of the Chicago Symphony Winds, the imaging on the Mozart was reasonably precise from left to right, but real depth was lacking. The two French horns, which are placed behind the rest of the ensemble in this recording, were not far enough back. They were softer in dynamic level, but their placement was closer to the front row. In general, image depth was lacking on the CS-5000.

There was also a noticeable lack of high-frequency extension, particularly on Shaw's *Firebird* and Sheffield's *Italian Pleasures* disc featuring guitarist Michael Newman. On the guitar recording, some of the characteristic sparkle of the performer's fingers striking the strings is present, but the extreme highs are somewhat dulled. Voices retain much of their characteristic warmth, but I again noted the lack of high-frequency extension on my German pre-DMM Teldec pressings of Solti's Wagner *Ring*. Here, Birgit Nilsson's voice lacked some of the cutting edge which normally characterizes her.

The CS-5000 sounded a bit dry and upfront, with subtle ambience information often disappearing. The Sheffield recordings can be particularly problematic in this regard, their MGM soundstage studio being quite a bit drier than a real concert hall, and retrieving the ambience information on these discs is a difficult task for a playback system. The Leinsdorf and Chicago Winds discs don't reveal the

sound of the recording room on the CS-5000. It takes an exceptional playback system to accurately recreate the sound of the recording room on these discs.

Throughout the listening tests, the reproduction was clean and fairly detailed. In fact, the essential characteristics of the V15V-MR came through on the CS-5000. The best detail was found in the woodwinds at the beginning of Respighi's *The Pines of Rome* with Dutoit and the Montreal Symphony (Decca/London). The bass was fairly well defined for a turntable in this price range, although on Shaw's *Firebird* the low-frequency extension was not as impressive as I know this record to be. Dynamic contrast on this turntable was adequate, if not exceptional.

Summary

The CS-5000 is a reasonable performer in its price range, but only if used with the fixed headshell. The VTA headshell seriously compromises its performance, and the convenience does not outweigh the sonic drawbacks. Turntables in this price range are not normally purchased through discount mail-order channels, and competent dealer support is considered part of the price. The potential buyer should insist on the fixed headshell and have the dealer perform the necessary cartridge installation and alignment if he is not comfortable doing it himself. I honestly believe that Dual does itself a great disservice by supplying the CS-5000 with the VTA headshell.

The improvements in low-priced CD players have cast a shadow of doubt over the future of low- to mid-priced turntables. The CS-5000 won't beat an unmodified Magnavox CDB-650 in terms of inner detail and spatial characteristics, but it can sound more euphonic in the high frequencies, particularly if you use the CDB-650's straight outputs. (I'm not an advocate of the additionally filtered outputs, but they do have the ability to hide certain defects in Philips' analog circuitry and power-supply design; for more information on this, the excellent articles by Walt Jung and Hampton Childress in the 1/1988 and 2/1988 issues of *The Audio Amateur* are required reading.)

The CS-5000 is worth considering, therefore, if you are in the market for a $500 turntable/tonearm combination. If there is one area I'd like to see improved, it is the CS-5000's plastic subchassis, which could be made more rigid so the arm and platter cannot move relative to one another. Despite CD, there is still competition in this price range. Thorens has achieved excellent rigidity in their comparably priced TD-320, and the models from Ariston also deserve serious consideration. S

FOLLOW UP

Ortofon MC-3000 Cartridge

This latest top-of-the-line cartridge from Ortofon received a generally enthusiastic review in Vol.11 No.1, but was criticized because of its reduced compliance (relative to its MC-2000 predecessor), which led to a thickening of the midbass and occasional LF mistracking when used in a low-mass arm like the Well-Tempered, and also because of questions about its absolute accuracy.

Then I tried the MC-3000 in the incredible Versa Dynamics arm/turntable, and did an about-face. Like all straight-line trackers, the Versa Dynamics has higher mass in the lateral plane than it has vertically. In some straight-line arms, the lateral/vertical mass ratio is as high as 50:1, which is ridiculous. In the VD, it is on the order of 5:1, ideal *for a cartridge of average compliance* such as the MC-3000.

The quality of bass performance from the VD, which was already superb with the MC-2000, was virtually unchanged with the 3000. But the LF extension—also excellent with the 2000—was *increased* with the 3000, making the low-end sound even more like that paragon of LF perfection, digital sound.[1] In addition, because the system resonance is moved to a lower frequency by the VD's higher lateral mass, mistracking on extremely heavy LF signals, like infamous cannon blasts, was eliminated.

The VD also brought the MC-3000's spectral balance into line, so that it, too, sounded

1. Don't laugh. No other recording medium comes close to digital's 0Hz low-frequency limit.

astoundingly like the original program sources from which discs had been cut—master tapes or direct-wire feeds from the microphones. In other words, while the Versa Dynamics and the Ortofon MC-2000 provided the best reproduction from analog discs that I had ever heard, the VD with the MC-3000 is an even better combination. It's just a shame that the state of the art in phono reproduction goes for $12,500 plus whatever it costs to deliver a usable signal from the 3000's 0.1mV output. **—JGH**

Sound-Lab A-3 Loudspeaker & Threshold SA-1 Amplifier

I am combining two followups into one here because both products were involved in one of the worst mistakes I have made in many years of testing: I had two of my reference components upgraded at once.

At a recent show, I had heard the latest version of the SA-1 driving Martin Logan Statements, and observed that the high end was noticeably improved in quality—sweeter and less dry. I arranged to return mine for updating.

While they were gone, and my reference system would be out of commission for a week or so, I figured that would be an ideal time to install the new power-supply modules Sound Lab had sent me some weeks previously. After I completed the job, I had no amplifiers on hand whose sound I was familiar enough with to assess the sound of the speakers. All I could tell was that, as claimed, the speakers' sensitivity was now about twice what it used to be (see Vol.11 No.6). A major plus!

When the SA-1s returned from Threshold, I gave them a 24-hour warmup and then auditioned them with the A-3s. The result was not pleasant: a relentless steeliness that no amount of adjustment of anything seemed able to control. Where was this spurious brightness coming from? The upgraded amplifiers or the upgraded speakers? Or both, maybe?

A brief listen to the A-3s with a pair of VTL 300W monoblock power amps seemed to exonerate the speakers. But before I had a chance to check out the SA-1 amplifiers under more controlled conditions, our semi-annual "Recommended Components" had to go to press (see the October issue), so we had no choice but to pull the Thresholds out of Class A and put them into Class K (Products to Watch) until the matter could be resolved.

Subsequent listening with the Thresholds has now qualified them for reinstatement in Class A, but my previous followup caveat—that the SA-1s and A-3s can no longer be recommended for use with one another—was confirmed. The latest SA-1 amplifiers are slightly brighter and more forward than the previous version, which is not in itself a disqualification for a supremely good amplifier. (The Mark Levinson No.23 has much the same brightness.) But the same thing also seems to be the case with the upgraded, higher-sensitivity SA-3 speakers. Again, this does not disqualify them as long as they aren't used in an acoustically bright listening room. But just put these two components together, and watch your ears bleed!

As of now, the A-3s remain my reference speakers for several reasons, not the least of which is that I still love the way they sound—but not with the SA-1s. They do better now with the VTL 300s, although I am still fighting the good fight to try and regain some of the seductive richness that first made me fall in love with the Sound Labs. (And that was using them with the early SA-1s.) The Thresholds will stay around too, as a second reference amplifier, but only for use with speakers that are a bit reticent through the brightness region. **—JGH**

Rare Records Ltd.

Gary Allabach, former manager of Gryphon Records and **Jerry Gladstein,** announce the opening of an unusual shop for the purchase and sale of

LP vinyl records

Collections from 10 to 100,000 wanted

G&A Rare Records Ltd.
139 West 72nd Street
New York, NY 10023
(Between Broadway and Columbus Ave.)
212 877-5020

NEUTRALITY CLARITY PRECISE FOCUS

Exclusively In Audio Cable From MIT

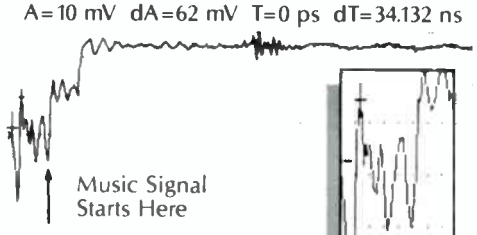
In less than a decade, high-performance cable has emerged as a critical component in any quality audio system. Since the early-1980s, MIT has been the acknowledged leader in superior audio cable. This audible superiority results directly from leading-edge computer design capability, rigorous testing and a unique understanding of the physics of cable performance.

MIT cable delivers *neutrality, clarity* and *precise focus* because it is designed to virtually eliminate "phase noise". Phase noise includes all forms of frequency and phase instability, and is an inevitable by-product of audio cable that is not phase correct. In fact, all other audio cables suffer significantly from phase noise. Only MIT cable is designed to be truly time aligned, phase coherent and thus, noise free. The result: MIT cable does not alter the sound as do other audio cables.

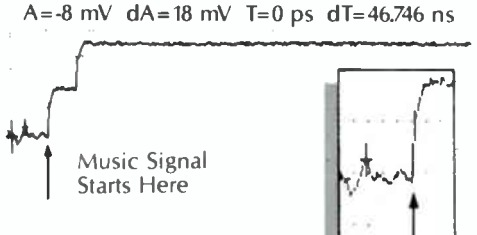
In a dramatic comparison of MIT's superiority, MIT ran head-to-head tests of one-meter lengths of MIT MI-330 vs. solid-core straight wire, employing a sequence of music tone bursts. Despite past regard for straight wire, and some observers actually recommending its direct application in audio cable, comparable lengths of straight wire simply cannot compete with MIT cable on crucial phase noise performance.

These test graphs, which illustrate only one of a series of music tone bursts, provide visual proof of MI-330's overwhelming phase noise superiority. From the instant each music tone is retriggered, MI-330's defined transmission is obvious. Equally important is what occurs *before* each music tone starts. This brief but critical time segment (to the left of the arrow in the exploded view) **is supposed to be absolutely quiet.**

Note that MI-330 is essentially quiet just before each music tone starts, as any audio cable must be for sonic accuracy. The length of solid-core straight wire, like other cables which are not phase correct, is noisy when it should be quiet. It is victimized by phase noise—stored energy which overrides and literally destroys quiet passages. Simply, *true quiet passages cannot survive through incorrectly designed cable!*



Solid-core straight wire (1m length): This graph shows one of a series of tone bursts. Note the significant phase noise to the left of the arrow which is before the tone burst starts.



MIT MI-330 (1m length): This graph also shows one of a series of tone bursts. Note that the MI 330 is noise free to the left of the arrow which is before the tone burst starts.

By comparison, MI-330's *quiet passages* and *clearly defined wave form* mean that the music starts and stops exactly when it is supposed to, yielding a more holographic sound stage, intertransient silence and minimal distortion.

MIT now offers unequalled neutrality, clarity and precise focus in two cable families: MIT and PC-SQUARED. MIT is simply the finest audio cable money can buy, and includes the top-rated **MI-330** interconnects and **MH-750 Music Hose** speaker cable, **MH-650 Junior Hose** and the remarkable limited edition **MI-330 Shotgun** and **MH-750 Shotgun** cable series. PC-SQUARED provides exceptional performance, approaching MIT, but at a reduced cost in **PC-2** interconnects and **PC-18** speaker cable.

Minimal phase noise is but one significant advantage of all MIT products. For more information on MIT and PC-SQUARED product lines, and a more technical discussion of phase noise, please write for data to:

Transparent Audio Marketing
Route 202, P.O. Box 117
Hollis, ME 04042

Music Interface Technologies MIT

Distributed by Transparent Audio Marketing · Rt 202, Box 117 · Hollis, ME 04042 · (207) 929-4553


When AUDIO MAGAZINE Wanted To Hear The APOGEE DIVAS At Their Best,
In the Best Of Audio '88 issue Anthony Cordesman said, "A dealer ultimately has to be judged by his ability to create good systems at a given price level. . . . I mention this because I was struck by the fact that the Divas performed exceptionally well at Sound By Singer."
Proof positive that the way a system is set up is every bit as important as its components.
Don't be mistaken: putting together a truly musical system presumes that you have selected each and every component with painstaking care for individual excellence as well as intra-system compatibility.
But, as Mr. Cordesman noted, that is only the first step. At Sound By Singer we believe that where components are placed, how speakers are angled and the way cables are dressed is just as important as selecting the system.
That's why expert installation services are available to all of our customers.
What is extraordinary for other stores is standard-operating-procedure for us.
They Came To Us!
Sound By Singer is an Authorized Dealer for:
Accuphase
Adcom
Apogee
Ariston
Audio Research
Cal Audio Labs
Carnegie
Creek
CWD
Epos
Fosgate
Grado
Heybrook
Koetsu
Krell
Linn
Lurne
Meitner
Mod Squad
Aragon by Mondial
Monster Cable
NAD
Nitty Gritty
Onix
Pioneer Video
Elite Audio
ProAc
PS Audio
Quad
Rega
Revox
Roksan
Siltech
SME
Snell Acoustics
Sonance
Stax
Talisman
Target
Talwar
Vandersteen
VTL
. . . and many more!
New Additions:
Martin Logan
DNM
Acoustic Energy
Sound By Singer, Ltd.
The Ultimate Link Between You And Your Music!
165 E. 33rd St.
New York, NY 10016
(212) 683-0925

a climate of

Photo: Richard Holt

GLASNOST

Barbara Jahn talks with Vladimir Ashkenazy

Vladimir Ashkenazy needs little introduction—his life story has been well documented in his book, Beyond Frontiers, *and his wealth of performances and recordings speak for themselves. However, I was anxious to know what, after thousands of concerts and 25 years with Decca/London with over 150 recordings, is the driving force and inspiration that keeps him going at such a severe pace.*

VA: I don't know what really keeps me going. Some vital force? I was born to work, I can't do anything else. I don't know what else I would do in life. I just work and play; I enjoy recording and conducting.

BJ: *Do you first perform in concert the works you are going to record?*

VA: Oh yes. Most of the works I've recorded I've performed in concert. It's the best thing. But some I haven't. Sometimes it's impossible to program a certain piece into a concert, but you have to record it or else you'd never get another chance. But these are exceptions, not the rule. The major, important pieces—you live your life with them, and play them many, many times before you record them. There are just some less important, less substantial pieces, that I have to learn very well and then record.

BJ: *Of all the recordings you've made, both as a pianist and a conductor, which do you recall with the happiest memories; which do you feel the most satisfied with?*

VA: I couldn't really name anything in particular because things are so contradictory. Some-

5 REASONS TO SHOP BY TELEPHONE AT HCM AUDIO

#1 GOOD PRICES

We offer competitive prices on a very large selection of components including accessories like cables, tip-toes and record cleaning supplies.

#2 U.S.A. WARRANTIES

You will never get a piece of "grey-market" merchandise from HCM AUDIO. We sell only those products which have been imported through the factory authorized U.S.A. distributors. This means any new product you purchase from HCM AUDIO will be covered by the manufacturers standard U.S.A. warranty. All you need to do is keep a copy of your original invoice from us.

#3 TOLL-FREE ORDERING

Our order desk is open Monday through Friday from 6:00 a.m. to 6:00 p.m. (Pacific Time) and Saturday from 9:00 a.m. to 6:00 p.m. (Pacific Time). Just call toll-free **1-800-222-3465** and have your Visa, MasterCard or American Express card ready.

NOTE: Toll-free number not available in California.

#4 LARGE INVENTORY

We keep a large inventory of products on hand in our warehouse. This means faster delivery to you. And when we do run out of stock on the item you've ordered... we tell you! You won't get the "run-around" at HCM AUDIO.

#5 QUICK SHIPMENT

Your order will be shipped from our warehouse within 3 business days. In the event your order is out-of-stock, we will not charge your credit card until it is shipped. And when the items you've ordered return to stock your order receives immediate priority handling.

CALL US AT
1-800-222-3465 or 1-916-345-1341

FOR PRICES ON THE FOLLOWING BRANDS OF EQUIPMENT AND A COMPLETE LIST OF SPECIALS, CLOSEOUTS & DEMO'S

Alpha Genesis * AR * Audioquest * B+K * Blaupunkt * Bose
Boston Acoustics * Celestion * Grado Signature * Hafler * Harman Kardon
JBL * Last * Livewire * Mod Squad * Monster Cable * Musical Concepts
Nitty Gritty * Premier * Signet * Sony * Sota * Stax * Straightwire * Sumiko
Superphon * Talisman * Thorens * Van den hul Cable * and more!

CALL 1-916-345-1341 FOR INFORMATION OR ADVICE

WE ACCEPT VISA, MASTERCARD, AMERICAN EXPRESS

Returns must be made within 7 days and have our return authorization number on the outside of the box or it will be refused. There is a 15% restocking charge on all returns. WE WILL NOT accept returns on phono cartridges, fluid products, speaker cable, or custom length interconnect cables.

HCM AUDIO

SEND ORDERS TO:
HCM AUDIO
1600-B MANGROVE
CHICO, CA 95926
Open Monday thru Friday
6 a.m. to 6 p.m. (Pacific Time)
Open Saturday
9 a.m. to 6 p.m. (Pacific Time)

times I feel things are going really well, and when I listen to the playback I don't think it's so good. So if I'm happy in the process of recording and the results are not so good, I tend not to look back at it with a happy feeling, and *vice versa*. But sometimes I've been happy and the recording was good too, only now I can't really remember because my memory is so confused after so many recordings. I have a strong professional attitude—I try to do my best and concentrate very hard, and happiness doesn't really come into it in the end. But I did a lot in Amsterdam with the Concertgebouw Orchestra, and they were marvelous.

BJ: *The Rachmaninov Symphonies,* The Bells, Isle of the Dead, *and Prokofiev 5, I think?*

VA: Yes, and the four Rachmaninov Concertos and Brahms's 1st Concerto under Bernard Haitink. But now I don't go there because I simply don't have the time. But they're marvelous, fabulous.

BJ: *Will there be more recordings with the Concertgebouw?*

VA: Not in the immediate future; I have to devote my time to the orchestras for which I am responsible.

BJ: *Do you like doing long takes in the recording studio?*

VA: Yes. I do the whole piece, and then I'll do the whole piece again, and again, three or four times, and then see which is the best. Then when we've chosen the really good one we'll begin to mend it. There are always imperfections, but long takes are necessary for spontaneity and concentration.

BJ: *Does the recording studio still feel like a sterile environment?*

VA: No, not any more. It did when I started, but you learn to live with it, and compensate for it; and you pretend you are playing for an audience, because you *are* playing for an audience but it's a potential one. Music has to be alive: you can't put it in a can.

BJ: *Presumably you've changed your mind about the interpretations of some of the pieces you recorded many years ago. Do you feel you would like to record these again?*

VA: Yes. Most of them one wants to change.

BJ: *Most of them? Because recording only captures your thoughts at one moment in time?*

VA: Yes, that's right. With really, really great music the possibilities of what you can do with it are never-ending. So it's inevitable that you'll be unhappy with your efforts. Music is so much more eternal than anything I can put into it. I feel so small against some Beethoven Sonata that I feel, of course, I didn't do it justice and I must try again. But even if I do, I still can't do it justice, but it's good to be able to keep trying.

Music has to be alive: you can't put it in a can.

BJ: *When you are playing the piano, do you try to recreate orchestral colors?*

VA: I don't know how to answer this question because the answer is yes and no, both! It depends on the type of piano writing and what the composer wanted to express. If you take Chopin, for example, there is so much color, but that color seldom relates to the orchestra. His inspiration sprang so much from the piano as an instrument, so much was conceived within the keyboard and its sound. But when you go to somebody like Brahms, who also wrote for the orchestra, it's sort of interchangeable. You know, the piano is just another sort of instrument, not the only instrument through which he could express himself. Therefore it often relates to instrumental color, and as I play I sometimes think this chord should sound like four horns. I'm just learning Brahms's Sonata 3 in f, and it is so orchestral, there is no question about it. A few passages are non-orchestral all right, but most of it. . .Take Liszt's b-minor Sonata; there are stretches that could not be conceived as orchestral texture, but there are very long stretches that would be even better on the orchestra than the piano. It's very interesting, one of those in-between pieces. When I was a boy I orchestrated the Liszt Sonata, but I couldn't succeed with some areas because they were purely pianistic.

BJ: *Do you still have time to practice the piano? I can't believe that you would when I look at your concert schedule.*

VA: Oh yes, I still have enough time, but I play fewer concerts now and there is less new repertoire, so I have to practice less.

BJ: *Have you exhausted the piano repertoire that you would like to record?*

VA: Well, apart from the pieces I would like to remake, I haven't finished all the Schumann yet (I think Volume 2 of that is just out), and if I learn the Brahms Sonata well enough I might

The Most Knowledgeable Audio Dealership

Many audiophiles who desire high quality audio systems are misled by well meaning—but misinformed—friends, salesmen, and enthusiast magazines whose understanding of sound reproduction is superficial or incomplete. As a result, many expensive "mistakes" are made.

During the past 10 years, Gala Sound, founded by pianist James Gala, has earned the trust and confidence of the audiophile community throughout the world. The musical and technical expertise of its founder and distinguished staff has established Gala Sound as the preeminent high-end audio dealership in the United States.

Audiophiles, musicians and music lovers throughout the U.S., Europe and South America, rely on Gala Sound for audio systems tailored to their specific needs, listening environments and budgets. These systems are second to none.

If you're serious about sound, you can own the finest: a definitive audio system from Gala Sound. Phone (do not write) Jim Gala at (716) 461-3000.

KEF ▪ KRELL ▪ APOGEE ▪ SOUNDWAVE ▪ B&W ▪ BANG & OLUFSEN ▪ THRESHOLD ▪ BRYSTON ▪ REVOX ▪ NAKAMICHI ▪ KYOCERA ▪ THORENS

GALA SOUND

3122 Monroe Avenue, Rochester, New York 14618

Vladimir Ashkenazy—a selected discography

Beethoven
Piano Sonatas 5-7
London 417 662

Piano Sonatas 14, 23, 8
London 410 260

Piano Sonatas 16-18
London 417 663

Piano Sonatas 21, 26, 27
London 414 630

Piano Sonatas 28-32
London 417 150

Piano Concerto 1, 6 Bagatelles
Zubin Mehta, Vienna Philharmonic
London 411 900

Piano Concertos 2 & 4
Zubin Mehta, Vienna Philharmonic
London 411 901

Piano Concerto 3
Zubin Mehta, Vienna Philharmonic
London 411 902

Piano Concerto 5
Zubin Mehta, Vienna Philharmonic
London 411 903

Symphony 5, Leonore No.3
Philharmonia Orchestra
London 400 060

Symphony 6
Philharmonia Orchestra
London 410 003

Symphony 7, Coriolan, Egmont
Philharmonia Orchestra
London 411 941

Brahms
Piano Concerto 1
Bernard Haitink, Concertgebouw
London 410 009

Piano Concerto 2
Bernard Haitink, Vienna Philharmonic
London 410 199

Chopin
Solo Piano Works
London 421 185-2 (13 CDs)

Debussy
La Mer, Nocturnes,
Prelude a l'apres-midi d'un faune
Cleveland Orchestra
London 417 488

Dvorak
Cello Concerto
Lynn Harrell, Philharmonia Orchestra
London 410-144

Mozart
Piano Concertos 17 & 21
Philharmonia Orchestra
London 411-947

Piano Concertos 19 & 24
Philharmonia Orchestra
London 414 433

Piano Concertos 25 & 26
Philharmonia Orchestra
London 411 810

Rachmaninov
24 Preludes, Sonata 2
London 414 417 (2 CDs)

Symphonies 1-3, Youth
Concertgebouw Orchestra
London 421 065-2 (3 CDs)

Sibelius
Symphonies 1-7
Philharmonia Orchestra
London 421 069-2 (4 CDs)

Strauss
Ein Heldenleben
Cleveland Orchestra
London 414 292

Tchaikovsky
Symphony 6
Philharmonia Orchestra
London 411 615

record that too.

BJ: *Do you have any preference now for the type of music you record? Is orchestral music becoming more important?*

VA: No, it depends on the quality of the music. In fact, it's equal, because I only record music that I really feel for.

BJ: *When you have been playing and recording the Mozart Concerti with the Philharmonia, in which you direct from the keyboard, has your role as pianist had to become less all-engrossing to allow you to think about the conducting too?*

VA: You know, it is so much in my system now (I am in my element with this sort of thing) that I am not aware of what I am doing. It just gels; I can't explain it to you, it's so natural. The musicians listen to me and they have such a high level of musical awareness that I know they will be there.

BJ: *You made some recordings of the Mozart Concerti earlier on in your career both under Istvan Kertesz and under Hans Schmidt-Isserstedt. Did you feel even then that you would like to be directing, doing the whole thing yourself?*

VA: No, not then.

BJ: *So it has developed in recent years?*

VA: Yes. I saw Daniel Barenboim doing it a lot, and I often enjoyed the *tuttis* he did much better than those of other conductors, and I thought, "well, I'm not a conductor, but the *tuttis* are not that difficult and I probably could do them the way I want." My musicians were as good as the ECO, so I thought I probably could do a good job; I tried a few times and I succeeded. But you know, it so much depends on what you want to do. Daniel had some good ideas, so he gave me a good example, a good impulse, as a musician. But it could have been a cellist or whoever who inspired me.

BJ: *You are starting to do a great deal of conducting now. When did that begin?*

VA: It really started very seriously in 1977, so that is 11 years ago. That's when I had my first cold shower of a London concert with the Philharmonia Orchestra.

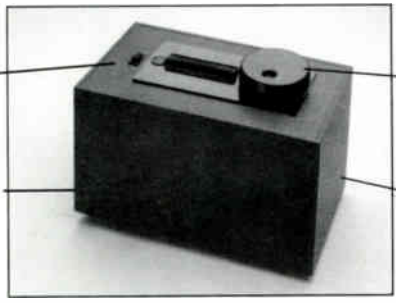
BJ: *Cold shower?*

VA: Well, of course, I was very exposed! Conducting in London is not like conducting in the provinces, where maybe it's not so important. But in London it's very exposed, the compe-

Try it for 10 days at no risk!

Now *everyone* can have a record cleaning machine!

Audio Advisor's new "Record Doctor"™ is the lowest-price *vacuum* record cleaning machine. Only $169.95!



Have we got the prescription for you — the cure for dirty records! It's the new "Record Doctor" cleaning vacuum machine, made exclusively for Audio Advisor. Because we have no retail-store markup, you clean up! Price is only $169.95. Other record cleaning machines sell for $300 and more.

Fast! Easy!

Simply splash a few drops of fluid from the easy-drip bottle. Then use the applicator brush to spread the fluid as you rotate the record by hand. Turn on the vacuum and rotate some more. Done!

"This machine really sucks!"

That's what a customer said. Record Doctor's powerful vacuum sucks up fluid and debris from the record grooves and leaves the record dry. Debris is gone... sucked up, NOT picked up from one part of the record and left on another! Record Doctor safely removes dirt, dust, grease, fingerprints, and other grunge too gross to mention.

Sonic splendor!

Serious audiophiles ALWAYS vacuum-clean their records — less surface noise, fewer ticks and pops.

The sound is clearer, CLEANER...the music more natural. Even the bass sounds tighter!

Records LAST LONGER because your stylus isn't pushing particles of dust into soft vinyl grooves. You protect irreplaceable, priceless LP's!

No frills!

Remember...the point of a record cleaning machine is to VACUUM-CLEAN your records. Other features are frills. You don't need a second motor to turn the record. Rotate it yourself and save!

You get the complete package — vacuum machine, high-quality applicator brush, and cleaning fluid — all for only $169.95 plus $8.95 shipping & handling. 220 volt 50/60 Hz model $189.95 plus shipping.

Use Record Doctor and listen to clean records for 10 days. If you are not ecstatic, return the little sucker and we'll refund your money.

Charge It! 

Order Toll-Free: 1-800-669-4434

audio advisor, inc.

225 OAKES SW • GRAND RAPIDS, MI 49503
FAX: 616-451-0709 Service: 616-451-3868

tition is great, the stakes are high, and the standard of performance is incredibly high; I was terrified, but somehow it went very well.

BJ: *And why did you want to conduct?*

VA: I've always had a basic affection for a lot of the orchestral music I heard in my childhood. Finally I did something about it!

BJ: *Is your conducting career taking over your career as a pianist now?*

VA: I don't know yet; I can't pronounce on that.

BJ: *If you could begin your career all over again, would you start out as a conductor or keep it exactly as it is?*

VA: I don't think I really know that either, but I must give an intelligent answer! So. . . I think I would still have played the piano, but maybe I would have started to conduct a little earlier. Maybe I would have studied conducting in the Conservatory, because it helps a little bit, although not that much. It wouldn't teach you how to conduct great music, but it would teach you all those manual techniques. It would be very nice to have that in your system to begin with. I never studied it, so I have had to teach myself. It's much quicker if someone tells you what to do and what not to do.

BJ: *When you prepare yourself for a piano recital or recording, you only have yourself to think about; when you conduct, you have all the other musicians to think about too. Which feels the greater responsibility?*

VA: When you're on your own you have no help, so psychologically you are a loner. When you're with an orchestra, especially a friendly orchestra—and I am usually good friends with musicians—then you feel there is a responsibility shared, and there is help coming at any moment. They know what I need to do, and if I fail sometimes, as I do, they are ready to help because they are interested in doing things well, too. So you cannot decide which is more difficult or more psychologically trying. Both are, both are more difficult!

BJ: *I recently heard you conduct Beethoven's Piano Concerto 3 with Radu Lupu as soloist. I was wondering then how it felt to conduct a piece that you also know inside out as a pianist?*

VA: It's fun. It's always fun to be part of a different interpretation.

BJ: *Do you think you have a greater empathy with a solo pianist in the concerto?*

VA: It's only a technical point—you really know when to bring the orchestra in and what to do with it all. Other than that, no, not necessarily. If you like their interpretation you enjoy it, and if you don't you don't enjoy it!

BJ: *But the fact that your interpretation as a solo pianist would be different from that of another pianist must surely make the timing of orchestral entries more difficult to judge.*

VA: No, my own interpretation disappears completely. I am there to do the job of accompanying and fitting in with the soloist's conception of the piece. Of course, in Beethoven or Brahms, for example, I contribute an awful lot as conductor. In other pieces I contribute very little. In Beethoven 3 I was contributing a lot, and there is certainly a common basis between someone like Radu and me. There can be differences, of course, but there are many more similarities. We agree, basically, on many points—there is no problem as far as basic structure is concerned—and only disagree on a few details, but my job is to do the details as he wants them.

BJ: *Joshua Bell found you a great inspiration when you were recording the Tchaikovsky Violin Concerto and Wieniawski 3 together. Presumably you were enjoying his performance and he yours, and you fired each other's imaginations.*

VA: Yes, that's right. But even there, my job as a conductor was to be with him, to be at his service.

BJ: *You are now Musical Director of the RPO, and Principal Guest Conductor of the Cleveland Orchestra, and you're soon to take up the post of Chief Conductor of the Radio Symphonie Orchester Berlin. Can you tell me what your recording plans are with these orchestras?*

VA: In Berlin we will do the Franck Symphony and more of his pieces. We do have other plans, but they're a little vague at the moment; we are still organizing them. In Cleveland I am doing a lot of Richard Strauss and some French music.

BJ: *You've done Prokofiev's* Cinderella *with the Cleveland—I love that performance. Have you anything planned with the RPO?*

VA: Another record of Tchaikovsky—*Romeo*, and *Francesca*.

BJ: *You've recorded Shostakovitch 5 with them. Are there going to be more Shostakovitch symphonies?*

VA: Not a cycle, but we will record 4, 6, 9, and 13. They will take some time. Then I think I'd like to do *Nutcracker*, if I'm allowed.

Pure Power

We couldn't believe our ears. We tried the Tripplite LC-1800 Power Line Conditioner/ Stabilizer to see if it would protect systems without degrading sound. The sonic *improvement* we heard was startling. Each preamp, from the DH-101 to the SP-11, sounded like a dramatically upgraded model. The music was smoother and less grainy, with more body and tighter, deeper bass. Once we heard the improvement we couldn't listen without the LC-1800.

How the LC-1800 works

The LC-1800 is a high-current regulated power supply that boosts voltage when the input drops and decreases output when voltage peaks to insure constant correct line voltage. Tripplite's unique ISOBAR circuits filter out line noise, suppress damaging spikes and surges, and eliminate interference between whatever components you plug in.

Order the Tripplite LC-1800 for only $289.00 plus $9.95 shipping in the US. Satisfaction guaranteed.

Charge it! Amex/Discover/MC/Visa

1-800-669-4434

Audio Advisor, Inc. • Grand Rapids, MI

The Tripplite LC-1800

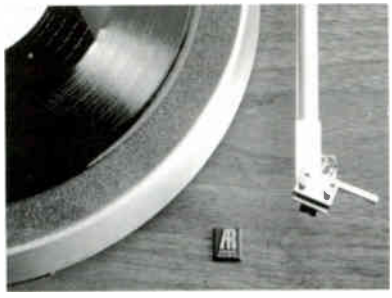
Customer comments:

"Wow, you were right! This LC-1800 really smoothed out my SP-11. I hear more detail and better bass, too. Send me another one for my second system in the family room." LC, St. Paul.

"I can't believe this Tripplite! My friend brought one over and we listened to it on his PV-2ar. The improvement was a shocker. It made an even bigger difference on my DH-101. Send me one!" JD, Rockford.

"I can't remember when a product has impressed me more." DR, Miami.

New AR ES-1 Table



Great belt-drive sound!
Classic design others have copied and charged much more for!

By arrangement with Acoustic Research, Audio Advisor, Inc. announces that the "Legend" lives. The ES-1 turntable is available now and better than ever . . . with new long-life sapphire main bearing and improved mat.

Stereophile lists the ES-1 in *Recommended Components*, Vol. 11, No. 4, pg. 96. "This is one low-cost turntable we can heartily recommend." With its real walnut veneer, the ES-1 looks worth twice the price and sounds it, too!

Best Buy tonearm, too.

Audio Advisor recommends the ES-1 with the Audioquest PT-5 — a straight, medium-mass arm with rich champaign finish and excellent internal wiring for clean, clear sound. The PT-5 fits beautifully on the ES-1 and is easily height-adjustable.

Exclusive metal armboard

Audio Advisor offers our own aluminum armboard option — pre-drilled for your arm, and custom installed when you buy the table with arm. This armboard couples the arm more rigidly to the suspension for more dynamic sound and tighter bass.

Order the table and the PT-5 for only $639.95 plus $14.95 shipping and handling. Add $34.95 for metal armboard. The ES-1 table alone, w/o arm, is $399.95. Satisfaction guaranteed.

Charge it! Amex/Discover/MC/Visa

1-800-669-4434

audio advisor, inc.

