As We See It

The Las Vegas CES
The 1980 Winter CES* came on the heels of the worst business year the audio field has seen in almost a decade. So-called high-end audio in particular had distressing sales declines during the last year of the 70s, with some dealers (who had not yet gone out of business) predicting that books for '79 would probably show as much as a 30% loss in sales from the previous year. Dealer turnout in the Las Vegas, NV Jockey Club, where most of the high-end manufacturers were showing their wares, was nonetheless surprisingly good, although makers of the highest-priced exotica were not as ecstatic about the turnout as were those exhibiting more-affordable gear. One high-end entrepreneur was heard to say (to one of his associates), "It doesn't look any better for this year than last."

But that was the private side of CES. For the benefit of the visitors, the audio industry was putting on a grand display of bravado, with various distinguished spokesmen predicting "the biggest year yet" and "an anticipated upswing for '80" and the "opening of as-yet-untapped markets." These "untapped markets," it turned out, were the kids who wanted stereos in their vans and an estimated multi-million souls who -- God knows how -- have somehow not been "introduced to" the pleasures and rewards (!) of stereo high fidelity. The only people who were smiling all the while were the makers of "alternate" home products -- the myriads of pocket calculators, LED watches, fuzz busters, video equipment and CB gear, whose exploding sales during the past

*Since CES stands for Consumer Electronics Show, it is redundant to call it the CES Show, as is oft done.

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few years offer a clue as to where all those hi-fi dollars have been going.

Generally, the theme of this year's CES was little different from previous ones: "Our stuff will make you more bucks." Since CES is, after all, primarily a humongous showcase from which dealers choose what they'll stock in coming months, we were not surprised by the high-pressure emphasis on more sales and higher margins, but we found it hard to get used to the blatant crassness of some of those appeals to the profit incentive. The ad reproduced below, which appeared in one of the special CES handout-promo publications, is typical.

By comparison, the displays at the Jockey Club, where the high-end manufacturers congregated to do business, seemed as garish as

The line that gives you more profit per square foot.

The Spirit of CES Incarnate: More $/Ft.$
a Trappist funeral. Actually, "dis-
play" hardly seemed the proper
word here, because most of the
high-end exhibits were so poorly
lit I wished I'd brought along a
flashlight. Most exhibitors were
at least making up for this by
playing their systems, but a
couple didn't even go that far.
For example, Audio Research, having
a plusher laurel than most to lie
on, was content to show how lovely
their equipment looked, and to
take dealer orders.

As usual, many high-enders
didn't bother to bring their own
carefully-selected "associated
components" to use with their
products, secure in the knowledge
that there were plenty of other
manufacturers eager to loan them
the necessary accouterments in
exchange for the promotion value
of their being seen around the
show. (At one time, many years ago,
the omnipresence of the Gonad
Audio Corp. Carbuncle IV amplifier
at a show meant that a lot of manu-
facturers had chosen it above all
else to drive their latest SOTA
speakers. Today, it means Gonad
Audio happened to have a room down
the hall and brought a few extra
Carbuncles with them.) But in a
few cases, exhibitors who had bor-
rowed other exhibitors' products
were pleased enough with them that
they called visitors' attention to
those products (after having ex-
hausted the pitch for their own).
Among these were the monstrous and
monstrously expensive ($3800)
Threshold Stasis I mono power am-
plifiers and the Bedini power amps.
(He and Streliof parted company.)
The sound at the show was, with
a few exceptions to be noted later,
unexceptional. Practically every
exhibit was boasting overblown,
boomy bass. This was invariably
blamed on the rooms, except by the
few who were producing superb bass
in identical rooms. Press releases
to the contrary, there were no
revolutionary developments, trend-
setting innovations, or technolo-
gical breakthroughs in evidence
among the audio exhibits, although
there were obviously visible trends.
To wit: Tubed components were even
more in evidence than last year,
there were several new electro-
static devices, there were far more
modestly-priced amplifying compo-
nents in the high-end division,
and -- thanks mainly to Telarc
Records -- I was once again hearing
more symphonic music at an audio
show than rock/pop fare. (So I'm
biased towards orchestras. We all
have our weaknesses.)

All in all, the 1980 CES re-
lected more steady progress in
audio than any great leaps forward.
While prices on the farthest-out
products pushed higher than ever
before, there were many signs that
the design sophistication that has
been narrowing the gap between
tubed and solid-state sound is also
starting to yield more reasonably-
priced equipment that sacrifices
less in sound quality. There will
still be audible differences be-
tween these, as we will be report-
ing as we test some of the many
whose loans we arranged for at the
show, but we suspect that the
choice of truly listenable, af-
fordable components is going to
be much wider in 1980 than it has
been to date. On the other hand,
maybe it won't...

Here We Go Again!
It has been over 4 years since
last we raised the price of a sub-
scription to Stereophile. We're
gonna hafta do it again.

While our rates stayed the
same, the costs of producing this
estimable rag rose by almost 30%.
Our growing circulation allowed
us to absorb much of the loss for
a while, but no longer. As of this
issue, the price for a 3rd-Class-
Mail subscription goes up to $16
and 1st-Class to $20. We're sorry,
but that's the way it has to be.
The Winter Wingding
A Report on the High-End Audio Exhibits at the Las Vegas Winter CES
by J. Gordon Holt & Larry Archibald

The Holt Report:

With the Jockey Club directory listing 101 exhibitors, and a number of others not listed but present anyway, I am not even going to try to cover all of them in this report. As a matter of fact, because of limited time at the show (four days was not enough) and the number of long-time friends and recent acquaintances I felt obliged to linger and munch fat with, I was not even able to cover all the important exhibits. My associate, Larry Archibald, hit the ones I missed and vice versa, and since we thought readers might be interested in two reasonably independent views of the show, both of us will do separate reports for this special issue. Our combined efforts should touch on all the exhibits of interest to serious audio persons. (Industry surveys show that less than 10% of audiophiles are female, despite ladies' lib.) As I write this, I don't know how Larry is going to organize his report, but I'm going to do mine manufacturer by manufacturer, in alphabetical order, covering only those whose sound impressed me as being better than average, or who were showing items that sparked my interest.

The average sound in the Jockey Club was better than at any previous CES, and I heard few exhibits that sounded really bad. As a fearless, independent underground editor, I am tempted to tell on the really bad ones, but they seemed so genuinely unhappy themselves about the sound they were getting (the room, of course) that I see no need to rub their noses in what may indeed have been associated equipment or acoustical problems. So I won't. (After all, manufacturers are just as capable of suffering as we audiophiles, believe it or not.)

I'll be relying here to some extent on memory, because not all manufacturers had literature on their latest offerings and I didn't take enough notes (who does?), so please forgive if I cannot cite chapter and verse on certain model numbers (if in doubt I won't guess), or if I inadvertently omit a couple of products whose absence from this (and Larry's) report constitutes borderline criminality.

I took a lot of splendid photos at the Jockey Club. Unfortunately, none of them came out. (Why in the name of God do camera designers devise frame counters that count frames when the film isn't advancing?) To cover this gaffe, partially, I have penned sketches from memory of some of the more memorable-looking gadgets I saw. The other illustrations scattered throughout this report are from photos supplied by the manufacturers.

American Audio Components

A new tube-equipment manufacturer, AAC's exhibit was memorable for several reasons. They were showing what has to be the biggest all-tubed power amplifier ever made, an absolutely mammoth contraption using 10 output tubes to generate a rated power of -- believe it or not -- 500 watts mono (and undoubtedly as much heat as a small gas-fired furnace). The price? A mere bagatelle, at $2,695 per channel. They also have a 100-watt mono tubed amplifier which, at $1,995 per pair, is a little...
more reasonable if not what you'd call cheap.

AAC was also showing (and playing) a tubed preamp for which we didn't get the price, and prototypes of a kind of device we thought had passed permanently from the audio scene many years ago: An ionic "blue-glow" tweeter similar in principle to the one that used to be made by DuKane Corp. (and later, briefly, by Electro-Voice) -- the granddaddy of the

![American Audio's Ionic Tweeter](image)

Plasmatics Type I. These were sitting atop a pair of DCM Time Windows, and the sound was massive, and very, very good. No bass boom, either.

Audible Illusions

Move over, Audio Research. Here's another company with one hat in the tube ring and one in solid state. AI launched their company with a "dual mono" tubed preamp -- dual mono because each channel has its own power supply. At CES they introduced two more components that tube adherents are going to find very attractive: A budget-priced tubed preamp and a 45-watt/ch. tubed power amplifier, optionally available in ready-built or kit form. The preamp will sell for $375 built up or $295 as a kit, the power amp will be $675 ready-built or $550 as a kit. Also announced by AI is a new solid-state preamp ($750 if I copied my notes properly) featuring some unspecified "very innovative design concepts that make it one of the finest sounding solid-state preamplifiers available at any price," whatever the hell that means...

Beveridge

On demo here was the new Model 3 cylindrical electrostatic speaker system which differs from previous Beveridges in that it can (indeed, must) be driven by the power amplifier(s) of your choice. Beveridge was using their own new all-tubed preamp and an Audio Research Dual 79 power amp. (The cartridge was, I believe, a Supex 901, but don't quote me.) The sound here was huge, imaging was very good -- better than I've heard from Beveridges previously -- and the middle-range suckout that bothered me with earlier models seemed entirely absent. I heard only two different recordings here, and while one (I didn't peek at the label) sounded rather hard, the other -- an ARK (Fulton) Armstrong High School Choir recording -- sounded more convincingly real than I have ever heard it from any of FMI's own speakers. Bass was not so hot -- quite deep but a little heavy and soggy. Maybe the room, maybe not...

Carver

This was my first opportunity to hear Carver's much-raved-about Holographic preamplifier, and while it was obvious (through Advent powered speakers) that switching in the "Holographic generator" did something to the stereo imaging, it was by no means obvious whether it made the imaging more realistic or less so. Actually, without precise knowledge of how the musicians were placed for a recording, and how it was miked, it is impossible to know whether a device like this is or isn't doing what it is supposed to
do, which is "to replicate an auditory event" (to quote from a Carver press release). Bob Carver seemed hesitant about letting us borrow one of the preamps for a test (because of the reputation for rigidity that most "perfectionist" reviewers have earned), but seemed to change his mind when I reminded him that Stereophile has never been averse to so-called signal processors as long as (1) they improve accuracy and (2) they can be switched out when they don't, or are not desired.

We have also become sufficiently curious about his "magnetic amplifiers" (200 watts per channel, in a single 7-inch cube with no cooling fins) that we will endeavor to borrow one of those too. At $349, this could be a real sleeper.

Cerwin Vega

As the continuing and undisputed champion floor-shaker at CES, Cerwin Vega was once again eliciting "What-the-hell-is-thats?" from visitors to adjacent rooms, whose own bass efforts paled into pallidness against C-V's rendition of the cannon blasts from Telarc's 1812 Overture. One exhibitor suggested that, in future, C-V should be assigned their own floor at the show, preferably in an abandoned wing of the building. Cerwin-Vega's sound, otherwise, was so loud that I didn't go into their room. I had other demos to listen to, and needed unbruised ears to do it with.

Conrad-Johnson Design

Besides their highly-rated tubed preamplifier, C-J was showing a new tubed amplifier (75 watt/ch., $985) that will be sold with a 5-year "limited" warranty. C-J was using FMI Nuances as their speakers and getting very nice, musical sound (no bass boom), but there was nothing about it that bowled us over as did some of the other demos at the Jockey Club. (Well, live music doesn't bowl one over, does it? Not really, but on the other hand, if I did hear live music at the Jockey club, I would have been bowled over. Come to think of it, I was bowled over by one exhibit at the show, but I'll get to that later...)

Cotter

Mitchell Cotter's room had some of the most musically natural sound at the show, courtesy of a pair of antique speaker systems (Quad electrostatics -- 23 years old), although I felt he had the appended subwoofers turned up a bit too high -- bass was a shade on the boomy side. (The room again, no doubt.) Cotter was also using a pair of the Bedini power amps (one for the Quads, one for the Janis woofers), his own preamps and filters, the Janis crossover, and a Denon arm and 'table with what Cotter identified as a modified Coral cartridge. (I never did ask who had modified it.) Oh, and I mustn't forget Cotter's super-costly turntable base which mounted the phono gear here. His phono base, incidentally, was the one item I saw in abundance in the Jockey Club that was apparently being used through exhibitor choice rather than because of Cotter-down-the-hall. There must have been at
least a dozen of them scattered through the exhibits, and the fact that there were different arms on them suggested that Mitchell hadn't just shown up with the bases and loaned them out willy-nilly.

**Dahlquist**

A rather low-key exhibit, Dahlquist's sound was eminently pleasant and listenable, with superb imaging but not terribly convincingly-real sound. Dahlquist was using the HAPI preamp with Bedini amps and a Fidelity Research FR-1 cartridge (presumably the IIF). The DQ-10 sounds very much like the Quad electrostatic in many ways, but I have yet to hear it "come to life" the way the Quads do on occasion. Is it simply because the Quads are "faster," or could it have to do with the fact that the Quads span with two drivers the frequency range that the Dahlquists cover with 5 (and 4 crossovers)?

**Dayton-Wright**

D-W is now being distributed by Odin Studios, whose Jockey Club exhibit was dominated by a veritable room divider consisting of stacked pairs of the new XG-10 electrostatics. The sound here was absolutely massive, with excellent low end, very alive mid range, and smooth, open high end.

Odin was gilding the lily here via a pair of Decca ribbon tweeters stuck between each pair of XG-10s. Since the XG-10s have their own tweeters, we wonder why Odin felt compelled to add their own. Hmmm?

Driving amps here were Threshold's Stasis Is, and the preamp (if memory serves me) was D-W's new SPA, which we are currently testing for our next issue.