225 OAKES SW • GRAND RAPIDS, MI 49503
616-451-3868 • FAX 616-451-0709

BJ: *Are you able to record on the RPO's own label?*

VA: It's difficult because I'm exclusive to Decca/London, they wouldn't release me for a major recording on the RPO label. But if there is some accompaniment coming up, I'll ask London if I may do that for the RPO label; but I'm not sure.

BJ: *You* have *made some chamber-music recordings with Itzhak Perlman for EMI, though.*

VA: Yes, and at the moment we are in the planning stage of trying to organize a recording of the Brahms Trios with Lynn Harrell. But that is uncertain yet.

BJ: *Despite a long and varied career, it seems that there is still a great deal that you want to achieve. Do you think that winning the Tchaikovsky Piano competition in 1962 was the seminal point in your career, especially in view of the fact that you began to record for London the following year?*

VA: I made quite a few recordings in 1955, '56, and '57 before I won the Tchaikovsky, so it wasn't such a big cornerstone in my career. I was already quite well known, as I'd played in America and Europe in '57 and '58. There was no problem with my career, and then suddenly they cut me out. Between '58 and '62 I was not allowed to go abroad by the Soviet authorities, and they said I had to play the Tchaikovsky competition—which I didn't want to do—because they wouldn't let me out again unless I participated in it. When I won, they let me go abroad again. So internationally it was of marginal importance, but domestically it was of great importance. If I hadn't won it I don't think they would have let me leave Russia.

BJ: *How do you feel about your country now, in the present political climate of* glasnost*? Would you like to go back?*

VA: I would be curious, it would be interesting to see. What's happening now we wouldn't have thought possible, say, five years ago. It's absolutely unbelievable. People say they want to pinch themselves to check that they are still awake, that they're not dreaming.

BJ: *Is it going to make things easier for artists?*

VA: Yes, but how much, nobody knows.

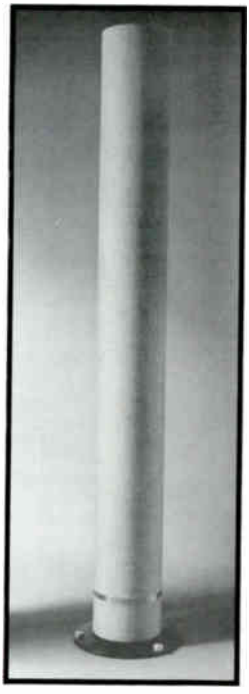
BJ: *Do you feel bitter?*

VA: No, I am delighted that things are changing in this biggest country in the world—a monstrous, dangerous country. If things are changing, it's safer for the world. S

Phantom Acoustics

Shadow

active acoustic control



The importance of controlling room resonances to realize bass clarity is well understood.

Now, the Phantom Acoustics Shadow *actively* suppresses the high pressure zones which support room resonances. Because it responds *actively* to pressure occurrences the Phantom Acoustics Shadow outperforms passive "trapping" systems.

Its active capabilities even allow absorption of the out-of-phase bass radiation to the rear of a planer loudspeaker for extended bass perception.

To receive a technical paper describing room resonance control and a list of Phantom Acoustics dealers, write:

Phantom Acoustics
c/o InConcert
12919 Earhart Avenue
Auburn, California
95603

Phantom Acoustics
is exclusively distributed by
InConcert

InConcert

Holiday Gift Ideas

For CD Players

AQ "Sims" CD Stabilizer Rings
15 Rings w/locator 19.95
25 Rings w/locator 29.95
50 Rings + free locator 49.95
100 Rings Special Price 89.95
AQ Sorbothane CD Feet (4)19.95

Mod Squad CD Damper Kit 23.50
CD polish & scratch remover 14.95
CD to Amp passive preamps:
DBP-2/VC:5 inputs 99.95
QED CDP: w/vol control 99.95
Interconnects: Aural,Cardas,Distech, FMS,Livewire,MIT,Monster, VandenHul Call

Magnavox CD Players
CDB480 16 bit Player 139.95**
CDB482 Player w/remote 149.95**
CDB473 Player w/remote 249.95**
CDB486 16 bit CD Changer 249.95**
VPI Magic Brick CD damper 34.95

For Turntables:

Automatic Tonearm Lifters:
AQ Prolift 39.95
Alphason Armlift 29.95
AR ES-1 table w/AQ arm 639.95*
AR ES-1 Turntable only 399.95*
Precut Metal AR Armboards:
For MMT, AR, RB300 34.95
Cartridge Alignment Protractors
DB Protractor 24.50
Dennesen Soundtractor 149.95
Electronic stylus cleaner 39.95
Grado Cartridges ZTE + 1 19.95
PZTE + 1 P-mount 21.50
Signature 8MZ, MCZ, TLZ, XTZ Call
8MZ replacement stylus 89.95
MCZ replacement stylus 134.95
Headshells: Sumiko HS-12 29.95
AQ-16 BEST AVAILABLE 39.95
Headshell Wires: AQ, Sumiko 9.95
SME Iitz BEST AVAILABLE 22.95

LAST Record Power Cleaner 11.95
#2 Preservative 14.95
#3 Record Cleaner 7.95
#4 Stylus Cleaner 7.95
#5 Stylast 16.95
SP-100 Power Cleaner 16 oz 79.95**
SP-200 Preservative 16 oz 105.00**
Nitty Gritty "First" Record Cleaner:
6 oz. 14.95 16 oz 24.95
Record Brushes: AQ or NG 9.95
VPI Brush for 16.5 or 17 19.95
Record Clamps: AQ clamp 39.95
Sota clamp 89.95 VPI clamp 45.00
Record Cleaning Solutions:
Torumat TM-7XH 16 oz 14.95
SuperCleaner16oz 12.95 32oz 16.95
1 gal 24.95 Super Size 2.5gal 49.95**
Record Mats AQ Sorbothane 31.95
Sota Mat 129.95 Sumiko-Acrylic 84.95

Stylus Gauge: Shure gauge 14.95
Electronic stylus gauge 99.95
Sumiko Products:
FB-1 MC demagnetizer 209.95
PIB-1 Tonearm adapter cable 69.95
VTA-16 VTA for MMT arm 74.95
Tip Toes/Counter Feet for turntables
C-3 For AR turntables 4.95
C-17/37 For VPI/Sota tables 8.95
C-10/12 For Oracle/Alexandria 8.95
Tonearm Interconnects: DIN to RCA:
AQ Sapph. Tonearm Cable 4ft 89.95
Monster Genesis Lightspd 159.95
VandenHul TSF TAC 1.5M 89.95
New Lead Balloon Stand 239.95 +
Turntable Belts: AR Belt 12.00
Sota Belt 9.95 VPI Belt 19.95
Turntable Wall Shelves:
Target TT-1 99.95**
Target TT-1L For Large tables 149.95**
VPI Record Cleaning Machines Call
VPI PLC: Power Line Conditioner Call

Audiophile Records & CD's:

*New Release
Chesky Records
RC-11, Reiner Sound (LP) 13.99
RC-10, Lt Kije/Reiner (LP) 13.99
RC-8, Gershwin:Rhapsody 13.99
RC-9, Spain:Reiner & CSD 13.99
*CR-6, Brahms/Reiner (LP) 13.99
*CR-7, Bizet,Tchaikovsky (LP) 13.99
*CD-16, Mozart, Haydn (CD) 13.99
*CD-17, Beethoven#2&#5(CD) 13.99
Proprius: Cantate Domino 15.99
Jazz/Pawn/Shop LP 33.95 CD 15.99

Reference Recordings: LP or CD
RR-12, Datos: percussion 15.99
RR-14, Big Band Sound 15.99
RR-16, Walton: Facade 15.99
RR-20, Serendipity 15.99
RR-21, Star of Wonder 15.99
RR-22, Copland: Appalacian 15.99
RR-23, Hellcon:Vivaldi/Bach 15.99
*RR-25, Nojima/Liszt 15.99
*RR-26, Redheads: Jazz 15.99
*RR-27, Fuller Plays Rameau 15.99
Sheffield: Kodo Drums CD 15.99
Moscow Sessions LP/CD (set)39.95

Accessory of the month

Record Doctor
Record Cleaning Machine
Vacuum-powered record cleaning machine $169.95**

Powerstrips

Datagard Line Filters:
The Power Strip: 6 outlet, on/off switch 14.95
The Datagard Strip: 6 outlet, 3 stage filter 34.95
Deluxe Datagard: 6 outlet, 7 stage filter 49.95
Trippilite "ISOBAR" Line Filters:
*ISOBAR-4 4 outlet, 2-stage filtering 69.95
ISOBAR-8 8 outlet, 4-stage filtering 99.95
Trippilite line conditioner/stabilizers:
*Trippilite LC-1200: 4 outlet, 2 stage filtering, -65db noise reduction, 1200 watt max 199.95**
Trippilite LC-1800: 6 outlet, 3 stage filtering, -85db noise reduction, 1800 watt max 289.00**

*These models available in 220 volt, 50/60hz add $10.00

Vibration Dampers

AQ Sorbothane Products:
AQ Feet: Large (4)34.95 Small (4)19.95
AQ Sorbothane Sheet with adhesive backing:
6"x6" 12.50 12"x6" 24.95
Monster Footers: NAVCOM vibration damper
CDF CD Player damper (4)74.95
Tip Toes & Counterfeet
C-3 ¾" with wood screw 4.95
½" Tip Toe without wood screw 4.50
1½" Tip Toe w/o wood screw 6.50
1½" Tip Toe with wood screw 8.95
C-10 For Dracie Delphi, Lead Balloon, ARC(C) Quad Stand, Vandersteen stands 8.95
VPI HW-5db "Magic Brick" 34.95

Order Toll Free 1-800-669-4434

Cables & Cable Accessories

Interconnect Cables: Aural, Cardas, Distech, FMS, Livewire, MIT, Monster, VandenHul — Call

RCA Connectors:

Mogami 7551 (7mm)	3.95
AQ RCA: 7mm/9mm/10.5mm	7.95
Tiffany: 4/5.5/7/9mm	(pr)13.50
—Female RCA:	(pr)14.50
—Female DIN	18.95
WBT 0101 9mm RCA	(pr)36.95
WBT 0200 female RCA	(pr)34.95

Speaker Cables: As-One, Cardas, Distech, Livewire, MIT, Monster, Tara Labs Space & Time — Call

Spade Lugs: Monster .75; Distech "The Lug" 5.95; GIANT 6ga (4)6.95 2ga (4)13.95

Bananas: King Size (8ga) 7.99; Monster X-terminators (pr)24.95; WBT 0600 expand. banana (pr)44.95

Tiffany Binding Posts (4)29.95

Esoteric Audio Binding Posts (2)18.95

Distech PowerBridge Cables — Call

Cramoline: contact cleaner 15.95

Silver Solder:

Wonder Solder 1.5oz.	9.99
WBT 0820 250g roll, .8mm	29.95
WBT 0840 500g roll, 1.5mm	59.95
Soldering iron kit with acc.	5.95

Tweek: contact conditioner 14.95

Video Cables:

VandenHul 1m	18.95	2m	22.95
Monster 1m	19.95	20ft	49.95

Speaker stands

Chicago Speaker Stand:—steel stands with cone points

BB-02 8"	49.95	RJ-10 10"	81.95**

Chicago Hercules Stand:

12"	129.95*	15"	134.95*
20"	134.95*	25"	139.95*

ARCICI Rigid Riser Stand—adjusts 20-36" 119.95*

ARCICI Quad ESL-63 Stand 169.95*

ARCICI For original Quad ESL 169.95*

Sound Anchors for Vandersteen IIC 219.95*

Target Stands: HJ20/2T 20" 189.95*

HJ24/2T 20" black or white 209.95*

Target BT-1 swiveling wall bracket 24.95

Equipment Racks:

Turntable Wall Shelves:

Target TT-1 99.95**

Target TT-1L for large tables 139.95*

QED WF-1 for CD players 99.95**

Paulson Isolation Platforms — Call

Target Equipment Stands/Racks:

AIB	3" amp isolation base	69.95**
TT2	20" stand with 2 shelves	139.95**
TT3	33" stand with 3 shelves	199.95*
TT3RR	33" with 2 record shelves	209.95*
PS3	33" large size stand	245.00*
TT5T	40" stand with 5 shelves	259.95*

All models UPS shippable. Specify white or black finish.

Foreign sales welcome

RAM Tubes

Last longer & sound better than original tubes.

Complete sets::

ARC SP3/8	89.95	CP SA-12	54.95
ARC SP6	64.95	CP SA-20	99.95
ARC SP9	69.95	Dyna PAS3	49.95
ARC SP11	64.95	NYAL Superit	49.95
ARC Amps	Call	Minuet & "A"	49.95
Audible M2	59.95	Moscode 600	159.95
CJ PV5/PIII	99.95	Moscode 300/150	79.95
CJ Amps	Call	Quicksilver Monos	149.95
CP SA3/7	49.95	12 AX7's or 6DJ8's, Reg	9.95
CP SA-5	159.95	Standard	16.95
VTL amps & preamps	Call	Premium	42.00

Gold Aero Premium Tubes — Call

Sorbothane Tube damper rings 2.50

Hi-temp Tube damper rings 1.00

Misc. Accessories

ASC Tube Trap acoustic room dampers — Call

Dust cover polish & scratch remover 14.95

FM antennas: Terk "Pi" antenna 74.95

AudioPrism 7500 — Call

"Littlite" gooseneck turntable light 45.00

Sonex Juniors: 2'x2'x2" sheets

Colors: charcoal, beige, brown or blue (4)49.95

Regular Sonex & special Sonex products — Call

Speaker cable switching boxes:

Niles SPS-1 4pr w/impedence matching 74.95

Niles HDS-4 4pr for heavy duty cables 139.95

QED UHSS2 2pr w/headphone jack 79.95

Stax earspeaker systems — Call

Tape deck switching selectors:

dbx 200 tape routing selector 99.95

QED TSU2P 2 tape decks 79.95

Tape head demagnetizer 14.95

Tweek: for all electronic contacts 14.95

VPI 16.5/17 pick up cleaning tubes 19.95

Shipping Charges (UPS, Insured, 48 States)

Accessories: One Item 3.95 Extra Items 1.25

*Turntables/Stands 12.95 **Electronics 8.95

UPS Air to Western Europe, Far East, Aus., NZ

-most items under $50 and less than 5 days.

Business hours: M-F 9-7 EST, Sat 10-3.

Prices subject to change. Add 3% for Amex.

Charge It! Carte Blanche · Discover · MasterCard · VISA

1-800-669-4434

audio advisor, inc.

225 OAKES SW • GRAND RAPIDS, MI 49503

FAX: 616 451-0709 Service 616-451-3868

We offer a selection of fine, out-of-print collector's pressings of jazz, pop and classical recordings.

DEFINITIVE FIDELITY.

ACCUPHASE
ARISTON
APOGEE
ASC
CALIFORNIA AUDIO LABS
CARNEGIE
COUNTERPOINT
EMINENT TECHNOLOGY
ENTEC
JADIS
KLYNE
KOETSU
LURNÉ
MAGNUM/DYNALAB
MELOS
MIT
MOD SQUAD
MOFFAT
MONSTER
NITTY GRITTY
ORACLE
QUAD
QUICKSILVER
ROWLAND RESEARCH
SONY ES
SPENDOR
SUMIKO
VANDERSTEEN
VENDETTA RESEARCH
VERSA DYNAMICS
VPI
WELL TEMPERED
WILSON AUDIO

NOW FEATURING KRELL AMPLIFIERS

Wilson Audio Specialties invites you to hear the "Definitive" difference.

Why should you listen to less? Audition the superior WATT ™ speakers in our comfortable listening environment.

Tuesday-Sunday, 11-6 PM
Thursday until 9 PM
(Closed Monday)

Definitive Hi-Fi (914) 381-4702,3

154 East Boston Post Road, Mamaroneck, NY 10543

Major credit cards accepted.

BUILDING A LIBRARY

Tchaikovsky's "Manfred" Symphony

Christopher Breunig

The Russian critic Vladimir Stasov suggested a Symphony based on Byron's *Manfred* after hearing Berlioz's St. Petersburg concerts in 1867, which included the *Fantastique* and *Harold en Italie*. He sketched out a detailed program and sent it to Balakirev—who, in turn, sent it to Berlioz himself. Berlioz was by then too ill to consider such a project, and the idea was shelved for 14 years. Then, in 1881, Balakirev received a new edition of Tchaikovsky's *Romeo and Juliet*, with a dedication to himself. Belatedly he acknowledged it, and began to pressure his fellow composer to compose the Manfred Symphony: his scenario listed key sequences, orchestration devices, the notion of the *idee fixe*, and cautions—"God preserve you from vulgarities in the manner of German fanfares and Jagermusik!" Tchaikovsky's reply was sharp: "In all probability your programme would indeed serve as an outline for a symphonist disposed to imitate Berlioz . . . but it leaves me absolutely cold. I could, to use your expression . . . *exert* myself . . . could provide those episodes with harmonic curiosities and piquancies, then send it all out into the world under a high-flown title . . . but such writing does not attract me in the least." He went on to write self-deprecatingly of his inseparable associations of *Manfred* and Schumann (whose incidental music we never hear today, except the Overture—though Beecham once recorded it).

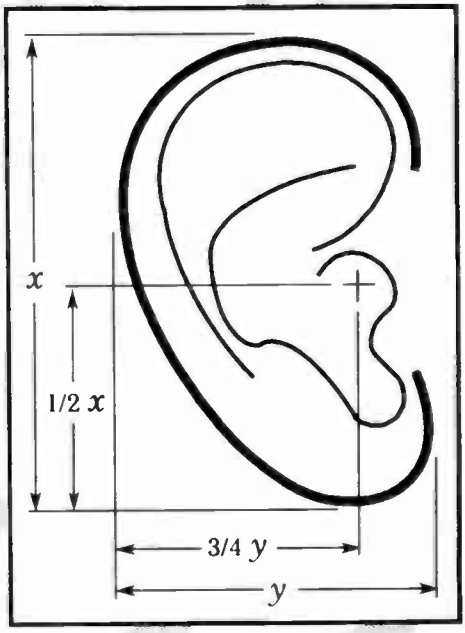
Well, Balakirev persisted—even sending a list of useful music for Tchaikovsky's reference!—and at last he was hooked. Sketches were completed quickly, and within six months a full score was ready. Tchaikovsky's letters reflect his mixed feelings about a project that he had found emotionally draining. To some he expressed the optimistic view that it was his best symphony; yet he also declared his intention to destroy most of it, especially the finale, and to recompose a Symphonic Poem from the best material.

Happily, this was only a threat. At around 55 minutes, *Manfred* is a long piece—some of the material is weak, some magnificent. In spite of the recurring motif, the movements do not tie together as those in the 4th–6th Symphonies seem to do. But Tchaikovsky set himself, and future interpreters, some near-impossible tasks. The very opening bars, scored for bass clarinet doubled by bassoons, then violas/cellos and string basses, need enormous intensity. And the depiction of the skirmishes of Hell, in the finale, require iron discipline from the conductor. The inner movements (the *Andante* a Mendelssohnian *Pastorale*) depend on great sensitivity to orchestral color; the writing is delicate; and the rhythms of the *Scherzo*, where the Alpine fairy appears to Manfred in the rainbow from a waterfall spray, need meticulous control of articulation.

There is one scoring detail worth mention. In Balakirev's addendum instructions, he declared, "for the Requiem in the last move-

Exercise Your Senses...

Adcom Ads
Allison
Audio Pro
Bang & Olufsen*
Bedini Carver
CWD* Denon
Grado Image
Luxman
Mod Squad
McIntosh
Monster Cable
Nakamichi*
Niles Audio
Stax Star Audio
Soundstream
Sonrise Sumiko
Talisman V.P.I.
Yamaha*



Custom installations available, free consultation by our knowledgeable sales staff, a complete line of hard-to-find compact discs.

Leonard Radio

Quality Electronics Since 1935

QUEENS
69-34 51st Ave.
Woodside, N.Y. 11377
718 803-1111

NEW JERSEY
160 Route 17
Paramus, N.J. 07652
201 261-5525
*Available in N.J. only

MANHATTAN
55 West 44th St.
New York, N.Y. 10036
212 840-2025

ment it would be well to bring in the organ." Now, my Eulenberg score shows *harmonium* from the *fff* at (iv) 448. The harmonium had been perfected by Debain of Paris c.1840. The limitation of this free-reed keyboard instrument (blown by foot pedals) was its restricted carrying power—but, of course, its timbres are unlike those of the big instruments. Of the recordings I know, only one appears to employ the harmonium, and that is in the deleted Philips/LSO Tchaikovsky cycle conducted by Igor Markevich. All seven discs really should be transferred to CD: Markevich was by temperament a superb Tchaikovsky conductor. Suffice it to say that the grandiose effect of large organ, though thrilling, may be a distortion of the subtle original intention.

So far, the choice on CD is rather limited—and, at the same time, some excellent LP versions have disappeared. Vox Prima has a CD by Abravanel and the Utah SO transferred from analog, which I do not know; I don't recommend the Muti/Philharmonia at all—Muti drives parts of the score insensitively (virtuosity at the cost of the music), and EMI's early digital sound is restricted and harshens at *forte*. Few conductors negotiate the transition to the Trio in (ii) convincingly and, to give him his due, Muti's diminuendo to *pp* is not strung out, but the thrumming tempo for the trio proper leaves too much unexpressed.

I suppose the ideal "casting" might be the Leningrad PO under Mravinsky, but it seems unlikely that a tape will now surface. However, the Chandos Tchaikovsky cycle with the Oslo PO was directed by Mravinsky's young colleague Mariss Jansons, whose *Manfred* (CHAN 8535, LP ABRD 1245) offers better sound than the Muti/EMI and a far more convincing and involving reading. I like the big thrust of the climax in (i), and Jansons' steady speed for the *Scherzo* works well. The resonance doesn't sound very natural at the ends of bands, and the orchestral playing is not in the premier league.

So, of the three most likely CD versions, first choice is Riccardo Chailly with the Concertgebouw (Decca/London 421 441-2, LP -1). Often, Chailly's recordings seem to reflect no deep view of the music, though technically they are good. To some extent I feel this here: it's all a little too affable, and there are one or two ugly minor incidents. But Chailly has a great orchestra to work with, and the string playing especially is magnificent. The reverberation of the Concertgebouw large hall almost blurs textures, but the engineers maintain clarity for the listener. Speeds and intensity are about right (Previn's LSO *Manfred* fails to convince because it sounds easygoing), but Chailly can't cover the weaker areas of compositional inspiration.

The whole *is* greater than the sum of the parts in this Decca version. On the same label is Vladimir Ashkenazy's New Philharmonia *Manfred*, one of his earliest recordings (1977) in the role of conductor. This year he has been presenting the *Manfred* with greater control and maturity: I only hope he likes the piece enough to do it again for Decca.

Only last month I came across a mint copy of a far earlier Philharmonia version: that conducted by Paul Kletzki. In its day (1955) this was looked upon as the "safer" alternative to Toscanini's NBC (RCA) version, from Carnegie Hall Dec. '49. Kletzki's Tchaikovsky is smoother, far more lyrical than the Italian maestro's, and the vintage Philharmonia was at that time a wonderful orchestra. Though mono only, the recording has amazing dynamic range. I count myself lucky to have found this (EMI XLP 30015).

It is the sheer rigor of Toscanini's performance which strikes one today. Not all the changes in pulse coalesce well—though I'd like to have Mortimer H. Frank's views on this, and clarification of the alternative Toscanini tapings here.

Toscanini's cut in the finale is nothing compared with the version presented to an incredulous Festival Hall audience some 12 years ago. Yuri Ahronovitch (whom I did hear conduct an electrifying Prokofiev *Romeo* ballet at Covent Garden) has become an even more preposterous figure today. But, before the LSO, looking like one of the Marx Brothers, with a baton the length of his arm, and the habit of accompanying vigorous downbeats with a "whoosh" from the lips, he audaciously truncated the *Manfred*, stitching back the great climax of (i) as grand conclusion to the finale too. When he made his recording with the LSO, sanity (or Cord Garben of DG) prevailed. But other irksome mannerisms prevailed as well.

A far happier collection—indeed, one of the very best versions—was with Michael Tilson Thomas and the LSO in 1980 (CBS 36673). Steven Epstein's production sounds finer on

For the Magic of Music

The Transcendent Music Source

Optimal Enchantment

Santa Monica, CA.
213/393-4434

Winner of the "Best Sound" at the first Stereophile Hi-Fi Show in Los Angeles.

the American LP than on the European transfer (a CD—MK 36673—has just been released). Tilson Thomas is well attuned to Tchaikovsky (excellent Symphony 1, *Nutcracker* ballet, and Suites: respectively Boston, Philharmonia, Los Angeles). Listen to the natural tempo he sets for (ii), which allows precise rhythmic articulation while conveying a beautiful sense of spaciousness. The tragic elements are weighty and "symphonic."

When Lorin Maazel recorded the *Manfred* with the Vienna Philharmonic (Decca/London), the work had not featured in the Orchestra's programs for over 20 years. His is a dramatic and concentrated account, quite superbly recorded (the "Jubilee" reissue is nearly but not quite as good as the London-pressed original LP). The dynamic range and sense of space were quite magnificent. Another technically outstanding production came from Philips in 1980. This was Haitink's completion of his cycle of the Tchaikovsky Symphonies in what were admiringly termed "second-generation" Concertgebouw recordings (though they needed a wide-range system to prevent them from seeming rather "muted"). Haitink was seen as a self-effacing conductor, whose readings were very classically poised. Parts of the *Manfred* seem to direct themselves, but this is illusory. There is enormous musical concentration here; the playing is rhythmically precise, the dynamic control impeccable. Today, Haitink radiates far more powerful energy and force on the podium—one can but look forward to his new Mahler from Berlin. This *Manfred* is arguably the best on disc, certainly far more memorable than those of Rostropovich with the LPO (EMI), or Svetlanov with the USSR SO (EMI/Melodiya).

Imported into the West, but not on licensed labels, Rozhdestvensky's, with the Radio Moscow Orchestra (Melodiya CM 03151&2), has the conductor doubling at the organ: a curious feature. In case you come across a copy, the pressing is decently cut, with quiet vinyl, but dynamics are cut back: you have to imagine the real volume unleashed at the end of (i), for instance. Full of warm and imaginative phrasing, Rozhdestvensky's reading is not very intense, and he makes an awful meal of the transition into the Trio. Very likeable and interesting, this is a partial view of the work—but the players do seem to have the music in their bones. **S**

DIGITAL DONE RIGHT

Introducing the Theta DS Pre™ Digital Signal Processing Preamplifier, a whole new kind of component for the Digital Age.

NOT JUST ANOTHER 2 BIT IMPROVEMENT

Only computing power an order of magnitude beyond any CD player can recapture all the information digital has to offer.

With the power of 80 IBM PC's and ultrasophisticated programming, Theta delivers a signal perfect in phase and time. All other digital sections randomise time. Correct spacial cues ("imaging," "dimensionality") come only from a time-correct signal.

Forget fancy analog fixes — all they can do is obscure problems created by inadequate digital sections. Digital done right *sounds* right.

Theta Digital Corporation

6360 Van Nuys Boulevard · Suite 5 · Van Nuys, CA 91401 · (714) 997-8908

TRACKING FORCE.

At Audio Studio we're scrupulous in our pursuit of the best values in high-end hi-fi. Audiophiles ourselves, we carefully analyze components before adding them to our select inventory. Which means that we can help you choose with confidence from among the best there is. And back that choice with solid service.

ADCOM. AKG. AR. ARISTON. ASC. AUDIBLE ILLUSIONS. AUDIQUEST. BEYER-DYNAMIC. B&K. BEVERIDGE. CHAP-MAN. DB SYSTEMS. DUAL. ELECTRON KINETICS. GRACE. HAFLER. HARMON-KARDON. KEF. KLYNE. MERLIN. MODSQUAD. MONSTER CABLE. MOREL. NAD. NITTY GRITTY. ORTOFON. PRECISION FIDELITY. PROTON. QUAD. REVOX. SME. SONY ES. SPECTRUM. STAX. STRAIGHT WIRE. SUMIKO PRODUCTS. SUPEX. SYSTEMDEK. TALISMAN. THORENS. VELODYNE. VPI.

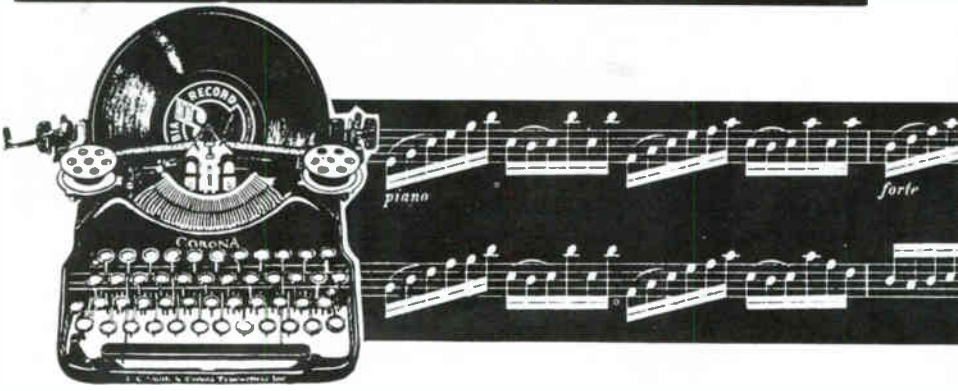
Track us down. Call or come in.

Audio Studio
414 Harvard Street
Brookline, MA 02146
(617) 277-0111

303 Newbury Street
Boston, MA 02115
(617) 267-1001

AUDIO STUDIO

RECORD REVIEWS



Classical

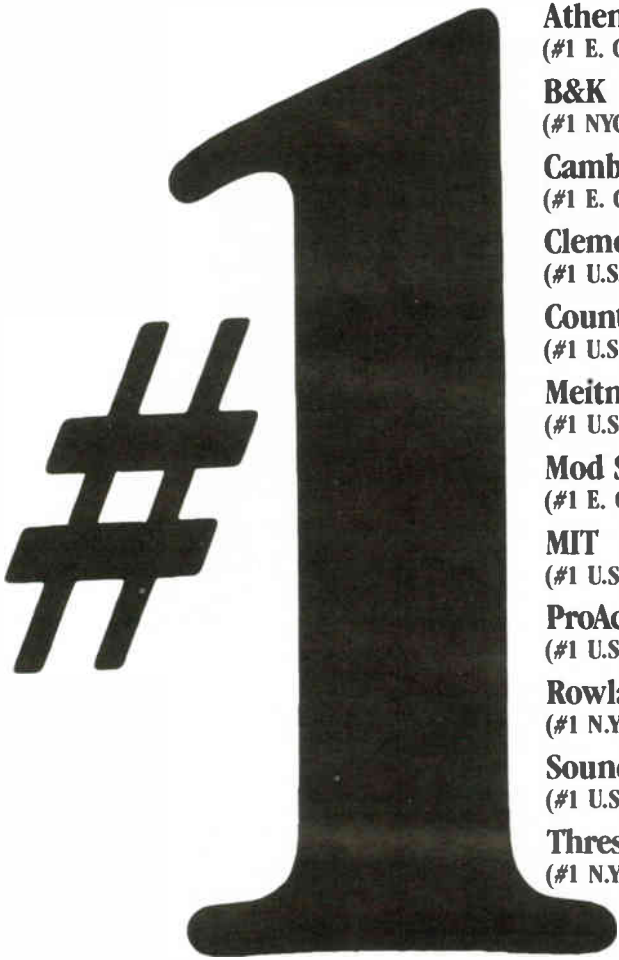
BEETHOVEN: Missa Solemnis in D, Op.123
Sylvia McNair, Janice Taylor, John Aler, Tom Krause
MOZART: Mass in c, K.427, "The Great"
Edith Wiens, Delores Ziegler, John Aler, William Stone; Robert Shaw, Atlanta Symphony Orchestra & Chorus
Telarc CD-80150 (2 CDs only). Robert Woods, prod.; Jack Renner, eng. DDD. TT: 139:11

Robert Shaw is a superb choral conductor whose work has pleased millions and never offended anyone. His recent videocassette release of *Messiah* brought to mind the phrase "middle of the road," and so does this record ing. I wish the expression didn't have the vaguely pejorative connotation it has, but there's nothing I can do about that. Within the context of this review it is meant descriptively, without judgment. I get great pleasure from his readings of these two works, and so, I suspect, will you.

The *Missa Solemnis* is a tough work. It is oddly constructed, makes great demands on its performers, and has some sharp, unsmoothable edges. Klemperer saw it as a grand edifice to be climbed slowly and respectfully; Bernstein took great relish in its wild shifts of mood and tempo; Karajan found it something awesome but understandable in his first, very successful, recording, and a piece to approach gingerly in his latest. Shaw and his group play and sing the notes as they are written. No revolution, no revelation. The "Amen" in the *Gloria* is taken so fast that one is left gasping at how superbly the chorus has been trained and how agile the soloists are. The "Et resurrexit" is suitably joyous; the "et vitam venturi seculi" has a wild, surging power. William Preucil's violin solo in the *Sanctus* is dizzyingly beautiful and mysterious, helped along by the soft-edged recording (more about this later). Normally in performances of this work there are moments when the sopranos and tenors in the chorus sound as if they wished they were elsewhere, with sagging pitch and a genuine sense of exhaustion. Here we have none of that: this is the *Stepford* chorus—error-free, miraculous. Shaw makes the work absolutely valid without posturing or pondering its meaning. Each section works superbly despite some cruddy singing by mezzo Janice Taylor; tenor Aler and bass Krause are superb, soprano McNair good without being memorable. I love this performance; I am everything but moved or thrilled by it.

Compared to the *Missa*, Mozart's "Great" mass can seem like Duran, Duran, but this would be a grave error in judgment. Shaw makes no such error. He is also not an "original instrument, old music" type of conductor—there is plenty of *rubato* coming from the large chorus and good sized orchestra, the latter playing modern instruments. The edition used is H.C. Robbins Landon's, with all of Mozart's music and no substitutions. This is a gorgeous work, perhaps Mozart's greatest mass, and it receives here a suitably beautiful performance.