Incidently, we made the latest (manufacturer-recommended) modification in the XG-10s that we are testing, and found the sound much improved although still not the greatest on earth. See the "Quickie" elsewhere in this issue.

**DBX**

dbx unleashed their new disc-noise-reduction system some months ago, offering a modest but interesting selection of dbx-encoded recordings originally mastered with the Dolby A system or (in one instance) with Mark Levinson's super-quiet customized 30-ips Studer tape machine. At CES, dbx demonstrated what their system could do with material that was originally mastered on a dead-quiet digital recorder. dbx and MK co-hosted a press demonstration of dbx discs made from MK digital master tapes of a large symphony orchestra (the Philharmonia Hungarica -- 104 members). The master recording system was a Sony PCM-1600 which, we were told, had had its A/D and D/A converters worked over by Ken Kreisel, the K of MK.

This proved to be one of the most dramatically impressive demonstrations at the whole show, with -- at one point -- an ear-shattering cymbal crash emerging without a hint of warning from a background of total silence. Even more impressive in its way was the...
direct A/B comparison between an original digital master tape and the dbx disc playback. The speaker system (M&K satellites and the Volksbass) may or may not have been as revealing as it could have been, but I was totally unable to tell the tape from the disc. This, incidentally, is as much a tribute to the playback cartridge as to anything else, and I found that it was a brand-new but as-yet unannounced sapphire-cantilever model soon to be introduced by ADC. That is one cartridge we are going to test as soon as it becomes available, because our criterion for judging any phono system has always been how well it can replicate the sound of the master tape that the disc was made from. Generally, the sound in this demo was excellent in all respects except for some terribly muddy, obviously-overloaded (or feedback-muddled) bass during very loud passages.

Dennesen

Dennesen Audio started in business with a precision all-aluminum phono tracking alignment device ($60) and is now galloping in all directions at once with the obvious goal of producing an entire system under a single brand name. They were showing a prototype of their own tone arm, a straight-line, air-bearing design that must be connected by a small hose to an aquarium pump, which must then be located far enough out of the way to be inaudible. Also on demonstration here was their own preamp (tubed, if I recall correctly), their own tubed power amplifier (which looked startlingly like a Paoli 60M but wasn't), and their own compact speakers with electrostatic tweeters. The sound here was only so-so but I couldn't figure out where the blame lay, although I suspected the speakers. Sound was smallish, a bit thin in the middle range, and slightly zizzy at the top.

FMI

I am including FMI here mainly because some readers may be wondering whatever happened to them since we gave up trying to test every latest modification of their much-modified speakers. Bob Fulton did not have his own room at the show, but a couple of pairs of his speakers were in evidence. In one room (I remember not which it was) was a pair of the FMI Premiers -- the latest incarnation of the original J-Modular system -- but they were not connected up and the exhibitor refused, rather vehemently we thought, to let us hear them. We didn't pursue it further.

In the Conrad-Johnson room there were a pair of FMI's next-smaller systems: The Nuances. These sounded very pleasant -- there wasn't much we could complain about, in fact -- but the listening conditions weren't good enough for us to tell if they are really as great
as some of our subscribers have told us.

Bob was at the show (although I never did see him), and was supposed to have been visiting us here in Santa Fe afterwards and bringing along a pair of Nuances. We were informed at CES by one of his West-Coast dealers -- Jeff Medwin -- that that plan had been scuttled. Instead, I was supposed to visit a local audiophile (only 20 minutes' drive each way) and audition the speakers in his home. I declined.

If Mr. Fulton doesn't come through eventually, perhaps one of our subscribers could cut loose a pair of the Nuances for a week or so for us to test? Any takers?

(Mr. Medwin contacted us after the show and offered us the loan of a pair of Nuances. We accepted of course.)

Fried

Fried Products seem to have gotten their act together at last (there was a time when they were diddling endlessly with alternate crossover-network designs), and were producing some nice sound in their demo room. Although they had several speaker systems on hand, and were switching back and forth between them, I felt the best sound was coming from their middle-sized Model R in its Series III incarnation. These had a very natural middle range, but there were times when I heard some hardness in the sound. Bass was detailed and deep but a bit heavy. Fried is one of the few high-end manufacturers who chooses to demonstrate his equipment with the kind of modestly-priced electronics most of us can afford (i.e., Haflers) rather than with the highest-priced exotica he can round up. It is probably a fairer way of demonstrating his line, but whether or not it puts him at a disadvantage at a show like this is moot.

Fried was sharing a room with a firm called F&F Products, which was demonstrating a cheap add-on projection system for TV sets. Picture quality was positively grisly. Small-screen sets just don't have enough detail to stand enlargement to 4 feet across, even when the projection lens is sharp enough to show the scanning lines, which this one wasn't. (Small-screen pictures look extra-sharp because of that compressed image, but the color dots which form their picture are actually no smaller than those in larger picture tubes.)

Hafler

Another silent exhibit, Hafler was simply showing his preamp and the new power amplifier, and taking orders. The Hafler Company is currently enjoying the reputation for making the best buys in audio, but another firm -- PS Audio -- is busily working on a similar reputation.

HAPI

In case anyone still wonders about this, Hapi stands for Hegeman Audio Products, Inc., and Hapi's one current product is a very neat-looking little low-profile preamp.

The Hapi 1 low-profile preamp.

Hegeman is flying in the face of style these days in daring to use operational amplifiers in his preamp, but I had to admit that the sound in that room was very clean (although the speakers didn't reveal all that much). I don't even recall what the speakers were.

Moncrieff

Peter Moncrieff produces the
International Audio Review, an impressively fat (typically 150 pages or more) collection of reports, discussions, speculations and expositions about our favorite subject, whose publication schedule is even worse than ours (averaging one per year). Peter had his own demonstration room at the show, not to promote IAR but to show off what may have been one of the few truly revolutionary innovations at the show. Described, with great originality, as a "holographic" speaker system, Moncrief's outlandish-looking devices were square panels, secretively covered with black grille cloth that bulged provocatively in various places but otherwise gave no hint as to their contents. These were placed on the floor in front of a pair of small subwoofer units (specially made for him by Vanderstein speakers), but the first unusual thing noted was that the panels were oriented edge-on to the listening area rather than facing it. A single seat in the room was designated the listening "area," although Mr. Moncrieff claimed that different speaker placement could widen the acceptable seating area but at some sacrifice of performance from the optimum location. I was not expecting to be too impressed.

What I heard from that seat was almost beyond belief! The reproduction from the few recordings played for me was so realistic that it stood my hair on end. Every instrumental timbre was completely natural, and the sound had that seemingly paradoxical combination of softness and detail that I hear in live music but have never before heard so convincingly reproduced. (Yet the brassy sizzle of the cymbals left no doubt about the system's ability to reproduce hard high end.) Symphonic recordings had an awesome power and roundness that is rarely heard outside of the concert hall, and -- on one recording -- the stability of imaging and the sense of perspective (plus the completely darkened room) created such a persuasive illusion of listening to a live orchestra from a distance that my hearing kept telling me I was at the front of the first balcony listening downwards to the orchestra. Bass, too, was extraordinary, not because of its amount (which was precisely right) but because it was so totally integrated with the upper range, so deep, so taut, and so real.

Mr. Moncrieff pointed out that he had found very few recordings which sounded as realistic through his system as those he played for me, which could mean one of two things: That the system has some peculiarities which complement those recordings, or that it is doing its job but few recordings are done properly. Without having a pair of the speakers to test on familiar ground, I won't hazard a guess as to which is the case. And since the system now exists only in prototype form, and only one pair of the speakers have been made, it may be a while before I get to borrow a pair of them. Oh well, they...
probably wouldn't be as good as I first thought they were, if I had a chance to listen to them for a while. (That's called flinging the gauntlet. What about it, Peter? Are you prepared to let us borrow those prototypes for a short while?)

Monster Cable

This line of loudspeaker and electronics interconnects was evidently introduced to try and prove that audibly excellent system interconnects can be made and sold for reasonable prices without resorting to mystical hype. These are available in standard, round-figure lengths, and their design was based on recent scientific research into the audible characteristics of wires (pure copper, very fine strands) rather than on the ESP performance of hump-backed whales under duress. So, what could we tell about their "sound"? Not much, really. We arranged to get a pair for testing.

Peterson

Another newcomer to the field, Ken Peterson didn't have his own room at the show, but was circulating among the exhibits promoting his new audio cables. (His business card also lists "hand-built electronics," but none of these was in evidence.) Peterson makes shielded cables, including lengths sufficient to allow one's power amps to be moved next to the speakers, for minimal amp-to-speaker cable runs, and his approach is rather different from other recent efforts in that his cables use silver-plated multi-strand wires, and are available (where required) with a "damping network that effectively eliminates cable reflections in the multi-megahertz region..." I'm still not convinced that multi-MHz considerations are significant in equipment which dies at 300 kHz or below, but I figure these are worth trying anyway.

It's time we held a shootout at the cable corral.

Phase Linear

Founded by Bob Carver (who now runs Carver Corporation), Phase Linear was bought a couple of years ago by Pioneer, who suddenly decided, after some dipping of toes in the high-end-audio pool, to take a bellywhacker. The visiting press contingent was treated to a demonstration of three new Phase Linear speakers and a new high-end power amplifier and preamp. The latter were described in the presentation as having "all distortion" reduced to the vanishing point, then the spokesman went on to cite IM and THD measurements as though no other kinds of distortion measurement are known. This exhibit was unique at the show in that the program material was from a digital disc, custom-made by Pioneer and played back on a Magnavox videodisc player through an experimental Pioneer PCM decoder.

The sound was extraordinarily clean (largely, we suspect, because there was no ultrasonic noise from a phono cartridge to upset the electronics), but was otherwise undistinguished except for its sheer volume, which I considered an affront to my hearing. (I abandoned my first-row seat and fled, cringing, to the back of the room.) The three differently-priced speakers were supposed to differ only in extreme low- and extreme high-end range, but in fact produced three distinctly different sets of mid-range colorations, too. Nuff said.

Plasmatronics

Alan Hill's (essentially-) massless speaker system sounded very good the last time I heard it. (A full report was in Volume IV, Number 4, but don't write for it; that issue is sold out, completely.) It sounded even better at CES, thanks (according to Dr.
Hill) to the Stasis I amps on the low end and, at the front, a strain-gauge pickup made by Electro-Research's John Iverson. I still felt the system to be a little bright, though, which would seem to suggest that the modification Dr. Hill described in his manufacturer's comment was either not switched in, or was not completely efficacious. The sound here was massive and razor-sharp but very smooth, with extraordinarily solid, floor-shaking low end and superb imaging by normal standards. (All demos at the show took a back seat on imaging, in comparison with the Moncrieff system.) Plasmatronics, Threshold, and Odin Studios (Dayton-Wright) shared top honors for the most awesomely authoritarian sound at the show.

Precision Fidelity
Previously known only for (all-tubed) preamplifiers, this firm was also showing two new power amplifiers: A dual-150-watt hybrid (with octal-base tubes in the front end and VMOS-FETs in the outputs), and a very beefy-looking mono amp -- 200 watts per channel, all tubes. The latter was described in PF's data sheet as "prohibitively priced at $4500 per pair." Evidently they hadn't priced a pair of Stasis Is.

PF has also just taken over distribution of the legendary Koetsu phono cartridge, which is "handmade by its inventor, Mr. Y. Suga-no." At $1000, and with its "limited availability," we aren't surprised that this is so legendary. It may be an extraordinary cartridge, but the pity of it all is that within 6 months it will probably be abandoned by the lunatic fringe for something more expensive and probably little better.

Quad (Acoustical)
As the manufacturer of the world's oldest enduring perfectionist-type speaker system, Quad was the only exhibitor at the Jockey Club who actually had to be using those venerable electrostatics in their room, and they were the only ones not mating them with subwoofers. The result was a reminder, to me, of how astonishingly deep a 40-Hz low-end limit can sound. Quad was using their 405 power amps and their new Model 44 preamp, and the sound -- while superbly musical and alive -- was perceptibly grainier than what we heard from the same speakers in Mitchell Cotter's room.

Peter Walker's son, Ross, was in attendance, and explained to me the status of the entirely-new Quad electrostatic system that had been unveiled at an Audio Engineering Society convention over a year ago. That unit, it seemed, was merely a prototype, a two-of-a-kind mockup intended merely to illustrate some of Quad's latest design innovations. The system is, Ross said, "far from being at a point where we could begin production on it." The timetable for the system, as of now? "Not in the foreseeable future." Okay, people, you can now run out and buy that pair of "old" Quads you've been lusting after (only $890 per channel), without fear of immediate obsolescence.

The Model 44 preamp retains and refines the uniquely flexible high-frequency filter system of the 33, and adds the feature of plug-in circuit cards that can adapt any input for high-level phono, low-level (MC) phono, or line input. Removable clips on the preamp boards can be combined as desired to match the resistive and capacitive loading requirements of any cartridge.

Sound Lab
This new company was demonstrating an almost-full-range (down to 100 Hz) electrostatic speaker system ("The Renaissance") on top of dynamic woofers, and putting out some of the better
sound at the show. Over-all balance was good (albeit a bit heavy over-all) and transient response was -- well -- best described as electrostatic. (And as they say in the Budweiser commercials, that says it all.) Stereo imaging on this was better than I can recall having heard from any electrostatic, and Sound Lab's president and chief designer, Dr. Roger West, explained that this was because the vertical electrostatic strips were narrow, closely spaced, and arranged to form an almost perfect semicylinder.

Snell Acoustics

This loudspeaker manufacturer was sharing a room with TVA, whose tubed electronics are described elsewhere. The Snell Type A is essentially the same system as we reviewed a couple of years back (Issue IV-3), but modified to overcome (apparently) the reservations we had about its sound. The sound in this room was slightly on the heavy side and (I felt) rather lacking in bite, but gorgeously rich and liquid with a soft but absolutely exquisite high end and remarkable imaging and depth. I'm not at all sure though that this was an ideal speaker/amplifier mating. The Snells tend toward warmth and I suspect the TVAs may also.