The openings of the *Gloria* and *Credo* are very slow and deliberate, but the points are well taken: this is not a post-Baroque reading, but a neo-Romantic one. The whole Mass is given great breadth, and the inner voices, both orchestral and vocal, in the "Cum sancto spirito" (to choose just one example) are crystal clear, with some of the most superb string and woodwind playing imaginable. Shaw enjoys the various rhythms in the Mass, and emphasizes them impressively. I have two criticisms: Soprano Edith Wiens, while not actually doing anything wrong, has an unmemorable voice and does not turn the "Et incarnatus est" into the sub-



Athena
(#1 E. Coast Dealer)

B&K
(#1 NYC Dealer)

Cambridge
(#1 E. Coast Dealer)

Clements
(#1 U.S. Dealer)

Counterpoint
(#1 U.S. Dealer)

Meitner
(#1 U.S. Dealer)

Mod Squad
(#1 E. Coast Dealer)

MIT
(#1 U.S. Dealer)

ProAc
(#1 U.S. Dealer)

Rowland Research
(#1 N.Y.C. Dealer)

Soundlab
(#1 U.S. Dealer)

Threshold
(#1 N.Y.C. Dealer)

THE NEW STEREO EXCHANGE

Authorized New Dealer For:

ASC, Athena **(#1 E. Coast Dealer)**, Audible Illusions, Audioquest, B&K **(#1 NYC Dealer)**, B&W, Cambridge **(#1 E. Coast Dealer)**, Celestion SL, Cello, Clements **(#1 U.S. Dealer)**, conrad-johnson, Convergent Audio, Counterpoint **(#1 U.S. Dealer)**, Duntech, Eminent Technology, Forte, Grado, Janis, Kimber Kable, Klyne, Koetsu, Meitner **(#1 U.S. Dealer)**, Mod Squad **(#1 E. Coast Dealer)**, Monster, MIT **(# 1 U.S. Dealer)**, NAD, Oracle, ProAc **(# 1 U.S. Dealer)**, PS Audio, Quad, Respons **(# 1 U.S. Dealer)**, Rogers, Rowland Research **(# 1 N.Y.C. Dealer)**, Sony ES, Sonographe, Soundlab **(# 1 U.S. Dealer)**, Spica, Stax, Straightwire, Sumiko, Threshold **(# 1 N.Y.C. Dealer)**, Tice Audio **(# 1 U.S. Dealer)**, Van Den Hul **(# 1 U.S. Dealer)**, VPI **(#1 U.S. Dealer)**, Versa Dynamics **(# 1 N.Y.C., Dealer)**, Well Tempered **(# 1 E. Coast Dealer)**, Wheaton Triplanar, etcetera.

The New Stereo Exchange, 704 Broadway, 3rd Fl., Greenwich Village, New York 10003
212 674•3055 212 505•1111 800 833•0071 outside NYC *most major credit cards*

lime piece it should be, and Shaw, in general, does not find the true majesty of the work. It is conscientious without being inspired, much like the *Missa*. The other soloists are excellent, the chorus once again superhuman, and the orchestra, as hinted above, first-rate.

With regard to the recording, the word "mellow" comes to mind. This soft-edged approach works at times, such as for the violin solo in the Beethoven cited above, but I found that I had to boost the treble in order to get any real excitement out of the orchestra. This is particularly clear in the last part of the Beethoven, where Shaw brings in the full orchestra in rather military fashion—the recording keeps it muted. My advice is to boost everything—it helps the general energy level. All balances are just right, and the recording has great spaciousness. These two performances (the set is a real bargain, with close to two hours and twenty minutes of music) are not for specialists looking for an awe-inspiring evening full of music. They are, however, handsome, intelligent, and worth it for the unbelievable chorus work alone.

But if you're searching for a great *Missa*, go for the Bernstein (DG 413 780-2 GH2, ADD), recorded live with the Concertgebouw and lacking only in bass response and a great soprano. Avoid, at all costs, von Karajan's drippy, all-digital reading with a bunch of lightweight soloists and the most antiseptic approach to this music imaginable. The Mozart Mass is superbly served up by Raymond Leppard and the New Philharmonia on Angel 34710, and features Cotrubas and Te Kanawa as heavenly soloists.

—Robert Levine

HAYDN: Symphonies 6, 7, & 8; "Le Matin," "Le Midi," "Le Soir"
Trevor Pinnock, The English Concert
DG Archiv 423 098-2 (CD only). Hans-Peter Schweigmann, eng.; Dr. Andreas Holschneider, Charlotte Kriesch, prods. DDD. TT: 64:34

Haydn had much to prove with the composition of these three symphonies, as he had just been appointed Kapelmeister to Prince Esterhazy in 1761. After replacing some of the weaker court musicians with others of his own choice, he went on to display the full range of his compositional talent while showing his instrumentalists the utmost respect and trust by allotting to them some of the most flatteringly virtuosic solos. It is interesting that these symphonies look back to the 17th century with their constant use of *concertante* and *ripieno* groups, and forward in their display of an atypical variety of styles, textures, and effects. The operatic influence on the recitative for solo violin that opens the second movement of "Le Midi" must have been considered very bold for its time, and proof of Haydn's knowledge of the current trends in all forms of European music. It would have been played by Luigi Tomasini, Haydn's famous leader; on this disc it is performed by the excellent Simon Standage.

Given on authentic instruments and with the chamber-sized orchestra that Haydn wrote for, it is wonderful to hear, with the utmost clarity, individual timbres and textures shifting in and out of focus and balance. The bassoon and, more interestingly, the double bass feature prominently in the *Minuet* and *Trio* movements of all these symphonies; the flutes are given solos and are heard, in duet, accompanying the duet for violin and cello that follows the aforementioned recitative; even the viola has its day in the *Trio* of "Le Matin." All is directed from the keyboard by Trevor Pinnock; ensemble is immaculate, tuning is faultless, and the sheer joy of these performances is infectious. In a recording that maintains the balance Pinnock has striven for and which presents the earthy qualities of these instruments without undue coloration or added warmth, these unprettified but very enjoyable performances must come closest to the sound Haydn would have heard.

—Barbara Jahn

MAHLER: Symphony 2 ("Resurrection")
Barbara Hendricks, soprano; Christa Ludwig, contralto; Westminster Choir, Joseph Flummerfelt, dir.; Leonard Bernstein, NYPO
Deutsche Grammophon 423 395-2 (2 CDs). Klaus Scheibe, balance engineer; Hans Weber, recording supervision; Hanno Rinke, producer. DDD. TT: 93:28

A considerable number of audiophiles believe that digital recording and CDs are antithetical to music or to sound which one can relate to as a musical experience, and are moreover convinced that such major record companies as Deutsche Grammophon are guilty until proven innocent of unlistenable recordings on nasty little silver discs. While these individuals may limit their listening experiences to old Mercurys and new Cheskys, magnificent though they are, on vinyl only, some of the rest of us will be transported beyond ourselves, beyond mundane considerations of technology, and into a world of thought which only Mahler could have created, and which only Leonard Bernstein could have brought to us in the particular way he has in the instance of this, his most recent recording of Mahler's "Resurrection" Symphony.

Admittedly, DG has much to live down, but a remarkable turnaround appears to be taking place. From their first debacle with Bernstein/NYPO at Avery Fisher, Mahler 7, through Cop-

STEREO & VIDEO designs

6300 Powers Ferry Landing, Atlanta, Georgia 30339

(404) 955-2533

- Finest service department in the Southeast. Interior design and custom installation experts. 220 Volt models available
- AMEX/VISA/MC (major credit cards accepted)
- We Ship Anywhere

ALCHEMIST
APOGEE
AUDIO RESEARCH
AVALON
B&K
CALIFORNIA AUDIO LABS
CARDAS
CHICAGO SPEAKER STANDS
CONVERGENT AUDIO TECHNOLOGY
COMPLEMENT
DAHLQUIST
DUNTECH
GOLDMUND
GRADO
KIMBER
KOETSU
KRELL
LUX
MAGNAVOX
MAGNUM DYNALAB
MARTIN LOGAN
McINTOSH
MIRAGE
MIT
MONSTER
MOTIF
MUSICAL CONCEPTS
NAKAMICHI
PARADIGM
PREMIER
PS AUDIO
ROTEL
ROWLAND RESEARCH
SPACE & TIME
SPECTRUM
SPICA
SME
SOTA
SUPERPHON
SYSTEMDEK
THIEL
VAN DEN HUL
VERSA DYNAMICS
VIRTUOSO
VTL
WELL TEMPERED LABS

Showroom Hours: M - F 11:00 AM - 9:00 PM
SAT 10:00 AM - 6:00 PM

land 3, Tchaikovsky 6, Harris/Schuman 3, and Mahler 2, they have shown remarkable degrees of improvement. One has only to play, one after the other, the first five minutes or so of the opening movements of Mahler 7 and Mahler 2. Mahler 7 has a discomforting feeling of nonreality—one is unable to relate the sound to a live situation or any number of realistic recordings, regardless of format. The violins appear to be clustered tightly together just right of the left-hand loudspeaker, and their timbre suggests the sound of a bedroom-table clock/radio. Put on Mahler 2. Now that's an orchestra, laid out just as it's supposed to be. The violins start just right of center, and they spread holographically to the left and well beyond the left-hand loudspeaker. The basses are also quite holographic in their fullness of sound, and despite the lack of exaggeration, one can hear that the bass section may be the final bastion of unnecessary roughness from the good-old bad-old days of the NYPO.

As are most of Bernstein's DG recordings, Mahler 2 was taped live, with a private session for minor repairs and codas, for it seems that Lenny and DG would like to have their cake and eat it too. They want it live, but they don't want *any* audience noise, however innocuous, nor applause at the end. When you attend one of these concerts, you'll see about 20 tiny mikes clustered closely over the orchestra. Still looks like multi-mono, right? But the sound suggests the *real* good old days, early stereo in the late '80s.

I suspect post-production artifice. The means of adding delay, acoustical effects, and so forth have become extremely sophisticated. I don't know what these guys are using, and DG is very tight-lipped about their technology, but just try to find a seat that sounds this good at Avery Fisher Hall. There may be some, but I've never sat in any of them.

On the other hand, I believe Fisher gets a bad rap. I find it neither as magnificent as its godfathers told us it would be, nor as awful as its hit squad believes it to be. It is clear to the point of austerity. Bernstein makes the austerity work for the music in the very opening bars of Mahler 2, that deathly cold blast of violin tremolo, and the violent eruption from the basses. But he transcends the hall's austerity, somehow making us forget all the criticisms that have ever been lodged against it since its most recent renovation, whether live or on a good recording such as this one.

Bernstein and DG are up against considerable competition. Bernstein competes with his own previous two recordings, and DG complicates matters by issuing an excellent-sounding and -looking CDV of Bernstein's 1973 live Mahler 2 from Ely Cathedral with the LSO. A studio recording done within days of the live performance is available on the mid-price CBS Best Value series. Bernstein's first, 1963 NYPO recording of the work is unavailable at this time.

There were actually 78rpm recordings of Mahler 2, led by Mahler contemporary Oskar Fried in the '20s, and by Eugene Ormandy with the Minneapolis Symphony in the '30s, but the first stereo recording of the work was by Bruno Walter and the NYPO in the late '50s (available on CBS Best Values CD). Walter commands authority as a reverent Mahler disciple, but I can still recall my feeling the first time I listened to Bernstein's 1963 recording: the ultimate heresy—it was *better* than the Walter. Not as disciplined, to be sure, nor as clean, controlled, or as neatly outlined; and Jennie Tourel, an old dear Lenny friend, was well past her prime and totally out of her element in her *Urlicht* and *Finale* passages (Walter had the sure, solid grace of Maureen Forrester).

What Bernstein brought to the work was a feeling of shape and agogics, and a fascination for details: the evolution of accompanying rhythmic figures from violent and disruptive to gentle and comforting, details which Walter and many other conductors have swept under the rug as murmuring drones. And Bernstein was a damn sight more exciting.

His second recording with the LSO was more controlled, more mature perhaps, but less involving on a visceral level. I continued to prefer the earlier NYPO recording.

At this point it seems relevant to mention the one other important recording of Mahler 2 which has appeared this year, that of Simon Rattle with the City of Birmingham Symphony on EMI. (The Philips recording by Ozawa and the Boston Symphony is *not* important.) What mixture there may be in the reviews has been more favorable than not. Rattle has earned the respect of the professional community for his thoroughness of preparation, his seriousness of purpose, and his abilities as an orchestra builder, and he has cultivated a public following. Aside from that, I find most of his music-making overbearing, predictable, and unspontaneous. It sounds as though he has told everyone how to play everything, leaving little to the imaginative abilities of his players; much as George Szell used to do. But Szell was a genius; Rattle is merely talented.

One doesn't necessarily choose a Mahler 2 based on vocal soloists, but readers may be assured that Mahler veteran Christa Ludwig gives a heartfelt as well as accurate rendition of *Urlicht*, though I find her somewhat tremulous in the *Finale*. Barbara Hendricks seems a bit bland and harmless in her *Finale* passages,

Visit **New Orleans** free
when purchasing your...

or other quality
audio systems

Audio Resource is a full service audio salon with a firm commitment to lasting musical enjoyment. We offer most major new audiophile products and accessories in an unhurried and relaxed atmosphere. We are proud to qualify as the seventh Cello designer in the U.S. Because of our unique geographic location Audio Resource can offer a wider range of audiophile products in a single setting.

- new & vintage audio sales
- expert restorations
- sophisticated componentry service • highest quality tube matching • delivery & set up anywhere! • acoustic/interfacing consultation • highest quality sound for your investment • located in Metro New Orleans area • call for product information and details

AUDIO RESOURCE

3133 Edenborn Ave., Metairie, LA 70002
Tues.-Fri. 10-6/Sat. 10-4, **504-833-6942**

accommodations by

We accept most major credit cards.

although she shows notable gains in power as well as conviction when joined by Ms. Ludwig. The Westminster Choir holds its own with the most incredible dynamic range in the repertoire, from the very threshold of audibility through fullthroated fortissimo against the unabated power of the NYPO in full cry, and they do so without force, and with utterly right harmonic balance.

Major record companies today offer few new releases in vinyl as well as CD, but this is one of them. Sonically there is little to differentiate: DG did an excellent cutting in deference to the wide dynamic demands of the work. But the source remains digital, and many of you out there cannot tolerate that. The CD version has, in addition to the well-known advantages, a formatting which permits one to hear the concluding three movements according to Mahler's intentions, without interruption of any type.

I am so deeply moved by this performance, and so favorably impressed by the production which DG has given it, that I have no compunctions in declaring it to be definitive in a way which is unlikely to bear substantial competition at any time in the foreseeable future.

—Richard Schneider

ROSSINI: *Tancredi*

Marilyn Horne, Tancredi; Lella Cuberli, Amenaide; Ernesto Palacio, Argirio; Nicola Zaccaria, Orbazzano; others; Ralf Weikert, Orchestra & Chorus of Teatro La Fenice, Venice

CBS M3K 39073 (3 CDs only). David Mottley, prod.; prepared for CD by David Mottley; Mike Ross-Trevor, eng. DDD. TT: 167:08

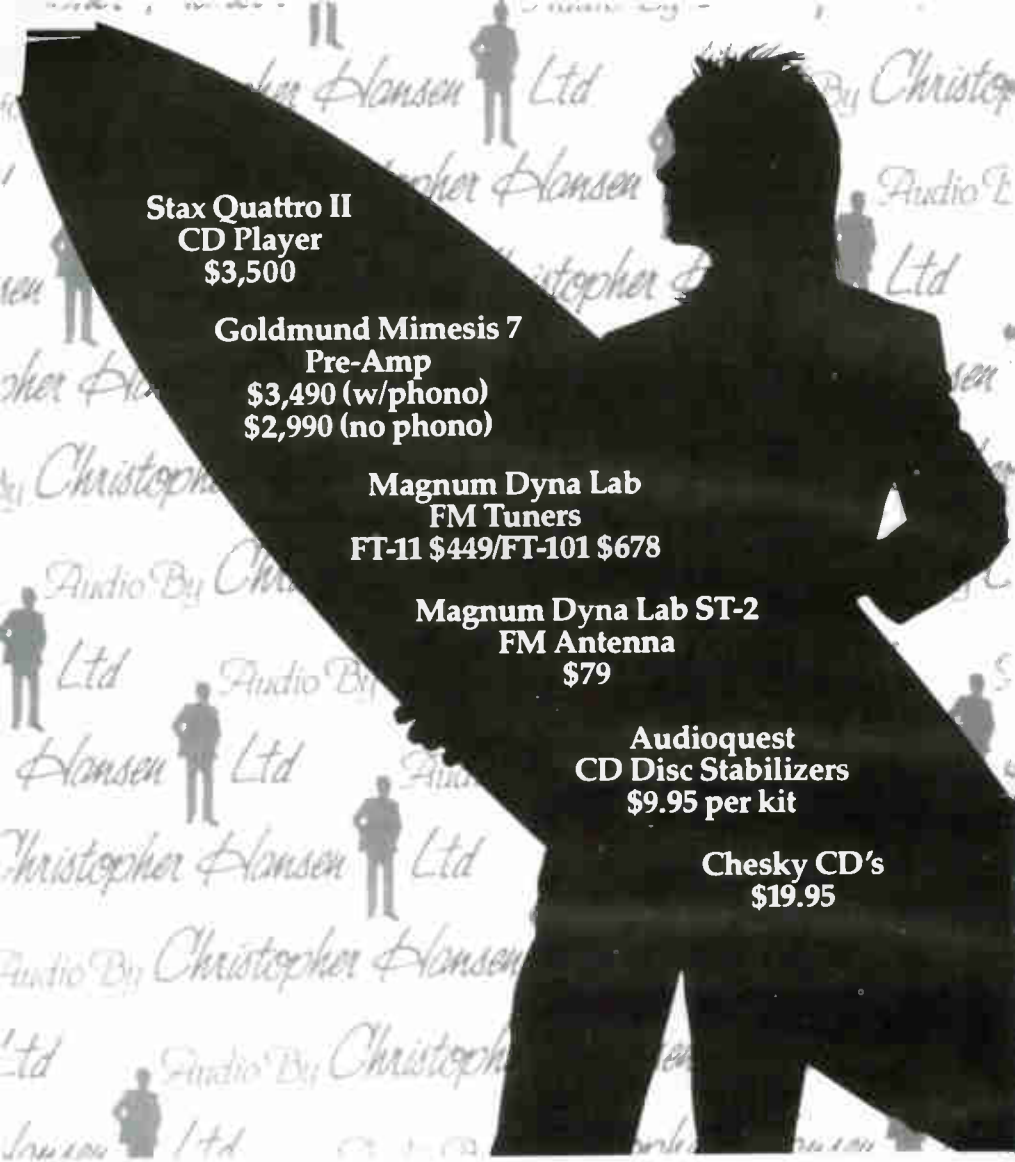
Tancredi, Rossini's tenth opera, premiered in 1813 in Venice and was an immediate success. It is an enormous and ambitious work about love and honor, based on works by Tasso and Voltaire. The hero's opening scene and aria, "Di tanti palpiti," was so catchy that people who had never been inside an opera house were humming it in the streets. (This aria was and is known as the "aria di risi"—the rice aria—because Rossini composed it in a restaurant during the 15 minutes it took for the water to boil for his rice.)

Tancredi is filled with miles of good melodies, rousing arias and duets which show off the human voice to its best advantage, splendid ensembles, and exquisite and interesting writing for woodwinds. The plot pleases as well, in an old-fashioned way. The soprano heroine, Amenaide, in love with Tancredi (composed for contralto, not castrato), is wrongly accused of collaborating with the enemy: the first-act finale finds her protesting her innocence; during the rest of the opera she proves it. The entire score is imbued with great vitality and inventiveness. By 1825, the opera had been heard all over Italy, in Munich, Dresden, Berlin, London, Paris, and New York. It fell out of favor with the onset of *verismo*, and for a few generations there were no singers with the technical ability to conquer this most demanding of music. In 1952 Giulietta Simionato and Teresa Stitch-Randall sang a performance or two in Florence, and it was seen as a viable, if not spectacular, star vehicle. It was obviously waiting for the *bel canto* revival, and, more specifically, Marilyn Horne.

Miss Horne has made somewhat of a specialty of the work since she burst upon the coloratura mezzo scene a couple of decades ago, and this recording finds her at her peak. She is the perfect *bel canto* singer, embellishing her vocal lines differently and creatively each time one hears her—she's never second-guessable and never dull. In addition, by 1983, when this was recorded, she had mellowed and was no longer interested, as she occasionally had been in the past, in showing off—too much. Yes, she's still full of fireworks, but they're better integrated into the role and she's a far more considerate partner than in previous years. A towering performance, not to be missed.

As the misunderstood Amenaide, Lella Cuberli is lovely, with pinpoint accuracy in fast passagework, a lovely femininity to her *cantilena*, and the correct vulnerability given to her character. She gets through her almost impossible Act II aria gracefully, and shines in her duets with Miss Horne. Ernesto Palacio uses his light, somewhat tightly produced tenor voice well. He works around the little notes with relative ease, only fudging periodically. He even embellishes second verses and sings *mezza voce* at times. I was therefore shocked to realize that he had taken his second-act *cabaletta* down a full third—what's a high D natural among friends? Nicola Zaccaria, without much to do, impresses in a woolly way as the villainous Orbazzano, and the rest of the cast is excellent.

Ralf Weikert, like his singers, is well-schooled in the Rossini style, and wisely elicits a Classical, rather than pre-Romantic sound from his forces. He brings out the right textures in the orchestra and ensembles and he trusts his singers. He has problems with the chorus at times—they're a bit ragged—but this is a minor blemish. The score is presented complete, with the exception of a couple of lines of recitatives and a few notes before cadenzas and final notes of arias. The embellishments to the vocal lines are spectacular, though uncredited. I do wish that Weikert had used Rossini's original, happy,



Accuphase ▫ Adcom ▫ Ariston ▫ Athena ▫ Audio Research ▫ Audible Illusions
Bryston ▫ California Audio Labs ▫ Carnegie ▫ Celestion ▫ Cello ▫ Duntech ▫ Energy
ESM ▫ Entec ▫ Goldmund ▫ Grado ▫ Infinity ▫ Jadis ▫ Linn ▫ Luxman ▫ Magneplanar
Mark Levinson ▫ Meridian ▫ MIT ▫ Monster Cable ▫ Nakamichi ▫ Nitty Gritty
Panasonic Pro Video ▫ Pioneer Pro Video ▫ Proton ▫ Pulsar ▫ Pro Ac ▫ Quad
Rega ▫ Revox ▫ Shure ▫ SME ▫ Sonographe ▫ Spica ▫ Stax ▫ Sumiko
Spectral ▫ Talisman ▫ Thiel ▫ Van Den Hul ▫ Well Tempered Lab ▫ Wilson Audio

Major Credit Cards Accepted . . . We Ship Anywhere . . . 220 Volt Models Available

CHRISTOPHER HANSEN LTD

646 NORTH ROBERTSON BLVD • LOS ANGELES CA 90069 • 213.858.8112

To be on our mailing list . . . send us your name and address or $5.00 for a Mark Levinson Catalog.

ensemble finale, even if it is a bit jaunty and simpleminded. I much prefer it to the slow, string-accompanied solo for the dying Tancredi used here. The composer wrote it at the request of an egocentric contralto a few months after the premiere, and it was dropped immediately thereafter in favor of the original. But Horne, I guess, wanted the last word—and frankly, she deserves it.

This was recorded live at La Fenice, but either most of it was done at dress rehearsals (there is applause only after the overture and each act), or the audience was bound and gagged. The odd stage noise is not bothersome, and the singers only turn away from the microphones a couple of times. The recording is vivid and high-level, with the singers closely miked and a good voice/orchestra balance, but the orchestral trebles tend to blare. It sounds like a live performance from a good seat—not a bad recommendation. Rossini fans, Horne fans, and, I guess, opera fans in general, should grab this. It's a gem of a performance of a special work.

—**Robert Levine**

R. STRAUSS: *Also Sprach Zarathustra* (1954); *Le bourgeois gentilhomme* Suite; Waltzes from *Der Rosenkavalier*

Fritz Reiner, Chicago Symphony

RCA 5721-2-RC (CD only). Leslie Chase, Lewis Layton, engs.; John Pfeiffer (Zarathustra), Richard Mohr, prods. ADD. TT: 70:57

R. STRAUSS: *Also Sprach Zarathustra* (1962); Four Last Songs; *Die Frau Ohne Schatten*, Act II: The Empress's Awakening Scene

Fritz Reiner, CSO (Zarathustra); Leontyne Price, Patricia Clark, Men of the Ambrosia Chorus, Erich Leinsdorf, New Philharmonia

RCA 6722-2-RG (CD only). Lewis Layton, eng., Richard Mohr, prod. (Zarathustra). (No production credits for the Price/Leinsdorf selections.) AAD TT 67:44

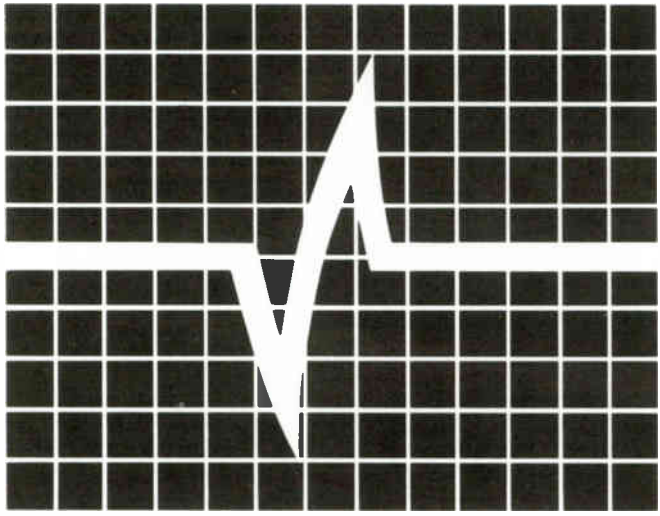
Ask an experienced audiophile, who hopefully happens to be a cultivated music lover as well, to name a single classical recording which exemplifies large orchestral stereo recording at its best, and the answer is liable to be Fritz Reiner's 1954 recording with the Chicago Symphony Orchestra of *Also Sprach Zarathustra*. Although *Ein Heldenleben* was recorded one day earlier, making it the first stereo recording to be produced by RCA, and certainly a legendary recording in its own right, this pioneering *Zarathustra* seems to have garnered a mystique, so much so that critics and public alike have given something of an indifferent shrug to the 1962 Reiner/Chicago *Zarathustra* remake. An acquaintance of mine who deals in rare records, including "shaded dogs" in the $100 range, tells me he can hardly give away copies of the later recording.

Although it goes against common wisdom, I have a problem with those who have dismissed the 1962 *Zarathustra*. There is no denying the appeal of the virtually purist miking of the 1954 recording, with a mere pair in front of and above the orchestra, and a single accent mike over the trumpets. (A little less than pure, perhaps. The Chicago trumpets mightn't have needed an accent mike. High power and uniform style and dynamics had been hallmarks of Chicago brass playing even prior to Reiner's Musical Directorship.) I always felt that if any section of the orchestra needed help coming through in the big tuttis, it was the French horns. Why, for example, should the violas totally cover the horn playing unison on their line at #14? Is the horn not a powerful instrument with great carrying ability? In the 1962 recording, the horns do come through with a more convincing sense of presence. Another key player who lacks presence in the 1954 recording is principal cellist Janos Starker, in his solo passages from the 4th bar of #20 and continuing at various points throughout the section entitled "Dance Song." His successor, the late Frank Miller, comes through much better on the 1962 recording, and I don't believe their differences in tonal concept account for the difference in the way they were picked up in the two recordings.

Nevertheless, many audiophiles have preferred the 1954 recording for its overall presentation of the orchestra in the splendid acoustical setting of Orchestra Hall. The case is made from the outset with its distant bass and organ pedal growl, and the great sense of space given to the timpani, whose player, the late, magnificent Edward Metzenger, gave himself plenty of leeway to make awe-inspiring crescendos in his resolute trademark passages. In the 1962 recording, Metzenger and his mighty drums were too closely miked, he didn't allow the same leeway for the crescendos, and at his second entrance, he seemed a bit unsure of his tempo. On the other hand, the climax of the introduction is more thrilling in '62, due in part to the power of the horns in the inner voices, the fiery trombone figure two bars before #1, and finally, the stunningly supersonic cymbal crash at #1 itself.

From a purely musical standpoint, many listeners have preferred the earlier recording for its spontaneity and ease, citing what they feel to be excessive caution and control in the later performance. For example, the section entitled "Joys and Passions" (16 bars before #4) is taken at a headlong clip in 1954. #4 itself bears the instruction "*noch bewegter, sehr leidenshaftlich*" (even more agitated, very passionately). Reiner and the orchestra certainly

The Perfect Pitch



A ONE YEAR SUBSCRIPTION TO HI-FI NEWS & RECORD REVIEW COSTS £24.80 FOR SURFACE MAIL AND £42.50 FOR AIR MAIL

. . . SUBSCRIBE TODAY!

Please send me 12 monthly issues of **Hi-Fi News & Record Review** commencing with the next available issue.

☐ £24.80 Surface Mail
☐ £42.50 Air Mail

I enclose a cheque/International money order payable to Link House Magazines Ltd.
or debit my credit card

☐ VISA ☐ ACCESS/MASTERCARD ☐ DINERS ☐ AMEX

Credit card no. Expiry date: _____

Signature _____

(Please print in block capitals)

Name: _____

Address: _____

_____

_____ (HF 02)

To: **Hi-Fi News & Record Review**, Subscription Department
Link House Magazines Ltd.
120-126 Lavender Avenue, Mitcham, Surrey CR4 3HP England

I understand that I am committed to one year's subscription and should I wish to cancel no refund will be made.

Registered in England and Wales No 1341560

HI-FI NEWS & RECORD REVIEW

A LINK HOUSE PUBLICATION

fulfilled that instruction in 1954. In 1962, the same passage is played at a slower tempo, to which some listeners have objected. On the other hand, to me it seems more intense, portraying a greater sense of conflict, so who's to say that's not more agitated and very passionate? This section concludes with a fortissimo compound figure led by the trombones and tubas, which, although executed quite correctly in '54, is laid down as a statement of law in '62, to such an extent that it appears to have influenced an entire generation of low-brass players who have entered the profession since this recording appeared.

Reiner, always precise, could be counted upon to accurately resolve conflicting rhythmic figures, as in the bass-cello fugue which opens the section entitled "Dirge," but he did so with even greater tension and involvement in '62 than he had in '54.

A further musical difference exists in a change of concertmasters. In '54, the violin solos in "Dance Song" were played by John Weicher, a CSO veteran from the Stock era, strong in Strauss tradition. By 1962, Mr. Weicher had moved over to the principal second violin position, and Sidney Harth was concertmaster. Mr. Weicher had served as concertmaster with distinction for many seasons, but compared to Harth's playing of these passages, he seems a diamond in the rough, whereas Harth seems a fully polished gem.

That would seem to encapsulate the musical differences between these performances. 1954 was Reiner's first season as Musical Director of the CSO. He had whipped the orchestra into fine shape, but it was merely a foretaste of what would follow. The 1962 recording, with its pros and cons, gives us an opportunity to study the difference made by eight years of Reiner's leadership.

The engineering for the '62 recording featured six microphones over the orchestra, as if perhaps they were attempting to retrieve bits of detail which had been obscured in '54. Perhaps they went a little too far on behalf of detail, as with the timpani at the opening, and neither recording really clarifies the great bell strokes at the section entitled "Those who Came After," #52, even though the bell was elevated 8′ above the stage in '62.

A further very important difference exists in the seating arrangement of the orchestra. In '54, Reiner deployed the string section as he had throughout his career, and which was the norm until *ca* 1950. First and second violins faced each other on the outside left and right respectively, with violas inside right, cellos inside left, and basses in a single row, left of the center rear of the stage with their instruments facing out into the hall. Timpani and percussion were just right of center rear, with the horns in front of them. Trumpets, trombones, and tubas were clustered in the right-hand corner of the rear of the stage, blowing diagonally across rather than straight out. The woodwinds occupied center stage, it seems, no matter how other sections were seated.

Reiner felt forced to abandon this seating plan due to what he felt to be ensemble problems related to the stage acoustics in Chicago. By '62, the first and second violins were seated together on the left, with the violas and cellos on the right, the violas outside. The basses were arrayed along the extreme right with their instruments facing across the stage. Timpani and percussion were back-row left of center, horns centered with trumpets behind them, and the trombones and tubas to the right of them, blowing out into the hall.

It would seem that in terms of music, acoustics, and audio, there is much to savor and enjoy in both recordings; no matter what anyone may tell you, each is a powerful and compelling statement of the work, and each recording has its many pluses and a few minuses.

As for fillers, the '54 *Zarathustra* comes with the Suite from *Le bourgeois gentilhomme*, drawn from incidental music for von Hofmannstal's adaptation of the Moliere play. Reiner omitted the Minuet after Lully (little loss, and I prefer the continuity without it). Recorded in 1956, the sound has always seemed bright and congested on LP. It is only somewhat clarified and tamed in the CD transfer, but is listenable nonetheless. Written virtually for chamber orchestra, the playing by the featured principals is elegant and assured. The final track contains Waltzes from *Rosenkavalier*, an arrangement by Reiner himself, recorded in 1957. What a pity Reiner didn't record Strauss's own Suite from *Rosenkavalier*, a sort of "symphonic synthesis" of the opera, but this abbreviated collection of waltzes is better than none at all, and is played to within an inch of its life. There's a bit more tape hiss than in the other selections, but this, too, is preferable to overzealous noise reduction.

Reports are that the original two-track 30ips master of the '54 *Zarathustra* has deteriorated in storage, and that this CD derives from a backup. There are those who feel that the rare shaded dog and the plum-label Victrola issue are better beyond any hope of comparison to this CD transfer. I do not agree. If you won't even have a CD in your system, you needn't have read this far. If you accept CD, even with reservations, you may find that this one takes you back to a pioneering moment in recording history, to a great performance in a believ-

HI-FI Answers

Defines the state of the art

Hi-Fi Answers is not the biggest British hi-fi magazine, nor the oldest, nor the glossiest – but it can lay claim to being the most stimulating.

Our British readers are true hi-fi enthusiasts: people who prefer good music in the home to an evening spent in front of the television. We provide them with reviews of the best hi-fi products the world has to offer, at all price levels, and feature articles on all technical and non-technical matters of interest.

We use our ears. We were the first UK magazine to declare CD unsatisfactory, though now we find much to praise; the first to examine the merits of solid-core cables; the first to introduce recently the challenging claims of Peter Belt. For years the magazine has concentrated on methods of optimising system performance, and on the leading edge of hi-fi design. **Hi-Fi Answers** has influenced the work of some of the UK's leading designers.

Our writers number among the foremost hi-fi journalists in the world: Alvin Gold, who is already familiar to **Stereophile** readers, James Michael (Jimmy) Hughes, David Prakel and the editorial staff, Keith Howard and John Bamford.

Our logo proclaims that we 'define the state of the art'. A bold claim? We invite you to judge for yourself by taking out a subscription.

A one year (12 issue) subscription to **Hi-Fi Answers** costs US$45 for USA and Canada, and can be obtained from:
Eastern News Distributors, 250 West 55th Street, New York, NY 10019.
Telephone 800-221 3148 (toll free) for details and newstand availability.

Subscription rates for other countries can be obtained from:
Subscriptions: Hi-Fi Answers, Haymarket Publishing Ltd, 12-14 Ansdell Street, London W8 5TR, England.

I would like a one year subscription to Hi-Fi Answers, at $45
☐ I enclose payment (check)
☐ Please bill me

NAME_____

ADDRESS_____

CITY_____ ZIP CODE_____

Please post to: Eastern News Distributors, 250 West 55th Street, New York, NY 10019.

able environment.

The fillers on the '62 *Zarathustra* bear little more comment than a yawn; for hard-core Price fans only. A pity they couldn't have fit Reiner's recording of *Symphonia Domestica* on this CD. What a blockbuster that would have been! The transfer is typical of RCA's best work in this area, as they hired a small coterie of music-minded producer/supervisors and some talented engineers, armed with a Cello Palette no less. That's the equalizer of the rich and famous, and may strike some as impure, but in this case, as well as in a number of other recent vintage RCA transfers, the result is a smooth "record-like" sound with a minimum of "digitalis," and with tape hiss reduced without apparent loss of air and space.

If you are one of those who admires the '54 *Zarathustra*, and has written off the '62 as a mere also-ran, give this reissue a try. Each is magnificent in its own right. The '54 is a full-price CD in the $15 range. The '62 is on the mid-priced Papillon series at about $10.

—Richard Schneider

STRAVINSKY: *Petrushka*, *Le Sacre du printemps*
Igor Stravinsky, Columbia Symphony Orchestra
CBS MK 42433 (CD). John McClure, prod. ADD. TT: 65:26

STRAVINSKY: Symphony of Psalms, Symphony in C, Symphony in Three Movements
Igor Stravinsky, Columbia Symphony Orchestra (Three Movements); CBC Symphony Orchestra; Festival Singers of Toronto (Psalms), Elmer Iseler, dir.
CBS MK 42434 (CD). John McClure, prod. ADD. TT: 70:10

So much has been written in praise of these recordings as "definitive" interpretations by a composer of his own music that any demurring from this view may well seem heretical. All five works are, of course, major masterpieces of this century, and the decision by Columbia (now CBS) to record them (and many other Stravinsky scores) with the composer in charge must be acknowledged as one of the most daring and valuable undertakings by a record company in the history of the phonograph.

But as some questions have been raised recently about so-called "authentic" performances of 18th- and 19th-century music on period instruments, so, too, one has every reason to question the "authenticity" of these performances directed by Stravinsky himself. For example, the distinguished critic Samuel Lipman, in his *House of Music* (David R. Godine, 1984), compared this 1960 *Sacre* with two earlier recordings led by the composer, one made in 1928 with an unidentified French orchestra, the other in 1940 with the NYPO. Lipman finds the latter version "tauter in rhythm, more energetic in momentum, and leaner in timbre." And in the 1928 account he hears "a performance whose orientation is the past, not the present," and an orchestra "faced with a modernist adventure rather than just another performance of a repertory piece coarsened by years of being presented to unsophisticated audiences in the distortions of superstar conductors."

It is also interesting, as an extension of Lipman's argument, to consider a "live" 1961 performance of *Sacre* directed by Stravinsky with the Swedish Radio Orchestra (which had a limited distribution on the Discocorp label). In this account, one finds a relaxed lyricism absent from all three of the composer's studio versions. The point is that when Stravinsky (or any other composer for that matter) tackles his own music, he becomes—as any intelligent performer inevitably must—susceptible to a change of viewpoint. This is also illustrated in Stravinsky's 1946 recording (again with the NYPO) of his Symphony in Three Movements, a broader, tougher, more intense account than this 1961 stereo version, and one far more suggestive of the "indignation" over World War II that the composer claimed inspired the work. And in the early '50s, Stravinsky recorded his Symphony in C with the Cleveland Orchestra, a version that is not only a bit more polished than this stereo remake, but also a bit more suggestive of the music's pervasive wit.

One other problematic issue remains unresolved with these stereo recordings: the extent to which Stravinsky's disciple, Robert Craft (who often rehearsed the recording orchestra prior to the composer's appearance), influenced the finished product. Composer Michael Colgrass, who was in the percussion section of the orchestra for this 1960 *Sacre* recording, has spoken in an interview (printed in *Edison, Musicians, and the Phonograph*, Greenwood Press, 1987) about how Stravinsky's dissatisfaction with some passages was ignored in the control room where Craft often sat. Indeed, some wags have wryly quipped about this and other late Stravinsky recordings that they contain "more Craft than art."

I have not raised any of these issues to denigrate the generally fine performances reissued here. Beyond question, they are valuable documents preserved in sound that, for its time, remains remarkably good. But they should not be viewed as "definitive" or "authentic," if for no other reason than a musical masterpiece defies a single "definitive" statement in the same way that works like *King Lear* or *Moby Dick* defy single "correct" interpretations. Had he lived to record still further versions of these five works, Stravinsky might well have left us

very different readings. But for a man of his years—he was 78 when the earliest of these recordings (*Petrushka* and *Sacre*) were made, 81 when the last (Symphony of Psalms) was produced—the control, exhilaration, and raw power of his direction, some lapses in ensemble notwithstanding, remain astonishing.

In every way, these CD transfers are magnificent, among the very best that CBS has issued. With the remixing supervised by the original producer, John McClure, distortion present in the LPs has been eliminated, and the overall sound is far more musical than that of earlier editions. In good measure, this seems to have been achieved through a re-equalization of the master tapes in which the midrange has been italicized and the treble slightly trimmed. As a result, impact is greater, timbres are truer, and the bass is a bit weightier than before. In addition, hiss remains almost inaudible, and greater clarity and separation of individual choirs are now evident, even though the perspective remains slightly flat, with little suggestion of depth.

CBS is also to be congratulated for providing detailed indexing for the two ballets (15 bands for *Petrushka*, 13 for *Sacre*), making it possible to find almost any portion of either score with the push of a button. The only flaw in the production is a failure to note that both *Petrushka* and *Sacre* were recorded in their revised versions of 1947 and 1943, respectively: no date is given for *Sacre*, and the *Petrushka* is erroneously identified as the original 1911 edition. In all other respects, these productions, if not "definitive," are exemplary, and those owning earlier LPs of any of them might well consider replacement with these sonically resplendent digital transfers.

—Mortimer H. Frank

Classical Collections

BENNO MOISEIWITSCH: *The Early Recordings, 1916-30*

Benno Moiseiwitsch, piano

The First Sessions (1916-19): **Daquin**: Le Coucou; **Debussy**: Estampes, Jardins sous la pluie; **Ravel**: Jeux d'eau; **Brahms**: Capriccio in b, Op.76 No.2; **Scriabin**: Nocturne for the Left Hand in D flat, Op.9 No.2; **Debussy**: Suite Bergamasque, Clair de lune, Preludes Bk.1, Minstrels; **Rameau**: Gavotte et Variations; **Scarlatti/Arr. Tausig**: Pastorale & Capriccio

Chopin: Scherzo No.2 in b flat, Op.31; Etudes, Op.10, Nos.4, 10, & 11; Op.25 No.3; Ballade No.3 in A flat, Op.47; Impromptu No.1 in A flat, Op.29; Waltz No.14 in e, Op. Posth.

The German Repertoire: **Beethoven**: Andante Favori in F, WoO 57; **Hummel**: Rondo in E flat, Op.11; **Mendelssohn**: Songs Without Words Nos.3 in A, Op.19 No.3,

FORTÉ

introduces two new power amplifiers

model 1a
50 watts/channel
0.05% THD into 8 Ohms
20Hz-20kHz
pure class A

model 3
200 watts/channel
0.05% THD into 8 Ohms
20Hz-20kHz
high bias class AB

Perfect companions for the ultra-quiet, ultra-low distortion FORTÉ model 2 preamplifier, these exciting new amplifiers may be auditioned at selected audio specialists.

for product information and a list of FORTÉ audio specialists write:
1945 Industrial Drive Auburn Ca 95603

exclusively distributed world-wide by
inConcert
a division of Threshold Corporation

& 22 in F, Op.53 No.4; **Schumann**: Fantasiestucke, Op.12, Grillen; **Henselt**: Si oiseau j'etais; **Brahms**: Intermezzo in C, Op.119 No.3, Rhapsody in E flat, Op.119 No.4

Encores: **Weber**: Sonata No.1 in C, Presto (Perpetuum mobile); **Delibes**: Le Roi s'amuse, Passepied; **Moszkowski**: La Jongleuse, Op.52 No.4; **Schumann/Arr. Liszt**: Fruhlingsnacht; **Scarlatti/Arr. Tausig**: Pastorale & Capriccio (1927 electrical recording); **Granados**: Danzas Espanolas, Op.37: No.5, Andaluza (Playera), & 6, Rondalla aragonesa (Jota) (No.6 previously unpublished); **Godowsky**: Concert paraphrase on *Die Fledermaus* by Johann Strauss II

Archive Piano Recordings APR 7003 (2 LPs). Bryan Crimp, reissue producer. (mono AAA.) (Also available direct from Appian Publications and Recordings, PO Box 1, Wark, Northumberland NE48 3EW, Great Britain; $30 ppd.)

BENNO MOISEIWITSCH: *The Complete Rachmaninov Recordings, 1937-48*

Piano Concerto No.1 in f#, Op.1; Piano Concerto No.2 in c, Op.18; Rhapsody on a Theme of Paganini, Op.43; Scherzo from *A Midsummer Night's Dream* (Mendelssohn); Prelude No.1 in c#, Op.3 No.2; Prelude No.6 in g, Op.23 No.5; Preludes Nos. 16 in G, 21 in b, & 23 in g#, Op.32, Nos.5, 10, & 12; Lilacs, Op.21 No.5; Moment Musical No.4 in e, Op.16

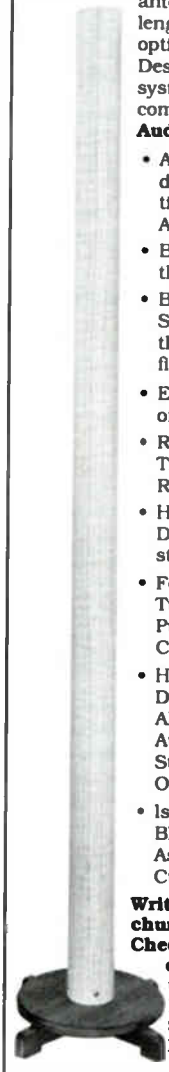
Benno Moiseiwitsch, piano; Sir Malcolm Sargent, Philharmonia Orchestra (Concerto 1); Walter Goehr, LPO (Concerto 2); Basil Cameron, LPO (Rhapsody)

Archive Piano Recordings APR 7004 (2 LPs). Bryan Crimp, reissue producer. (mono AAA.) (Also available direct from Archive Piano Recordings, PO Box 1; Wark, Northumberland NE48 3EW, Great Britain; $31 ppd. Both APR 7003 & 7004, $55 ppd.)

Born in Odessa in 1890, Moiseiwitsch studied in Vienna with the renowned Theodore Leschetitzky, the same teacher who taught such successful yet stylistically varied pianists as Paderewski, Ignace Friedman, Mieczyslaw Horszowski, and Schnabel. Emigrating to England in 1908, Moiseiwitsch based himself in that country until his death in 1963 but had the most thoroughly international career that one could imagine. He was a frequent visitor to the US from 1919 on, and I count myself lucky actually to have heard him in recital in New York in the late 1940s when in my teens. His recording history, too, was extensive, ranging from acoustic sessions starting in 1916 through the earliest electricals of 1925 up until stereo discs had already been well established; his last LP recordings, for American Decca, were made about 1961, but of course the majority of his discs date from the 78 days (some 120, counting the acoustics), and they include some real classics. A close friend of Rachmaninov, Moiseiwitsch was in many ways considered his pianistic heir, but his superb gifts as an interpreter can also be admired in his recordings of keyboard works as far-ranging as other late 19th to mid-20th-century Russians, Beethoven, the French impressionists, Chopin, Liszt, and his special love, Schumann. Because his is a name hardly known to a younger generation,

How to Achieve Peak FM Reception.

Here finally is a serious indoor FM antenna for people who demand peak performance from their tuners and receivers. **The AudioPrism 7500** is the first full size, half-wave length antenna with appropriate length elements (7'-2") for optimal FM reception. Designed as a major audio system component, not as a compromise accessory, the **AudioPrism 7500**:



- Achieves Higher Gain (5.1 dBi) and Clearer Reception than All Other Indoor Antennas
- Brings in More Stations than Most Cable Systems
- Brings in More Distant Stations with less Noise than Electrically Amplified Antennas
- Exhibits Superb Rejection of Multipath Interference
- Receives Low Angle Transmitter Signals to Reduce Flutter & Fading
- Has an Omnidirectional Design - Needs No Constant Tuning Adjustment
- Features Coaxial, Twin-Tuned, 1/4" Diameter, Pure Aluminum J-Pole Configured Elements
- Has a Clean, Unobtrusive Design to Integrate with All Types of Decor and Audio Cabinetry. A Stable Wood Base Uses Only 1 s.f. Floor Space.
- Is Covered with Standard Black or Beige Fabric. Ask Local Dealers About Custom Fabric Coverings.

Write, Call or FAX for Brochure. Order: No Personal Checks; Bank Cards Welcome; Money Orders to RF Limited. Sug. Retail $149.95 + $15 Shipping. Dealer Inquiries Welcome.

AudioPrism

A Division of RF Limited

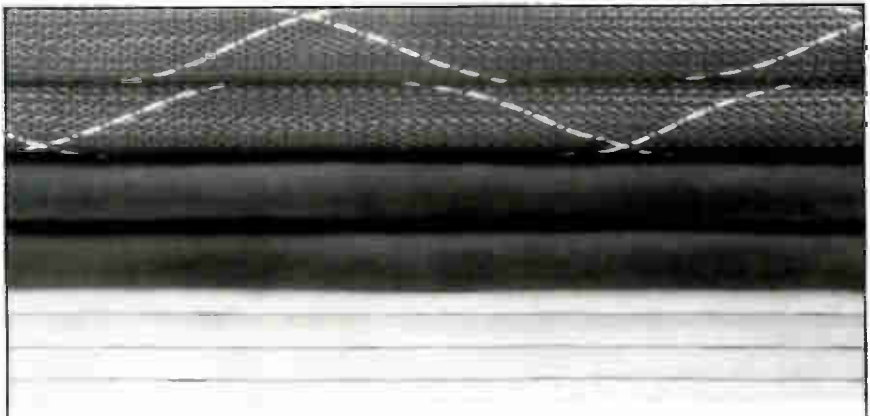
P.O. Box 1124, Issaquah, WA 98027

Tel: 206•392-0399 FAX: 206•392-8413

Best Results Start At $549.00

Send For Brochure
And See Review In *The Absolute Sound* Issue 52

MUSICAL CONCEPTS
#1 Patterson Plaza, • Florissant, MO 63031
(314) 831-1822



AS-ONE™ INTERCONNECT • SYMPHONIC CONDUCTOR™ SPEAKER CABLES • MISSING LINK™ AUDIOPHILE A.C. CABLE

Aural Symphonics FAX 408-270-6039

2016 FLINTBURY COURT • SAN JOSE, CALIFORNIA 95148 • 408-270-6033
IN CANADA, INTERLINEAR 105 RIVIERA DR., UNIT #3, MARKAM, ONTARIO L3R 5JM 416-479-1893

it may be necessary to call readers' attentions to this performer, who, by all rights, was one of the giants of his time—and *that* is not a description I use easily.

What was so unusual about Moiseiwitsch, and what made his performances so special? Let me describe a few of his many attributes by parenthetically adding where they can most readily be noted in the four LPs at hand. He was a tremendous colorist with one of the most gorgeous tones to be heard on records, discernible even through the side effects of the usual 78 surface noise (Rachmaninov Preludes Op.32, Nos.10 & 12, made in the early '40s). His playing had grandeur, sweep, warmth (Rachmaninov: last movement of the 1948 Concerto 1; concluding pages of Concerto 2's middle movement, 1937). One can always hear his sturdy, rhythmically powerful approach, but it is tempered by the most poetic *innigkeit* imaginable (the Liszt arrangement of Schumann's "Fruhlingsnacht," 1922). Yes, he was a Romantic, but a strong classical streak combined with superb musicianship to produce a high-level interpretation of whatever he tackled (Beethoven's *Andante favori*, 1930). Both singing characteristics and ideal sentiment, without exaggeration or sentimentality, are part of his feeling for lyricism (Mendelssohn's Op.53 No.4, Song without Words, 1927). One can always recall his elegance (the earliest electrical included here, Chopin's Second Scherzo of 1925, as well as the four Etudes of two years later). Temperament and a virtuoso's personality, as well as a virtuoso's technical equipment, give his playing tremendous dash (the cheeky, good-humored Hummel Rondo of 1930, or the dazzling 1921 Weber *Perpetuum mobile*).

It is tempting to try to describe almost every recording contained in these two albums, but I will content myself with mentioning just two more personal favorites: the mercurial delicacy and lightness plus the accentuation of the broken-octave variation No.19 in the Paganini Rhapsody of 1938 is just one of the reasons why I consider Moiseiwitsch's the greatest performance of all, and the justly famous one-take recording of Rachmaninov's *Midsummer Night's Dream* Scherzo is simply amazing.

The British firm, Appian Publications and Recordings (address given in the heading), which has already issued valuable albums of Rosenthal and Barere, has promised that more retrospective discs of Moiseiwitsch will appear on its Archive Piano Recordings label. The University of Maryland's International Piano Archives is also producing a two-LP set of some of Moiseiwitsch's 1954 Schumann and Brahms, among other works. All of this is to the good, for playing of this caliber deserves to be known, regardless of date of recording, the initial distractions of surface noise, or the fact that the sometimes primitive and even occasionally constricted recorded piano sound is far removed from the miracles of modern sonics. What emerges magnificently is the artistry of the performer.

—Igor Kipnis

SCARLATTI: Fugues & Sonatas
Fugue, K.417; Sonatas, K.263, 264, 213, 214, 140, 224, 87, 27, 219, 24
Edward Parmentier, harpsichord
Wildboar WLBR 8501 (CD; LP not available). Michael Lynn, eng.; Joseph Spencer, prod. AAD. TT: 50:06
BEETHOVEN: Sonata in c, "Pathetique"
HAYDN: Sonata in E, Hob.XVI/52
W.A. MOZART: Sonata in F, K.332
Leslie Tung, fortepiano
Wildboar WLBR 8701 (LP; CD not yet available). Jack Vad, eng.; Vad & Sylvia Reoderer, prods. AAA. TT: 47:29
Both available from Harmonia Mundi USA, 3364 S. Robertson Blvd., Los Angeles, CA 90034.

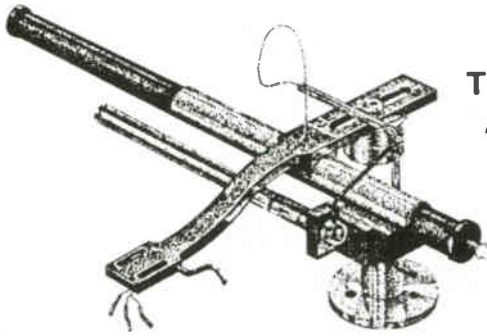
The compositions, performance techniques, and instruments on these two recordings may seem at first glance too dissimilar to include in a single review. The recordings share, however, a label; Wildboar so signifies thoughtful program, careful manufacture, and inspired musicianship that considerations of era and instrumentation are simply overshadowed.

Harpsichordist Parmentier has already recorded two LPs for Wildboar—one of Renaissance Italian music (WLBR 8001), and one of the music of Bohm and J.S. Bach (WLBR 8101). The new Scarlatti disc finds Parmentier again with full grasp of his subject. He imbues these works with an industry not always heard in authentic-instrument performances of Baroque works. Parmentier's concentration is apparent in the Fugue, where the counterpoint and harmonic tension never let up, and modulations are deceptively adept, never predicable or abrupt. His playing of the sonatas is also singular. Parmentier may miss the last bit of *galanterie*, but then the recorded literature has plenty of breezy traversals of Baroque works. Instead he plays with color and emotion. One hears the onomatopoeia Scarlatti wrote in to reflect his adopted Spanish homeland: frequent, literal guitar strums; courtly processions, folk tunes. Parmentier demonstrates again that he is the equal of his teacher Gustav Leonhardt in the application of *rubato* to artistic effect, and that, like Leonhardt, he is best regarded as a musician who tempers his duty as archivist with the requirements of living performance.

The works chosen reinforce the sense of occasion and concentration. Producer Spencer tells me that he and Parmentier "wanted to show a different side of Scarlatti on this program. We went out of our way to pick pieces

Air Apparent

a new contender for "best tonearm in the world"



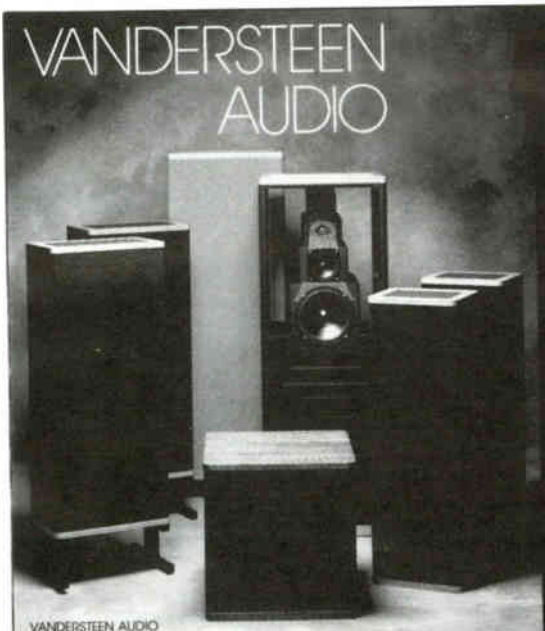
The SimplyPhysics Aviator Tonearm

Only $650 Complete

- *Air Bearing/Lateral Tracking*
- *Methacrylic Arm & Airtube*
- *Van den Hul MCS internal wire*
- *Tiffany output jacks*
- *Single Allen Lock VTA*
- *Convenient Cueing*
- *Air Pump with Air tank*
- *Compatible with most cartridges*

Arcici Marketing (212) 724-6021 SimplyPhysics (713) 537-8108

VANDERSTEEN AUDIO



VANDERSTEEN AUDIO
116 West Fourth Street
Hanford, California 93230
(209) 582-0324

DIMENSIONAL PURITY

VANDERSTEEN AUDIO was founded in 1977 with the commitment to offer always the finest in music reproduction for the dollar. Toward this goal there will always be a high degree of pride, love, and personal satisfaction involved in each piece before it leaves our facilities. Your Vandersteen dealer shares in this commitment, and has been carefully selected for his ability to deal with the complex task of assembling a musically satisfying system. Although sometimes hard to find, he is well worth seeking out.

Write or call for a brochure and the name of your nearest dealer.

without a lot of flash and dazzle." As is typical with Scarlatti collections, most of the sonatas are arranged in same-key pairs, with little break between. Parmentier and Spencer have been adept at these pairings, so that the chosen sequences, even when not adjacent in Kirkpatrick numbering, sound almost as if composed together as concentrated works.

These are not self-consciously historical performances, but rather vital readings by a consummate artist who chooses to express himself through old techniques and technology. This is why Parmentier is almost alone among harpsichordists (Leonhardt and Kipnis come to mind as other exceptions) in instilling some of the excitement brought to this music by pianists such as Horowitz and Michelangeli.

The leap from harpsichord to fortepiano—a percussive rather than plucked instrument, capable of dynamic modulation—was less complete technologically than intellectually. Leslie Tung demonstrates this discontinuity in his playing of the Beethoven "Pathetique," which opens the Wildboar LP. Tung's is a passionate and mercurial reading of Beethoven, but the effect is quite different from what we're used to hearing on Steinways. His instrument can, by modern standards, scarcely convey the contrast between *pp* and *ff*, cannot play a *sfz*; and Beethoven's score has many such dynamic markings. The fortepiano reinforces the historical context: as the music gets more demanding, it sounds more like a harpsichord, almost as if in frustration at its limited voice. Clearly, the "Pathetique" was, in 1799, a composition in search of an instrument yet uninvented. Tung realizes this, and his sense of history, combined with skill and heart, make his performance a splendid, if ironic, success.

Tung's precipitous Beethoven stands in contrast to his crystalline playing of the Haydn sonata. He assumes a different persona here, his playing scrupulous without becoming fussy. One may hear more emotional Haydn, but rarely a performance so clear, with notes and chords laid out with natural understanding for the work. Only in the slow middle movement does Tung disappoint slightly, his playing occasionally becoming a bit too objective and lacking in fluidity.

This Haydn selection shows to great advantage the excellent sound of the LP. The fortepiano is recorded close-in but not microscopically. One can hear realistically the instrument's action, its harmonics and subtle dynamics.

The performance of Mozart's K.332 is a delight. Tung has fun with the piece, making enthusiastic and effective use of accent and *fp* in the outer movements. My only cavil is that this cut is recorded a little too closely, to the detriment of Tung's meticulous care with dynamics, which haven't quite enough room to breathe.

These Wildboar issues recommend themselves to listeners interested in the keyboard literature, and mightily so to those usually put off by authentic-instrument performance. The playing has an expressive power surpassing most old-instrument efforts. Indeed, small, dedicated labels such as Wildboar affirm that there is a lot of performing energy out there unconnected to the major recording combines, lacking only sufficient outlet to communicate to a large audience. **—Kevin Conklin**

Jazz

BENNY GOLSON/FREDDIE HUBBARD QUINTET: *Stardust*
Benny Golson, tenor sax; Freddie Hubbard, trumpet & flugelhorn; Mulgrew Miller, piano; Ron Carter, bass; Melvin "Smitty" Smith, drums
Denon CY-1838 (CD only). Ed Rak, Troy Halderson, engs.; Tatsunori Konno, prod. DDD. TT: 67:03

MCCOY TYNER: *Double Trios*
McCoy Tyner, piano; Avery Sharpe, bass; Marcus Miller, electric bass; Louis Hayes, Jeff "Tain" Watts, drums; Steve Thornton, percussion
Denon CY-1128 (CD only). Ed Rak, Gene Curtis, engs.; Sonny Lester, Tom Ueno, prods. TT: 61:20

Although these are both new releases, there is much in each that bespeaks the jazz revolution of the 1940s and '50s—a time when pioneers like Charlie Parker, Dizzy Gillespie, Max Roach, and Bud Powell avidly infused the music with harmonic and rhythmic complexities of Bartokian proportion. And in the case of Benny Golson, one also hears echoes of still earlier jazz figures such as Coleman Hawkins, Ben Webster, Lucky Thompson, and Don Byas.

Golson, of course, first became active in the '50s, and Thompson and Byas were, by his own account, among his early influences. That admiration continues to shade his playing, as do the more recent soundscapes of John Coltrane. Here and elsewhere, Golson's approach is fullthroated yet soft of edge, as witness his soulful, breathy incantation of the verse to "Stardust," and his melodically inventive, almost stream-of-consciousness exploration of bassist Ron Carter's "Double Bass."

His featured colleague, Freddie Hubbard, exhibits typical adroitness with neo-bop solos that often explode like Fourth of July firecrackers. But despite Hubbard's obvious talent —and there's plenty of it in evidence on these seven cuts—potentially powerful moments are often simply glib and facile. During his own "Povo" he gets caught up in tiresome effects and half-valve tricks, while on "Far Away" (also his composition) his playing dissolves into pure

The New MC-2

Only $595 a pair

Building on Success:

". . . I have no hesitation in recommending that you go and listen for yourself to the MC-2. . . Then buy."
—Alvin Gold
Dec. 87 *Hi-Fi Answers*

". . . one of the finest loudspeaker designs available today at any price. . ."
—Paul Crook
Oct. 87 *Hi Fi News & Record Review*

BRITISH FIDELITY

Distributed in the U.S. by: **RCS Audio International, Inc.**
1055 Thomas Jefferson Street, NW
Washington, DC 20007
(202) 342-0400

U.S distributors for British Fidelity (Music Fidelity in U.K.), Spendor.

tedium. On the other side of the coin, there are the brief but beautifully focused improvisations of pianist Mulgrew Miller. Though Miller doesn't display technique to burn, he has more than enough to work his way through the changes with keen melodic insight and a spirit of joyful discovery. Good stuff!

If none of the original material is apt to spin your head around, Golson's "Sad To Say" should fill it with some very tender thoughts. Perhaps a bit less immediately appealing than his touching anthem "I Remember Clifford," the music's plangency nonetheless grabs you from its opening repeated chords, and doesn't let you go until the final cadence. Drummer Melvin "Smitty" Smith provides solid and sensitive backing throughout the album, as does master bassist Ron Carter. In all, then, this mostly mainstream session (rounded out with an up-tempo "Love Is A Many Splendored Thing" and Golson's hora-tinged "Gypsy Jingle Jangle") offers many rewards—Hubbard's penchants for hyperactivity and bluster notwithstanding.

Double Trios also finds pianist McCoy Tyner in a retrospective mood, both in his choice of material and (perhaps because of it) the manner in which he embellishes it. Along with his "Latino Suite" (hardly a suite but sporting a nice 22-bar tune), "Down Home," and "Dreamer," there's Neil Hefti's durable contribution to the Basie library, "Li'l Darlin'," Thelonious Monk's "Rhythm A Ning," and the timeless standards "Lover Man" and "Satin Doll."

The order of the day is clearly straight-ahead swinging, and on "Li'l Darlin'" Tyner sets the ground rules with six hard-edged, funky choruses, sometimes puckish and always driving. Absent are the extended modal forays which have become one of his calling cards; rather, it's Tyner at his most accessible and extroverted, though not without liberal amounts of the unexpected melodic twists and high-tech harmonies that make his playing so distinctive and absorbing. There are also more than a few reminders of his debts to Art Tatum and (yes) Erroll Garner.

The title presumably refers to the two sets of sidemen Tyner utilizes (Sharpe, Haynes, and Thornton on the first four cuts, Miller, Wright, and Thornton on the final four). Miller's electric bass contributes more prominently to the texture than Sharpe's acoustic instrument, and his soloing is more expressive (Sharpe, in fact, turns in an incredibly square-cut, *arco* accounting of the "Dreamer" theme). Drummer Watts tends to be busier than Hayes and indulges in a bit more cymbal bashing, though each player obviously knows what this music is all about.

Not surprisingly, the piano is more closely miked (and somewhat shriller in sound) on the Tyner disc than on the Golson/Hubbard, with percussion slightly veiled and lacking impact on both. The major sonic difference between the two releases, however, is the amount of reverb added to the horns (with much less to the rhythm section) on the latter. The result—most notably at junctures like Hubbard's muted solo on "Sad To Say"—seems gimmicky and manufactured. Moreover, someone should have his wrist slapped for the clumsy splice that mars the end of the verse in "Stardust": when Hubbard enters with the chorus pick-ups after an abrupt, strangled fade, it sounds as if the whole group had been moved to a different room. But if *Double Trios* wins on the illusion-of-reality scale, the sonics accorded Golson and company will probably not lose you any sleep if the musical brew is your cup of tea.

—Gordon Emerson

THREE NEW STRINGED QUARTETS

TURTLE ISLAND STRING QUARTET

TISQ: David Balakrishnan, violin; Darol Anger, violin, octave violin; Irene Sazer, viola, violin; Mark Summer, cello

Windham Hill WH-0110 (LP), WD-0110 (CD)*. Howard Johnston, eng.; David Balakrishnan, Darol Anger, prods. ADD. TTs: 41:37, 53:06*

MODERN MANDOLIN QUARTET

Works of Bach, Bartok, Beethoven, Debussy, Falla, Hindemith, Mendelssohn, Ravel, Stravinsky

MMQ: Dana Rath, Mike Marshall, mandolins; John Imholz, mandocello; Paul Binkley, mandola

Lost Lake Arts LL-0095 (LP), WD-0095 (CD). Howard Johnston, eng.; Mike Marshall, prod. AAD. TT: 37:21

GREENE STRING QUARTET: *Molly on the Shore*

GSQ: Richard Greene, Margaret Wooten, violins; Jimbo Ross, viola; Melissa Hasin, cello

Hannibal HNBL 1333 (LP). Dennis Dragon, eng.; Richard Greene, Geoff Muldaur, prods. AAA? TT: 40:05

What hath Kronos and Grisman wrought? David Grisman raised up Bluegrass by its bootstraps and invented a new musical form based on classical control of dynamics and harmonic invention, called Newgrass, Dawg Music, or whatever; and the Kronos Quartet, playing Zappa, Hendrix, and Evans along with Bartok and Schoenberg, has revitalized the moribund chamber-music scene by refusing to be predictable in dress *or* program. (In a recent concert, they managed to play only two of the dozen pieces originally programmed. I loved it.)

The Turtle Island and Greene String Quartets and the Modern Mandolin Quartet fall squarely between these two thrusts from different camps, though with decidedly different emphases. TISQ is a standard string quartet that writes its own conservatory music; whatever classics it performs are jazz classics. The more conservative MMQ restricts itself on its first release to transcriptions of standard chamber-

Apogee, Fried, Monster Cable and **Superphon** had one thing in common at Summer CES in Chicago!

They all chose the Euphonic Technology ET650PX MkII to show themselves at their very best.

ET650PX MkII

"The Compact Disc player that sounds like music..."

EUPHONIC *technology*

19 Danbury Rd., Ridgefield, CT 06877
(203) 431-6434

Available direct and through selected dealers.

True Image

NEED WE SAY MORE ?

TIP-2 Dual Mono Preamplifier TIP-1500 Mono/Mono Class A Amplifiers

TRUE IMAGE RESEARCH CORPORATION
P.O. BOX 7146 • ALHAMBRA • CA. 91802 • (818) 282-6032

music repertoire. And GSQ, in the words of their label, Hannibal Records, "does nothing but play offbeat music."

TISQ is entirely satisfying: the four jazz standards that comprise side one—"Stolen Moments," "A Night in Tunisia," "Milestones," and "Tempus Fugit"—are worlds more substantial than Kronos's transcriptions of Bill Evans tunes (for all the things Kronos are, they are *not* improvisers), and the soloing is rich and inventive. "Milestones," in particular, has cried out for such an arrangement ever since Miles Davis's own version back in 1958. Many consider that earlier recording *the* quintessential modern jazz performance, all early spring mornings, sass, cosmopolitan suavity, and the seemingly limitless possibilities that were just to begin in the '60s—it's all there. Most of that spirit is here, too, in Balakrishnan's stellar arrangement. Great work.

Darol Anger's arrangement of Bud Powell's "Tempus Fugit" (also done to a T by Miles, in an early-'50s Bluenote recording) is remarkably freewheeling. There's a note on the album cover to the effect that "All the sounds on this recording were acoustically generated by the instruments of the String Quartet." I'm glad they said so—I would have sworn to massive tape manipulation here, with what sound like snoring violins mumbling to themselves in their sleep. I have no idea how it's done, or how Anger & Co. maintain the rhythmic and harmonic pulse during this long break, but it's arrestingly musical.

Cellist Mark Summer, too, impresses with his one-man rhythm section in "Tunisia," and Oliver Nelson's "Stolen Moments" completes the feeling of freshness that pervades the album.

Balakrishnan's *String Quartet No.1: Balapadam* is interesting enough, but a bit too doggedly linear in composition, reminiscent of some of Keith Jarrett's early conservatory work or Chick Corea's by-the-yard chamber music. The first movement, "Eurasian Hoedown," is more European than Asian, and the third, "Variations on My Father's Footsteps," is Spanish, Indian, and Roumanian by turns, with fine improvisation throughout.