Spica

I'm listing this small loudspeaker manufacturer mainly for chauvinistic reasons, as it is based in my new home town: Santa Fe, NM. These small, cylindrical systems were producing excellent stereo images, good instrumental timbres, and quite remarkable low end from systems of that size and price ($375 per pair).

Threshold

This electronics manufacturer gave us a brief attack of deja vu, for not only were they occupying the room directly above Odin Studios (Dayton-Wright), they too had the end of their room partitioned off with a pair of stacked Dayton-Wright XG-10s. Besides the Stasis I, Threshold was showing a new CAS-2 power amp (100 watts per) and a new SL-10 preamp, both using cascode-coupled transistors. The sound here was huge and -- not too surprisingly -- very similar to that in the room below them. Really stupendous sound! They too had ribbon tweeters (Pioneer) between the stacked XG-10s, which makes me wonder how long it will take for Dayton-Wright to get the hint.

TVA

These all-tubed amplifiers from the English Michaelson and Austin
firm look like some of the deluxe tube equipment that was being made back in the 1940s when, instead of a black chassis with a cover cage, amplifiers were chrome plated with the tubes left fully exposed. TVA now has three power amp models and a tubed preamp. The biggest amp is a huge mono model boasting 100 watts output and a circa-$2000 price tag; two smaller stereo ones are rated at 70 and 50 watts/ch respectively. TVA does not loan equipment for testing, and we couldn't persuade Mr. Michaelson to bend the rule. Tests would be almost academic anyway, as the amplifiers are claimed to be in very short supply -- another way of saying they are almost unobtainable. The sound we heard, through a pair of Snell Model A speakers, was gorgeously liquid, rather soft but exquisitely musical at the top, full but a little loose at the bottom, very well imaged, and generally a little warm and fat. How much of the warmth was due to their mating to the Snells and how much was room-related was impossible to guess, but the room's size and shape (resembling a wide pie slice with half the pointed end cut off) should have been ideal.

Sao Win produces what just has to be the most beautiful-looking turntable in the world, apart from the fact that it is rapidly gaining a reputation as one of the best. His tone arm, which probably qualifies as a middle-of-the-road in terms of effective mass, looks like a sophisticated aircraft compass with a cartridge carrying arm appended, and has some unique ways of accomplishing (better, I was assured) all adjustments the best other arms accomplish. The pickup was of course his strain-gauge system, developed from the primitive stereo ceramic units first made in the early 60s by Weathers Industries (whose purchase put Sao in the manufacturing business). I was intrigued by a tiny box he was showing that contained two meters that gave continuous readings of stylus force and anti-skate adjustment. The unit senses the DC current through the strain-gauge elements and integrates these to produce the meter readings. Unfortunately, it's not usable with...
any but strain-gauge cartridges, and probably only with Win's.

The sound in both of WIN's two adjoining rooms was quite good but not fantastic, although there was not a trace of the hot-as-hell high end that turned me off earlier versions of his cartridge.

Anything else? Well, there was the usual clutch of new phono cartridges with exotic cantilevers (boron, beryllium, sapphire, diamond), hordes of new moving-coil step-up preamps and transformers, more new tone arms of new but uninspired design, countless new box-type speaker systems that sounded like boxes, and almost as many new preamps and power amps whose descriptions made it clear that this year's design desiderata are power-supply stabilization, passive RIAA equalization, and the total abolition of TIM, SID, and AID (Audio In the Doldrums). Except for Phase Linear's demos and some new digitally-mastered analog discs from Telarc and M&K, digital audio was presenting a low profile as of January 1980. Sony was showing but not demonstrating two new semi-professional PCM converters, and Sanyo was showing their own PCM adapter which, they claimed, would sell for under $4,000. We've seen that kind of optimism before. (Sony's cheapest, the PCM-10, is now pegged at around $4,500. Both require a separate videorecorder.)

As I said earlier, we arranged to borrow many of the components we saw for reviewing, but we cannot hope to test them all in a year, let alone in the 3+ months that it will take before half of them undergo their first round of design modifications. We've decided definitely on some of the items we'll be testing (such as the dbx disc-noise-reduction system, the Renaissance electrostatic speakers, and the new ADC cartridge, among others), but we'll welcome your suggestions as to others you'd like to see reviewed in future issues. Write to us.

A final note: There are two CES shows per year, and the winter one is the smaller of the two, so we don't plan to cover every future one in this much detail; we only did it this time because it's been some years since we covered a CES more than superficially. We'll report highlights in future, but will leave more space for equipment reports and other more down-to-earth aspects of the Real World. JGH

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THE ARCHIBALD REPORT:

My friends, I have a need -- a need to dispel myths, to let you know what CES is really about. Thinking back to my days of avidly searching out underground audio journals* for news of the latest CES, I can imagine how the glamour of attending CES would arouse the envy of any serious audiophile. I mean, isn't it like going to the best-stocked dealer in the world, every listening room just bristling with the latest and juiciest of audio gear? The best selection on the East/West Coast, with the designers as intelligent and willing salesmen?

Aye, there's the rub: sales. CES is, above all, a trade show. It is the place where the dealers you buy from do a good portion of their selecting and ordering for the year. And the economic climate ain't what it used to be, when almost any new and flashy product met with acceptance, and even egregious buying errors by dealers were washed away by gen-

*A new one of which, aptly named The Audio Journal, is now in its third issue.
erous profits brought in as the American buying public snapped up high end audio at any price. Not that a cut-throat attitude prevailed at this winter's CES. On the contrary, there was much caution on both sides, with manufacturers courting dealers with an atypically soft sell, and dealers trying carefully to select only those items at the show which might become immediate hits with their whimsical clientele, thereby salvaging their sagging sales record during the previous year.

So, into the midst of this American HiFi bazaar wanders the innocent underground magazine reviewer; not his first CES, to be sure, but his first as a reviewer. And foremost in his mind is that adjective "innocent". Just how innocent are the rave reviews given on the basis of a brief audition, or -- more to the point -- the outrageous pans of more or less innocent products auditioned at what might be a considerable disadvantage in this most ephemeral of listening situations? And how to deal with the near-certain, and perhaps justified, hostility of certain manufacturers who remember less-than-perfectly-considered reviews of their products in the past. Predictably, the welcome from most manufacturers was cordial but guarded, although this ran quite a gamut. From Ross Walker of Quad, whose products are all spoken for until the end of the century as far as I can tell, and who couldn't care less what anybody writes about him, to Lowell Yamaura of Kenwood who had what appeared to be genuine complaints about the way his products had been treated by the underground press. It used to be that a rave review by one of the undergrounders fueled a huge buying surge on the part of the high-end public, while an outright condemnation made some products virtually unsellable. But this is no longer true, for both economic and aural reasons. First, many audiophiles could no longer justify the money necessary to follow component-of-the-month (or six-month) fads. Second, they learned that all those long-winded discussions of countless components in the underground press had little relevance to what they would hear, and (at last) started listening to components themselves before buying. (Hallelujah! A true listening public! This result of the straitened economic situation can only be applauded.) And it was interesting to note that a few manufacturers, who offer genuinely good value, were plagued only by the need to turn away prospective dealers and explain shortages to those who are already dealers.

Another encouraging aspect of the economic pinch was the prevalence of good products and the paucity of truly lousy ones, living testimony to the efficacy of competition and free enterprise (and one of the few such testimonies). I'd like to mention a few CES highlights by discussing a series of interesting people I met at the show, with occasional mention of products alone -- mainly ones that JGH may not have touched on. We will go in chronological order starting with the press conferences of Friday, January 4 before the show actually opened and extending through the evening of Sunday, January 6th.

Anonymous. This fascinating encounter was with Phase Linear's collective public relations fairy godmother/father, some of whose linguistic innovations rivalled the more turgid efforts of the Nixon/Haldeman/Earlchman era. This ranged from the relative innocence (that word again) of claims that their products are "Designer's Dreams" and their new
trimline 3300 preamp has "no noise, no distortion" (I mean, whose does?) to the "fact" that their top-of-the-line speaker system is "Tri-ampable"—not to mention his observation that "when you go from aluminum to metal your weight goes up". And no one laughed. Unfortunately the above-referenced fairy godperson was unable to charm the newly introduced loudspeaker systems, Models 580, 560, and 530, the sound of which got progressively heavier and more inaccurate as the price went up; nor was there any magical good sense informing the Controller-of-the-Volume, whose heavy hand drove both JGH and yours truly from the room in the fetal, hands-over-the-ears, posture. Should've known better than to sit in the front row!

Stan Ricker. Here we have the American Audiophile Record Industry's Father-Image of the Cutting Lathe, a true gentleman and happy giver forth of quotable aphorisms. Ricker was Man of the Hour at Mobile Fidelity's press conference at which they debuted their Beatles' Abbey Road disc and received a million-sale Gold Record award. Stan is a very likeable person, surprisingly available and humble for someone so well known, and impressively knowledgeable about his craft. Some of his most interesting comments concerned the inherent phase shift of elliptical styli—because they are almost never perpendicular to the groove modulation—which can result in up to 90 degrees of phase shift by 6 kHz. As he says, "the concept of spaciousness is phase-randomness at high frequencies—you're not supposed to hear depth if it's not there." The other comment which aroused my interest was "It's important that the cartridge be chosen to match the vinyl; these Japanese cartridges sound bitching— but only with Japanese vinyl!" That's outrageous, in a way, that we now have to have cartridges to match not only our arms and speakers and pre-amps, but each country's vinyl as well! Yet here we have a reliable witness testifying to entirely different—and in one case, unbearable—sound off the same stamper, dependent only on the vinyl used. I would like to have more to report on this fascinating subject (and person) but Stan, as I mentioned, was Man of the Hour, much sought after and very tired to boot. Stan, incidentally, has quit JVC to work for Mobile Fidelity.

Jerome E. Ruzicka. The dbx Corporation presented the most exciting demonstration/press conference of CES. My notes begin, "excellent punch, fair lunch, great pickles ..." Seriously, the dbx demonstration was exciting in its presentation of wide dynamic range and quiet surfaces. I think JGH deals with this elsewhere. The real highlight of the press conference, though, was Jerome Ruzicka.

1. This brings up the subject of reviewers who lay themselves open to truly grievous errors in judgment by fixing on a certain aspect of reproduced sound—depth, for instance—and end up recommending components that give you the most of that characteristic. The staff of one magazine in particular likes to do that. At the present time, depth has apparently been forsaken for wall-to-wall imaging. Did they finally get enough depth? Too much? What's their next hobby horse going to be, I wonder?

2. For those not familiar with this latest perversion of the mother tongue, "Bitching" is not a pejorative; it is a laudation.
In spite of a lot of overblown hoopla on his behalf by dbx's PR people -- "the guiding force behind the marriage of digital tape recording to dbx disc encoding"; "his unusual background... provides the unique expertise necessary"; "comes from a musical family and is a pianist himself" (!) -- Mr. Ruzicka amazingly came through as a really happy man. I mean, he was excited when his demonstrations came off as planned. He had enthusiasm. It's not hard to see how a man like that gets big things done. A refreshing change from the biz-as-usual commercialism pervading CES.

John Meyer. Here is a man whose name is almost totally unknown to audiophiles, and yet whose speaker system (at $13,000 per, including tri-amplification) is used as a studio monitor by two of the largest U.S. audiophile record companies, Crystal Clear and Mobile Fidelity. The name of the company, of whom John is owner and principal engineer, is Meyer Sound Laboratories, and their principal thrust is high-quality sound reinforcement. Both Crystal Clear and Mobile Fidelity had their MSL speaker systems (model ACD) operating at tremendous volume levels. Which brings up the system's principal design criterion and achievement: reproduction of music at anything up to 130 dB (!!) with low distortion and little change in sound character at the higher levels. In this respect I would say the speakers are a clear success. Due to the unsuitability (to these ears) of program material and volume level, I would not wish to comment upon their suitability or lack thereof for home sound reproduction. (Unfortunately, both the expense of John's speakers and the size of his company have, up until now, discouraged loans to reviewers. Perhaps a little publicity will loosen things up in this respect.) I'll tell you one thing, though: you haven't heard Pink Floyd's Dark Side of the Moon until you've heard it over the Meyer ACD speaker system. You just won't hear 20 Hz at 110 dB, or whatever it was, anywhere else. Nor, after one experience, will you want a repeat; it's very viscerally disturbing. I have a feeling that the MSL speaker systems will become much better known to audiophiles, particularly those who crave ear-shattering levels in the home.

John did not have his own room at CES. He was attending to sound out response to and possible marketability of the ACD system. Yet his attitude was refreshingly different from that of most manufacturers. Here was someone who had carved for himself a clear niche in the world of sound reproduction, a niche in which he is pre-eminent and obviously very busy. But how different are his criteria from those of the Stereophile! A driver which is perfect below 95 dB but then begins to distort badly is of no use to John at all, no matter how perfect it is below 95 dB. Describing all the demonstrations he heard at CES as "veiled", he was surprised that people actually preferred that veiling, and wondered at the reproduction of an organ at 85-90 dB when the original performance (including a recording which he had helped engineer) had easily reached levels of 110 dB.