TISQ's ensemble work is impeccable, something proven strongly on the CD bonus, an extra 11 minutes of seven brief improvisations under the title "The Decline of an American String Quartet." These miniatures are reminiscent of Schoenberg's tiny pieces for string quartet, though with more vigorous rhythmic punch, all the more impressive for being improvised (and sounding like a *lot* more fun to play).

The CD is a bit rough in the tutti string passages, and is cut at a much higher level than the LP, whose surfaces are pristine. Otherwise, the sound is warm in both formats, though studio-dry. But for those extra improvisations, I'd unhesitatingly recommend the LP.

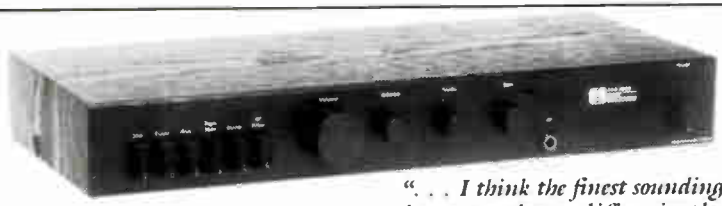
The Modern Mandolin Quartet sticks to rather quick tempi on their first album, as might be expected of a quartet of instruments incapable of sustaining pitches except by trilling. The lyric limitations of the mandolin are most evident in such pieces as Hindemith's *Abendkonzert #2*, in which the solo flute part sounds forlornly attenuated as plinked out here. Suffering even more, the Ravel and Debussy selections sound like little more than filler, incomplete compositions, rhythm tracks lacking soaring leads.

But the MMQ manages to avoid another pitfall of multiple plucked/strummed instruments: thick fogs of strummed chords. The playing is uncluttered, the arrangements sparse. It's no surprise that the most effective pieces are those transcribed from piano originals; little is lost in the translation from percussion to percussive instruments. de Falla's "Asturiana," from *Seven Spanish Songs*, is haunting; it and Stravinsky's "Galop," from his *Five Easy Pieces for Two Pianos*, are the aptest arrangements here. As is, with delicacy and grace, the famous *Alla danza Tedesca*, from Beethoven's String Quartet Op.130, delightful if a bit too pickily strummy.

What does surprise is the large number of fret noises and flubbed notes and entrances throughout *MMQ*; though not enough to affect your buying decision, the frequency of such clams is odd for a studio recording.

Mike Marshall said that "We used a lot of microphones fairly close to the instruments as room mics," so "this record is fairly unconventional as traditional classical recordings go." 'Fraid not, Mike. Lots of sonorities remain, true, but there's not much feeling of a group playing together. Other than that, the impeccably mastered LP considerably betters the CD in bloom, fullness, and richness and brilliance of highs. Far from suffering from digititis, the CD seems to err on the other side—it's muffled and dark. Guess you need those over-20kHz harmonics after all.

Molly on the Shore's recording is not as good—a typically dry, astringent, sinewy-stringed studio recording at Ocean Way, which is more used to rock groups—as either of the preceding, but there's no doubt that the Greene String Quartet delivers the most enjoyable 40 minutes of music of the three. Richard Greene has been playing professionally for well over 20 years, including gigs with Bill Monroe, Jim Kweskin, the Blues Project, the Blue Velvet Band, Seatrain (remember them?), David Grisman, Spring-



THE NEW CREEK SERIES 2 INTEGRATED AMPLIFIERS

". . . I think the finest sounding British integrated amplifier is the Creek 4140 . . . "
Neil Levinson, Fanfare, July/August 1988.

". . . as musical as ever - another step forward for Creek . . . "
Hi-Fi Heretic, No. 10.

". . . It is more powerful, more detailed, more articulate and punchier than its predecessor . . . "
Hi-Fi Review, July 1988.

MUSIC HALL

108 STATION ROAD, GREAT NECK
NEW YORK 11023·516-487-3663

GREAT BRITISH HI-FI IN AMERICA

SOTA's New Cosmos™: Beyond Acrylic— The Reference Turntable for the 1990s

To neutralize the resonant LP, to couple it hard and fast against the ideal surface—that dream drives SOTA's design team of David Fletcher and Allen Perkins. Beyond the best of the '80s technology—the damped acrylic platter—comes SOTA's new **vacuum Vinyl-ForMat.** The ideal "vinyl-mimic" with the ideal vacuum record clamp.

Acrylic is good, but the **Vinyl-ForMat** exactly matches the mechanical impedance of record vinyl—further optimized by its total inertness. For the first time, the record, mat, and platter function as a single, non-resonant entity.

Structurally, the **Cosmos** functions as a single entity, indicated by the 6dB improvement in channel separation directly attributed to the new rigid design. It is the ultimate execution of ideas that made SOTA America's most successful turntable company.

The Black Cosmos™

P.O. BOX 7075, CA 94707 415/527-1649

SOTA industries

steen, and the Blasters, to name a very few. Except for electronic amplification, Greene has managed to bring together *all* of his past experience, listed and un-, in this truly witty, flexible ensemble.

The well-chosen compositions, arrangements, and playing are consistently intelligent, bluesy, and swinging. The lone movement from Randall Thompson's second String Quartet, new to me and previously unrecorded, is endlessly inventive, but no more so than the GSQ's own arrangements of "Puttin' On the Ritz," Lenny Pickett's New Orleans-style "Dance Music for Four Saxophones," "Goodbye Pork Pie Hat," and the Grainger/Greene version of "Molly on the Shore/Temple Hill."

This is not mere dilettantism, but serious fun. The GSQ's versatility is far-ranging and facile enough that all I could do was laugh along with them. Try the demented mandolin-style figurings of Joe Venuti's "Doin' Things," or the harmonically oblique funk of Don Pullen's "Big Alice." Melissa Hasin's plucked cello solo on the last has the feel of "Willie and the Hand Jive" crossed with the Dead doing "Turn On Your Love Light," if you can believe that. And David Grisman's delightful "Kneedeep in the Greenegrass," the intro of which is a rewrite of Greene's own violin riff on the Blue Velvet Band's "You'll Find Her Name Written There" of 20 years ago.

"The Doors Trilogy" plows ground cleared by Kronos's cover of "Purple Haze"—Bartokian blues that reveals anew the harmonic inventiveness of these early Doors originals. These are not merely gimmicky vehicles, but masterful arrangements. Jimbo Ross's eerie viola solo on "You're Lost Little Girl" is particularly moving. "Hello, I Love You" doesn't work nearly as well, descending into encore-like theme-and-variations, but the rest of the "Trilogy" is wholly musical.

Hearing is believing. *Molly on the Shore* comes highly recommended.

—Richard Lehnert

Pop

JOHN HIATT: *Slow Turning*
A&M SP 5206 (LP), CD 5206 DX 003682 (CD). Larry Hirsch, eng.; Doug Sax, mastering; Glyn Johns, prod. AAD. TT: 49:06

The trouble with making an album as good as last year's *Bring the Family* (Vol.11 No.5) is that folks are bound to be disappointed when you don't hit the bullseye next time 'round. But let's get real—*Family* was the kind of strong, deep, personal statement that comes along only once or twice in a songwriter's lifetime. It's no skin at all off Hiatt's nose that *Slow Turning* is *almost* as good.

Turning sounds like an album made fresh off the road; it's louder, raunchier, more of a bar-band rocker; great to dance to, but a lot less introspective than *Family*, with more general-issue, throwaway songs. Hiatt casts himself more often here as just the passer-on of some gritty stories he's heard, rather than the teller of his own tales; *Family* was all in the first person, which greatly helped the straight-from-the-heart directness that made the album so irresistible. For the first time with Hiatt, as has always been my beef with Springsteen, he's telling stories not his own.

There are few grabbers here like "Your Dad Did," "I Stood Up," or "Memphis in the Meantime," all from *Family*, but "Tennessee Plates" shitkicks strongly along the well-worn groove of romanticizing another small-time hood, and the title cut is a sheer joy, referring in word and music to Buddy Holly and Charlie Watts, goosed along by Bernie Leadon's driving banjo. "Is Anybody There" is as good as anything on *Family*—a song of health hard-won, of someone no longer seduced by the easy answers of romance, but committed to learning the harder lessons of a long-term love. "Paper Thin" continues the self-searching of *Family*'s "I Stood Up," asking the alcoholic question "Do I really have to be responsible For what I did between those tavern walls?" With a shake of the head and a lopsided grin, the whole album answers: "Yup."

Musically, not a lot has changed: Hiatt revels in his own big, hooting voice at least as much as before, and his band, the Goners, though hardly the all-star lineup of Nick Lowe, Jim Keltner, and Ry Cooder that made *Family* such a miracle (and who, a week before the sessions, were still signed up to do *Slow Turning*), still pours out thick, solid playing, chunky as buffalo stew. The feel is more of straight-ahead country rock than sweaty R&B this time around, however; Hiatt recorded *Slow Turning* in Nashville.

Once again, the band sounds as if recorded live in the studio, the drums actually sounding like a life-sized drumkit, no bigger, no smaller (this is *rare* on a rock recording). There's precious little difference between the LP and CD of this analog recording, other than the near-usual 2½-D flatness of the CD; I can't tell whether this is because the CD is mixed more democratically simply because it *can* be, or whether the loss of 3-dimensionality is inherent in the medium. Contrariwise, and just to drive digiphiles crazy, Bernie Leadon's mandolin on "Trudy and Dave" is vivid on LP; on the CD, you can hardly hear it.

audiolab
by Cambridge Systems Technology

Musical,
affordable,
... logical

Distributed in USA & Canada by:
ARTECH ELECTRONICS LTD.
P.O. Box 1165 Champlain, N.Y. 12919 (514) 631-6448
AUDIOLAB • PRISMA CABLE • J.A. MICHELL • GYRODEC • ZETA • TENDERFEET

PRISM

Light at the end of the CD Tunnel

"The joy of hearing music in such a new light makes the Prism the best value in CD players today, as well as the best CD player period."
J. Peter Moncreiff

"The Prism is significantly more open and dynamic than any other CD player I have heard to date. It delivers the dynamic range that CD has promised since it first appeared but has never quite made good on."
Anthony H. Cordesman

Enough said. Now is the time to listen. Call us (619/436-7666) and ask for the name of your local full-line Mod Squad Dealer, or write to 542 North Hwy. 101, Leucadia, CA 92024

The Mod Squad

The best thing about John Hiatt is how clearly he gets his own sense of sweaty vitality into the grooves; this is the kind of guy you feel you could ask to help rototill the garden and recycle a couple Coronas. And, hey, ain't it amazin' how *real* music can sound without synthesizers? —**Richard Lehnert**

BRUCE SPRINGSTEEN: *Chimes of Freedom*
Columbia EP 44445. Bruce Springsteen, Jon Landau, Chuck Plotkin, prods.; Toby Scott, eng. ??D, TT: 21:31

This is an EP—over 21 minutes of live music recorded during the Boss's latest tour this past Spring. There are four cuts: an acoustic "Born to Run" and "Tougher than the Rest" (from *Tunnel of Love*), recorded in LA back in April; "Be True," recorded in March at the Joe Lewis Arena in Detroit; and Dylan's "Chimes of Freedom," recorded in Stockholm in July. The EP's release was set to coincide with Bruce's participation in the Amnesty International concerts in the Fall.

Despite the fact that we've recently been treated to a 5-record live set of Bruce concerts, and the fact that I'm already on record (no pun intended) as not being one of the Boss's biggest fans, this is worth purchasing, even if for only half the cuts. On "Chimes of Freedom" and "Born to Run" Springsteen does an interesting job of turning two well-known tunes into something new and wonderful.

Although the recording is good—about as musical as a live rock recording can get—the applause between cuts sounds as if the mikes were placed in another county. Music: B. Applause: F.

By the way, *Chimes of Freedom* is available on LP, cassette, and CD-3. No clues as to how it was recorded or mastered. Upon release, record and tape were selling for $5, the mini-CD for a buck more. Worth picking up.

—**Gary S. Krakow**

BRIAN WILSON: *Brian Wilson*
Sire/Reprise 25669. Brian Wilson, Russ Titelman, Jeff Lynne, Lenny Waronker, prods.; Mark Linett, eng.; Dr. Eugene E. Landy, exec. prod. A?D. TT: 37:16

It's hard to separate the hype about the album not only from the stories about the man, but from the music as well.

First, the hype. This album came with the most extraordinary press kit in recent memory (or even not-so-recent memory, including my short stint as a promotion man for a record company in the early '70s). The kit is a blue looseleaf folder containing a Brian Wilson biography, a 25-page "Conversation with Brian" ("Brian took some time out from the final mixing sessions of his album to discuss his artistic rebirth"), an in-depth look at "The Making of the Album," "A Selected Discography" of Brian's hits, and a black-and-white 8x10 glossy *plus* a 4x5 color negative—all to make sure each reviewer can convey everything that needs to be known about this work.

Next: the stories about the man. Brian Wilson was the genius behind the Beach Boys and the California surfing sound. Brian wrote, produced, and sang lead. From 1962-1966, the Beach Boys scored nearly two dozen Top-40 singles (including three #1 hits) and recorded an incredible 12 albums (10 of which went Top 10, nine of which went gold). See, I told you that press kit would come in handy! Brian admits he leaned heavily on the "Wall of Sound" made popular by fellow record producer Phil Spector. That technique of stacking layer upon layer of sound was the basis for the 1966 classic *Pet Sounds*, hailed as a work of genius by everyone. Paul McCartney is even quoted as saying it was the inspiration for *Sgt. Pepper*. So, for his next project, Brian was determined to make a record that would blow everybody's mind, including the Beatles' (here comes that press kit again). "Unfortunately, Brian's new music ended up blowing his own mind." It started as a rock opera written with Van Dyke Parks and titled *Dumb Angel*, its name then changed to *Smile*. But Brian refused to finish it. Pressures and drugs took their toll, and in 1967 Brian withdrew completely: he refused to do much of anything (he did write a few great songs scattered about on some forgettable '70s Beach Boys albums) until he decided to record this solo album.

With the help of his shrink, Dr. Eugene Landy (note: he's the Executive Producer and coauthor of the songs), Brian feels he's now gotten over his nervous breakdown, is on his way to understanding and dealing with his problems, and is ready to be accepted, once again, as one of the moving forces in the rock world. There are some people who believe Dr. Landy's therapy techniques are unconventional, and some California law-enforcement officials believe Dr. Landy's total control over all facets of Brian's life, business *and* therapeutic, borders on the criminal. If you've read the interviews in *Rolling Stone* or in the press kit, you may think Brian's had one too many sessions with his shrink.[1] It's almost as if all the affect is gone. Brian seems to be on another planet—but the musical genius is still there.

That brings us to the music. It's terrific. Instead of playing all sorts of instruments himself, as he did in the past, Brian has discovered

1 Or, if you saw Brian live on the David Letterman show back in August—Letterman was uncharacteristically gentle, I thought—he still has a way to go. —JA

SYSTEMDEK

Now firmly established as a 'Classic' with critics and consumers, the SYSTEMDEK IIX turntable easily outperforms the competition at the budget audiophile level. Featuring an easily adjusted three-point hanging spring suspension which provides ideal isolation for the tonearm and massive belt driven platter. Along with the new closer tolerance main bearing, these vital criteria combine to ensure maximum retrieval from your record collection.

For information on the SYSTEMDEK range of turntables and the dealer nearest you, please contact –
In the U.S.A.: Systemdek Sales, B-19 Abbington Drive, East Windsor, New Jersey 08520 • (609) 448-7752
In the U.K.: Systemdek Ltd., 34, Kyle Road, Irvine Industrial Estate, Irvine KA12 8LD Scotland • (0294) 71251

LESS NOISE, MORE MUSIC

Record & CD cleaning machines for audiophiles.

NITTY GRITTY

NITTY GRITTY RECORD CARE. 4650 ARROW HWY., #F4. MONTCLAIR, CA 91763 (714) 625-5525

synthesizers (with the help of Michael Bernard, who taught Brian all about programming computers and sampling).

Brian Wilson is really two albums: the first has 10 songs very reminiscent of '60s Beach Boys material: bouncy, bright, with Brian's lilting voice (layers and layers of it, I think to help it along a bit after all these years) and a strong Spector influence in the instrumentation. Best cuts are "Love and Mercy," "Meet Me In My Dreams Tonight," and the Jeff Lynne-produced "Let It Shine." The second album consists of the song "Rio Grande." According to the press kit, producer/guru Lenny Waronker liked the 10 songs, but wanted Brian to compose a "piece of music" (like "Heroes and Villains"). Brian balked, but finally did so. It's a cowboy song with a few different movements, and runs 8:12. It's very pleasant. I prefer the "songs."

Finally, is *Brian Wilson* really the continuation of *Pet Sounds* plus 20 years? I went and bought a new copy of *Sounds* while in Santa Fe to check out the claim. Despite some similarities (the tone poems and sound effects) and differences (since Brian is deaf in one ear, this is his first stereo album), I think the new album is better,[2] though not necessarily more mature.[3] You'll have to listen for yourself. Just don't let what you know about the man (or that blasted press kit) get in the way.

It's an analog recording. The LP sounds a little less congested, but the CD has a great blue label.

—Gary S. Krakow

2 No no no no no. **—RL**

3 Yes yes yes yes yes. **—RL**

You could pay more...

...for a discrete FET Class A preamp. But you *wouldn't* get low distortion CMOS electronic switching, premium German polypropylene capacitors, gold plated jacks and the sonic excellence of the Parasound P/FET-900.

...for an AM/FM quartz synthesizer tuner. But you *wouldn't* get such wide IF bandwidth for pure audio response, high sensitivity and the sleek fluorescent display of the Parasound T/DQ-260.

...for a 2x90 watt high current amp. But you *wouldn't* get lightning-fast 60MHz outputs, costly German polypropylene capacitors, 260 watts in mono, relay protection, level controls and the rock solid imaging of the Parasound HCA-800II.

But why? **When Parasound offers you a whole range of extraordinary components with *more* quality for your money.**

Parasound Products, Inc.
950 Battery Street
San Francisco, CA 94111
415 397-7100

Canadian Distributor
Pro Acoustics
227 G Brunswick Blvd
Pointe Claire, Quebec H9R 4X5

electronics
COUNTERPOINT
NAD • DENON
MOD SQUAD
REVOX • McINTOSH
PROTON • TANDBERG

loudspeakers
M&K • MIRAGE
BOSTON ACOUSTICS
B&W • SONANCE
VANDERSTEEN
MONITOR AUDIO

turntables
WELL TEMPERED
SOTA
THORENS
DENON

video
FOSGATE
SHURE HTS
PIONEER
PROTON

accessories
AUDIOQUEST
KIMBER KABLE
SIGNET • MONSTER
CWD FURNITURE

—In Southern California—

AUDIO DEN
SERVICE SUPPORTING SALES
15600 ROSCOE BLVD. VAN NUYS, CA 91406
(818) 781-4700

Audio Den offers quality Equipment and Professional guidance to the Music Lover.

For those who seek Excellence in the reproduction of Music — We offer Custom Home Installation and Personal Service.

Your Happiness and Satisfaction is our Primary Goal

BERNING TF-12 PREAMPLIFIER $2950

- Differential vacuum tube amplification
- Revolutionary electronically controlled 80-position precision resistor step attenuator
- Infrared remote control

Innovative products for connoisseurs since 1975

THE DAVID BERNING COMPANY
11007 Candlelight La., Potomac, MD 20854 301-299-8970

MANUFACTURERS' COMMENTS

Conrad-Johnson Premier Seven preamplifier

Editor:

Our thanks to J. Gordon Holt for reviewing the Conrad-Johnson Premier Seven. Naturally we are gratified to be recognized as the preeminent manufacturer of vacuum-tube audio electronics. We also believe that the two short paragraphs devoted to describing the sound of the Premier Seven are a reasonable capsule summary of its sonic character, which will prove useful to those readers who have the diligence to wade through the text to find it. We would, however, like to clarify a few points regarding Conrad-Johnson, and the nature of our Premier products.

Conrad-Johnson Design continues to manufacture (in its PV/MV ranges) products aimed at being the "best value for the money" and making near-state-of-the-art performance accessible to a broader range of audiophiles. The design of best-value products absolutely requires an intimate understanding of what is possible when cost is no object, leading us into state-of-the-art research and the Conrad-Johnson Premier range of products.

The Premier models are intended to define the state of the art in music reproduction equipment. This intent is not subject to compromise in terms of fashion, cost, or convenience. For this reason, the Premier Seven is in fact two monaural preamplifiers, for absolute channel separation. For this reason, the Premier Seven level controls are, at extraordinary cost, 23-position switches selecting 23 pairs of precision resistors, thereby eliminating the inferior resistive elements of a potentiometer. For this reason, there are only two switch contacts in the signal path (selector and level switch). For this reason, the Premier Seven employs a costly suspension system for the main audio circuits to eliminate microphonics, a system the efficacy of which is attested to by JGH, though he refuses to credit it. For this reason, the Premier Seven is an all-tube design (because of its inherent distortion characteristics, the transistor remains an inferior device for audio amplification, especially in preamplifiers).

The Premier Seven is, necessarily, not for everyone. It is inherently costly, and offers fewer controls and less convenience than most inexpensive Japanese receivers. Whether it is worth the cost to one fortunate enough to be able to afford it will depend on how important quality music reproduction is to that individual.

We ask that readers carefully consider how seriously to take JGH's relative comparisons of the Premier Seven to lesser products, and urge them to hear for themselves the merits of our new preamplifiers. **Lew Johnson**

The Conrad-Johnson Group

VTL 100W Compact monoblock power amp

Editor:

What a lovely, carefully arrived-at review. A lot of hard work—thank you so much.

The 775mV input sensitivity is, I believe, right for most reasons. Obviously, *our* own and most other tubed preamps are designed with this in mind. But CD direct-in and passive controls were borne in mind too. We're sending *Stereophile* some of our preamplifiers so you'll get a taste of the combined design thinking.

David Manley

Vacuum Tube Logic of America, Inc.

Euphonic Technology ET650PX Mk.II CD player

Editor:

We wish to thank Arnie Balgalvis for his very thorough and thoughtful review of the ET650PX Mk.II Compact Disc player.

Readers will be interested to know that all ET650PX Mk.II players are now being shipped with the improved Philips Digital Filter (SAA 7220P/B) and dual 16-bit Digital/Analog converter (TDA 1541A). **Michael Goldfield**

Euphonic Technology

Colossus

Editor:

There is no reason for Martin Colloms to be disappointed at all. Shouldn't the quality of the Colossus-generated compact discs now available indicate that *even if* the rumor [about Colossus] was true (which it isn't), a remarkable improvement in A/D conversion technology has occurred?

Come on, people; listen up!

Webster defines MAGUS (mā-jus) as magician, sorcerer.

You may define it as pure enjoyment.

- ▶ 200kHz all-tube circuitry.
- ▶ Automatic output muting.
- ▶ Gold-plated contacts.
- ▶ Polystyrene bypasses.
- ▶ 3db less noise.
- ▶ Accepts cartridges to .3mv!

NOW ONLY $895.

For nearest dealer contact:
MFA Systems
3178 Fowler Road
San Jose
CA 95135
408-274-5679.

We do not reveal patent-pending information to anyone, including the esteemed J. Gordon Holt, for the most obvious of reasons. And neither does anyone else.

The Colossus design adheres to the Philips/Sony 16-bit "Red Book" standard. Full 16-bit linearity—*ie*, resolution—is guaranteed! Coupled with our A/D filtering approach, a two-channel Colossus would be news enough. But four digital channels (and soon to be eight) may have been too much for anyone to believe. If Sony couldn't (or did not bother to consider) more than two channels of PCM-formatted digital audio, how could a little-known pimple on the nose of the elephant (By The Numbers) accomplish such a feat? Rumors begin with disbelieving nay-sayers, not with Fleetwood Mac, as you may have been led to believe!

And while we're on the subject of rumors, please allow me to address a few other old wives' tales that are currently circulating throughout the audio world.

Sampling Rates: 44.1kHz *vs* 48, 50, 60, etc.: Higher sampling rates do not guarantee improved resolution of the recorded analog program! If a 44.1 system cannot compete with a system that samples at a higher rate, then the 44.1 system in question was not designed correctly. Colossus samples at 44.1kHz. Colossuses have also been constructed sampling at 50kHz and 60kHz. No difference between any of these units has been detected by some of the best ears in the business, regardless of the sampling rate!

18-Bit D/A Resolution: The 18-bit (or more) D/A converters now being touted throughout the audio industry offer the promise of improved adherence to the 16-bit standard. Fair enough, but remember that we are dealing with a 16-bit system, not an 18-bit or higher system. Colossus guarantees full 16-bit I/O linearity, with strict adherence to the "Red Book" standard. We do not claim to have reinvented the wheel, but we do claim that an audio engineer with a vast amount of experience in the computer domain has at last designed a digital audio recording system. It is Colossus!

Colossus Enhancement: Colossus is an archival device. It does not alter, color, or *enhance* the incoming program signal in any way. Accurate resolution of the incoming program signal, good or bad, is the benefit that this Lou Dorren design offers. One can eliminate the "digititis" effect with Colossus-generated prod-

uct, and concentrate on performance, miking techniques, the sound of the studio or concert hall, and know that Colossus represents an honest mirror image of the program signal that it received. You are the beneficiary of this system. Production units will be generally available to the recording industry beginning this month (November, 1988).

Brad S. Miller, Chairman
By The Numbers

Precision Audio DVIC-471 CD player

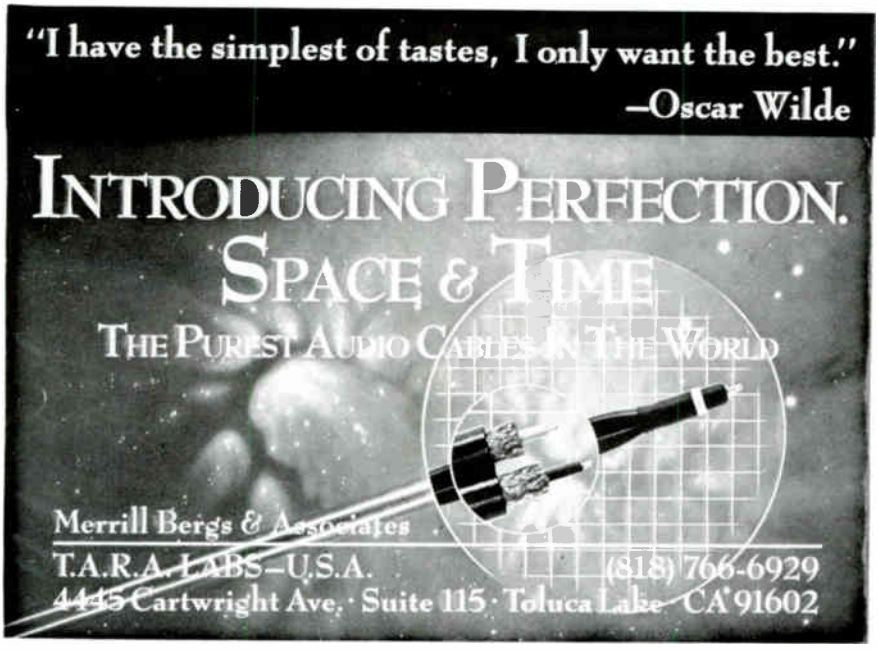
Editor:

We wish to thank John Atkinson and the staff of *Stereophile* for the fair and accurate review of our DVIC-471 CD player.

Mr. Atkinson's critique of the PC board in the early production version of the DVIC-471 we sent him is justified. The new production version of the PC board uses a double-layer construction with plated-through holes. The new board, manufactured at a leading PC-board house, was designed on modern CAD equipment to make its five photo masks. The new board is made on military-grade G10 fiberglass, not commercial-grade FR-4 fiberglass, and has premium 2oz copper traces. The board now has all components mounted on the top side of the board, and no jumper wires are used. We have made no circuit changes to the board, and the new board does not change the sound of the player in any way. Mr. Atkinson is correct about the use of the integrated circuits on our PC board: they are used in the DC servo circuit and are not in the signal path. The doubled-up capacitors present on the PC board provide the nonstandard values necessary to create the accurate de-emphasis response that has been measured.

Mr. Atkinson mentions in the review that he was not able to measure the –90.3dB output of our player because there was too much noise at the output. What he saw at the output was not inband noise, but high-speed digital clock signals which radiated to our PC board from the main PC board. We have greatly reduced the amount of this signal on our current players by incorporating a ground plane on the new PC board.

The low-level linearity problem that has been measured is the result of a problem in the SAA 7220 digital filter chip and not the TDA 1541. Philips uses a corrected SAA 7220P/B chip in its CD880 and CD960 players. Sony uses its own CXD1088Q digital filters with the TDA 1451 DAC in its CDP910, '505ES, and '705ES series CD players. We have measured



ON DISPLAY NOW IN KANSAS CITY!

SHAHINIAN DIAPASON (WITH BEDINI CLASS A POWER)

"The Diapason must be heard by anyone claiming to know what's going on in high-end loudspeakers" Thomas J. Norton, Stereophile, Vol . 11 No.8

B&W 801 MATRIX SERIES 2 (WITH ROWLAND RESEARCH MODEL 5)

"The pinnacle of current full-range dynamic loudspeaker design"
Lewis Lipnick, Sterophile, Vol. 10 No. 9

EMINENT TECHNOLOGIES LFT III & IV
(WITH ROWLAND RESEARCH MODELS THREE & SEVEN)

FOCUS HIGH DEFINITION MONITORS
(WITH TRUE IMAGE ELECTRONICS)

B&K, California Audio Labs, Counterpoint, Kimber Kable, Linn, Marantz Series 94, Rauna, Rega, Rotel, Jeff Rowland Design Group, Spectrum, Superphon, Vandersteen, VPI and many more

GOLDEN STEREO

913-648-3750
5337 West 94th Terrace
(NE Corner 95th & Nall, around back)
Prairie Village, Kansas
Tues - Sat, 11 - 6, Thurs till 8
and by appointment

MAJOR CREDIT CARDS • FREE SHIPPING ANYWHERE • ASK ABOUT OUR 100 PERCENT RETURN POLICY

ACCUPHASE
ADCOM • AKG
ALTEC LANSING
BANG & OLUFSEN
CARNEGIE
CHICAGO SPEAKER STANDS
CWD CABINETS
DENON
KEF • KLIPSCH
LEXICON • LUXMAN
MARK LEVINSON
MARTIN LOGAN
MERIDIAN
NAKAMICHI
NILES
PARSEC
REVOX
PHANTOM ACOUSTICS
RUSSOUND
SIGNET • SME
MADRIGAL
SONY ES • SOTA
SOUNDSTREAM
STAX • SUMIKO
THORENS
THRESHOLD
JVC VIDEO
PRONEER VIDEO
PROTON VIDEO
SONY VIDEO
YAMAHA VIDEO

Stereophile's Newest Advertiser and the Oldest Audio Dealer in New England!!

Our founder quit Dartmouth to open The Music Box in 1928—when the loudspeaker became a practical reality!! We presented the best in American Audio at the 1958 Brussels World's Fair.

Our commitment to customer satisfaction is obvious. We are proud to admit that we have more servicemen than salesmen due to the high customer demand of both home and commercial installations---from Maine to California.

Quality Sound Since 1928

The Music Box

58 Central Street •Wellesley • MA • 02181
(617) 235-5100

the linearity of all of the above machines using a spectrum analyzer and found they produce less than 1-bit linearity errors. The sound of a CD player using the TDA 1451 is more open when driven by a correctly designed filter.

The subjective bass response of the TDA 1451 is dependent on the sophistication of the power supply driving it. Better power supplies could be retrofitted into the 471 player, but we feel the results are not as cost-effective as moving to a better stock machine with a more robust power supply such as those listed above. The resulting player is, of course, more expensive than the DVIC-471. For example, a Philips CD880, which lists for $750, would cost $1200 after we have added our replacement analog section.

David Rich, Dir., Research & Development
Frank Bagnasco, Jr., Operations & Support
Jon Schleisner, President
Precision Audio

Dual CS5000 turntable

Editor:

I would first like to thank Mr. Galo and *Stereophile* Magazine for providing this comprehensive, insightful view of our CS5000 turntable.

Before I clarify some important features which should be of great value to both your readers and the owners of the CS5000, I would like to address the comments directed at "Sample One."

While we at Dual realize that there is no discredit intended toward the operation of Dual as a company or toward our quality control, the remarks on this first sample do just that. Let me point out that this sample was sent to *Stereophile* in July of 1986 for its *second* review at that time. Therefore, it had been opened, assembled, inspected, disassembled, and thoroughly "handled" twice before it was finally entombed in the basement of *Stereophile* for two years.[1]

We at Dual were given no notification that this piece had been unearthed for another review. Of course the accessories were missing and the suspension was completely compromised. Please understand that all Dual products are correctly packed, complete with all accessories.

I would like to shed some light on the sonic drawbacks and isolation problems which Gary has pointed out.

The CS5000 comes complete with the footfall isolators installed at the factory. This ensures that they will operate correctly. What must be understood is that these are to be used only in installations with severe footfall shock problems.

With the proper removal of these dampers, which all authorized Dual dealers are trained to do, the CS5000 *will not "thump"* when tapped. In addition, the bass response will be tremendously improved, along with imaging and detail. **Steve Portocarrero**
Technical Director, Ortofon Inc.

Wheaton Triplanar II tonearm

Editor:

I appreciate the Triplanar II's Class A rating, but feel I should correct the last sentence in that October listing. I have made two changes to the Triplanar II since DO's January review, but have not changed the tonearm's base. The cueing lever has been repositioned, making the arm more compatible with the Sota and Lurne turntables, and the headshell tube has been redesigned to mate with a different tonearm rest. Making the headshell tube more rigid has also resulted in more dynamic output, with better balance and bass. **Herbert Papier**
Wheaton Music Inc.

Sound-Lab A-3 loudspeaker

Editor:

Gordon Holt's commentary on the Model A-3 update strongly suggests something of great concern to designers. Updating a product can be a two-edged sword in that changing one parameter of a design might simultaneously and undesirably alter performance in another area. Fortunately, the update referred to—increasing the DC bias potential of the speaker—has no inherent negative side effects. Only two significant areas are affected by doing this: both the efficiency (and sensitivity) and the transduction motor constant are increased. This results in greater responsiveness to a given input signal and a stiffer acoustical source impedance; nothing else is altered. Consequently, the very low-mass diaphragm is less susceptible to the effects of acoustical reflections and, hence, more immune to room anomalies. Furthermore, the frequency response of phase and amplitude remain unchanged since, from an interactive standpoint, the bias system and audio channel of the constant-charge elec-

[1] I am not quite sure from where Mr. Portocarrero infers this statement. Certainly the Cheapskate did review a sample of the CS5000 in June 1986, in Vol.9 No.4, but as far as I am aware, this sample was returned to the distributors after the review period. It did not twiddle its thumbs in the *Stereophile* basement for two years. —JA

EXPOSE YOURSELF

to all of the speakers you've always wanted to audition, now under one roof.

APOGEE Sonically and visually stunning ribbon speakers. Frequent "best sound at show" awards; available in decorator finishes.

VANDERSTEEN Legendary baffleless designs; openness and imaging comparable to planar speakers. Superb values, outperforming competitors twice their price.

FRIED Classic musical, phase-coherent loudspeakers both large and small. Transmission line loading for tremendous bass impact *without* subwoofers.

EMINENT TECHNOLOGY Innovative, highly reliable push-pull planar magnetic systems acclaimed by *The Absolute Sound, IAR* and *Stereophile.* Upper range clarity that surpasses even electrostatic designs.

JSE Patented Infinite Slope crossovers eliminate driver interference. Phase coherence assures proper harmonic structure, lifetime warranty.

SPECTRUM Audiophile sound on a budget. Best performance in low cost loudspeakers.

Apogee • Ariston • Audioquest • BEL • B & K • British Fidelity • Counterpoint • Eminent Technology • Forte • Fried • Grace JSE • Kimber Kable • Kiseki • Klyne • Melos • Meridian • MIT • Monster Cable/Alpha • Musical Concepts • Nitty Gritty Ortofon • Premier • PS Audio • Rauna • Rotel • Rowland Research • SME • Sonographe • Sony ES • Sota • Spectrum • Stax Systemdek • Talisman/Alchemist • Tube Traps • Van Den Hul • Vandersteen • Vendetta Research • VTL • Wharfdale

Come listen and compare these world class loudspeakers on some of the best associated components available. Then choose the one most suited to your listening requirements.

AUDIO NEXUS

33 Union Place, Summit, NJ 07901—We Ship Anywhere **201-277-0333**

Hear IN SOUTHERN CALIFORNIA

- Counterpoint SA-11 Preamplifier with Wireless Remote Control
- Eminent Technology LFT III Planar Speakers
- Magnum FT-101 FM Tuner
- MI-330 Shotgun Cables
- Mod Squad Prism CD Player
- Rowland Research Mono Amplifiers
- Spica Angelus Loudspeakers
- Vandersteen 2W Subwoofer
- Virtuoso DTi MC Cartridge

Music by the Sea

542 Coast Highway 101
Leucadia, California 92024
(619) 436-7692
Tu, Th, Fri & Sat 11am-6pm; Wed 11am-8pm

Audioquest	Oracle	SOTA	Tube Traps
B&K Components	PolyPhasors	Straightwire	Vac. Tube Logic
Grado Labs	Rotel	Sumiko	van den Hul
Nitty Gritty	SME Tonearms	Superphon	Well Tempered Lab

PLUS a complete selection of the very best LPs and CDs

trostatic speaker are mutually exclusive. Therefore, the sound quality of the speaker should not be affected when the bias is increased, with the exception that room influences are reduced and, due to the higher efficiency and sensitivity, the need for driving power is less for a given sound-pressure level, resulting in lower overall system distortion.

However, due to higher speaker sensitivity and greater immunity to the masking effects of room anomalies, one may become more aware of the characteristics of ancillary equipment. We suggest that the system use an unmodified SA-1 to test this hypothesis.

Roger A. West, Ph.D., President
Sound-Lab Corporation

Editor's note: the following letter was received as a private communication from Superphon's Steve Nelson, but as it raises an important point concerning reviews, I felt that Stereophile*'s readers should have the opportunity to read it. I stress, however, that Mr. Nelson is* not *representing the views of Superphon.* —**JA**

Cables & Superphon

Editor:

I've followed both Dick Olsher's cable survey in the July issue and the resultant responses with a great deal of interest. I doubt anyone foresaw the controversy that would arise from the survey, but that should give us all reason to stop and think.

We prize the subjective reviewing process because its prime emphasis is placed upon what the reviewer *heard* from the components reviewed. If we were only interested in laboratory specifications, we would be reading other publications. But all of us must remember that the inherent strength of subjective reviewing, the reviewer's opinion, is also the inherent weakness: it's one person's opinion. Nothing more than just that, as I'm certain DO would himself tell you.

It seems, though, that some subscribers expected a rendition of the Ultimate Truth about speaker cables, and therein lies the Ultimate Folly. I reread the cable survey after delving through the responses in the September issue, and I can't cast any stones at DO. He carefully listed his evaluation methods, cable standards, source material, and reference system. Personally, I wish he had included a larger number of cables, but then, I hesitate to think of the added response. DO undertook an enormous task, lasting several months, and while I'm not certain I agree with all of his recommendations, I applaud the undertaking. He has drawn my attention to several cables which I have not auditioned, and given me reason to re-audition several others. He has made me stop and think.

In last month's issue of *Stereophile* is a less than favorable review of two of the products that my company, Superphon, produces. I am personally very disappointed with the Cheapskate's findings, and disagree strongly, as will thousands of Superphon owners. But I will not rise up on my hind paws and bellow at the moon because Superphon didn't get a favorable review. Disappointed as I was, I could not find fault or error with the reviewer's methodology, nor will I tell him that his opinion of our products is wrong. It's only his opinion, and having met Mr. Tellig on a couple of occasions, I'm fairly certain that he would tell you the same thing.

My point is that the Ultimate Truth about any audio component can only be determined by the individual interested in that component. Reviews serve to give us information and point us to components which may be of interest to each of us. Or give us an idea that those components may not be of interest. The final assessment can only be made by the individual audiophile, who, hopefully, reads a reviewer's comments, takes the time to audition personally, and then takes the time to *stop and think!*

Bravo! Mr. Olsher, for giving us a darned good cable survey to read and consider. And Bravo! *Stereophile*, for allowing us to see the resultant controversy. It gave me reason to stop and think.

Steve Nelson
Sales Manager, Superphon

TARA Labs speaker cable

Editor:

I wish you to know that I am upset that an uncertainty has been created regarding the supply and distribution of the Space & Time Phase II speaker cable in the United States. [See "Recommended Components" in the October issue.] I believe that you may have received misinformation about the availability of the Phase II speaker cable and I want to have this cleared up.

Since late June of this year, supply and distribution in the USA have been effected by Merrill Bergs & Associates/TARA Labs USA, with

In New England...

Known by the company we keep.

MAJOR AUDIO
Accuphase
ADS
Adcom
ASC
Audioquest
Audio Research
Bryston
Cambridge Audio
CWD
Duntech
Eminent Technology
Grado Signature
Magnepan
Magnum Dynalab
Martin-Logan
Meitner
Meridian
Mod Squad
Mission Electronics
Mondial Designs
Manster/Alpha
MIT
NAD
Nakamichi
Niles
Oracle
Sennheiser
Signet
SME
SOTA
Spectrum
Stax-Kogyo
Sumika/Talisman
Target
Thiel
Thorens
Threshold
Vandersteen
Velodyne
VPI
Well-Tempered Labs
Wilson WATT
Yamaha

VIDEO
Multivision
Pioneer
Proton
Sony
Yamaha

Modern Demo Facility, Specialty Accessories, Records and CDs
In-store Service, Custom Design Service, No Mail Orders Please

TAKE 5 AUDIO

105 Whitney Ave., New Haven, CT 06510

Mon.,Tue.,Wed.,Fri.,10-6,Thurs.,10-8,Sat.,10-5, MC/VISA/AMEX/TAKE 5 Charge

PURSUING AUDIO PERFECTION

AUDIO RESEARCH
AUDIOQUEST
BANG & OLUFSEN
LINN
MARK LEVINSON
MARTIN-LOGAN
NAKAMICHI
THETA
VANDERSTEEN

If you seek more than an impressive array of controls, more than the latest fad in HiFi, and more than the "dollar per watt mentality," we seek to satisfy your quest.

Our experience in musical performance and audio engineering, combined with our desire to achieve perfection in each audio system assure you the fulfillment that you pursue.

One visit to our shop will convince you that we have the world-class equipment and the expertise that you will need.

Haven & Hideaway

AUDIO SYSTEMS
15102 BOLSA CHICA RD.
HUNTINGTON BCH, CA 92649
714/897-0166

whom I note you are familiar.

The Phase II speaker cable has been in continuous supply all over the world since our launch at the January CES in Las Vegas. The cable is exactly the same as it ever was, and there has been no change or compromise with our having to increase the production for this wonderful yet simple cable.

I personally inspect every reel of Phase II speaker cable to ensure that it meets with my original design and specifications.

As you may now realize, the very same cable that Dick Olsher reviewed in July has been successfully supplied and distributed to date. In future, I would appreciate that information for Space & Time cables is sourced from the current Distributor for the USA, Merrill Bergs & Associates/TARA Labs USA, as they are in contact with me and are the only source of information that I would rely upon.

I appreciate your assistance in clarifying this situation for the readers of *Stereophile*, as I am aware that some readers have been told that the cable was not available or that it got a lucky review and was not worth tracking down. I trust that people will forgive, as I have done, the kind of person who lacks the integrity to allow a truly great cable product to be heard by as many who want to try it.

I believe that the audio public are able to judge and hear for themselves, and that they leave it to others to produce yet a finer cable product if they are able.

Please note the address and telephone number of the Space & Time cable products for the United States: Merrill Bergs & Associates/TARA Labs USA, Suite 115, 4445 Cartwright Ave., Toluca Lake, CA 91602.

Matthew Bond
The Absolute Reference Audio Labs

NYAL/Classic Audio

Editor:

Some of your readers may be confused about my relationship with New York Audio Labs and the audio industry, so I am writing this letter to clear up any misunderstandings.

I was Chief Engineer and the designer of the Moscode line of audio products for New York Audio Labs from 1983 through October 1986. In October of 1986 I left NYAL to go out on my own. After much evaluation, research, and thought given to what I was going to do, I founded Classic Audio, Ltd. as a new possibility for what I have to contribute to the field of audio.

We are now introducing the Classic Audio CA 260 Dual Mono Amplifier, which I am very excited about. This is a 50Wpc unit that uses actual 1960s vintage McIntosh output and power transformers that were obtained, brand-new, through a special surplus purchase. These units are available factory-direct and are in stock at this time.

Now that NYAL has been declared out of business by Harvey Rosenberg in letters appearing in your magazine, many customers want to know where to get support and service. Through Sound Services, our service division, we can fix and/or modify any Moscode, Futterman (Julius or NYAL versions), and NYAL products. We are happy to help out anyone in need.

I have developed modifications for the Moscode 300 and 600 that I consider to be major improvements. These are not capacitor/jack/wiring upgrades, but are complete reworkings of the main circuit, complete with Gold Aero Tubes. We can also modify any NYAL product and make it sound better. I can say with pride that you are coming to the source.

I thank you for your business and comments concerning Moscode and Classic Audio, Ltd. It pleases me to know that I was able to give so much pleasure to so many audiophiles in the past, and I look forward to serving you in the future through Classic Audio, Ltd./Sound Services, 238 Liberty Ave., New Rochelle, NY 10805, (914) 633-3039, M-F 9am-5pm EST.

George Kaye, President
Classic Audio, Ltd./Sound Services

Apogee Signature loudspeakers

Editor:

The comment regarding other Apogee models ("Recommended Components," Vol.11 No.10) is out of date. Immediately after the introduction of the Diva, Apogee incorporated Diva technology into the Duetta Signature and Caliper Signature series. The Signature series now offers an extended high end and even lower, tighter bass control. The addition of a three-position switch on both models provides greater flexibility in room coupling. Respectively, the Caliper Signature and Duetta Signature offer 3dB and 5dB greater sensitivity than their predecessors.

Sara Bloom
Apogee Acoustics

NOTHING IS CLOSER.

From Our Outstanding Collection Of Reference Components:

ACOUSTIC ENERGY AE-1 Loudspeakers / **JANIS** Stereo Bass System
COUNTERPOINT SA-5.1 Preamplifier & SA-4 OTL Mono Amplifiers
ALPHASON Sonata Turntable & HR-100MCS Pickup Arm
VIRTUOSO DTi Cartridge / **SILTECH** Speaker Cable
ANALOGIC DESIGN Hybrid Tube CD Player

reel music systems

HOURS BY APPOINTMENT • WASHINGTON, D.C. • TELEPHONE 202-362-3466
SYSTEMS DESIGN CUSTOM INSTALLATIONS EVALUATIVE SERVICES

Experience Excellence

We Bring You: Audio Research, Magneplanar, California Audio Labs, Rowland, SOTA, Martin Logan, WATT, Spica, Velodyne, Polk, Rega, Carver, NAD, Monster, MIT, Aragon, Waveform, Grado, Kimber, Well Tempered, Quicksilver, Athena, Focus, Heybrook, Nakamichi, Kloss and more.

ABSOLUTE AUDIO VIDEO

1232 N. Tustin, Orange, CA 92667 est. 1975

(714) 538-4434

WHERE TO BUY STEREOPHILE

Dealers interested in selling *Stereophile* should telephone Reba Scharf (505) 982-2366

ALABAMA

Auburn
Accurate Audio
110 E. Samford Ave

Birmingham
Lawrence Stereo
430 Greensprings Hwy #34

Huntsville
Campbell Stereo
1216 N. Memorial Parkway

Mobile
Audible Difference Audio
3963 Cottagehill

ALASKA

Anchorage
Shimeks
405 E. Northern Lights Bl

ARIZONA

Mesa
Hi-Fi Sales
810 W. Main St

Phoenix
Tower Records
3949 E. Thomas Rd

Scottsdale
Esoteric Audio
8672 E. Edgemont SE

Tucson
Wilson Audio Ltd.
2440 E. Broadway

CALIFORNIA

Benicia
Benicia Audio/Video
810 Southampton Rd

Berkeley
DB Audio
2573 Shattuck

Tower Records
Classical Annex
2585 Telegraph Ave

Canoga Park
The Laser's Edge
22021 Sherman Way

Shelley's Stereo
6836 De Soto Ave

Upscale Audio
8381 Canoga Ave

Capitola
Cymbaline Records
1475 41st Ave

Carmichael
Deetes Sound Room
5825 Manzanita Ave #4

Claremont
Audio Basics
976 W. Foothill #139

Omega Music & Video
228 W. Bonita

Concord
C&M Stereo Unlimited
2151G Salvio

Cupertino
Elite Electronics
20149A Stevens Creek Bl

Diamond Bar
Audio Best
22204 E. Croll Ct

El Toro
Tower Records
23811 El Toro Rd

Encinitas
North County Stereo Vision
131 N. El Camino

Encino
Sound Factor West
17265 Ventura Bl

Fair Oaks
Pinkerton Audio
6716 Madison Ave

Fairfield
C&M Stereo Unlimited
2020 N. Texas

Gardena
Reference Audio Systems
18214 Dalton Ave

Grass Valley
Alta Buena Stereo
214 E. Main St

Huntington Beach
Havens and Hardesty
15102-A Bolsa Chica

Irvine
Soundquest
4255 Campus Dr #116

Lancaster
California Soundworks
737 W. Lancaster Bl

Leucadia
Music by the Sea
542 N. Hwy 101

Los Angeles
Bel-Air Camera & Hi-Fi
1025 Westwood Bl

Christopher Hansen Ltd.
646 N. Robertson

Paris Audio
12401 Wilshire Bl

Mission Viejo
Home Technology Systems
28251 Marguerite Pkwy #C

Videolaser
28451 Marguerite Pkwy

Monterey Park
Gene Rubin Audio
529 S. Lincoln

Mountain View
Sound Goods
391 San Antonio Rd

Newport Beach
Audio by Design
1000 Bristol St N.

Northridge
Northridge Audio Center
9054 Tampa Ave

Oakland
Pro Audio
383 40th St

Orange
Absolute Audio
1232 N. Tustin

Palo Alto
Western Audio Imports
4191 El Camino Real

Pasadena
GNP Showcase
1244 E. Colorado Bl

Riverside
SpeakerCraft
6282 Magnolia Ave

Sacramento
Keith Yates Audio
3019 D St

Neal's Speakers & Stereo
1728 Fulton Ave

Paradyme Audio/Video
1720 Fulton Ave

San Carlos
Manion's Audio
1125 Laurel St

Digital Sonics
336 El Camino Real

San Diego
Stereo Design
9353 Clairemont Mesa Bl

Stereo Unlimited
3191 Sports Arena Bl

San Francisco
Audio Excellence
425 Washington St

Harmony Audio Video
2238 Fillmore

Sounds Alive
731 Florida St

Tower Records
2525 Jones St

Ultimate Sound
141 Kearny St

San Jose
Paradise Sound
860 S. Winchester

San Luis Obispo
Audio Ecstasy
786 Higuera

San Mateo
Mateo Hi Fidelity Inc.
2199 S. El Camino Real

Santa Barbara
Audio Vision
360 S. Hope Ave

Santa Maria
Jeff Lynn Audio
5455 Esplanada Ave

Santa Monica
Audio by John Dudley
1431 Ocean Ave, #400

Audio Shoppe
1322 2nd St, Ste 22B

Jonas Miller Sound
2828 Wilshire Bl

Optimal Enchantment
522 Santa Monica (by appt.)

Shelley's Stereo
2212 Wilshire Bl

Sausalito
Music by Design
107 Caledonia St

Sherman Oaks
Tower Records
Classical Annex
14623 Ventura Bl

Simi Valley
House of Audio/Video
1970-4 Sequoia

Stockton
Private Line
Home Entertainment
88 W. Castle St

Torrance
Stereo Hi Fi Center
23232 Hawthorne Bl

Upland
Audio Haven
1937 W. 11th St

Van Nuys
Audio Den
15600 Roscoe Bl

West Hollywood
Tower Records
Classical Annex
8840 W. Sunset Bl

Westminster
Audio Today
14306 Beach Bl

Woodland Hills
Paris Audio
20037 Ventura Bl

Wilson Audio Video
Entertainment
20044 Ventura Bl

COLORADO

Boulder
A D Systems Ltd.
2525 Arapahoe Ave

Listen Up
2034 E. Arapahoe

Cherry Creek
U.S. Tech
248 Detroit St

Colorado Springs
The Sound Shop
528 S. Tejon

Denver
Sound Hounds
1575 S. Pearl

Listen Up
999 S. Logan

Fort Collins
Audio Junction
2727 S. College Ave

Sound Hounds
646 S. College

CONNECTICUT

Bristol
Sound Unlimited
169 Church St

Fairfield
Audio Design
195 Trunxis Hill Rd

New Haven
Take 5 Audio
105 Whitney Ave

New London
Roberts
90 Bank St

Stereo Lab
140 Bank St

DELAWARE

Wilmington
Laser Sight & Sound
4723 Concord Pike

DIST. OF COLUMBIA

Needle in a Haystack
1990 K St

Serenade Records
1800 M St NW

FLORIDA

Clearwater
Rising Sounds
3135 US 19 N.

Fort Lauderdale
Audio Center
4134 N. Federal Hwy

Fort Pierce
Sound Shack
2302 S. US 1

Fort Walton Beach
Stereo Images
11 Eglin Pkwy SE #6

Hollywood
Audio Encounters
523 S. 21st Ave

Jacksonville
House of Stereo
3505 Southside Bl #10

Jupiter
Sound Wave
4050 US #1

Melbourne
Sound Gallery
912-B E. New Haven

Miami
Audio by Caruso
13831 S. Dixie Hwy

Audio Plus
6214 S. Dixie Hwy

THE SOUND CONCEPT

Accuphase • A.D.S. • Audio Pro • Bang & Olufsen • California Audio Labs • Carnegie
Concord • Conrad Johnson • Linn Products • Magnepan • Mark Levinson • Meridian
Mission • Mission Cyrus • Mondial Aragon • Monster/ALPHA • NAD • Oracle • Proton
Quad • Robertson • SME • Sound Engineering • Sound Organization • Sonographe
Soundstream • Synthesis • Thiel • Yamaha

• 5 Demo Rooms • Custom Home and Car Installations our Speciality • Extended Warranties •
• Liberal trade up • Single Speaker Demo Room • Monthly Specials • Personal Appointments Available!

ON DISPLAY FOR YOUR MUSICAL ENJOYMENT

Accuphase DP 80/DC 81 C.D. • California Audio Labs Aria C.D. • Conrad Johnson
Premier 3 & Premier 4 • Linn LP 12/Ittok/Troika • LK 1 + 2, D.M.S. • Magnepan 2.5 R & 3A
MARK LEVINSON No. 20 Reference Mono Amps, No. 23 Amp, ML7A Pre Amp
SME • Carnegie One • Thiel 3.5 • Quad ESL 63 USA (New) • Sound Engineering PFM-1

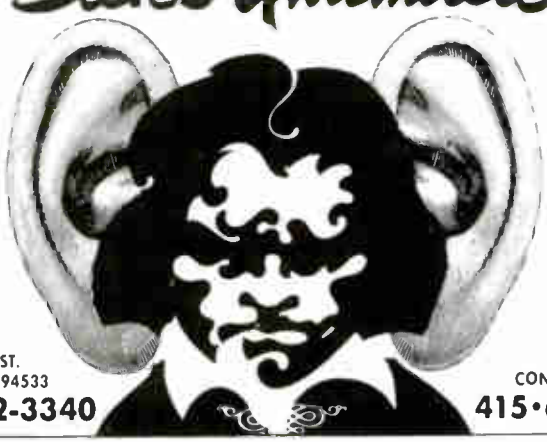
THE SOUND CONCEPT / 2314 Monroe Ave./Rochester, N.Y./**716-442-6050**
Monday thru Friday 10-9 Saturdays 10-5
MC/VISA/AMEX/DISCOVER

WE CREATE MASTERPIECES FOR YOUR EARS

- AUDIO RESEARCH
- CAL AUDIO LABS
- MARTIN LOGAN
- COUNTERPOINT
- MAGNEPAN
- KYOCERA
- MIRAGE
- ORACLE
- ROGERS
- SOTA

Stereo Unlimited

- WILSON AUDIO
- B & W MATRIX
- VAN DEN HUL
- QUICKSILVER
- SUMIKO/SME
- NAKAMICHI
- DALHQUIST
- ADCOM
- ENTEC
- SPICA
- NAD
- MIT



2020 N. TEXAS ST.
FAIRFIELD, CA, 94533
707•422-3340

2151 "G" SALVIO
CONCORD, CA, 94520
415•676-8990

Sound Components
1536 S. Dixie Hwy
Tampa
Audio Visions
14733 N. Dale Maybry

GEORGIA

Atlanta
Music Audio
2100 Roswell Rd NE
Music, Music, Music
Buckhead and
N. Lake Tower Festival
Sounds of Distinction
3231 Paces Ferry Pl
Stereo Shop
2774 Hargrove Rd
Lilburn
Musical Designs Inc.
4462 Burns Rd
Martinez
The Stereo Shop
104 Chamilla Dr
Tucker
MG Audio
4880 Lawrenceville Hwy

HAWAII

Honolulu
The Audio Shoppe
300 S. Beretania #207
Sounds
502 Kaaahi St
Tower Records
611 Keeaumoku St

IDAHO

Boise
The Stereo Shoppe
5105 Overland Rd

ILLINOIS

Barrington
Take One Audio Video
203-D W. NW Hwy
Champaign
August Systems
901 N. Prospect Ave
Glenn Poor's Audio Video
114 W. Church
Chicago
Absolute Audio
5211 S. Harper
Acme Audio & Recording Co.
3821 N. Southport
Audio Video Option
141 W. Jackson Bl
Chicago Speakerworks
5700 N. Western Ave
Superior Audio Systems
833 N. Milwaukee
Chicago Heights
Audio Enterprises
202 Halsted
DeKalb
Audio Plus
866 W. Lincoln Hwy
Lansing
Audio Clinic
2 River Pl
Murphysboro
Sabin Audio
1313 South St
Naperville
Quintessence Audio Ltd.
20 W. Jefferson St
Normal
Glenn Poor's Audio Video
106 E. Beaufort
Peoria
Sound of Peoria
105 E. Arcadia
Rockford
Absolute Audio
4227 Maray Dr
Springfield
The King's Stereo
1275 W. Wabash, Ste S

INDIANA

Indianapolis
Audio Workshop
5357 N. Keystone
Ye Olde Hi Fi Shoppe
824 E. 64th St

IOWA

Davenport
Audio Odyssey
1718 E. Kimberly Rd
Iowa City
Hawkeye Audio
401 S. Gilbert

KANSAS

Lawrence
University Audio
2319 Louisiana St
Prairie Village
Golden Stereo
5337 W. 94th Terrace

KENTUCKY

Louisville
Audio Video by Design
9409 Shelbyville Road
Musical Images
of Kentucky
6700 Sycamore Woods Dr
Sound Gallery
9916 Linn Station Rd

LOUISIANA

Baton Rouge
Art Colley's
Audio Specialties
711 Jefferson Hwy
Metairie
Audio Resource
108 Bonnabel
New Orleans
Oliver's
112 University Pl
Tower Records
408 N. Peters St
Wilson Audio
8001 Maple St

MARYLAND

Baltimore
Soundscape
406 W. Cold Spring Ln
Ellicott City
Gramaphone Ltd.
9005 Chevrolet
Frederick
Audio Ceu
180 Stoneybrook Ct
Laurel
Needle in a Haystack
14270 Baltimore Ave
Lutherville
Gramaphone Ltd.
10801 Tony Dr
Rockville
Needle in a Haystack
785 Rockville Pike
Silver Spring
OEM Audio
9330 Georgie Ave
Towson
Discerning Ear
834 Kenilworth Dr

MASSACHUSETTS

Arlington
Audio Vision
1060 Massachusetts Ave
Boston
Audio Studio
303 Newbury St
Encore Audio
225 Newbury St
Listening Studio
23 Stillings St
Tower Records
360 Newbury St
Brookline
Audio Studio
414 Harvard St
Cambridge
Q Audio
95 Vassar St
Dartmouth
Sound II
576 State Rd
Framingham
Natural Sound
401 Worcester Rd
Northampton
Sound and Music
351 Pleasant St
Peabody
Clearly Audible
255 Andover St
Pittsfield
HBS Stereo Systems
237 First St

MICHIGAN

Bad Axe
Grewe Systems, Ltd.
112 S. Port Crescent
Birmingham
Almas HiFi Stereo
395 E. Maple
Dearborn
Almas HiFi Stereo
15031 Michigan Ave
East Lansing
Jemstone
325 Grove Street
Farmington Hills
Almas HiFi Stereo
29401 Orchard Lake Rd
Ferndale
JAM Hi-Fi Specialists
22346 Woodward Ave
Grand Rapids
Spectrum Electronics
2019 Eastern Ave SE
Lansing
Great Lakes Audio
502 N. Harrison
Muskegon
Stereo Showcase
3100 Hensy
Royal Oak
Audio Dimensions
4128 N. Woodward Ave
Saginaw
The Listening Room
1305 Court St

MINNESOTA

Minneapolis
Audio Perfection
7401 Lyndale Ave S.
Hi End Audio
4959 Penn Ave S.
HiFi Sound Electronics
1226 Harmon Pl
St. Paul
House of High Fidelity
157 N. Snelling Ave

MISSOURI

Ballwin
Flip's Stereo Place
15050 Manchester Rd
St. Louis
Best Sound Inc.
1131 S. Brentwood Bl

NEBRASKA

Lincoln
Natural Sound
233 N. 48th St, Ste P

NEVADA

Las Vegas
Tower Records
4700 S. Maryland Pkwy
Reno
Audio Alternatives
26 Hillcrest Dr

NEW HAMPSHIRE

Hanover
Hanover Audio
47-51 S. Main St
Nashua
Re-Sound Inc.
402 Amherst St, Ste 310
Salem
Cuomo's
291 S. Broadway

NEW JERSEY

Deptford
Hi Fi Connection
136 Route 41
East Brunswick
Atlantic Stereo
636 Route 18
Englewood
Stuart's Audio
3 Grand Ave
Franklin Lakes
Franklin Lakes Stereo
792 Franklin Ave
Hackettstown
Marcel Associates
57 Wood Duck Ct
Marlton
Hi Fi Connection
RD 1, Route 73
Millburn
Professional Audio
Consultants
182 Essex St
Morristown
Sight and Sound
60 Speedwell Ave
Northfield
Sound Inc.
900 Tilton Rd
Paramus
Leonard Radio
160 Route 17 N.
Ridgewood
Sounding Board
75 Franklin Ave
Tom's River
Rands Camera and Hi Fi
1841 Hooper Ave
Trenton
Hal's Stereo
Lake Lawrence Plaza
Verona
Audio Connection
615 Bloomfield Ave
Westfield
Stuart's Audio
544 North Ave E.
Wyckoff
Conklin's Inc.
637 Wyckoff Ave

NEW MEXICO

Albuquerque
Hudson's Audio Center
7611 Menaul NE
Page One Newsstand
11200 Montgomery NE
Santa Fe
The Candyman
851 St. Michaels Dr
Downtown Subscription
130 W. Palace
Galisteo News
201 Galisteo St
Ovation Audio
1310 Osage, Ste A

NEW YORK

Astoria
Steinway Sound
25-15 Steinway St
Batavia
Unicorn Audio
206 E. Main St

• SHURE • MONSTER CABLE • GRADO •

• DYNAVECTOR •

• STAX •

• STANTON • NITTY GRITTY •

• SIGNET • ORTOFON • BEYERDYNAMIC •

We Are Proud To Offer

A LARGE SELECTION OF:

NEEDLES

CARTRIDGES

Featuring

- ORTOFON
- SHURE
- GRADO
- DYNAVECTOR
- AUDIO TECHNICA
- PICKERING
- SIGNET
- NITTY GRITTY
- STANTON
- BEYERDYNAMIC
- AUDIOQUEST
- STAX
- CARNEGIE ONE
- THORENS
- AR
- MICRO SEIKI
- AND MANY MORE...

TOLL FREE

VISA (800) 342-9969

High Quality Turntables & Accessories in Stock...

M&Y CO.

8344 Melrose

Los Angeles

Simply The Best!

The BEST Audio Equipment.

- AR • Adcom • Alphason
- Apogee • Audible Illusions
- Audio Research • Bang & Olufsen
- Belles • B&K • B&W • Counterpoint
- Dahlquist • Dual • Eminent Technology
- Grado • Hafler • Janis • Kinergetics
- Koetsu • Live Wire • Magnavox
- Monitor Audio • Monster/Genesis
- NAD • NEC • Nakamichi • Philips
- Pioneer Elite • Polk Audio • PS Audio
- Shure Ultra • Signet • Sota • Spendor
- Stax • Straight Wire • Systemdek
- Target • Thorens • Ultra • VPI• Yamaha

The BEST Video Equipment.

- Canon • Harman/Kardon • JVC
- Magnavox • NAD • NEC • Philips
- Pioneer • Proton • Shure
- Sony • Yamaha

The BEST Service.
Delivery and custom installations are available from all three locations. Technician on premises in Manhattan.

The BEST Advice.
At Audio Breakthroughs, when you talk to a salesperson, you'll be talking to a long-time audiophile who loves music as much as you do.

The BEST Quality.
Every piece of equipment sold at Audio Breakthroughs must undergo an exhaustive evaluation by our staff before we agree to feature it.

The BEST Locations.
Easy to reach from anywhere in the tri-state area. Open late Monday, Thursday, Friday, all day Sunday.

AudioBreakthroughs

- New York City - 199 Amsterdam Ave. at 69th St.....212-595-7157
- Manhasset - 1534 Northern Blvd., on the Miracle Mile....516-627-7333
- Woodbury - Turnbury Commons on Jericho Tpke.....516 367-7171

Binghamton
JSG Audio
1437 Front St

Buffalo
Speaker Shop
3604 Main St
Stereo Emporium
3407 Delaware Ave

Colonie
Mom's Music Systems
1593 Central Ave

Goshen
Long Player Stereo
60 N. Church St

Huntington Station
Audio Breakthrough
129 Route 110

Lake Grove
Audio Den Ltd.
Smith Haven Plaza
2021 Nesconset Hwy

Latham
Auto-Sound Plus
947-949 Troy-Schenectady
Clark Music in Albany
1075 Troy-Schenectady

Lynbrook
American Audiophile
373 Sunrise Hwy

Mamaroneck
Definitive Hi Fi
154 E. Boston Post Rd

Manhasset
Audio Breakthrough
1534 Northern Bl

Merrick
Performance Audio
2064 Sunrise Hwy

Mount Kisco
Fox and Sutherland
15 South Moger Ave

Nanuet
Eardrum Audio Video
148 E. Route 59

New York City
Audio Breakthroughs
199 Amsterdam Ave
Electronic Workshop
10 E. 8th St
Leonard Radio
55 W. 44th St
Lyric Hi-Fi Inc.
1221 Lexington Ave
2005 Broadway
6th Ave Electronics
1024 6th Ave
Stereo Exchange
687 Broadway
Sound by Singer
165 E. 33rd
Tower Records
692 Broadway
Tower Records
1961 Broadway

Patchogue
Square Deal Radio
and Television
456 Waverly Ave

Pleasantville
Audio Excellence
343 Manville Rd

Rochester
Interior Images
317 S. Broadway
Paul Heath Audio
217 Alexander
Rowe Audio
1737 Mt. Hope
Sound Concepts
2314 Monroe Ave

Scarsdale
The Listening Room Inc.
590 Central Park Ave

Smithtown
Audio Enjoyment
11 Caroline Ave

Stonybrook
Esoteric Sound Systems
Coventry Commons, Rt 347

Syracuse
Superior Sight and Sound
2780 Erie Bl E.