Alan Hill. As some of you may remember from the Plasmatronics speaker review, Alan Hill lives in Albuquerque, NM. He also happens to be another of those truly nice people one occasionally runs into in the audio world. I originally met Alan at a high-end store in Albuquerque where I was seeking the answer to an elementary crossover problem. Alan was standing nearby buying some French EMI...
records, and not only volunteered the answer to my question, but invited me to his house for a listen to his speakers; that, in turn, turned into a late evening exposition on physics, sound, numerous of his inventions, etc. That's the kind of guy he is. His speakers were at their best to date, with the help of the John Iverson strain gauge cartridge and Threshold's new, and finally-in-production, Stasis 1 amplifiers. I had heard the speakers in an identical room a year before with the redoutable Threshold 4000, and, believe me, the difference was hard to believe. Tight, tight bass and plenty of it, with the feeling that the drum or double bass was right there in the room with you. He attributed greatly improved imaging (phenomenal, considering the long, narrow, mirror-lined room) and greater dynamic range to the Iverson cartridge. Ever the scientist, Alan's response to the question, "Is there anything you don't like about the cartridge?" was "Not any more than any other crude mechanical device." That's what I call a no-overhang attitude towards a friend's product: praise where praise is due, but let's not forget we're just scratching the surface when it comes to replicating live music.

Lowell Yamaura. The only true representative of what CES is all about in this collection of vignettes, Lowell Namaura is national Sales and Marketing Manager, Audio Purist Group, for Kenwood Electronics, Inc. Kenwood was exhibiting at the Las Vegas Convention Center, a huge barn of a place through which I was trying to pass as quickly as possible when Kenwood's exhibit caught my eye. The large Japanese companies certainly have a flair for marketing and outright gadgetry. How about an FM tuner with a CRT display of all the stations the tuner was picking up, arranged by frequency and showing their relative strength? The CRT can also display a "Magnification Mode" of the same information, showing the quality of the signal received, and a readout of the stations which have been user-programmed into a push button selection device. Or how about a preamplifier with 17 amplification stages and a 52-lb. separate power supply? I don't know how these products sound, and probably never will because "Kenwood has developed this model using the latest audio technology and expertise at its disposal to demonstrate its prowess in this product area. Consequently, this model is not for sale" (and won't be).

It was when I requested the loan of some of the products Kenwood does sell, for reviews, that I got to know Mr. Yamaura. His view was, at first, that his products sell well without underground reviews, so why should he let them out to undergrounders to be butchered up with incompetent reviews. Apparently his experiences with another magazine led him to this skeptical position. Thus put on the spot, I explained as best I could the way in which Stereophile tests products. But it was when I mentioned the name of J. Gordon Holt (really, I'm not making this up) that the ice began to thaw and Mr. Yamaura realized that the Stereophile from New Mexico was the same Stereophile that hailed from Pennsylvania, and to which he was a loyal and respectful subscriber. And that he could count on the same balanced viewpoint for Kenwood's new products that he'd seen applied for so long to other products. It was a glowing testimonial from someone who was initially, and with apparent justification, somewhat hostile.

Peter Moncrieff. J. Peter Moncrieff's "Internation Audio Review" is normally an indirect competitor of Stereophile and sometimes-crit-
ic of all "undergrounders." Of all the people I've met in the field of audio journalism, he thinks the most and the best; his manner varies from brusque to mildly jovial, and he always, as far as I can tell, says just what he thinks. Although it feels as if you wait even longer for LAR than for the other magazines, Peter's writing, once it comes, is always a dense and thorough treatment of the subject under consideration. I would encourage any audiophile who is beyond the "component-of-the-month, what's-the-latest-and-juiciest" phase to subscribe to LAR, whose address is 2449 Dwight Way, Berkeley, CA 94704.*

Why such a buildup for another mag in an article about CES? Well, it's just a little background-and-credentials-establishing for the person who, without a doubt in my mind, offered the best sound and, moreover, the biggest breakthrough in sound reproduction at any CES I've been to. Each channel of the Moncrieff Lab Monitors comprises a bookshelf size subwoofer and a 24" by 24" by 6" panel which is set perpendicular to the front of the subwoofer. These incongruous-looking (in their present prototypical form) contraptions are more or less aimed at right angles to the listening seat, and Surprise! they disappear. What you have instead of speakers is a soundstage whose width and depth are vastly larger than the listening room. The instruments exist out there, in space, just as at a live performance with the exception that imaging can be better than live with some recordings. All this is done without compressor/expanders, digital time delays, random-phase pro-

*And much cheaper, too. JGH.
larly with respect to time-smearing. At the other exhibits people were saying "Please forgive the lousy room" or complaining about the failure of their favorite cartridge. Peter was making no apologies for anything.

Postscript

I could find no place for it elsewhere in this article, but one of the most fascinating offshoots from CES comes from Dynavector. They have published a brochure describing the developments in their DV/KARAT Diamond (a cartridge with a diamond cantilever) and their DV/KARAT (likewise, with a ruby cantilever), a brochure which deserves some sort of prize for obfuscating syntacticide. Following are some excerpts therefrom:

"These purely theoretical investigations for the cartridge design concluded the unprecedented or unusual design criterion. This criterion needs the very short length and the very hard material in the cantilever design. But this criterion was found to be absolutely the truth after we have listened to the reproduced sound by the prototypes of DV/KARAT....The fastest cantilever is considered to be the one having the large diameter and thin wall of the very hard and very light material. When the very light cantilever of smaller diameter is used in the design attempting to have the very small equivalent mass by which the resonant frequency can be very high, the propagation velocity is not so much improved even by the very light and hard material used....We had experiments by de-

signing the moving coil cartridge with the diamond cantilever of only 2.5 mm length. The results were really tremendous (sic) and surprising. Every detail of the music in the record was more precise and had more liveliness and excitement as in the real music. Every instrument came closer to the listener out of the speaker boxes and they were positioned in the correct place. In addition to these outstanding features, the sound from the old timer records which are stocked in the library as the nuisance was found to be astonishingly fresh and exciting when reproduced by this prototype....Almost all old masterworks on discs by B. Walter, M. Callas, J. Heifetz, V. Horowitz, A. Rubenstein, L. Klauss, etc., presumably sleeping in your library can revive and sound again with similar excitement and high fidelity like the modern direct cut records, sometimes with more natural ambience than today's hi-fi records."

"Behold, I show you a mystery...we shall all be changed, in a moment, in the twinkling of an eye, at the last trump; for the trumpet shall sound and the dead shall be raised incorruptible..." What comes through is the writer's tremendous enthusiasm for the product, a genuine joy. I think anyone who's interested in either cartridges or translations or both should avail themselves of this brochure, from your friendly Dynavector dealer.

Meanwhile, Dynavector has promised Stereophile a sample of at least the DV/KARAT; we will report on it as soon as possible.
Stereophile reports are primarily-subjective assessments of the sonic attributes of components tested under home-use conditions. Components which are capable of being bypass-tested (such as tape recorders, pre-amplifiers and equalizers) are evaluated in terms of the accuracy with which they reproduce their input signals. Components for which bypass tests have not as yet been devised are evaluated in terms of performance norms which we have established through 16 years of testing, with the sound of live music as the "reference standard." Ratings are weighted according to the relative importance we assign to various aspects of reproduced sound. These are, in order from most to least importance: Overall balance, accuracy of mid-range reproduction, freedom from noise, freedom from listening irritations, reproduction of inner details, bass and treble range and quality, stereo imaging, and reproduction of depth and perspective. When assessments of a product cannot be made by bypass testing, Stereophile reports represent a consensus of two or more trained listeners selected for their familiarity with and ability to relate to the sound of live acoustical instruments. Stereophile reports are copyrighted and may not be quoted without written permission of the publisher.

Components used for evaluations are: Pickups: Shure V-15-IVG and Fidelity Research FR-1 Mark IIIIF; Tone arm: SME 3009-I11. Turntable: Denon DP-2550; Preamplifier: Berning TF-10 hybrid; Power amplifier: Infinity Hybrid-Class-A; Speaker systems: Infinity RS-4.5, Acoustat Monitor IV (with integral amplifiers); Tape recorder: Revox A-77-I11 with dbx 157; Neutrik Audio Tracer (for response measurements); Fulton audio interconnects and Brown speaker cables; Spectra platter mat; IVIE octave analyzer. Note that these are not "standards" against which other components are judged; our reference standard is live instrumental sound. These are merely known quantities which we have found to be of value in revealing the shortcomings of other components.

In order to minimize the possibility of judgmental error, we rely mainly on tape sources for the evaluation of amplifier-loudspeaker combinations. Tapes used are original masters and copies of commercial masters, all of whose derivations are catalogued. Preamplifiers are auditioned with an accurate inverse-RIAA pre-equalizer and tape sources, as well as with phono cartridges. Cartridge/arm/preamp matings are compared via a representative sampling of well-made discs and tapes. We expect discs to sound as much as possible like master tapes, particularly in those cases where we are able to compare a disc with the original tape it was made from. Tape recorders and signal processors are routinely bypass-tested.

A/B testing is not used except for preliminary checking to ascertain whether a component is working and is worthy of further auditioning. Serious evaluation is performed by listening only to the component under test (in conjunction with others of known characteristics) for a period of several days or weeks and with a wide variety of program material.

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Mordaunt-Short Pageant 2 and Carnival 2 Speaker System

PAGEANT 2: Two-way system with 8-inch woofer in resistively-loaded reflex enclosure, 1-inch dome tweeter; 8 ohms impedance; 100 watts maximum program input; response ±3 dB, 65 to 20,000 Hz; 21 inch H by 13 W by 9 D; $480/pair without stands, or $540 with stands. (Stands $80 if purchased separately.) CARNIVAL 2: Two-way system with 8-inch woofer in infinite baffle, 2-3/4-inch damped-surrond cone tweeter; 8 ohms impedance; 80 watts max program input; response ±3 dB, 85 to 17,000 Hz; 15-3/4 inch H by 9-1/4 W by 5-3/4 D; $240/pair, without stands. (Speaker intended for bookshelf placement.) Mordaunt-Short, Inc., 1919 Middle Country Rd., Centereach, NY 11720.

The Pageant Series 2 is M-S's next-to-top-of-the-line speaker system. Like most English "mini-monitors," it is designed for placement away from room boundaries and about a foot off the floor. (Mordaunt-Short's own stands for the Pageants cost $60 if ordered with the speakers or $80 if ordered separately.)

The Pageants are about average in efficiency, at 89 dB out for 1 watt in, and maximum output is rated at 110 dB, which equates roughly with an input power of a shade above 100 watts, and that just happens to be the manufacturer's figure for maximum safe input power. Each speaker has two rear-panel switches each of which provides a choice of flat response or 2-dB attenuation from 1000 to 3500 Hz and 3500 to 25,000(?!) Hz. Our measurements ascertained that their Flat positions did indeed provide the flattest response, but listening tests were less conclusive on that subject. About which more later.

The Pageant 2s have certain minor colorations which make them more suitable for use with some associated electronics than with others. With neutral program material and electronics, their bass-treble balance is excellent although, if they err here at all, it is towards a slight hardness, which means they will probably not sound too good in an acoustically bright (i.e., acoustically reflective) room. Their middle range is slightly recessed and a little smudgy, lower highs tend to be somewhat bright/steely, and their high end is rather closed in and a little on the dry, tizzy side. Stereo imaging is good but not superb, as the result of a small degree of phasing interference (audible on pink noise and some program material as the so-called vertical-venetian-blind effect as one moves across the listening area). They tend to stretch stereo images laterally, but the images have little tendency to wander.

They have a mild upper-bass
heaviness, with rather rapid rolloff below about 60 Hz in many rooms but astonishing (considering this) contribution in the 40-Hz range in some rooms.

Needless to say, they are ill-suited for use with most all-tubed electronics, whose characteristic bass looseness and high-end glare exacerbate the Pageants' own peculiarities. Most solid-state components too must be ruled out because of their high-end graininess, which adds a singularly unpleasant edge to the high-end sound of the Pageants.

Fortuitously, though, there are some solid-state components around whose sound combines low-end solidity with a slightly warm balance and a silky-smooth high end, and these do wonders for the sound of the Pageants. Among these are the Audionics BT-2 power amplifier, which are in fact such an ideal complement to the speakers that we are moved to recommend all three as the major 3/4 of a remarkably good, modestly-priced system, rather than risk advising that the reader try to mix and match the speakers with other electronics which may not produce the same high level of over-all musical accuracy.

We tried the Pageants in two acoustically dissimilar rooms, and were able through experimentation to get them to sound virtually identical in each location. Properly placed, their sound (with the Audionics electronics) was rich, superbly balanced, and very smooth over-all, with good stereo imaging perspective, being neither close nor more distant than would be expected from the microphone placements used (in those instances where we knew what those place-
ments were). And significantly, the speakers did a truly remark-
able job of revealing the finer
differences between recordings,
including the subtleties of high-
end smoothness that mark some
audiophile-oriented recordings as
superior to others. Disc surface
noise was reproduced unobtrusively
and without the persistent pitch
that usually signals the presence
of ringing within the upper ranges.

Because of the Pageants' char-
acteristics in high and extreme-
high ranges, it seems reasonable
to assume that they would be
nicely complemented by the typical
moving-coil cartridge, with its
typical brightness suckout and
high-end rise. This did not prove
to be the case. The sound with
them became deadish and sizzly.
And while we hate to keep harping
on what must to some readers look
by now like a hobby-horse of ours,
we must in all honesty report that
the best sound from this system
-- and the sound which, incident-
ally, most closely duplicated
that of taped program sources --
was obtained with the Shure V-15-
IVG cartridge. (The spherical-
tipped version; the hyperellip-
tical, again, sounded hard.) The
cheaper V-15-111G did equally well,
but the use of that cartridge
complicates matters slightly, as
it must (with most tonearms) be
used with added capacitative
loading totalling about 500 pF per
channel. With the 111G, we advise
getting the DB Systems DBP-6
equalization kit, which includes a
sheet listing the necessary extra
capacitance for use with any of a
variety of arms.

In comparison with the Rogers-
BBC LS-3/5A speakers, which are
comparable in price, the Mordaunt-
Short Pageants have substan-
tially higher power-handling ability,
particularly at the low end, a
softer extreme high end, and a
generally somewhat-more-forward
sound. The Rogers, too, has a
mild upper-bass hump, but it has
slightly greater amplitude but
seems less inclined to be affec-
ted by room resonances (for rea-
sons we cannot explain). The
Rogers sound slightly flatter in
response below 70 Hz but fall off
more rapidly, reproducing virtu-
ally nothing below 55 Hz in any
room we have tried them in. The
Rogers, despite measurements
which suggest the contrary, sound
slightly distant in perspective
and a little up at the high end,
and thus do best with good tubed
electronics. The Pageants don't.
Imaging is better on the Rogers,
and they provide a larger apparent
sound source despite their smaller
size. (Better dispersion, prob-
ably.) So, take your pick.

The Audionics/Shure/Pageant
system, then, has to be classed
as a moderately-priced music-
lover's system par excellence.
It may not appeal much to your
run-of-the-mill audiophile because
its weak points are in areas he
tends to deem more important than
musical accuracy: Imaging, middle-
range definition, and response at
the frequency extremes. But its
combination of positive qualities

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**Diagram:**

- **Measured (solid) and subjective (dotted) response of the Carnival 2s.**

- **Graph:**
  - Frequency range: 20 Hz to 20 kHz
  - Measurements include sound pressure level (SPL) in dB
  - Data points at 20, 30, 50, 75, 100, 200, 300, 500, 750, 1K, 2K, 3K, 5K, 7.5K, 10K, 20K Hz
  - Solid line represents measured response
  - Dotted line represents subjective response

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should bring lasting pleasure to any sound-conscious music listener.

We should point out that, at present, we have three speaker systems on hand, each of which cost in excess of $2000 per stereo pair. We use them for component evaluations because each one excels in the reproduction of at least one aspect of sound. For our own enjoyment of recordings, we listen to the Audionics/Pageants with the Shure IVG. That, we think, says something. It does not say that this is the best system money can buy. (That system would probably include Quad ESLs.) It does say that, as far as we are concerned, this is one of the best you can buy for the money.

The Carnival 2 is the least expensive system in Mordaunt-Short's line at $275 per pair, and they simply aren't in the same league as the Pageants.

With a neutral source, they have a dished-down middle range with humped upper bass below and a hard, sizzly quality above. Stereo imaging is rather mediocre, with a tendency to place overtones farther towards the speakers than their fundamentals.

Like the Pageants, they sounded best to us with the Audionics electronics mentioned previously, but they nonetheless came through with a sort of "wonky" coloration, a pronounced upper-bass turbidity and heaviness, and a rather tizzy, closed-in high end. There was no hint of deep bass. Their strongest point, considering what else is available in their price class, was their relatively un-colored middle range.

These have scads of competition in their price class, but every competing system we have heard has so much coloration of its own (and each in different ways) that we will not hazard a guess as to how any listener will react to any one of those speakers. We have yet to find one that we consider to be markedly better than any of the others, but we're still looking. (Preliminary listens to the Spica speakers suggest that they may be well worth serious consideration, and we have arranged to test a pair for a future issue.) As of now, though, we cannot really recommend the M-S Carnivals except to those who find themselves attracted to their particular set of colorations.

(No Mfr's Comment Received)

Neutrik 3201
Audio Tracer

Portable frequency-response recorder with built-in swept-frequency oscillator. Frequency ranges: 20 to 20,000 or 200 to 200,000 Hz. Readout format: Heat-sensitive paper charts conforming to IEC standards. Frequency error typically 3%, no more than 5%. Selectable 0.3 or 0.5-octave warble tone at 5 Hz rate. Max output levels: 3 watts into 8 ohms up to 20 kHz or 3.5 V into 100 ohms or higher. Minimum output 1 mV. Source impedance 0.1 or 50 ohms. THD up to 1% at 100 kHz, up to 1.5% at 200 kHz. Output linearity: See curves in report. Input impedance: 20k ohms AC, below 100 ohms DC mode. Sensitivity (for full-scale deflection) 0.28 V AC or 316 mV DC. Input attenuation up to -50 dB switched and -20 dB vernier. Recorder ranges: 50 dB and 25 dB from zero to full scale. Linearity at scale limits: ±1 dB on 50-dB range, ±0.5 dB on 25-dB range. Pen speeds 50 mm/sec, 100 mm/sec, 500
Paper speed continuously variable from 0 to 25 mm/sec. Oscillator/recorder tracking within 0.2%. Stabilizing time: 1/2 hour. Dimensions 11 ½" L by 5½" W by 3 H. $2,000. Distributed by Philips Audio-Video Systems Corp., 91 McKee Dr., Mahwah, NJ 07430.

The NAT is not exactly an audiophile product. While it is by far the least costly device available that will do what it will do, there are few audiophiles who could justify its $2,000 cost. For this reason -- and even though, to us, the device is of great interest -- we will refrain from making this report as long as we would like to or as long as it should be if we thought enough of our readers were interested enough to consider the purchase of a NAT.

In a nutshell, the NAT is an ultra-compact, completely portable device for measuring and recording frequency response. It will make accurate measurements of amplifiers, preamplifiers, tape recorders, phono cartridges, loudspeakers (with a warble-tone source to minimize standing-wave buildups) --

-ascertained by running a self-calibration (output to input) curve and applying the result as corrections to the measured response.

We tested three samples of the unit -- two early-production units and a current one. The first two had typical early-production problems which are unlikely to occur in subsequent samples. The only thing we found which might be a problem with some other samples was a slight irregularity in the operation of the paper-speed control, which -- if it occurs at precisely the wrong spot -- can make it very difficult to synchronize the response graphs to an external frequency sweep, as from a test record. (A switch plus a vernier would eliminate the problem, at somewhat higher cost to the buyer.)

The built-in oscillator can be used as a sine-wave source for

![Calibration curves for the Audio Tracer. The slight low-end drop-off is characteristic of several samples, and is the same at both sensitivity settings, so the same correction can be applied to all measurements.](image-url)
response testing without making a permanent recording, or can be automatically synchronized with the graph sheets supplied on a roll for use with the NAT. Fresh rolls cost around $7 for 200 read-outs, at an approximate cost of 3.5 cents each. Neutrik can also supply as an optional accessory a tiny calibrated probe microphone for acoustical measurements. With this and the NAT, we were able for the first time to run loudspeaker response measurements which agreed with their subjective (as-heard) frequency response, and this has prompted us to start publishing curves of measured as well as subjective response for the loudspeakers we test. We plan to use the NAT in conjunction with our equipment tests for the foreseeable future.

This is a superb little instrument, with all the accuracy and versatility that could be needed by the serious audiophile and the production-line quality-control tester. It is beautifully put together and looks rugged enough to take years of hard usage if not outright abuse.

Our original, detailed report on the NAT has been sent to Philips for their information, after we made the decision to go with a shorter report. Stereophile readers wishing to see that original report can obtain a copy by writing to the Public Relations Division of PAVSC (Address at the head of this report).

(No Mfr's Comment Received)

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Chartwell PM-210 Speaker System

Guest Review by Alan Edelstein

Two-way speaker system with 8-inch woofer in bass-reflex enclosure, and 1-inch dome tweeter. Max input 50 watts; 8 ohms. 26” H by 13¼ W by 11¼ D. $400. Chartwell by Osawa, 512 Fifth Ave., New York NY 10019.

If this were England, I could begin by saying, "Here's the Chartwell PM 210, another one of those BBC-type 2-cubic-foot boxes." Just as the old Acoustic Research AR3 was the model for a horde of American loudspeakers in the 1960's, the high-quality 2-cubic-foot loudspeaker is an English standard of the 1970's. And fortunately, just as the AR3 was a fine product to imitate in its day, this class of British speaker has a superb pedigree stretching back to the BBC and its work on speaker design and plastic-cone technology.

The Chartwell PM 210 is an update of the earlier PM 200 which had an 8-inch bextrene woofer and a dome tweeter in our 2-cubic-foot box made of thin flakeboard damped with bituminous felt panels. This produces a lower box-panel resonance frequency with a low Q (i.e. the box is strongly damped and therefore stops vibrating very quickly). The BBC feels this type of cabinet construction is superior to the more-typical rigid-panel designs.

The tweeter in the 210 is the ubiquitous fabric-dome Son Audax seen on so many designs these days. Most of the time this tweeter sounds very tizzy bright to me, due to what sounds like a resonant peak at around 16 kHz. Fortunately, the Chartwell designer has equalized out this peak with his crossover design, which is as typically complex as in other BBC-influenced designs. The crossover employs high-quality polyester capacitors but uses iron-core chokes instead of air-core ones. The latter cost more, but you can hear their added openness and transparency, especially on peaks.
Typical of the PM 210 as a 2-cubic-foot box is the positioning of its woofer and tweeter on the front panel's vertical center line. Properly done, this is the best way to ensure proper stereo imaging, a characteristic valued more highly in England than in the U.S.A. It is all too common for British magazines to criticize American speakers for spraying sound all around and giving a lot of equally bad stereo seats instead of a few good ones.

The PM 210 does image properly. Listened to in a good stereo seat, in front of and between the speakers, images are stable. On over-done, multi-miked records, you can close your eyes and point to individual sound sources. On real stereo records, recorded with a 2-microphone technique, you can hear a properly spread-out sound-stage with violins merging into cellos into basses.

Typical of quality British speakers, the PM 210 must be used on a stand about one foot tall which allows free air movement under the cabinet, and at least one foot -- preferably more -- away from any walls, in order to maintain correct bass balance. A corner is this speaker's bane, and this is by design. A room corner location excites every standing-wave resonance a room can support. Since the worst of these are at low frequencies, corner placement gives the impression of augmented bass, which conveniently allows a speaker designer to aim for high middle-range efficiency with weak bass on the assumption that the standing waves will correct the over-all balance. The problem is that standing-wave bass is very irregular in response. The English have lately tended to opt for lower over-all efficiency in order to design proper balance into the speakers themselves, thus requiring that they be used in a location which will excite as few room resonances as possible. This means off the floor and well away from corners.

Properly positioned, the PM 210 has adequate bass which is subjectively flat to slightly below about 50 Hz, rolling off fairly rapidly from there. This is typical of bass-reflex designs, which fall at 18-dB/octave below system resonance. Response is only slightly heavy in the mid-bass, with good albeit not spectacular detail. It does not have typical one-note bass, and is well up on any bass ranking scale but it is not near the top of that scale.

The mid-range is very good, with only a slight trace of nasality, but a very high degree of listening ease. And that's the way things should be; the less noticed about the mid-range the better.

The high end sounds very smooth but can be mildly criticized for not having that last little bit of air and transparency. But don't underestimate the high end of the PM 210 either. It can fool you by sounding deceptively dull when compared to a speaker with a rising or peaky top.

The PM 210 will play a little louder than the average British speaker (cleanly to about 100 dBA), but if you're searching for a lease breaker this is not it.

If you use a stable amp with clean clipping characteristics, and set the average volume at a reasonable level, the PM 210 and other British speakers such as the Spendor BC-1 will surprise you with how well they handle everything but very large amounts of low-frequency energy. Just don't expect to play organ records at high levels. And don't expect to get away with a less-than-average amplifier. The Chartwell has a complex crossover, which
means it is a highly reactive load demanding an amplifier which won't be upset by that. An overactive protective circuit in an amplifier will also foul up the sound of a speaker with a complex crossover at least as badly as will an unstable amplifier.

Since the Spendor BC-1 and Chartwell PM 210 are so competitive in design and cost, and because the BC-1 is the landmark of the British 2-cubic-foot bookshelf genre, it is useful to compare these two speakers. Good as the middle of the PM 210 is, the BC-1 is slightly less colored (though it doesn't possess the elusive easy quality of the PM 210). The PM 210 has marginally tighter bass and a more extended top end without the 12-kHz peak of the BC-1. I haven't forgotten I said the PM 210 might have more extended treble, but the BC-1 rolls off even earlier.

Choosing between the two is something that will take real insight into what you, the reader, most value in sound reproduction. While this magazine can tell you what a product does correctly and incorrectly, it can't tell you what you want a speaker to do or how to weight its plusses and minuses.

The best single thing I can say about the Chartwell PM 210 is that it doesn't call attention to itself or get in the way of the music. It won't impress your audiophile friends, but after a few minutes of listening, the PM 210 can recede into the background. If you want a speaker to live with for the next couple of years, try this one. I could live with it.

AE

(No Mfr's Comment Received)

Audionics Space and Image Composer

A 2-to-4-channel processor for SQ or stereo discs. Dimensions 19" W (rack mountable) by 3½ H by 9 D, over-all. $450. Audionics of Oregon, 10950 South West 5th St., Beaverton, OR 97005.

The Tate decoder chip is the most sophisticated SQ processor to come along thus far. Audionics has used it in their "Composer" for SQ decoding as well as ambience enhancement of 2-channel stereo discs.

The result is a very much mixed bag of blessings and curses. In a nutshell, the SQ-decode function works superbly with properly-encoded discs, which probably constitute less than 1/2 of 1% of the so-called SQ discs on the market. With the rest, results vary between poor and dreadful. There is intra-channel spillover (sometimes diagonally), distressing pumping modu-

lations in both rear and front channels, and often very dirty, gritty sound from the rear. At best, there is a slight muddying of front channels and a convincing replication of what the original discrete 4-channel master probably sounded like, but the best comes along so rarely it is hardly worth considering.

In the Enhance mode, the "Composer" does a very creditable job of restructuring the ambient environment of recordings that had one to begin with, but again its potential is curtailed by the fact that most of the reverb on available recordings was erzatz, reflecting the vibrating modes of springs rather than of sound waves in an enclosed space. And since the process depends on very precise sens-
ing and processing of miniscule phase differences between the front-channel signals, it is acutely sensitive to such phase anomalies as are caused by delayed arrival times of sounds reaching the recording microphones. With recordings made with coincident-pair stereo mikes, these anomalies are small and cause only occasional discontinuities (sounding like brief tape drop-outs) in the rear channels -- barely noticeable with the rear-channel level set suitably low, but noticeable nonetheless. With multi-miked recordings -- which again constitute more than 99% of available recordings, the phase garblings cause horrendous burbles and pumpings in the rear channels, as well as severe break-throughs of sounds that belong in the front channels and ought to stay there.