West Babylon
Audio Visions
1067 Montauk Hwy

White Plains
Harvey Electronics
236 E. Post Rd
Lyric Hi Fi
146 E. Post Rd

Woodbury
Audio Breakthroughs
Turnberry Commons

Woodside
Leonard Audio
69-34 51st Ave

NORTH CAROLINA

Cary
Advanced Audio
1263 Kildaire Farm Rd

Charlotte
Higher Fidelity
1620 S. Boulevard
Sound Systems
3748 E. Independence Bl

Durham
Audio Visions
4600 Chapel Hill Rd

Raleigh
Audio Advice
3532 Wade Ave

Wilmington
Atlantic Audio
4127 Oleander Dr

OHIO

Cincinnati
Pete's News Shop
308 Ludlow Ave
Stereo Lab
11419 Princeton Rd
4582 Montgomery

Columbus
Custom Stereo Electronics
1391 S. Hamilton Rd
Needle in a Haystack
2384 Wellesley Ln
Progressive Audio
1764 N. High St

Dublin
Audio Encounters
4271 W. Dublin
Granville Rd
Camelot Music
6313 Sawmill Rd

Fairborn
Audio Etcetera
2626 Col. Glen Hwy

Findlay
Audio Specialties
229 N. Main St

Heath
Threshold Audio
409 S. 22nd St

Kettering
Hauer Music
3140 Far Hills Ave

Lakewood
Play It Again Sam
12611 Madison Ave

Miamisburg
Stereo Showcase
Prestige Plaza 5

Sandusky
Audio Force
521 E. Perkins Ave

Toledo
Audio Center
1546 Alexis Rd
Jamiesons' Stereo
5431 Monroe

University Heights
Atlantis Home
Entertainment Systems
2220 Warrensville Rd

OKLAHOMA

Tulsa
K-Labs Audio
2806 S. Harvard

OREGON

Portland
Hawthorne Stereo
1428 SE 36th St

PENNSYLVANIA

Butler
Audiophile Accessories
119 E. Wayne St

Hermitage
Sounds Good To Me
2481 E. State St

Hershey
Stereo Barn
251 W. Chocolate Ave

Philadelphia
Chestnut Hill Audio
149 N. 3rd
Discovery Discs
3417 Spruce St
Tower Records
Classical Annex
537 South St

Pittsburgh
Mook's Audio
2883 W. Liberty Ave

Selinsgrove
Stereo Shoppe
19 N. Market St

PUERTO RICO

Puerto Nuevo
Laser Sound
de Diego Ave #272

Rio Piedras
On Top Audio
332-B Ave Jesus T. Pinero

RHODE ISLAND

Providence
Ocean State Audio
304 Thayer St

SOUTH CAROLINA

Columbia
Sound Advice
2821 Ashland Rd

Greenville
American Audio
597 Haywood Rd
Operation Audio
437 N. Pleasantburg Dr
Sound Source
941 Haywood Rd

West Columbia
Upstairs Audio
746 Harden St

TENNESSEE

Memphis
Underground Sound
2125 Central Ave

Murfreesboro
Hi Fi Buys
854 NW Broad

Nashville
Cumberland Audio
4119 Hillsboro Rd
Nicholson's Stereo
115 19th Ave S.
Tower Books
2400 West End Ave

TEXAS

Amarillo
Sound Systems Ltd.
2502 Paramount

Austin
Audio File
9041 Research Bl
Cochran Corporation
2830 Real Street

Beaumont
John Goodyear Audio
229 Dowlen

Dallas
Krystal Clear Audio
5330 Longview
Omni Sound
4833 Keller Springs
Preston Trail Audio
17390 Preston Rd #320

El Paso
Soundquest Inc.
6800 Gateway E. 1D

Garland
MJM Audio
4125 Broadway

Houston
Esoteric Ear
4230 Glenchase Lane

Odessa
Harold's Electronics
2809 Andrews Hwy

San Antonio
Bill Case Sound
4319 Medical Dr #106
Concert Sound
7103A Blanco Rd

UTAH

Ogden
The Hi Fi Shop
2236 Washington Bl

Salt Lake City
Audition Audio
2144 Highland Dr
Le Disque
2146 S. Highland Dr

VERMONT

Burlington
City Stereo
207 College St

S. Burlington
Audio Den
100 Dorset St

VIRGINIA

Alexandria
Excalibur
323 S. Washington

Bailey's Crossroads
Audio Buys
5177 Leesburg Pike
Skyline Mall

Charlottesville
Preferred Sound
309 E. Water St

Danville
Aeolian Products & Svcs
215 Main St

Fredericksburg
Contemporary Sounds
1236 Jefferson Davis Hwy

Richmond
Audio Art
2215 Broad St

Roanoke
Audiotronics
4235 Electric Rd

Springfield
Needle in a Haystack
Springfield Mall

Virginia Beach
Digital Sound, Inc.
6519 College Park Sq

WASHINGTON

Bellingham
Landing Discs & Tapes
1307 11th St

Seattle
Definitive Audio
6017 Roosevelt Way NE

Acoustat
Aragon
Arston
Audible Illusions
Audioquest
B.G.K. • CAL
Cardas
conrad-johnson
Creek
Eminent Technology
Grado
Heller
Heybrook
Janis
Madrigal Carnegie
Magnum Dynalab
MIT • Meitner
Monster
ProAc
PS Audio
Quad
Quicksilver
Rega Planar
Rotel
Sonographe
Spendor
Spica
STAX
Superphon
Vandersteen
VPI • VTL
Well-Tempered

Rhode Island's State-Of-The-Art Audio Store.

OCEAN STATE AUDIO

304 Thayer Street
Providence, RI
(401) 521-1140
Open Mon-Fri 11-8; Sat 11-6

Yes, we carry the above lines and then some. But so do many other dealers.

Why do audiophiles travel exceedingly long distances to buy from Upscale Audio? Why do listeners who have heard the same components at another salon hear so much more over our hard-wired reference system? In short, why do we have such a large and growing fan club of loyal customers both in and outside of So. California?

For the answer, call or visit Upscale Audio soon.

UPSCALE·AUDIO
ROGERSOUND·LABS

(818) 882-3802
For a free copy of Upscales, our irregularly irreverent newsletter, write us at 8381 Canoga Avenue, Canoga Park, CA 91034

Spokane
Hal's Stereo
W. 313 Spraque Ave
Tacoma
Stereo Shoppe #2
11007 Bridgeport Way SW
Walla Walla
Tiger Todd Productions
1509 E. Isaacs

WEST VIRGINIA

Morgantown
Sound Investments Inc.
467 High St

WISCONSIN

Glendale
Sound Investments Ltd.
2500 W. Silver Spring Dr
Wisconsin Rapids
Salon I Audio
2551 8th St S.

CANADA

National Distributor
Fenwick, Ontario
Ruehle Marketing
850 Roland Rd

ALBERTA

Calgary
KW Audio
344 17th Ave SW
Loyalty Sound
1107 8th St SW
Edmonton
Audio Ark
10746A 124th St
Harold's Stereo
16612 109th Ave
9024 51st Ave

BRITISH COLUMBIA

Vancouver
Big Bird Audio Visual
740 Marine Dr
Music Works
4740 Main St
Straight Gain Electronics
2220 W. Broadway
The Sound Room
2803 W. Broadway
Victoria
Sweet Thunder Records
575 Johnson St

MANITOBA

Winnipeg
Creative Audio
214 Osborne St S.

NEW BRUNSWICK

Fredricton
Magic Forest Music Store
546 Queen St

ONTARIO

Brampton
Eastmen Audio
295A Queen St E.
Chatham
Absolute Sound
425 Clair St
Guelph
Guelph Hi Fi
5 Speedvale Ave E.
Hamilton
Globe Audio
552½ Upper James St
Globe Discount
217 King St E.
Kingston
House of Sounds
277 Princess St
Vern Napier Camera
333 Princess St
Milton
Sound Man
629 Main St E.
Ottawa
Distinctive Audio
903 Carling Ave
Euphonics
687 Bank St
Saro's
132 Bank St
Stereo Trading Post
242½ Bank St
Peterborough
The Audio Room
300 George St N.
Richmond Hill
Linear Sound
10176 Yonge St
Thornhill
Stereo Factory
7616 Yonge St
Toronto
Audio Empire
1011 Albion Rd
Classic Audio
1894 Lawrence Ave E.
Great American Sound
402 Queen St W.
Great National Sound
615 Queen St W.
High End Audio
2216A Queen St E.
Ring Audio
553 Queen St W.
Toronto Home of Audiophile
150 Dundas St W.
Waterloo
Sound Stage
56 Regina St N.
Whitby
Whitby Audio
223 Brock St S.
Windsor
Better Audio
106 Eugenie St W.
Essex Audio Consultants
322 Pelissier

QUEBEC

Ste-Foy
Rotac Electronics
2873 Ch Ste-Foy

AUSTRALIA

National Distributor
Thornbury, Victoria
Audio Q Imports
649 Burwood Rd
Hawthorn 3122

DENMARK

National Distributor
Graestad
Matrix
Bylyngen 4, Blistrup
Copenhagen
Bristol Stereo Center
Frederiksberggade 28
Fona
Ostergade 47
Hi-Fi Entusiasten
Tagensvej 162
KT Radio
Vesterbrogade 179-181
Vejle
S.K. Sound
Vissinggade 7
Aalborg
AC Radiohuset
Boulevarden 16
KT Radio
Norregade 19-21
Aarhus
Cilfa Hi-Fi
Ny Munkegade 65
KT Radio
M.P. Bruunsgade 36

FINLAND

National Distributor
Oslo 1, Norway
Audio Import
Box 9193 Vaterland

HONG KONG

Aeroplax Limited
Rm 201 Canton House
54-56 Queen's Rd Central
The Sound Chamber
Suite 1001, Dina House
11 Duddell St

ICELAND

National Distributor
125 Reykjavik
Steini HF, S. Danielsson
Skulagata 61

ITALY

National Distributor
Lucca, 55100
Sound and Music
Via Mazzarosa 125

JAPAN

National Distributor
Suma-Ku, Kobe
Verite
3-6-1 Sekimori-Cho

NETHERLANDS

National Distributor
2611 RV Delft
Tannoy Netherlands
Ezelsveldlaan 52
Amsterdam
RAF HiFi Stereo
Rijnstraat 142-150

NEW ZEALAND

National Distributor
Petone, Wellington
D.R. Britton Ltd.
3 Sydney St

NORWAY

National Distributor
Oslo
Audio Import Ltd.
Box 9193 Vaterland

SINGAPORE

National Distributor
Flair System
B1-03/04, Katong Peoples Complex
112 E. Coast Rd

SPAIN

National Distributor
Valencia
Sarte Audio Elite
Padre Jofre, 22

SWEDEN

National Distributor
Oslo 1, Norway
Audio Import
Box 9193 Vaterland

SWITZERLAND

National Distributor
Zurich
Ensemble AG SA LTD
H. Annoni Strasse 23
CH-4132 Muttenz
Aarau
Stimmgabel—H. Ineichen
im "City Mart"
Bern
Klingler Hi-Fi
Obere Zollgasse 29b
Lugano
Musicdoor
Quartiere Maghetti
Thun
Audiotechnik Luthi
Frutigenstrasse 61b
Zurich
Hi-Fi Muller
Merkurstrasse 45

TAIWAN

National Distributor
Taipei
Taifu Electronics
Chung Ching S. Rd

THAILAND

Bangkok
Focal (Thailand)
388 U-Chareon Village
Rachada Rd
Huay-Kwang BKK 10310

UNITED KINGDOM

National Distributor
Wilstead, Bedford
Moth Marketing
10 Dane Lane
Newstand Distributor
Periodicals in Particular
1 Prince of Wales Passage
Hampstead Rd
Glasgow G2
Music Room
221 St. Vincent St
London
Audio T
190 West End Ln
Douglas Brady Hi Fi
18 Monmouth St
Covent Garden
KJ Leisuresound Ltd.
26 New Cavendish St
Sound Information
13 St. John's Hill
Manchester
Music Room
50 Bridge St
Reading Berks
Reading Hi Fi
Harris Arcade, Friar St

WEST GERMANY

National Distributor
6 Frankfurt/M. 56
Audio International
Gonzenheimer Str 2b

WEST INDIES

Jamaica
Kingston
Dataline Equipment & Systems
25 Waterworks Circuit

"The reports of my death are greatly exaggerated."
- Mark Twain -
Great American Author

Can a Legacy Return?

We at G.A.S. announce that despite evidence to the contrary, we never really left...

And we proudly confirm our plans to Revivify, Reform, Postulate, and Recreate.

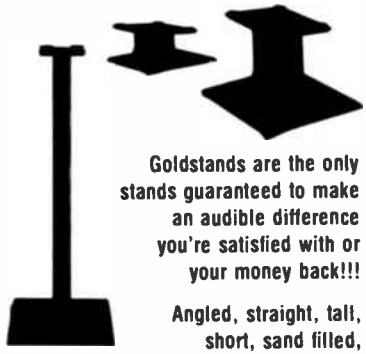
Look for us. *We State the Art*

GAS
Great American Sound

21300 Superior St., Chatsworth, CA 91311 (818) 407-2428

GOLDSTANDS

FULLY ASSEMBLED SPEAKER STANDS

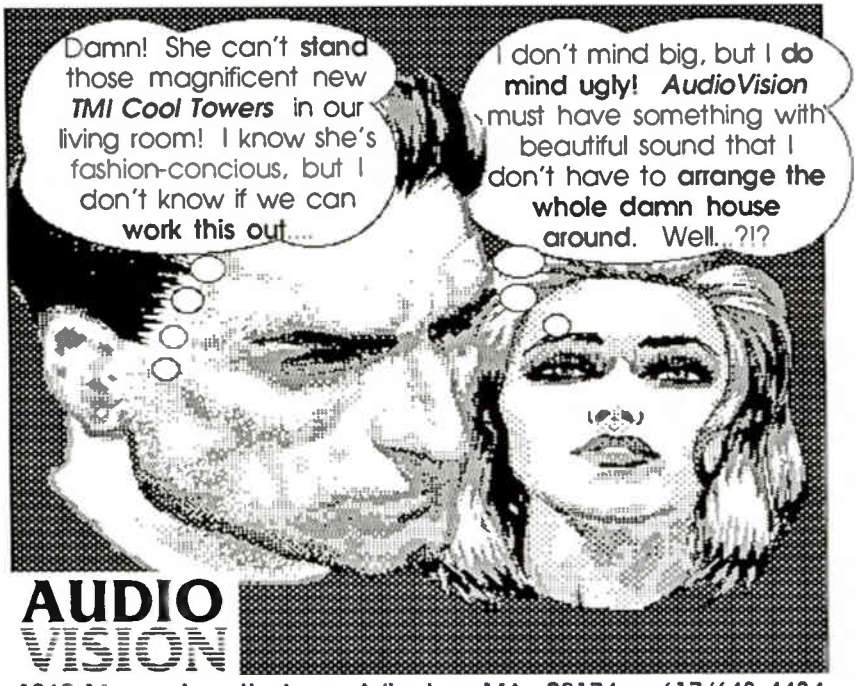


Goldstands are the only stands guaranteed to make an audible difference you're satisfied with or your money back!!!

Angled, straight, tall, short, sand filled, spiked.

CUSTOM STANDS OUR SPECIALTY

Goldstands, 229 Nassau Rd. Huntington, NY 11743, 516-427-4813



1060 Massachusetts Ave. Arlington, MA 02174 617/648-4434

AUDIO MART

RATES: Private, $.60 per word, $10 minimum on phone-in ads; Commercial, $1.75 per word, $70 minimum on all commercial ads. **PAYMENT:** All classified ads must be prepaid with order. Phone-in ads are credit card only: Master Charge, VISA, American Express. **MAIL TO:** *Stereophile,* Classified Ad Department, P.O. Box 5529, Santa Fe, NM 87502, or **CALL:** (505) 982-2366. **DEADLINE:** Ads are due on the first working day of the month, two months in advance of the issue in which your ad will appear.

FOR SALE

PAS-01 PASSIVE PREAMPLIFIER KIT as featured in *Stereophile* Vol.11 No.2 (February 1988). Authorized by *Stereophile*; three inputs; complete apart from enclosure and RCA plugs; all parts as specified by Ben Duncan (Holco resistors, Bourns pots); upgrades available; $100 including shipping. (New Jersey residents add 6% sales tax.) Orders to *The Audible Difference, care of Stereophile, PO Box 5529, Santa Fe, NM 87502.*

FOR MUSIC LOVERS ONLY! Apogee, Aragon, Bedini, Cardas, Classe, Epos, Hanson, LiveWire, Mod Squad, Precise, Straight Wire, Sumo, and more! Serving Michigan residents and areas without representation! Free UPS shipping! Expert Advice! *Call (313)342-2475 for prices and availability. Ask for Gil. Performance Systems.*

UNIQUE VINYL presents a humble yet fascinating selection of analog LPs worthy of your attention. The new Fall/Winter '88 Stocklist includes personal views/reviews of every title, each lovingly auditioned on high-end equipment. This humble selection is broad: orchestral, opera, choral, chamber, jazz, folk, rock, and electronic. Labels include: Concord Jazz, Decca, EMI, Iona, Pablo, Riverside, Virgin, Wilson, and others. $5 will buy you access to music worth owning. *Unique Vinyl, 45 West Georgia Avenue, Phoenix, AZ 85013. (602)274-1333.*

HAFLER DH220 (C.86), mint, $260. *(615)483-8070.*

BRISSON/MIT CABLES, CUSTOMIZED ATHENA POLYPHASORS, MI-330/Shotgun custom interconnects, the only hi-flexibility all-MIT tonearm sets, Camacs for Levinson, XLR balanced, meticulous workmanship! Brisson hookup wire for internal rewiring, Clements Speakers, MIT wiring harness & mods for Infinitys, custom-threaded Tiptoes, ASC Tube Traps, Chateauroux, Sidereal, Wonder Caps & solder, Resistas, WBT & Tiffany connectors, many accessories, $1 catalog. *Michael Percy, Box 526, Inverness, CA 94937. (415)669-7181.*

LEVINSON ML-7A $3495, JBL 250Ti Speakers $1795, VPI HW-19 'table w/Souther Arm, Veritas cartridge $1395, Nakamichi ST-7 tuner $375, dbx 4BX $425. All perfect, low hours w/boxes, manuals. *(605)342-3564, (605)342-4360.*

NEED CASH? Audio Mart to the rescue! Phone in your classified ad to *Stereophile Classified Dept. (505) 982-2366.*

NW GEORGIA AUDIOPHILES: Adcom, Aragon, Carnegie, Dahlquist, Eminent Technology, Infinity, Mod Squad, Rega, Shure, Sumiko, van den Hul Cable, VPI, Yamaha, surround video systems. *The Music Room, 406 E. 2nd Ave., Rome, GA 30161. (401)291-8030.*

AFFORDABLE HIGH END—ASC Tube Traps, Audible Illusions, Audioquest, B&K, Celestion SL, Chicago Stands, Kimber Kable, Kindel, Magnum Dynalab, Merlin, Mod Squad, Morel Acoustics, Niles Audio, PSE, Sonrise, Velodyne, CD players, Philips, Rega, Epos, and more. For more information or free brochure and free literature, please call *(301)890-3232. J.S. Audio, One Childress Ct., Burtonsville, MD 20866.* Audition by appointment. Monday through Friday, 10am to 7pm; Saturday, 11 to 5. MC/Visa, Amex.

NAKAMICHI 1000ZXL CASSETTE RECORDER, like new, $1500 or best offer. *Call Bob (414)388-2153 after 6pm CDT.*

SUBSCRIBE TO *THE AUDIO CRITIC*, the quarterly review that prints what the underground amateurs don't know and what the top professionals only tell their friends. Start your 1-year, 4-issue subscription with No. 10, which explains the ground rules, and get No. 11 and No. 12 (the latest) at the same time. Send $22 (no Canadian dollars, $10 extra for overseas delivery) to *The Audio Critic, Box 392, Bronxville, NY 10708.*

VTL DELUXE 120 power amps, $2590. *(216)449-8495.*

INSPIRED CIRCUITRY FOR YOUR ADCOM OR HAFLER amplifier. Jim Ott, founder of Northwest Audio Labs, is now offering his exclusive circuit-board modification which regulates the power-supply front end. We don't just swap parts out! Phone or write for free brochure. *Northwest Audio Labs, Inc., 1557 NW Monroe, Corvallis, OR 97330. (503)753-0472.*

PHONO PREAMP, highly reviewed, factory direct $149. For literature & reviews call *(800)637-6695 ext.2825.*

SURROUND SOUND, highly reviewed, factory direct $299. For literature & reviews call *(800)637-6695 ext.2833.*

DYNAMIC NOISE REDUCTION, clean up records & tapes, $249. For liteature & reviews call *(800)637-6695 ext.2020.*

AUDIOPHILE ALBUMS FROM SOUND ADVICE! Fifth annual Christmas sale. Mobile Fidelity, Reference Recordings, etc. UHQRs, Rolling Stones collections. VISA and MC accepted. Fast service. Collector's items not found in overcrowded stores make excellent gifts! *Sound Advice, 8215 Grand, K.C., MO 64114. (816) 361-2713.*

MUSICAL IMAGES, IN CENTRAL CALIF., where we feature Vandersteen, PSE, Quicksilver, Modulus HC, MFA Magus, Linn Products, and "The Wire." *The Musical Interconnect, please call (209)449-0707* "because your music is important."

The Ultimate Sound Connection.

Introducing ULTIMA™ Interconnect Cable. *It's Audibly Superior:*

- 100% Teflon Insulation
- Lowest Induced, Phase Distortion of Any Interconnect Cable
- 100% RF Shielded Cable for Low Noise
- Oxygen Free, Long Crystal, Silver Coated Copper Wire
- Precision-Machined Connectors Feature a Unique Solderless Compression Fit
- Available In .5, 1.0, 3.0 meter and Custom Lengths

Audition it at Your Local Dealer. Or Write, Call, Fax for Brochure. To Order: Bank Cards; No Per. Checks; Money Orders to RF Limited; $160.00 Dealer Inquiries Welcome.

AudioPrism
A Division of RF Limited
P.O. Box 1124, Issaquah, WA 98027
Tel: 206•392-0399 FAX: 206•392-8413

WHAT PRICE HIGH END?

Incredible Imaging.
Room Audibility.
Dynamic Capability.
Spectral Accuracy.
$450.00 Per Pair.

The Audiophile-File™ says: "I can say with all honesty that I have never - and I mean never - heard any dynamic or other monopolar speaker with such a sense of room audibility." (JFT - 10/87)

Find out for yourself.

Lantana tads.

Lantana

P.O. Box 1958 • Garden Grove, CA 92642
(800) 234 - TADS (8237)

POWER BLOCK BY TICE AUDIO

A.C. POWER LINE CONDITIONER

- Designed specifically for audio
- Eliminates R.F., EMI, Hash & Spikes
- 10% Voltage boost or reduction
- Radically improves every system
- L. 18½" × W. 10" × H. 8½" Wt. 60 lbs.

Home trials available at:

AUDIO ENJOYMENT

◦ VPI	◦ EHS	◦ MFA	◦ Spica	◦ Tice
◦ Klimo	◦ Fried	◦ Sumiko	◦ Kindel	◦ Target
◦ Belles	◦ Lazarus	◦ PS Audio	◦ Magnum	◦ Garrott
◦ Systemdek	◦ Quicksilver	◦ Win Labs	◦ Terpsichore	◦ Chicago
◦ JS Electrostatics	◦ British Fidelity	◦ Audible Illusions	◦ Eminent Technology	& Much more!

516-360-8815 Smithtown N.Y.

W. New England's Best!

Acoustat • Apogee • Aragon • Boston/Acoustics • B&W • Celestion • CWD • dbx • Dual • Energy • Fried • Hafler • Infinity • JSE • JVC Video • Koetsu • Krell • Magnum • Meitner • Meridan • MIT • Mod Squad • Monster • NAD • Onkyo • Ortofon • Rotel • Shure • SME • Snell • Sony ES • SOTA • Stax • Sumiko • Velodyne • Well Tempered

Sound & Music

Sales & Service • 351 Pleasant Street
Northampton, MA 01060 • (413)584-9547

SPICA ANGELUS $675, Adcom 555 preamp $325, As/one interconnects. All less than nine months old. *Larry (216)929-1133.*

A HEARTFELT THANKS to everyone at DRH/Wavetrace Technologies for making our second year so successful! Our Adcom amplifier modifications are still No.1, with B&K and Magnavox following in the family tradition. *Wavetrace Technologies, 4215 E. Bay Dr. #1205C, Clearwater, FL 34624, (813)536-2904.*

AUDIO RESEARCH D-90B-SP power amplifier, $850; also MCP2 moving-coil preamplifier, $750. *Call Fred (615)435-4668 evenings.*

HAFLER XL280 $325, box and manual. *(406)761-3296.*

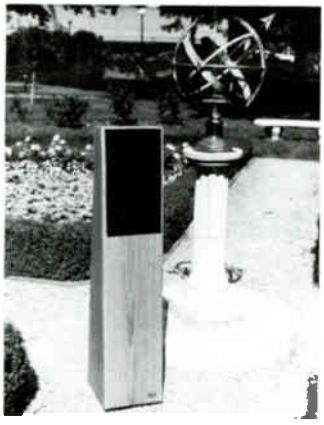
B&K AMPS, PREAMPS, CRAMOLIN, Kimber Kable, Kevek speakers, Furman line cond., Tenderfeet, GyroDec, Sheffield Lab, Sonex, Zeta tonearm, Technics stylus force gauge, Amperex 6DJ8/ECC88, India 12AX7/ECC83, GE 6550/KT88. *Vector Electronics, Box 20404, Portland, OR 97202-0404.* SASE for quotes. *Call: (503)233-2603. Visa/MC/Amex.*

SUPERPHON REVELATION PREAMP, dual-mono, $290; Powered Advent loudspeakers, $350; Nakamichi 600II cassette, negotiable. *Jon (615)298-5008.*

CLASSE AUDIO DR3 power amp, mint, $1595. Audioquest CD1R, $395. *Jerry (216)449-8495.*

NELSON-REED 8-04/B SPEAKERS, new $3200, now $2100. Factory-sealed replacement tube set for C-J PV-5, $59. Very heavy 15" Target speaker stands, $149. *(303)329-9061.*

AFTER A DECADE OF R & D



This patented design allows an $850 pair of loudspeakers to outperform speakers costing many times their price.

DEALER INQUIRIES INVITED

Taddeo Loudspeaker Co.
(716) 244-6027 • 2604 Elmwood Ave.
Suite 105 • Roch., NY 14618

KIMBER KABLE™

ACCLAIMED AS A LEADING CABLE PRODUCT LINE. SEE OUR NEW LPC (LOW PROFILE CABLE) WITH 100% TEFLON CONSTRUCTION SUITABLE FOR UNDER CARPET INSTALLATIONS. KC1-INTERCONNECTS ARE NOW AVAILABLE!! ASK YOUR KIMBER KABLE DEALER.

Musical • Accurate • Dynamic • Flexible • Stable
Valuable (but not too expensive)

4PR-$1.00/FT • 4VS-$2.00/FT • 4TC-$4.40/FT
8TC-$7.80/FT • KC1-$68.00/Meter Pair
8LPC-$6.00/FT • 16LPC-$10.00/FT • 4AG-$100.00/FT
8AG-$180.00/FT • KCAG-$350.00/Meter Pair
DEALER INQUIRIES WELCOME

KIMBER KABLE
2675 INDUSTRIAL DRIVE - OGDEN, UT 84401
(801) 621-5530 FAX(801) 627-6980

AUDIO ART

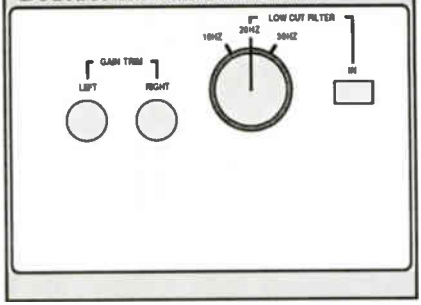
Est. 1976

Audioquest	NAD
Audible Illusions	Ram Tube Works
B & K	SME
Bryston	Sony ES
CWD	Stax
California Audio Labs	Tiffany
Klyne Audio Arts	Thorens
Magnepan	Threshold
Martin Logan	VTL
Music Reference	Vandersteen

Open 11 to 6 Tuesdays thru Saturdays, except until 8 Thursdays

2215 EAST BROAD STREET
RICHMOND, VIRGINIA 23223
(804) 644-8903

Boulder MS11 PHONOGRAPH PREAMPLIFIER



The sonic quality of the MS11 Phono Preamplifier module may be the best reason to invest in the Boulder Modular Preamplifier System

Boulder Amplifiers
4850 Sterling Drive, Boulder, CO 80301
303-449-8220
Telex: 6503085376 MCI UW

setting the standard in loudspeakers...

Rogers

AudioMatrix
IMPORTERS OF AUDIOPHILE PRODUCTS

Years of fine tuning have made the Rogers LS2 and LS6 a great sound value. Their small size and modest price will delight audiophiles pinching pennies or cubic inches. Hear the fantastic LS2 and LS6 Rogers loudspeakers at one of our dedicated Rogers Dealers.

Call or write for your nearest dealer.

N. Illinois and S. Wisconsin's

Best Hi Fi Dealer

•

Proudly Presents

•

Acoustat • Boston Acoustics • Carver
Counterpoint • Denon • Dual • Kyocera
Lazarus • Linn • Magnum Dynalab
Magnasphere • Mission • Monster
NAD • Onkyo • Paradigm
Soundstream

•

With in house service of all brands.
Custom installation for home and auto.

•

Hours: Monday - Friday 10:30 - 7:00
Saturday 10:00 - 5:00

ABSOLUTE AUDIO
4227 MARAY DRIVE ROCKFORD, IL 61107 815-395-1000

FEATURING:
QUAD ESL 63 USA
ORACLE DELPHI MKIII
ELECTROCOMPANIET
EC-1 PREAMP
CELESTION SL-700

KOETSU ROSEWOOD SIGNATURE MKIII
VIRTUOSO DTI • MONSTER GENESIS
SME IV-V • AIR TANGENT • TRIPLANAR
C.A.T. SL-1 • NOVA CPA-100 • DNM
CREEK • ONIX • REVOLVER • REGA
CELESTION Si • EPOS • MONITOR
ARISTON • VAN DEN HUL CABLES
KRELL CABLES • MONSTER CABLE

ARIA RD 1 Box 310 Stockton, NJ 08559
Call Joseph Del Priore
EVENINGS & WEEKENDS (609) 397-2416

AUDIO RESEARCH SP-11, D-79, pair Janis W-1s, 1-As, Sound Lab A-2s, Fidelity Research FR-14 *B/O (201)992-7963.*

CD-PLAYER OWNERS: Bypass the preamp! This "straight wire" volume control between your CD and amplifier yields the ultimate sonics. CD/Aux, Source/Preamp/Tape switching; "Bourns CP" volume controls, gold-plated jacks, diecast enclosure. $199 postpaid, free COD, 10-day trial. *Information and orders: (212)865-4549. Spectrum Physics Dept. B, Box 1348, NY, NY 10025.*

CONRAD-JOHNSON PV5. New in February. $1100. *Tom, (412)782-3709, days; (412)263-1960, eves.*

SPACE & TIME PHASE I and Phase II speaker cables. Original and the ultimate Pandora Interconnects. Perfection is simple with the right connections. *(604)594-3046, Tube Sound, 11953 Carriage Pl., Delta, B.C. V4E 3K6.*

MERRILL MODS. . . for the AR turntable. *Call Underground Sound, 2125 Central Ave., Memphis, TN 38104. (901)272-1275.*

MERRILL "HEIRLOOM" TURNTABLE. . .The most thoroughly engineered turntable. *Underground Sound, 2125 Central Ave., Memphis, TN 38104. (901)272-1410.*

THRESHOLD FET/10H LINE CONTROLLER, transferrable warranty, $1200. Sonographe SD-1 CD, $350. Both 9 months old and perfect. *(414)224-0348 eves./wknds.*

Hello Houston!

THE
ESOTERIC EAR
IS YOUR
HIGH END AUDIO DEALER

★ **Three Single Speaker Soundrooms**
★ **The Ultimate Audio Gear For Your Budget**
★ **Expert Consultation and Advice - Free**

SimplyPhysics • VPI • Sota • Arcici Stands
Sound Anchor • Eminent Technology • Premier
Audioquest • Talisman • Alchemist • Virtuoso
Magnum Dynalab • Counterpoint • Lazarus
MFA • Discrete Technology • Melos • Rotel
Mavrick • Convergent Audio Technology • Focus
Rauna • Vandersteen • Martin Logan • Sound Lab
Chesky • Reference Recordings • Sheffield Lab
DMP • MFSL • Opus 3 • Bainbridge Records
Audio Advancements • Audiophile Accessories
Audiophile Magazines

Free Newsletters ★ By Appointment Only

The Esoteric Ear
Houston's high end audio dealer

RICK ROBERTS
713-537-8108

The Most Effective Pain Reliever Money Can Buy

Try our prescription for fast relief from earaches caused by poor stereo performance.

- COUNTERPOINT tube preamplifiers & hybrid amplifiers
- VANDERSTEEN classic, time-coherent loudspeakers
- SONOGRAPHE music systems: CD players, turntables, preamplifiers, amplifiers

Apogee • Ariston • Audioquest • BEL
B & K • British Fidelity • Counterpoint
Eminent Technology • Fried • Grace • JSE
Kimber Kable • Kiseki • Klyne • Melos • Meridian
MIT • Monster Cable/Alpha • Musical Concepts
Nitty Gritty • Ortofon • Premier • PS Audio • Rauna
Rotel • Rowland Research • SME • Sonographe
Sony ES • Sota • Spectrum • Stax • Systemdek
Talisman/Alchemist • Tube Traps • Van Den Hul
Vandersteen • Vendetta Research • Wharfdale

AUDIO NEXUS
CALL US FOR THE EXTRA-SPECIAL TREATMENT YOU DESERVE
201-277-0333
33 Union Place, Summit, NJ 07901

A Sound Foundation.

PinPoints®

Enhance the performance of your audio system by creating a sound foundation under it. **PinPoints** transfer and eliminate unwanted harmonic vibration and excessive resonance from your components, cabinetry and speakers into flooring. **PinPoints** also:

- Stabilize your speakers and audio cabinetry on deep pile carpeting so they can't be easily knocked over
- May be threaded into the base of your turntable, metal or wood shelves supporting a turntable, audio cabinetry, metal racks and subwoofers
- Support a load of 25 lb. each

1 set of 4: $7.95 2 sets of 4: $14.95
$5 Shipping; No Per. Checks; Bank Cards Welcome; Money Orders to RF Limited.
Dealer & OEM Inquiries Welcome.

AudioPrism
A Division of RF Limited
P.O. Box 1124, Issaquah, WA 98027
Tel: 206•392-0399 FAX: 206•392-8413

Enjoy the Music...

Roksan
ProAc
DNM
Onix
JPW
Rotel
Target
Revolver
Heybrook
Acoustic Energy
and more
at
SELECT SOUND

WATCH FOR THE OPENING OF OUR NEW STORE ON LONG ISLAND'S NORTH SHORE!
(516) 484-9299

If You Purchased Any High End Audio Component Without Calling Us We Have a Cap For You.