This is not to say the "Composer" doesn't add spatiality and -- as a result -- much dramatic impact to practically any recording. But to us, the cost in most instances was far too much degradation of the over-all sound to be worth the gain. We have never liked sound-in-the-round quad anyway, which happens to be the thing the "Composer" does best, so for us that capability carries little weight. To us, quad means ambience reproduction (or production) with instruments that stay out in front, and it is our feeling that delay units such as those from Audiopulse and Advent do this more convincingly with all stereo recordings than the "Composer" does with the relative few that don't throw it for a loop.

(Manufacturer's Comment on Page 64)

SME 3009-III Tone Arm


This is one of the most versatile tone arms around. For the same reason, it is also one of the most tedious to set up because, since every parameter is adjustable, every parameter must be adjusted.

Unlike most arms with plug-in headshells, the SME has a plug-in arm, which accomplishes exactly the same thing but places the additional mass of the plug and socket back near the tone-arm base where its effect on the cartridge-system mass is minimal.

The arm is available with an optional viscous-damping system, presumably for the benefit of those reactionary souls who still don't comprehend how viscous damping works and thus prefer not to use it. The fluid supplied is however too thick; the arm should be purchased along with Shure's "Thinning Fluid," which latter should be added (and excess fluid removed) until the arm takes about 1 second to drop from a height of 1 inch with the smallest paddle in place and the tracking force set for 1 gram. With high-compliance cartridges, the arm is almost completely free from resonances (outside of the usual system bass resonance, which is a function of mass and cartridge compliance), and produces only a satisfyingly uncolored "clunk" when shock-excited. (This is partly accomplished through the use of a pasty compound, supplied with the arm, which firmly bonds the body of the car-
tridge to the headshell.) As a result, the arm has little sound of its own and, in fact, makes some cartridges almost overly-rich in quality. (The SME II, by contrast, was rather bright and a little harsh.)

With relatively-low-compliance cartridges, that tend to impart stronger vibrations into the arm, some of the additional mass needed (say, about 50% of it) is best added right at the headshell rather than entirely in the tone-arm base, for the slight flexibility of the arm tube may otherwise cause the cartridge end to decouple itself from the base end, with resulting spurious and unnecessary resonances. (Some moving-coil cartridge manufacturers specifically recommend a high-mass arm. We cannot condone this, for the subsonic impulses that result when tracking warped or eccentric discs cause more problems of system distortion and degraded imaging than they solve.)

Our experience with the SME III over a period of several months has shown that most cartridges produce more tape-like sound in it than they do from any other arm (with the possible exception of the Breuer arm, which we have never felt obliged to test because of its cost and virtually-zero availability). It is still our first choice and, as of now, our reference arm for all cartridge tests.

Incidentally, the manufacturer’s setup adjustments are right on the button, and should be followed to the letter.

It should be noted that SME now has available a cheaper version of the III, designated the IIIS, which saves you $50 for the privilege of doing without the damping. We advise against that.

The SME III may not have the glamor of some of the more-exotic arms currently on the market, but we suspect that most sane people will still hold it in high regard when those exotica are into their 10th modification and working on their 11th.

(No Mfr’s Comment Received)

Quickies

Infinity RS-4.5 Speaker System
Follow-Up

More on the continuing saga of the 4.5, now into its 5th modification in a relentless attempt to conquer the sounds of trombones and cellos...

The latest version is better than any of the previous ones, which is only to be expected after all. The original hardness is completely gone, the stupendous low end and high end remain unscathed, and while that elusive (at least for the 4.5) capacity for vulgarity when called on has been improved, the system is still more lushly polite than aggressively outspoken.

We have an old Phase-Four London recording of Stokowsky doing his arrangement of Mussorgsky’s “Night on Bare (Bald) Mountain” which contains some of the most flamboyantly flatulent trombone passages ever committed to a disc. They almost made the grade through the 4.5s, but both the stentorian “aww” quality and the requisite spikes were tamed by the system.

So, the 4.5 isn’t perfect yet. So, some other, cheaper, systems do a better job with trombones and cellos than the 4.5. It is still one of the best speaker systems available today, regardless of cost -- one that is quite capable of making most instruments sound palpably alive and just as gorgeously rich and smooth as they do.
in a live situation. Perhaps we are making too much of its one, really minor shortcoming, but much music does lose some of its dramatic impact because of that shortcoming. Despite it, we are adopting the RS-4.5 as our reference test system simply because it is now the best full-range dynamic system we know of (and is thus ideal for power-amplifier testing), and because -- all cavils aside -- it does everything else so blessedly well. It has been added to our Recommended Components list in Class A, with that one little reservation.

Incidentally, the RS-4.5 is the only speaker system currently in-house that will handle the humongous cannon-shot impacts on Telarc's new "1812 Overture" recording without (1) bottoming, (2) developing acute hangover, or (3) going "Phht"! And that is an accomplishment.

(No Mfr's Comment Received)

Audionics BT-2 Preamplifier
(The full report on this and the Audionics CC-2 power amplifier were both slated for this issue but were squeezed out for lack of space. Since these Quickies cover all of their salient points, we will probably skip the long reports on them unless we are deluged with reader requests for them.)

A basic basic preamplifier, this has only three inputs (phono, aux, and tape with monitor provision) and a minimum of other control functions (Stereo/Mono, RIAA/IEC). The IEC is a new, proposed disc-playback curve which incorporates a subsonic attenuation, for reduction of rumble and feedback. With most discs, it causes a noticeable thinning-out of deep bass, and has thus far been greeted by the industry with passionate indifference.

The unit has a single AC "convenience outlet" and a front-panel switch which seems to turn the preamp (and its pilot light) on and off. Actually, it doesn't; it is only an output-muting switch. The preamplifier remains on at all times, as does anything plugged into that "convenience outlet." (We thought "convenience" in this context meant it spared one the inconvenience of unplugging whatever was in the outlet.)

The BT-2's RIAA equalization was found to be slightly off, erring in the direction of a very gentle downwards tilt towards the high end and yielding a total error of ±0.5 dB, or 1 dB spread. (The curve below has an expanded vertical scale to make the deviation visible. This curve in no way relates to the subjective curves we frequently publish, wherein a barely visible deviation from Flat corresponds to a barely-audible deviation.) This very small equalization error, combined with the preamp's very low distortion which prevents spurious brightness), makes the BT-2 sound slightly on the warmish side.

The preamp's low end is very deep and taut, the high end extremely sweet and smooth yet open and focussed (a very un-

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Deviation from RIAA in the BT-2-II's phono equalization.
transistorish top), the middle range liquidly transparent and as well-defined as the best of the available tubed preamps. Imaging was very good, with but a slight broadening of sources and a subtle loss of spaciousness (in comparison with tape sources fed via an inverse-RIAA pre-equalizer).

All in all, a superb little preamp -- not completely neutral in sound, but more listenable in many respects than any other we have encountered in (or below) its price range. (It lists for $429.)

(No Mfr's Comment Received)

Audionics CC-2 Power Amplifier
There isn't really much to be said about this, except that sonically it has much in common with the BT-2, even to the slight warmth. (In this case we could find no measurable reason for it.)

It lacks the gut-busting authority at the low end that we have heard from some power amps (most of them more powerful than this one), but is otherwise one of the most ingratiating performers we've come across, with a suavely liquid, easy quality, yet the ability to let hard transients cut effortlessly through a full-orchestral fortissimo. It has no perceptible effect on imaging (detrimental or otherwise), and does an excellent job of reproducing perspective without exaggerating depth. (Some reviewers confuse depth with exaggerated distance, which is the result of a broad upper-middle-range frequency-response dip -- a form of euphonic distortion, but a distortion nonetheless.)

The CC-2 won't drive subwoofers very well. Its extreme bottom is a little thin, mid bass is a bit lacking in impact. Neither is it very happy with some electro-static loads. (It overloads easily and spitingly, driving the Infini- ty SS-1A's tweeters.) With most modest speakers, though, it is an ideal driving amplifier, quite capable of producing what sounds like substantially more than its rated 75 watts per channel.

Note that the pairing of these two Audionics components produces a noticeably warm sound, which is not likely to be complemented by a similarly-inclined speaker system. They are, on the other hand, an ideal combination for use with normally lean, brightish speakers like the Mordaunt-Short Pageants reviewed elsewhere in this issue.

We have received a couple of letters from CC-2 buyers who had problems with a mechanical buzz (60-Hz fundamental) from the power transformer, and dealer reactions suggested that this may be a common occurrence. Our suggestion: Plug in your CC-2 and check it for this before taking it out of the dealer's store. (It is not the kind of thing that is likely to develop after a period of use; if it's going to happen, it will happen at the outset.)

(No Mfr's Comment Received)

Dayton-Wright XG-10 Speaker System
This full-range electrostatic (plus ceramic tweeter) speaker system shows great promise but, as the saying goes, it needs work.

In its original form, the system had no high end to speak of, sounding much like a very fine mid-range/bass reproducer. A subsequent factory modification, involving the installation of adjustable 5-ohm resistors in place of the original fixed ones, allowed us to bring up the 5-kHz range to the point where the dullness was gone, but had no effect on the extreme high end, which was
deficient no matter how we adjusted the speaker's controls. (Incidentally, D-W recommends setting the adjustable resistors to $2\frac{1}{2}$ ohms as a preliminary setting, but we found that to cause shockingly hard, steely sound. We felt the optimum to be closer to $3\frac{1}{2}$ ohms.) We have always liked electrostatics, but for reasons we cannot really explain, this one just doesn't make it. It has neither the snap nor the feeling of you-are-there reality that has attracted us to some other electrostatics (notably the less-expensive Quads). And while the XG-10 can produce higher listening levels than the Quads, it takes almost 10 times the power to produce the same output as a pair of Quads! The XG-10 has some significant innovations going for it (the gas-filled bags for example), but we don't feel the design has been sufficiently refined at this point to make it a viable consumer product.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{frequency_response.png}
\caption{Measured frequency response (solid lines) of the XG-10 with two adjustable-resistor settings, and subjective response (dotted) at the $3\frac{1}{2}$-ohm setting.}
\end{figure}

(Manufacturer's Comment on page 42)

Acoustat Monitor 4 Speaker System
Sonically similar to the Acoustat X reviewed here (issue 4-3), these full-range electrostatics with integral amplifiers are much less dry-sounding, similarly deficient in extreme high end, and a little on the heavy side. Bass is very deep but not very taut, and the system is capable of putting out quite high (ca. 105-dB) listening levels without strain, under normal circumstances. (Abnormal circumstances include the Telarc 1812 Overture, whose cannonades send the amplifiers into paroxysms of choking overload.)

The high end can be adjusted from soft and sweet to slightly tishy by adjustment of the vertically-aimable panels to fire above your head (when seated) or directly at ear level.

Stereo imaging is good but nothing to write home about.

Everything considered, we are inclined to feel that the smaller X model is a better speaker. The Monitor images better, produces higher output levels, and goes about a half-octave deeper (flat to around 30 Hz), but to us, the X's rather leaner sound yields a more convincing illusion of listening to real instruments. We happen to feel that is a first-priority consideration, while very much aware that many other listeners will disagree with us. We are, to an extent, nit picking here, for these really are excellent speakers and, like their smaller version, have to be considered a Best Buy. (What other amplifier/speaker combination can you buy for $13000 that can equal these in most res-
Incidentally, the reduction in over-all dryness is largely a result of circuit changes in the driving amplifiers -- changes which will effect the same improvement in current-production Model Xs.

Two final notes: First, we are obliged to mention that the Acoustat X is no longer called the X, but is now called the Monitor 3. Second, Acoustat's speakers have earned a reputation, along with those from Beveridge, for being the most indestructible electrostats ever made. This obviously has something to do with the fact that both have been usable only with their own amplifiers, which are designed to overload before the speakers receive breakdown-type signal levels. (It may be a different story with Beveridge's new System 3, that requires external driving amps of the customer's choice.)

(No Mfr's Comment Received)

PCM-1 Follow-Up

Sony's PCM-1 digital-audio recording converter, which received a rave review in our issue 4-4, was discontinued almost immediately after that report was published, pending the adoption of universal home-PCM operating standards. It has now been superseded by a Model PCM-10, which conforms to the new standards. PCM-10s are starting to come into the US now, as is an "intermediate" (between audiophile and professional) Model PCM-100. The 100 has provision for direct digital copying from one VCR to another without an intermediate analog-conversion step. (The PCM-10 also allows for direct digital copying but does not provide dropout correction, so direct 10 copies may show some sonic degradation after a few generations.)

The PCM-10 is expected to cost about the same as the PCM-1 -- around $4500, plus the cost of the necessary VCR. This is probably the best audio recording system available for under $10,000 in terms of sound, but neither the 10 nor the 100 permit editing of a recording (beyond what can be done with the VCR's Pause control). The 100 can however be used with Sony's professional editing system (if you can find a studio that has one).

(No Mfr's Comment Received)

Servolinear SL-VI Speaker System

These have very nice bass but are sabotaged by rather indifferent performance above that. The drivers blend poorly, sounding distinctly like three separate units (which they are), there is an irksome nasality to the sound, there is what sounds like a pronounced, narrow-band suckout centered at around 5 kHz, and although the system produces an unusually spacious sound, stereo

(To page 57)
JVC G-71USJ Color Camera

Color video cameras continue to improve in quality and come down in price. This one -- already superseded by two new models from JVC -- offers excellent color in daylight illumination and better detail resolution than previous models, but is still a far cry in both color and black-and-white detail from professional TV cameras.

The unit comes fitted with a 6:1 zoom lens that focuses down to about 3 feet, and an electronic viewfinder -- a tiny black-and-white TV screen that shows exactly what the camera is picking up. A remote VCR Run/Pause switch is located on the front of the camera where it can be easily operated while hand-holding everything. The electronic viewfinder cannot however be used for viewing playbacks of recorded material. A separate monitor (a portable TV set) is required to do that.

Sound pickup is via a small microphone assembly which attaches to the bottom of the camera. The mike is "boomed" forwards about 9 inches in front of the camera, at the end of an extension which also serves as a handle for holding the camera when it isn't tripod mounted. Audio quality from the microphone was surprisingly good -- better than one hears from the best TV-audio signals. Distortion was very low and the frequency response was more than adequate for speech and most natural sounds, and quite adequate for music.

A set of rechargeable batteries (plus the charger) is available as an option, for on-location filming with a portable VCR. The lightest of these are still pretty hefty, weighing 15 lbs or more, and the JVC camera plus one battery weighs around 10 lbs, so it takes a rather solid person to carry these around for any length of time. Portable video recording is still far more involved and cumbersome than point-and-shoot Super-8 filming, and it has the additional disadvantage that it cannot be edited with the ease or retention of picture quality that Super 8 permits. But a portable VCR will operate for about an hour on a single battery charge -- much longer than the running time of a single Super-8 load, but less time than can be racked up with a suitably endless supply of film reloads. Videotape however costs but a small fraction of the equivalent running time of Super-8 film.

The color fidelity of the GR-71 with sunlight illumination is comparable to the best from Super-8 film, but picture detail is noticeably inferior, having substantially less detail than the resolving power of a good TV set. Resolution diminishes further under reduced-light conditions, and color balance tends to go to pot under artificial illumination. The camera comes with a color-tempera-
ture filter which is used for daylight illumination and should be removed for tungsten lighting. Without the filter, the color is reasonably well balanced for professional photographic floodlights but becomes increasingly yellow in highlights and purple in lowlights as color temperature drops below 3600K.

Generally, this camera does a nice job, with better resolution and color accuracy than any other nonprofessional video camera we have encountered (and we've checked out most of the competition), but its picture detail is nonetheless far below professional-camera standards. On the other hand, so is its price: $950.

(No Mfr's Comment Received)

**JVC HR-3600 Videocassette Recorder**

At roughly the same price ($1200) as the Sony SL-8200 Betamax reviewed here two issues back, this is better in some respects and not as good in others.

We won't list operating features here; they are available from any Sony dealer. We will, instead, address ourselves to how well it does what it is supposed to do.

In comparison with high-resolution original signals, the HR-3600AH's playback showed a noticeable loss of resolution, very slight evidence of ringing (faint light edging of dark vertical details), but otherwise excellent reproduction. There was no difference in color hue or saturation between the original and the VCR playback. Despite the resolution loss, we rather preferred the JVC's picture quality to that of the Betamax 8200 because we found the JVC's slight softening of detail less irritating than the Sony's color noise (which shows up as multi-colored flecks in large areas of color, particularly bright red). If we were to assign equal weight to all aspects of the playback picture though, we would have to say that the JVC's picture quality is about equal to that of the Sony. The JVC trades off picture detail for reduced color noise, and only the buyer can ascertain which tradeoff will bother him the most. You can get a clue about your own position here by thinking of color noise as the video equivalent of tape hiss or disc surface noise, and of reduced picture resolution as reduced definition or high-end response in audio. The one that irks you the most in sound reproduction will probably bother you the most in a video reproduction. On the other hand, maybe it won't.

While the JVC never produced the lateral image jitter that we observed on occasion from the Sony, its horizontal synchronization seemed much weaker in that, whenever the transmitted signal was interrupted, even for an instant, the JVC's picture would tear completely apart for upwards of a second or so. Further evidence of horizontal-sync problems was an occasional tendency for vertical lines at the top of the picture to bend back and forth. Neither problem could be improved by adjustment of the VCR's tracking control.

Audio quality on the JVC was comparable to that of the Betamax at high tape speed (x1): Flat from 50 to 10,000 Hz, with around 40 dB of S/N ratio. This is more than adequate for recording anything from TV without audible loss, but (as with all other current VCRs) hardly state-of-the-art fidelity. The audio track is (also like all other VCRs to date) mono only.

With most VHS videocassette recorders offering slower tape speeds for longer playing times, the JVC units may well provide as good picture reproduction as any VHS ma-

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Recommended Components

Each component listing on the next few pages is followed by a series of numbers, each corresponding to one of the numbered notes on the following pages. If you are only interested in knowing what components we are recommending to buyers, just ignore the numbers. If you are curious enough about a component to want to know more about it, or to ascertain how it would "mesh" with your present components, take pencil and paper and jot down each of the numbered Notes pertaining to it. The result will be a capsule "Quickie" report on that component.

Components listed here are ones which we feel to be the best available in each of four quality classes, based on all of the information available to us at time of publication.

Components are selected for listing on the basis of our own tests as well as reports in other magazines and from users. The ratings are predicated entirely on performance -- i.e., accuracy of reproduction -- and are biased to an extent by our feelings that things added to reproduced sound (flutter, distortion, various forms of coloration) are of more concern to the musically-oriented listener than things subtracted from the sound, such as some deep-bass or extreme-treble range. On the other hand, components which are markedly deficient in one or more respects are down-rated to the extent to which their deficiencies interfere with the full realization of the program material that is likely to be fed to them.

Some of the items listed here-under are discontinued models (*), listed here because their durability and performance distinguish them as "classics", and because they are sometimes available used, at substantial reductions below their original cost.

Component classes are as follows:
CLASS A: Best attainable sound, without any practical considerations; "state of the art."
CLASS B: The next best thing to the very best sound reproduction.
CLASS C: Somewhat lower-fi sound but far more musically natural than average home component high fidelity.
CLASS D: Satisfying musical sound but significantly lower fidelity than the best available.

The order in which components are listed in each class has nothing whatsoever to do with their quality, relative to that of others listed in the same class.

Components which are judged to rank near the bottom of one class and the top of a lower class are listed in both classes.

Some component categories have no D-class listings. This is because we have yet to find one of that class which is that much better than the competition to warrant singling out.

The following changes in the list have been made since the last issue:
* Discontinued and obsoleted Sony PCM-1 digital audio recording converter dropped from list pending

(To bottom of page 42)
Turntables
(B) Denon DP-1500
    Acoustic Research AR-77XB* (20,29,30)

Cartridges
(A) Shure V-15-IVG (4,11,13,15,80,118,156)
(B) Shure V-15-IIIG (4,11,13,15,80,118,162)
(C) Shure M-95EJ (11,12,13,80,118,162)

Tone Arms
    SME-3009-III (20,136,138,192,195)
(B) Mayware Formula 4 (16,20,136,138,192)
    KMAL (19,20,22)
    Grace 707 (28,195)

Tape Recorders
(A) This space temporarily unoccupied.
(B) Revox A-700 (34,44,46,138,157,189,192)
    Nagra IV-SL (36,38,46,62,80,161,185)
    Stellavox SP-7 (38,43,46,62,185,189)
    Technics RS-1520-US (46,52,80,135,161)
    Revox B-77 (33,34,44,45,46,160,161)
    Tandberg TCD-340 cassette (46,138,156,181,195)

Microphones
(A) Sony C-500* (56,80,138,157,166,181,192)
(B) Sony C-38 (55,56,80,138,157,166,180,181)
    Beyer M-500 (56,58,80,135,163)
(C) PML DC-20 (56) or DC-21 (55,61,62,138,160,163)
    Beyer M-260 (56,80,137,139,162,178,184)
(D) Advent MDC-1 (55,135,139,158,164,183,195)
    Beyer M-550 (55,80,135,139,163,164,183)

Receivers
(C) Advent 300 (68,99,137,156,178,180,195)

Preamps
(A) Berning TF-10 (78,86,88,136,142,157,165,166,181,189,192,196)
(B) Audionics BT-2 (75,78,88,94,136,138,157,161,181)
    Conrad-Johnson (78,92,136,156,181)
(C) Ace Audio ZDP (77,78,79,136,162,181,185)
    Dynaco PAS-3x* (83,84,137,138,156,184)
    Quad 33 (79,86,136,157,158,161,181,193)
    Ace 3000 pancake (77,78,128,130,135,156,194)

Amplifiers
(A) Infinity HCA (95,136,137,138,157,163,165,166,181,190,192,196)
(B) Audio Research Dual 150* (88,91,92,95,135,157,165,181,189,190,192)
    Bryston 4-B (95,126,136,137,138,157,156,180,181)
    Audio Research D-110 (136,138,157,161,165,166,186)
(C) Audionics CC-2-II (134,139,156,181,182)

*Discontinued model.
Recommended Systems

Class A

In our last issue, we refused to list a Class A recommended system because every speaker we were aware of that should have been a part of that system had one or more areas which were bettered by much-less-costly systems, and thus could not be considered as "state of the art."

Since we made that statement, Infinity's valiant efforts on behalf of their RS-4.5 system have raised its middle-range performance from ho-hum to acceptable, and that plus its superb performance in other areas now earns for it a qualified Class-A-Recommended rating. So, we once again have a Class-A system that we can recommend for musically-picky audiophiles with more money than restraint. This system still lacks some bite and "guts" -- the ability to sound vulgar when the need arises -- but if you don't mind your trombones and cellos a little prettified and shorn of their natural spikes, this is a system you should be more than happy to curl up with.

(A) Shure V-15-IVG cartridge
Shure/SME 3009-III tone arm
Linn-Sondek turntable
Berning TF-10 preamplifier
Infinity HCA power amp
Infinity RS-4.5 speaker system
Ca. $9,000

(B) Due to our inability to date to match a Class B speaker with a Class B preamp and power amp which complement it, we have no Recommended B system as of now.

Class C (Music-Lover's System)

Assuming the cost of an average disc (with average sound) to be $7, this modest little system will set you back by the equivalent of almost 260 discs. If you now own 12 discs, we would advise you to buy more of them and stick with your KLH compact. If you're already the proud owner of a respectable disc collection, and are past the point of needing a Beethoven's Eroica or Bruckner's 8th to fill in gaps in your repertoire, this system could well be the best investment in listening pleasure that you will have made in 10 years. What this lacks in extreme high end and subterranean bass is, in our not-so-humble opinion, more than compensated-for by a remarkably natural middle range and a degree of ease and listenability that can stand comparison with the sound of live music. Its major weakness is a certain lack of bite and detail in the middle range, yet it is analytical without being clinically revealing. This is a system that many people who attend concerts regularly (and still prefer that sound to hifi) may never again feel the need to upgrade. And think how many records one could buy then!

(C) Shure M-95-EJ cartridge
Rega Planar 2 phono unit*
Audionics BT-2 preamplifier
Audionics CC-2 power amplifier
Mordaunt-Short Pageant 2
Ca. $1800

(D) We are still working on our D system. Patience...

* We have not tested any moderately-priced turntables from some time, so the Rega recommendation is provisional, being based on favorable comments from subscribers and from other publications. We will test one ourselves ASAP. (Most inexpensive 'tables are available only with integral arm, and the arm is usually their worst feature. The Rega arm shows promise, although the 'table can be purchased without it.)
(C) (Continued)
Son of Ampzilla (77,94,138,163,186)

(D) Dyna Stereo 70* (77,92,137,156,178)

Speaker Systems
(A) Infinity Reference-Standard 4.5 (114,118,120,126,136,138,141,156,157,180)
(B) Quad electrostatic (80,103,107,108,114,115,116,117,139,158,159,165,166,188)
   IMF Monitor IV (100,106,118,119,129,137,138,140,156,180,191)
   Acoustat Monitor IV (80,90,117,120,127,137,150,156/159,180,182)
   Acoustat Monitor III (80,90,120,127,137,150,158,165)
   M-Z Mod 3 (106,118,119,122,128,136,156,194)
(C) Mordaunt-Short Pageant 2 (113,118,119,122,127,139,156,178,195)
   FMI 100 (113,118,119,126,137,139,156,180,195)
   Rogers-BBC LS-3/5a (99,103,108,113,114,119,121,122,126,132,137,139,159,165)
(D) FMI 80 (108,113,118,119,127,135,156,158,165,185,195)

Headphones
(A) Infinity ES-1 (Selected Sample) (88,108,136,146,149,150,153,155,157,166,181,189,197)
   Stax SRX Mk I or II (SRD-7) (108,137,146,149,150,153,155,157,165,166,181,189,195)
(C) AKG 240 (105,108,128,136,148,153,155,158,163,165,186)
   Beyer DT-480 (106,137,148,152,156,180)

Miscellaneous Devices
(A) RTR ESR-6 Add-On Tweeter (108,121,150,157,165,181,189)
   Russound QT-1 Patch/Switching Box
   M & K BE-II A Add-on woofer (103,114,131,134,137,138,140)
   FMI Shielded Audio Cables (157,165,166,189)
   FMI Loudspeaker Cables (88,136,138,157)
(B) M & K B-II Add-on woofer (103,114,131,134,137 (unless 111),140,195)
   Dynaco (ESS) SE-10 Octave Equalizer
   dbx 118 Program Expander/Compressor
   dbx 157 Tape-Noise Reduction System
   Audiopulse One

Disc-Care Products
   Discwasher "Zerostat"
   Watts "Dust Bug" (Used dry)
   Discwasher "Discwasher"
   KMAL Record Cleaner
* Discontinued model.