AUDIO OUTLET
The High End *Mail Order* Store
P.O. Box 673
Bedford Hills, NY 10507
(914) 666-0550

Celestion • Counterpoint • Virtuoso • SME
MIT Audio Cable • Vacuum Tube Logic
Well Tempered • Kinergetics Subwoofer
Eminent Technology Speaker • Aragon
British Fidelity • Audio Concepts CD • MFA
Musical Concepts • Tube Traps • Grado
Magnavox CD/video • VPI • Superphon
B&K • Maplenoll • Chesky • Onkyo • LAST
Siefert • Spectrum • Thorens
van den Hul
and others

SOUNDS ALIVE!
HIGH END HI-FI
731 FLORIDA SAN FRANCISCO 94110
415-550-1699

CHICAGO SPEAKERWORKS

designs & builds
LIMITED PRODUCTION LOUDSPEAKERS

- World Class Performance
- Factory to You Pricing
- Save 30% to 40%

Counterpoint
VTL
B & K
Musical Concepts
Acoustat • Convergent Audio
Rogers • Fostex • VPI
PS Audio • Proton
& much more

5700 N. Western, Chgo 60659
312 - 769-5640

TRANSFORM YOUR CD PLAYER into a musical instrument. Our highly innovative mods offer maximum performance at realistic prices. Products include DC Servos, gain modules, power-supply mods, FET op-amps, and more. Please call *(512)821-6119 or write Soloist Audio, 332 Tuttle, S.A., TX 78209.*

20' PAIR INTERLINK REFERENCE A cables, $150. *Call Tim (915)856-4425.*

ATTENTION MAGNAVOX, SONY ESPRIT OWNERS—We now stock a higher-performance D/A converter for your player, complete with adapter board, hi-rel socket, and film decoupling caps. Call or write for details. *Soloist Audio, 332 Tuttle, S.A., TX 78209, (512)821-6119.*

CASINO (SEALED) BOB AND RAY (M minus) $10, Lab 5, Lab 2 (sealed) Hatari, Aqualung, Mercurys, LSCs. *Ed (313)355-9757.*

ARIZONA AUDIOPHILES: Scottsdale's definitive audio salon has these used/demo specials available now: Yamaha CDX1100U CD player, $650; NEC AV350 surround-sound, $244; Klyne SK2A pre-pre, $288. Annual clearance sale starts soon. Call for details. *Esoteric Audio, 4120 N. Marshall Way, Scottsdale, AZ, (602)946-8128.*

SPENDOR SP-2, $499; SPICA Angelus, $795 mint; demos got to go; Belles 400A, $995; XLM 349 Cal Labs Tercet new model, $750; final closeout JSE mint demos: mahog 1.8, $1395; model 1, black, $695; model 6, walnut, $495; freight paid. Rauna Leira II, white, $799. *Golden Stereo (913)648-3750.*

CLARITY
Audio Owners

"Clarity Interconnects are orders of magnitude better than any other I've heard." C. Jordan

"Striking 3-Dimensional layering of images and whistle clean sonic purity." G. Hoffman

"Surprising improvement in bass response - adds visceral impact on small speakers." R. Moon

"Airy, extended & sweet highs, cleanest mid-bass." D. Goldman

"Most important upgrade I've ever made in my system." F. Liokumovich

15 DAY MONEY BACK GUARANTEE
$295 Per 1 Meter pair, including WBT jacks. (Exp. 12/1/88).

Clarity Audio Systems, 808 Post Street
Suite 709, San Francisco, CA 94109
(415) 641-7130 Dealer Inquiries Welcome

audio-technica
TWEEK
GRADO
TIPTOES
LAST
MONSTER CABLE
Dynavector
Bang&Olufsen
PICKERING

YOUR SEARCH IS OVER!

We specialize in hard to find phono cartridges and original replacement styli.

(800) 221-0906

CALL TOLL-FREE FOR FREE PRICE QUOTES AND VISA/MC ORDERS
N.Y. STATE (516) 599-1112

SEND SELF ADDRESSED STAMPED ENVELOPE FOR OUR FREE CATALOG.

LYLE CARTRIDGES
Dept. S, Box 158
Valley Stream, N.Y. 11582

Phones Open Mon-Sat 9 am-8 pm

ortofon SHURE STANTON

SOUND THAT SPEAKS FOR ITSELF

SPECTRAL • SOTA • MAGNEPAN
BOSTON • MONSTER • LUXMAN
NAKAMICHI • GRADO SIGNATURE
LAST • NITTY GRITTY • MADRIGAL
CARNEGIE 1 • STAX • KYOCERA
THIEL • M & K • ONKYO GRAND
INTEGRA • PS AUDIO • ADCOM
B & W • VELODYNE • PIERRE LURNE
SME • MIT • SUMIKO • SHURE ULTRA

SINCE 1968

CUSTOM ELECTRONICS
(402) 397-4434
7511 Pacific • Omaha, NE 68114

HIGH END AUDIO IN CENTRAL PA

"Central PA's high end audio shop for the discriminating listener."

VANDERSTEEN MERRILL MARTIN LOGAN ET
COUNTERPOINT Well Tempered Lab
Threshold PS AUDIO conrad-johnson
SPICA MIT Infinity IRS Series
audio research

THE stereo SHOPPE
21 N. Market St., Selinsgrove, PA • 717-374-0150

HIGHER FIDELITY

Authorized dealer for:

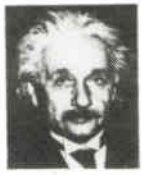
ADCOM*	PROTON TELEVISION
AKG	PROTON TABLE RADIO
ARAGON	RATA
ARISTON	ROTEL
BEYER	SENNHEISER
B&W*	SHURE
CHICAGO SPEAKER STAND	SONOGRAPHE
CONRAD JOHNSON	SONRISE
CRAMOLIN	SUMO
DAHLQUIST	SUMIKO
DISCWASHER	SWITCHCRAFT
GRADO	SYSTEMDEK
GRADO SIGNATURE	TARGET
JPW	TERK
KOSS WIRELESS	3D ACOUSTICS
KINDEL	TORUMAT
MAGNUM DYNALAB	TWEEK
MAY AUDIO ACCESSORIES	VAMPIRE
MOD SQUAD	VAN DEN HUL
MONSTER	VPI
NILES	WBT

*IN STORE ONLY

AND OVER 250 MORE MANUFACTURERS OF BOTH CONSUMER AND PROFESSIONAL AUDIO AND ACCESSORIES.

Technical advice with no hype! Ask for me, Cal Walker. I try to answer all calls personally.

FOUR PRIVATE LISTENING ROOMS
1620 South Blvd., Charlotte, NC 28203
Open 7 Days.
800-438-6040 USA 800-221-7267 NC
704-376-0350 Charlotte
Returns Require Written Authorization



Why Do the Most Intelligent People Choose the Speaker Shop?

Audio Research • Apogee • B&K
Bryston • Counterpoint • DEA Ovation
Dahlquist DQ-20 • KEF • Koetsu
KRELL • QUAD • Nakamachi
Magnum • MIT • Monster
Sony ES • SME • Oracle
Sumiko • Well Tempered • V.P.I.

We're Known for Our Quality, Service & Friendly Advice

SPEAKER SHOP
UNCOMPROMISED STEREO VIDEO
Established 1977

3604 Main St., Buffalo, NY 14226
716-837-1557

MICHIGAN RESIDENTS TAKE NOTE! We carry: Threshold, Conrad-Johnson, ProAc, SOTA, TDL Speakers, KEF, Polk, Energy, Monster, Straight Wire, STAX, Nakamichi, NAD, Niles, Ortofon, Sumiko, Grace, VPI, CWD, and more. Professional consultation and installation. *The Listening Room, 1305 Court Street, Saginaw, MI 48602. (517)792-3816.* No mail orders, please.

THE FINEST EQUIPMENT, EXPERT ADVICE, outstanding prices! Krell, SOTA, Apogee, Quad, Counterpoint, Wilson Audio, Maplenoll, Eminent Technology, VPI, Meitner, Audible Illusions, Entec, California Audio, Quicksilver, more! Virtually all cartridge and cable lines. Free newsletter. *Galen Carol Audio, (512) 494-3551.*

NO RISK GUARANTEE! *A/D SYSTEMS LTD.* In stock: Nelson-Reed Pro System (8-04/B loudspeakers w/1204 subwoofers); van den Hul Silver (interconnects & speaker wires); Tice Power Block & Titan, a/c power line purification & conditioning system, a/c energy storage system; Paulson Isolation Bases, air suspension! CD stabilizer rings by Sims, a must! Classe electronics (DR-3-VHC amp!); inquiries, mailing list, newsletter: *2525 Arapaboe Ave., Suite E4-284, Boulder, CO 80302.* Visa/MC/Amex. *(303)443-4443.* $6 for analog list.

JOHN CURL–MODIFIED SONY DAC, DAS-703ES w/discrete DC-coupled analog section, very sweet-sounding digital, $995. Yamaha DSP-1 digital sound field processor, 12 modifiable hall simulations, 3 AV surround systems including Dolby, $500. Cambridge CD1 player, standard of comparison, $995. *(707) 964-9044.*

AUDIO BEST: LA, ORANGE, SAN BERNARDINO, California. Hot components on display: Counterpoint SA3.1, SA12; PS4.6, 100C; Conrad-Johnson PV8 (replaces PV5), DF1 CD; Audible Illusions 2C; Mod Squad Prism CD (1AR 1a rating); Acoustat Spectra 22&33; Spica Angelus; Well-Tempered; Velodyne subwoofers; Magnum tuner; Fosgate surround-sound; MIT, Motif, Sonographe, Adcom, B&K, Superphon, Music Reference, Vortex, Palantir, Spectrum, Rauna, Soundlab, VPI, Maplenoll, Systemdek, Sumiko, Grado, Alphason, Garrott, vdHul, Monster, Randall, Straight Wire. *(714)861-5413, appointment.*

An audiophile from Carmel
Had fine used equipment to sell;
He phoned in his ad
And sang out so glad,
"How convenient! What service!
It's swell!"

Stereophile Classified Ad Dept.
(505)982-2366

DUST IT OFF AND GET RID OF IT! Audio Mart is just a phone call away. *Stereophile Classified Ad Dept. (505)982-2366.*

A&S SPEAKERS offers the nation's widest selection of speaker systems, kits, drivers, and crossovers. Audition Dick Olsher's Dahlia/Debra or the Bill Reed 6-02A in our showroom, or use our extensive mail-order catalog. Free literature. *A&S Speakers, 3170 23rd St., San Francisco, CA 94110. (415)641-4573.*

AUDIO RESEARCH D250 amplifier, $2800. *(405) 721-5654.*

Audio Unlimited

FOR SPECIALS LIST ONLY
CALL 1-800-233-8375

AUTHORIZED DEALER FOR:

- AR
- Altec
- Audio Control
- Audio Dynamics
- Audioquest
- B & K
- dbx
- Fried
- Grado
- Hafler
- JVC
- Monster Cable
- Pioneer Elite
- Proton
- Sony-Car
- Stax
- Superphon
- Thorens

AND MORE!

503-963-5731
1203 Adams Ave.
La Grande, OR 97850

10:00-5:30 M-Thurs.
10:00-3:00 Fri.
Pacific Time

All the best.

Krell Audio Research
B&W ProAc Thiel
Cello Koetsu Meitner
SOTA Versa/Dynamics
Well-Tempered Duntech
Aragon PS Audio Linn
Analogic Design Dahlquist

. . . and many more!

C&A AUDIO
193 Bellevue Ave.
Upper Montclair, NJ
201 744 0600

Sound performance that deserves a standing ovation!

- High quality, home audio & video entertainment systems.
- Over 38 years of expertise.
- Custom installation

Mark Levinson • Conrad Johnson • Thiel
Motif • Meitner • Sota • Bang & Olufsen
Talisman • Monster–Alpha Series • Sumiko
Velodyne • Nakamichi • Rotel • Klipsch
KEF • a/d/s • Yamaha • Denon • CWD

HAL'S STEREO & VIDEO

The sound decision that excites your senses.

609/883-6338

Alt. US Route 1 and Texas Avenue
Lawrenceville, New Jersey 08638

WHEN ONLY THE BEST WILL DO IN SOUTH FLORIDA!

Stax • B & K Components • A.R.
Counterpoint • Systemdek
Sumiko • SME • Musical Fidelity
Aragon • Spendor • Rauna • VPI
B&W • Rotel • Heybrook • J.P.W.
Eminent Technology • Acoustat
Superphon • JSE Infinite Slope
Straightwire • Last • Grado
Musical Concepts • Audio Quest
Mod Squad • Sound Lab • C.A.T.
LP's & CD's
Used Equipment Bought & Sold

AUDIO ENCOUNTERS
523 S. 21st Ave. / Hollywood, FL
(305) 921-5751

Audio Connection

BELLES RESEARCH
great power amps
BOLERO
for those with a small room, but very high expectations.
BRITISH FIDELITY
the A-1, any 1 can afford
KLIMO
tube electronics for ear & eye
MELOS
CD sound, razor close to analog
MERRILL
a turntable engineered right!
MØRCH
tonearms which are "Spitzenklasse"
NESTOROVIC
majestic, both amps & speakers
TICE
Powerblock & Titan, both a "must"
VANDERSTEEN
a legend indeed...

201-239-1799
615 Bloomfield Ave., Verona, NJ 07044
Also for sale:
occasional close-outs, used equipment
Hours: Mon, Tues, Fri. 12-7, Thurs. 12-9, Sat. 11-6
Closed: Sun., Wed. **Please, call for an appointment!**

Come and Relax at
SOUTHERN CALIFORNIA'S
Newest High-End Audio Store

Audio Haven
Fine Audio Components

TWO LIVING ROOMS DEDICATED
TO THE DISCERNING LISTENER:
- *State of the Art room*
- *State of the Wallet room*

THRESHOLD	MIRAGE	POLK
APOGEE	VTL	FORTE
ROTEL	THORENS	SYSTEMDEK

and growing . . .

1937 W. 11th Street, Suite G
Upland, California 91786
(714) 982-8110

Off the 10 Frwy. where Los Angeles
and San Bernardino counties meet

UNPARALLELED MUSICAL REPRODUCTION, from the complete line of NOSC home audio loudspeakers. Built for performance, and covered by a five-year warranty and 30-day money-back guarantee. Free brochure. *NOSC, Box 13023, Akron, OH 44313.*

CONVERGENT AUDIO TECH PREAMP—unmodified with new 6DJ8s. Beats SP10 & II, $2850. NAK 700ZXL cassette recorder, $900. VPI, HW19, SST black acrylic chassis w/oak base; turntable $695, or $1395 w/ET II arm. MIT 330 interconnect cable with connections, any length, $60/yd. *Call Dick 6pm-11pm EST, (508)528-0279.*

AUDIOQUEST, AURAL SYMPHONICS, B&K, BEL, Berning, Cardas, Chesky, Clearaudio, Eminent Technology, Focus, Magnum Dynalab, Maplenoll, Melos, MFA, Morrison, Quicksilver, Reference Recordings, Sheffield, Straight Wire, Superphon, VPI, and more. *Audio Abode, Dallas, TX (214)369-2092 evenings and weekends.*

CASH FOR USED PWR/PREAMPS, ARC, Levinson, Krell, Threshold, Conrad-Johnson, & Rowland Research, in good condition. Pick up amps from your home or just ship UPS/COD. Call *CA (213)257-6726 Sennie.*

A $50,000 SOUND FOR LESS THAN $10,000? You'll be surprised how close we come with help from Martin-Logan, Threshold, Well-Tempered, Conrad-Johnson, Mod Squad, Dahlquist, MIT. Our under-$2500 Spendor/B&K system is unbeatable, too. Also AR, Entec, Forte, Fried, Grado, Hafler, Magnum Dynalab, Magnavox, Target, van den Hul, VPI. *Champagne Audio, 39 E. Green, Champaign, IL 61820.*

FOR SALE: B&K ST-140 power amp, $250. Superphon Revelation Basic Dual Mono preamp, $250. Shure Ultra 500 cartridge, $150. Straight Wire LSI interconect (2m), $60 each. *Call (718)237-2925, 9am-2pm.*

FOR SALE: LUXMAN PD-300 BELT-DRIVE TT with Premier FT-3 arm, $550; ProAc Tablettes (black ash, original version), $325/pr w/out stands; Audio Research SP-7 preamp, $525; Denon PRA-1000 preamp, $200; Yamaha CD-2 CD player, $225; Yamaha B2X power amp, $550; Pioneer LD-1100 laser disc player, $275. Call *Tom at (702)452-3644 evenings and weekends (PDT).*

SME TYPE V, brand new in box, $1450; Virtuoso DTi, $875; Spectral DMC-10 Delta preamp, as new w/special mods, Lucite cover, $2400; Spectral DMC-6 preamp, brand new in box, $2050; Spectral DMA-50 amp, brand new in box, $2050; Sota Star Sapphire Series III, mint, light oak, w/E. Flywheel reflex clamp, $1400. Call *(408)283-0792 after 7pm, Pacific time*

ELECTRON TUBE SALE: Matched pairs, 12AX7, 12BH7, 6FQ7, 6L6GC, EL34, KT-88, 6550A, 4000 types stocked, since 1947. GE, Amperex, Telefunken, Gold Lion (original), Sylvania. Military grade, same-day shipping. Write or call for prices: *ARS Electronics, 7110 DeCelis Pl., PO Box 7323-Dept SP, Van Nuys, CA 91406. In California, (800)422-4277. Outside California, (800)422-4250.*

THE BEST RECORD RACK IN AMERICA: stackable, portable, oak units hold LPs, CDs, and tapes. Ask for free mailorder brochure (please mention *Stereophile*): *Per Madsen Design, (415)928-4509. PO Box 330101, San Francisco, CA 94133.*

DAT
Digital Audio Tape

THE FUTURE OF
TAPE RECORDING
IS HERE TODAY!

STUDIO QUALITY RECORDING
NOW AVAILABLE IN YOUR HOME

The SIZE and CONVENIENCE of Cassette with all the ADVANTAGES of
COMPACT DISC TECHNOLOGY

SONY, SHARP & TECHNICS,
HOME, PORTABLE & PROFESSIONAL UNITS
from $1595

ALPINE, KENWOOD & CLARION
CAR DAT PLAYERS
from $1395

High Quality Blank DAT Recording Tape, Digital Headphones, Interconnects & other Accessories also available.

CALL or WRITE TODAY 609 259-0044

American International Audio Video

One North Main Street • Medford, NJ 08055

1 Year Parts & Labor USA Warranty on all Units

The Audio Shoppe
Music Speciolists

Linn · Naim · Creek ·
Exposure · Fulton ·
Rega · Royd · Rotel ·
Monitor Audio · Epos
Goldring and more

1322 Second Street Suite 228
Santa Monica, California 90401
(213) 458-8148
Trade-ins accepted

PRECISION AUDIO D1 ANALOG REPLACEMENT for Sony, Philips, and Magnavox CD players. Why pay twice the price for half the performance? See fall issue of *Sensible Sound* for review. Only *Precision Audio* offers a discrete component transimpedence amplifier. Not a modification but an entire analog replacement on an independent PC board. Fully class-A balanced circuit, no VI limiting or coupling capacitors. DC Servo amplifier. Hear the high-end sound buried in your midpriced CD player without investing in a second mortgage. Sony, Philips, or Magnavox machines, $450. Pricing on complete new machines also available. For more information, call or write: *Precision Audio, 223-47 65th Ave., Bayside, NY 11364. (718)631-4669.*

CROSBY MODIFIED QUADS 18793-4 mint, used with Spectral amp, custom black 24", stands $3850. Kimber 4TC 15' pair, $110 mint. *Ed, NYC, (212)535-6945.*

FREE HIGH-END KIT CATALOG. Power amplifiers, preamps (tube/ic/JFET), active crossovers (tube/ic). Resista ±1% MF Resistors, Gold RCA connectors, Mogami cables. *Old Colony Sound, Box 243S, Peterborough, NH 03458.*

FOR SALE: TWO MARANTZ 9s, one Marantz 10B, one Marantz 7, excellent condition. Amplifiers cosmetically perfect, $7500 or best offer. *Call Dan (407) 683-9208 daytimes, (407)848-8095 evenings.*

SPECIALISTS IN AFFORDABLE HIGH-END AUDIO & customer service: B&K, Musical Concepts; Angstrom, Merlin, Kinergetics, AR turntable, Straight Wire, Chicago Stand, Echo Muffs, Sumo. *Ariel, Carmel, IN 46032. VISA/MC. (317)846-9766, (317)841-7154. Eves./Wkds.*

AFFORDABLE HI-END: B&K, Superphon, Magnum Dynalab, Angstrom, Opus 3, JPW, QED, Chicago Stands, Lexicon surround-sound pulsar projection TV, more. Authorized dealer, competitive prices. Serving mid-north Indiana and areas without representation. *Stereo Consultants, Lafayette, IN.* Phone hours, 3-11pm EST, Mon.-Sat., *(317)474-9004.*

AUDIOPHILES, AUDITION JSE INFINITE SLOPE loudspeakers on our 30-day no-risk auditioning program. Authorized JSE, Fried, Spectrum, Counterpoint, Superphon, B&K, Kinergetics, Hafler, Magnum Dynalab, Thorens, Audioquest, Parasound, Apature dealers. Est. 1959. *Sound Unlimited, 169 Church St., Bristol, CT 06010. (203)584-0131.* We pay shipping.

WORLD'S LARGEST SELECTION of used McIntosh and JBL Alnico components. Reproduction Hartfields, a must-hear for 8-10k speaker-system buyers. Free audition, transportation with purchase. Call for details. *John Wolff, (313)229-5191.*

SAN DIEGO AREA: Merlin Signature speakers (Cardas-wired), Cardas cables, Convergent Audio preamp (outstanding musical excitement), Wingate class-A amps, Sound Anchor equipment racks and speaker stands. *Audio Archives, (619)455-6326.*

LPs SOUND GREAT when treated with Gruv-Glide. Reduce wear and static, improve tracking. See Audio Cheapskate review, December 1986. $21.95 per kit. Check or MO to *Rozoil Lubricant Co., Box 19003, Las Vegas, NV 89132.*

AUDIOPHILE WAREHOUSE LIQUIDATION! Direct-to-disc, halfspeed, Quiex II recordings. 2000 available. Great prices—example: Dark Side of Moon, $45. *Elusive Disc, 4216 Beverly Blvd., Suite 230, Los Angeles, CA 90004. (213)388-7176.*

TARA LABS SPACE & TIME PHASE II—*Stereophile* Class A-rated speaker cable in stock. The most incredible value on the market today. Call us for TARA Labs Space & Time Phase II cables. We also stock other major brands such as Cardas, LiveWire, etc. We offer the lowest prices and the best in advice. *Audio Outlet, Inc. (914)666-0550.*

SOTA SAPPHIRE WITH ACRYLIC MAT, MMT arm, and Grado 8M; absolutely mint for $700; also KEF 105.4 speakers, mint for $900. *Call Tim at (915)856-4425.*

SPECIALISTS IN AFFORDABLE HIGH-END AUDIO & customer service: B&K, Musical Concepts, Angstrom, Merlin, Kinergetics, AR turntable, Straight Wire, Chicago Stand, Echo Muffs, Sumo. *Ariel, Carmel, IN 46032. VISA/MC. (317)846-9766/(317)841-7154. Eves./Wkds.*

PACHBURN® AUDIO NOISE SUPPRESSOR

The choice of recording industry, archives and collectors around the world.
Three processors for reduction of transient and steady-state noises. Plus special features for optimum reproduction of old records, lateral or vertical.
Model 323A: $2,650
Write for literature to:
P.O. Box 335, Dewitt, NY USA 13214-0335
Tel.: (315) 472-5644

NOW YOU CAN PLACE YOUR AUDIO MART AD BY PHONE!

It's easy as 1,2,3.

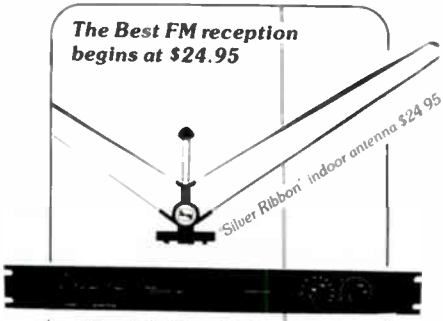
1. Compose your ad.
2. Have your credit card number and expiration date handy. (We accept Master Charge, VISA, and American Express.)
3. Give us a call at (505) 982-2366, ask for the Classified Ad Department.

The deadline for Audio Mart ads is the first working day of the month, two months in advance of the issue in which your ad will appear. Personal ads cost $.60 per word, $10 minimum on phone-in ads, Commercial ads cost $1.75 per word, $70 minimum.

SAVINGS TO 40%, MID-FI TO HIGH END. Over 100 brands, nobody beats our prices. Full warranty, free shipping. *Quality Audio (902)582-3990, 7-10pm EST.*

OUR MODIFIED DYNACO ST-70 at $495 complete is still the finest amplifier available, even at several times the price. Why pay the same for a stock ST-70 copy or someone else's modification when ours are still the only amplifiers to offer our proprietary Zero-Blocking and Dynamic Voltage Source technologies? We also offer customized modifications on other tube amplifiers as well as specialized modifications for bi- and triamping. *Enlightened Audio, 2973 Calle Gaucho, San Clemente, CA 92672, (714)361-9643.*

NAIM 32.5/HI-CAP/250, Linn DMS Isobariks (Rosewood). *(717)743-1125.*



'Signal Sleuth' tunable FM signal amp.

'ST-2' omni.

For the very best in FM reception accessories, call or write;

MAGNUM dynalab "The FM Specialists"

255 Great Arrow Ave.,
Buffalo, NY 14207

Toll-free 1-800-448-8490

WAVE LOUDSPEAKERS. If you are one of the few who recognize quality and appreciate value, call or write for information package. *Eagle Air Studios, 436 S. Pine St., Nevada City, CA 95959, (916)265-2959.*

A young hi fi buff from Sedona
Had way too much hardware to owna—
Reading Audio Mart,
He took it to heart,
And called in his ad on the phona.

Stereophile Classified Ad Dept.
(505) 982-2366

CARVER 1.0T MONOBLOCKS 1000rms/ch. Easily reversible to stereo: $900/pr. AM/FM tuner TX-11a, $425; CD2000 w/remote, $450. Everything like new and in boxes. *(212)831-2660.*

LOOKING FOR THAT CERTAIN HIGH-END SOMETHING? Run an ad in the Audio Mart "Wanted" section. A quick call to the *Stereophile* Classified Ad Dept. is all you need. *(505)982-2366.*

HIGH-END AUDIO SALES and installations. Superphon, Nelson-Reed, Distech, Systemdek, Arcici, DNM, Spectrum, and more. *Beveridge Audio, Mon.-Sat., 10am-10pm EST, (212)601-4346, ask for Joe.*

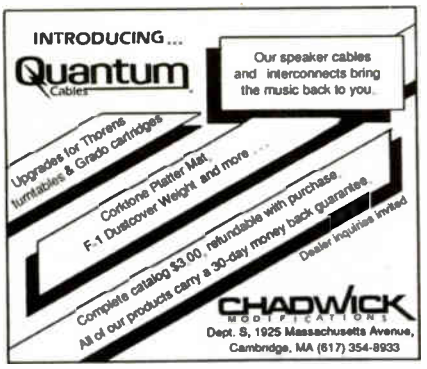
AUDIOPHILE PARTS—CAPACITORS: WonderCap, Rel-Cap, Chateauroux, Aselco. Resistors: Resista, Holco, Vishay. Connectors: Royce, WBT. Wire/cable: Tara Labs, Cardas, MIT, van den Hul. Custom modifications available. Call/write for catalog. *Sonic Frontiers, 181 Kenilworth Ave., Toronto, Ontario, Canada M4L 3S7. (416)691-7877.*

AUDIOPHILE ALBUMS AT WHOLESALE! Mobile Fidelity, Nautilus, Sweet Thunder, Century, Japanese; also Reference, Sheffield, Chesky, Proprius, M&K, Crystal Clear, Umbrella, Super Disk, Wilson, Lyrita, EMI, Decca, Opus III, RCA Living Stereo, Mercury Living Presence, Casino Royale, Linn, Odin, North Star. Dealer inquiries invited. One-stop distributor prices for audio stores. Accessories by Audioquest, record-cleaning machine by Nitty Gritty, and Last record-care products. *Chad Kassem, PO Box 2043, Salina, KS 67402-2043. (913) 825-8609.*

THE SOUND OF MUSIC

With unrivaled transparency, resolution and tracking ability, the TRI-PLANAR II creates a musical sound stage unmatched by any other tonearm.

WHEATON MUSIC INC. • 11230 GRANDVIEW AVE. • WHEATON, MD 20902 • (301) 949-1262 (301) 949-8392

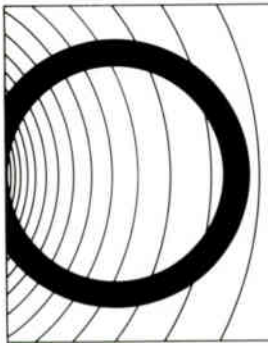


WANTED

CASH PAID FOR USED AUDIO EQUIPMENT. We buy and sell by phone, paying over blue book prices. *The Stereo Trading Outlet, 320 Old York Rd., Jenkintown, PA 19046.* Call for highest quote. *(215)886-1650.*

WANTED: AUDIO SALES CONSULTANTS for positions at high-end audio salons in southern California. Send resume and picture. *MBC Placement Service, 723 East Alisal, Covina, CA 91723.*

ALWAYS PAYING TOP $$$: Marantz & McIntosh tube; McIntosh solid state, JBL systems & Alnico components, electronics. Accuphase G-18 Equal., Krell, M. Levinson and ? *John Wolff, (313)229-5191. Please leave message if machine answers!!*



CD RINGS

from EUPHONIC TECHNOLOGY

The Compact Disc improvement everyone can hear!
Dramatic improvements in **soundstage, imaging** and **detail.**

ORDER TOLL FREE:

1-800-444-1428 Ext. 103

EUPHONIC *technology* 19 Danbury Road • Ridgefield, CT 06877
Available Direct and From Audio Dealers

better bottoms The octaves down there at the two digit frequency range are coming into their own today. And *Speaker Builder* has every bit of information you need to design for yourself or buy the best available system that does full justice to all the music you love. For eight years now *Speaker Builder*, the loudspeaker-design bi-monthly, has been publishing authoritative information for the music aficionado, whether it's software for FFT analysis of room performance, or the smallest, best, transmission line with the newest multi-driver complement. Crossovers get full and excellent treatment in *SB*'s pages. Whether it's electrostatics, ribbons, vented or closed boxes, subwoofers, horns, T-lines, or infinite baffles, *Speaker Builder* does it all.

Use the coupon below to order six issues with our absolute guarantee of satisfaction—or your money back—whenever, whyever. Or call with your credit card order for faster service. You will not be disappointed.

☐ Enter my subscription to *Speaker Builder* for two years @ $35.
☐ Send me one year (six issues) for $20.

I enclose $_____ in a Check/MO Please charge to my ☐ Master Card / Visa ☐

NUMBER EXP.

NAME

STREET

CITY ST ZIP

SPEAKER BUILDER, PO Box 494, Dept. K77, Peterborough, NH 03458
Charge Card Telephone Orders: (603) 924-9464, Monday-Friday, 9-4

THE STEREOPHILE ADVERTISING STANDARDS

Advertising published in **Stereophile** is accepted on the premise that the merchandise and services as offered are accurately described, and are available to customers at the advertised price. Advertising that does not conform to these standards, or that is deceptive or misleading is never knowingly accepted. If any **Stereophile** reader encounters noncompliance with these standards please write: **Nelson & Associates, 62 Wendover Rd., Yonkers, NY 10705.**

ADVERTISER INDEX

THE FINAL WORD

Praise, Criticism, Plea, Erratum

We usually try to take the higher ground with respect to other magazines, preferring to say nothing if we can't say something nice. The results of our recent Readership Survey (details in Vol.11 No.10), however, were so striking with respect to other magazines that I thought some general commentary was in order.

We'd had preliminary indications from earlier informal surveys that our readers read a lot about hi-fi, but the figure of 4.5 magazines *average* still stuns me. And some of you read 12-14 magazines on the subject! As I looked at which magazines were read, I noted a pattern: Multiplying *Stereophile*'s circulation at the time of the survey (45,000) by the percentage of our readers who "regularly" read another magazine (defined as more than three times a year—a frequency which exceeds some of their publishing schedules!), time after time you get almost the entire claimed circulation of said other publication.

TAS, for instance, claimed a circulation of 20,768 in their most recent second-class circulation statement (Issue 51, Winter 1988); the 38% of *Stereophile*'s readers who regularly indulge in *TAS* total 17,200. *IIFN/RR*, JA's alma mater, claims (or used to claim) a US circulation of about 5000; at 12.6%, *Stereophile*'s share of that number is 5670. Similar results were obtained for magazines as diverse as *The Sensible Sound*, *IAR*, and *High Performance Review*, though I admit that my research into these other publications' circulation numbers has not been exhaustive.

And, while smugly patting ourselves on the back for the thoroughness of our "market penetration," we sit scratching our heads for likely sources of new, enthusiast readers. Is 45-50,000 the limit of the high end? I say no, but I also think that we have significant proselytizing and word-spreading to do before our numbers leap 'way up.

While on the subject of other magazines, I'd like to aim some praise and criticism at *Hi-Fi Heretic*, one of a number of smallish magazines born in the last four years. Praise, where it counts, for the forthright and interesting opinions of Editor Kent Brantsford and Contributing Editor Art Dudley. Brantsford, in spite (or maybe because) of a strident pro-Linn bias—he even refers to companies in the plural, a British practice—distinguishes himself from much of his smaller competition by actually having something to say.

The criticism, in an area important to me but perhaps not to *HFH*'s readers, is aimed at their use of Apple LaserWriter-quality typesetting. Especially considering *HFH*'s staunchly anti-digital views! That kind of laser typesetting compares subjectively to 8-bit audio: it has both poor resolution (one-sixteenth that of standard typesetting), and no "cadence"—the relationship of letters and words has not been elegantly worked out, as it has been over the years for standard typefaces. I like a high-end audio message to likewise appeal to my high-end eyes, Kent!

Plea

Stereophile's task of doing a thorough job of reviewing substantially *all* high-end products is so taxing that we are soliciting the employment of an in-house writer, someone whose only job is arranging for equipment reviews and carrying them out. Desirable characteristics: technical competence; extreme enthusiasm for music and reproduced sound; real ability as a writer; a winning personality; and willingness to relocate to Santa Fe, New Mexico. Direct inquiries to John Atkinson, Staff Writer Position, PO Box 5529, Santa Fe, NM 87502.

Erratum

In a moment of perhaps too-wicked glea, TJN referred to the company ESS as "itself no more" on p.130 of our October issue in his discussion of Dynaco's demise. TJN was wrong. Although ESS has occupied a relatively low profile of late (they're not listed in the last three CES directories), they do appear in *Audio*'s Annual Equipment Directory, with eight models ranging in price from $89.95/pair to $649/pair. Their phone number is (213) 537-7070; we apologize for any harm we may inadvertently have done them.

Larry Archibald

"A runaway bargain and a stellar performer."

HI FI HERETIC, FALL '86

"B&K products are among the finest values on the market today."

"...one of the most musical power amps on the market...sounds better than many other amps selling for twice the price."

STEREOPHILE
VOL. 8, NO. 8, JAN '86

PRE-AMPLIFIERS AND
POWER AMPLIFIERS

Available from selected dealers.
Write or call for complete specifications:
B & K Components, Ltd., 1971 Abbott Road, Lackawanna, NY 14218 • 1-800-543-5252 (NY: 1-716-822-8488)

Enter The New Digital Domain.

Linear 18 Bit Digital Processing.
Musical resolution beyond your expectations.

Acculinear D/A Converters.
Low level musical signals without high level distortion.

Opto-Drive Power Supply.
Optical current source for ultimate stability.

If you would like further information,
write for the White Paper on digital technology.

Artistry in Sound

ONKYO

200 Williams Drive, Ramsey, N.J. 07446