CHANGES
   test of PCM-10 which supersedes it.
   • Audionics CC-2-II power amplifier added to Class C.
   • Infinity RS-4.5 speaker system added in Class A with reservations.
   • Acoustat Monitor IV and Monitor III speakers added in Class B.
   • Rogers LS-3/5a speakers reinstated in Class C.
NOTES

1. Low output; use step-up transformer.
2. High-level RIAA-equalized output.
3. Substantial sample-to-sample variability; should be individually selected.
4. Outstanding tracking ability.
5. Do not exceed manufacturer's recommended maximum cable capacitance.
6. May interact poorly with some preamps.

10. Stylus damping often deteriorates in a few months.
11. Excellent 78-rpm stylus available.
12. Some mistracking of very loud modulations.
13. Mistracking inconspicuous when it occurs.
14. Mistracking unpleasant when it occurs.
15. Spherical tip; smoother at high end than elliptical.
16. Requires 5-1/2 inch depth below top of platter.
17. Use only with lightweight high-compliance cartridges.
18. Use only with cartridge tracking at 1-1/2 grams or less.

20. Outstanding immunity to acoustic feedback.
21. Use non-detachable-headshell model if possible.
22. Mercury contacts have too much resistance for use with some moving-coil cartridges.
25. Basic drive mechanism only; must be installed on suitably isolated deck.
26. Some acoustic feedback tendency at very high listening levels.
29. Integrated arm/turntable. Performance can be improved by replacing tone arm with one of Recommended arms.
30. Excellent external-shock isolation.

31. Belt drive, low torque.
32. Direct drive, moderate torque.
33. High-speed (7.5 & 15) model.
34. Available in 2-track version.
35. If unbalanced inputs cause hum, use input transformers.
36. Set-up adjustments accessible without removing cabinet.
37. Edit cueing not possible.
39. Built-in test oscillator: 8-or 10-kHz frequency.

40. Digital (PCM).
41. PCM copy facility.
42. Extremely good s/n ratio.
43. 10-1/2-inch reel adaptors available at extra cost.
44. Awkward to thread.
45. Does not meter output signal.
46. Separate play head facilitates adjustment for specific recording tape.
47. Instructions describe user set-up for specific recording tape.
48. PCM adapter only; must be used with videotape recorder.

50. Low output; needs pre-preampifier with many preamps.
51. Precise editing not possible without costly auxiliary equipment.
52. Extremely low wow and flutter.
53. Omnidirectional.
54. Cardioid.
55. Bidirectional (figure-8).
56. Emphasized presence range, rolled-off low end; ideal for speech or pop vocal.

60. Somewhat awkward to handle.
61. High output may overload some preamps.
62. Choice of AC or battery-powered supply.
67. Fairly low sensitivity.
68. Moderate sensitivity and selectivity.
69. Very highly sensitive and selective; ideal fringe-area tuner.
70. Tuner section better than audio section.
75. No auxiliary AC switching.
76. No tape monitoring provision.
77. Available in kit form.
78. No tone controls.
79. Low output voltage; will not drive most US-made power amplifiers to full output.

80. Outstanding record for dependability.
81. Volume compressor/expander can be used as tape-record noise-reduction system as well as for existing recordings.
82. Professional tape-noise-reduction system.
83. Poor tone-control action.
84. Needs high-impedance load; use only with tube-type amplifiers.

86. Flexible and effective control lineup.
87. Some hiss audible through high-efficiency speakers; use power amp with input level-set controls.
88. Unsurpassed reproduction of inner detail and depth perspective.
89. Integrated preamp/amplifier.

90. Includes built-in power amplifiers specifically matched to and equalized for the speakers and their radiation characteristics.
91. Floating 0-ohm output terminals; may not be usable with common-ground headphones or speaker-switching devices.
92. Best with electrostatic tweeters or tweeters with comparable transient performance.
93. Some samples may oscillate at full-up volume-control setting.
94. Best with typical dynamic tweeters.
95. Under-damps low end of many dynamic woofers.
96. Over-damps low end of many dynamic woofers.
98. Mono power amplifier.
99. Low power capacity.

100. Very high power capacity.
102. Very low efficiency.

103. Fairly low efficiency.
104. Fairly high efficiency.
105. Will produce very high listening levels with adequate power. Watch for hearing damage!
106. Does better with good solid-state amplifiers than with tube amplifiers.
107. Difficult load for most amplifiers.
108. Best driven by top-notch tube amplifiers.
109. Cross over above 2,500 Hz unless modified.

110. Must be biamplified.
111. Should be biamplified for best detail and control.
112. Best in very large listening rooms.
113. Ideal for small listening rooms.
114. May be biamplified for considerably higher efficiency and better control of driver balance.
115. Unusually critical of room placement.
116. Use Quad 303 power amp or one of similar power rating.
117. Beamy high end.
118. Unusually spacious sound.
119. Excellent stereo imaging.

120. Moderately good stereo imaging.
121. Very large apparent sound source.
122. Excellent driver blending.
123. Woofer does not blend well with upper range of system.
124. Some audible discontinuity between upper-range drivers.
125. Very comprehensive protection circuitry.
126. Slightly distant perspective ("Row M"), shy of mid-range bite.
127. Neutral perspective ("Row H").
128. Rather forward perspective ("Row A").
129. Very "gutsy" and authoritarian sound.

130. Some vowel-like coloration.
131. Passive crossovers, available for use with Magneplanar and
Quad systems, allow for common- 
bass (single-woofer) operation.
132. Tendency toward boominess.
133. Some upper-bass drumminess.
134. Somewhat loose low end; needs 
high-powered amplifier with very 
high damping factor.
135. Lean, dry low end.
136. Extremely tight, well-defin- 
ed bass.
137. Rich, fat low end.
138. Very deep bass range.
139. Somewhat limited deep-bass 
range.

140. Low end may be underdamped 
by some amplifiers, producing 
flaccid heaviness.
141. Low end may be overdamped 
by some amplifiers, producing 
excessively lean, dry bass.
142. Some phono hiss audible at 
high volume settings.
146. Must be driven by power amp- 
ifier.
147. 2000 ohms (Hi-Z).
148. 200-600 ohms.
149. 4 to 8 ohms.

150. Electrostatic.
151. High rejection of outside 
sounds.
152. Moderate rejection of out- 
side sounds.
153. Designed for minimal rejec- 
tion of outside sounds.
154. Heavy weight.
155. Very lightweight.
156. Extreme highs slightly soft, 
sweet.
157. Airy, open high end.
158. Bright, very "alive" sound.
159. Slightly sizzly high end.
160. Somewhat hard over-all sound.
161. Slightly dry high end.
162. Slightly hard high end.
163. Crisp high end.
164. Wiry high end.
165. Extraordinary focus & "snap".
166. Unsurpassed high-end trans- 
ient response.
177. Rather diffuse sound.
178. Somewhat deficient in snap 
and sheen.
179. Somewhat 2-dimensional sound; 
deficient in depth perspective.
180. Somewhat over-ripe, richer- 
than-life sound.
181. Liquidly transparent, lucid.
182. Slightly dark, heavy.
183. Slightly grainy over-all 
sound.
184. Slightly veiled.
185. Very subtly veiled.
186. Slightly dry sound.
187. Poor reliability record.
188. Despite any deficiencies, 
this is one of the most accurate 
sound reproducers in its compon- 
et catagory.
189. Fantastic!
190. But is it worth the money 
to you?
191. We don't really like this 
but a lot of people whose judge- 
ment we respect do.
192. Our personal favorite, as of 
now.
193. We feel rather so-so about 
this. Better audition it before 
deciding.
194. A mixed bag. We like it but 
you may not.
195. Best performance for the 
money.
196. Failure rate not yet esta- 
lished.
197. Samples may vary widely.

We have been getting complaints from some readers about the Recommended Components section being "unweildy." We presume this is because of the seemingly-endless Notes which follow the listings. Well People, we never promised you a bed of roses. And nobody ever said you had to plow through the Notes, either. If you just want Recommendations, there they are. Just pretend the Notes aren't there. Simplicity itself! If, on the other hand, you are interested in knowing whether a Recommended component will work.
Recordings

Mostly by Margaret Graham


I do wish Varese-Sarabande and Chalfont would do something about the high end of their recordings. Where does the problem lie? Here is yet another disc with delightful program material beautifully conducted, and a shrill, steely high end. It really is a great disappointment.

These performances are really exciting. The Ginastera ballet is an energetic piece of music with an appropriately strong kinetic feeling. The Bolero, of which I am so tired, receives a superb interpretation by Gould; I could actually listen all the way through it. The Weinberger isn't as spirited and lusty a performance as the old Reiner which is still my favorite (on "Overtures and Dances," RCA*), but if you haven't heard the Reiner you will find this one engaging. Like some of the Brandenburg Concerti, it is almost impossible to sit still, it so energizes one. The Shostakovitch Overture, too, is a well-conceived interpretation.

I really would like to put this record in the Top of the Heap, but alas, the high end mitigates against it.

The Music of Sir Edward ELGAR and Ralph VAUGHAN-WILLIAMS. The Bournemouth Sinfonietta, George Hurst conductor. Chalfont C77.005.

The title here implies that this is all the music these esteemed English composers wrote. It isn't. This is gorgeous music, lovingly conducted, but then I have always had a soft spot for Vaughan Williams' music anyway. George Hurst will be a worthy successor to Sir Adrian Boult.

The Overture to "The Poisoned Kiss" is a frolic which contrasts perfectly with the following "Hymn Tunes". "The Running Set", an arrangement of folktunes for a dance whose original music is long-lost, is energetic and lusty, whilst "Sea Songs" exemplifies the brassy fullness that characterizes so much of Vaughan Williams' orchestrations.

The Elgar works are lovely too. "Sursum Corda," in its use of string, organ and brasses, is superb. "Sospiri" is a delicate, subtle work. "The Minuet from Beau Brummel" has an 18th-Century

with your favorites speakers or will cause your entire system to blossom forth in colorful fireballs like the bridge of the USS Enterprise under Klingon fire, then by all means ignore the Notes. Like those little rolls of paper next to the public sit-downs, they're only there for your convenience.
flavor despite its obviously 20th-Century origin. "Burlesco" from the fragmentary opera, "The Spanish Lady," is a short charmer. "Adieu" is a transcription from an early piano solo, and The Waltz from "The Starlight Express" (a fantasy for children of all ages) has a delicate lilt. Perhaps, someday, we can have a recording of all its incidental music.

The recording has a harshness at the high end, but the mike perspective is perfect! And despite its analog origin, this disc holds its own against any digital disc in cleanliness of sound and surface. This is an "ought-to-have" recording -- unless your system has some harshness of its own. Then this will sound like trash.


This is a first-class example of something that has been bothering me for some time about audiophile discs in general: The sound is gorgeous -- infinitely superior to that on three old Columbia's of Taj Mahal that I own -- but the performance is indifferent. Those Columbia's were done before live audiences, and the recordings were incidental to the performances. On the Crystal Clear, it sounds as though the performances were incidental to the recording and that the (small) "audience" was simply a contrivance. The Columbia's have a great feeling of excitement -- a feeling that performers and audience were communicating. The Crystal Clear has not.

"Live and Direct" beautifully illustrates the fact that it is not enough to preserve sounds perfectly; that is what recording is about, but it is not what music is about. At some point, we record buyers must recognize that our commitment to high fidelity does not mean we will blindly purchase anything with fancy technical credentials and "good sound". We must remind those record producers that what we really cherish is the feeling and excitement of live music, where the quality of the performance interacts with our own imagination to make for an unforgettable experience. This effect can be captured on records, even in low fidelity. Now that genuine high-fidelity recording has been proven possible, we have a right to expect more from the new "audiophile" releases than that alone.

LA


This re-cutting from 1959 Urania master tapes is quite successful. Despite some prominent mid-bass and a slightly edgy treble sound, the performances are lyrical and lively. The Prokoviev Waltzes have always been a favorite ballet of mine, as their somewhat spare orchestration lends a charming piquance to this often overly-lush musical form. The Gypsy Fantasia (five dances from his ballet, "Tale of the Stone Flower") has a cossack feeling of great energy and elan, counterpointed by the wistful "Dance of the Gypsy Girl" with its slightly oriental harmonies.

The Balakierev overture will seem familiar even to those who have never heard it before, for Tchaikovsky and Stravinsky both drew from the same resources as did Balakierev.

Hans Schweiger's interpretations are excellent, with tempi neither rushed nor dragged. He draws both delicate and robust sounds from
The Kansas City Philharmonic. The only flaw which will bother audiophiles is that exaggerated wiriness in the high end. In this case I would recommend judicious use of an octave equalizer (2dB down at 4kHz does it), as the performances are really worth the price of the record.


The elegance and leisure of grace of old-world Europe are captured to perfection in this recording. I haven't been so thoroughly enchanted in a long time. And if I were planning to seduce someone, this disc would be part of my arsenal. From Strohmayer's flirtatious polka "Schone Ida" through Lanner's "Neue Wiener Landler, Opus 1" to Johann Strauss pere's lilting "Spielpolka," each dance is delightful. Diabelli's "Wiener Tanz" played on solo guitar is a little gem, as is the anonymous "Linzer Tanz".

The recording itself is very good, with good perspective, lovely string tone and quiet surfaces, but suffers from excessive artificial reverb and a rather honky midrange which includes a fairly pronounced "wolf-note". I suggest you get this anyway, and enjoy a short trip through time and space to 19th-Century Vienna.

JOHN WILLIAMS: Dracula -- the Film Score. Conducted by John Williams. MCA 3166.

The sound on this disc is swimmingly reverberent, with brashly-recorded brasses and a hard-as-nails high end. The music is in the fulsome romantic tradition of film music, with marvellously dark, foreboding passages and tensional development. Although I didn't see this film, it is easy to imagine the familiar horror story in the context of John Williams' score.

I would truly like to give this high marks on the basis of the music, which is absolutely goose-bumpy, but I cannot forgive the grating recording. I would suggest buying this only if you have an equalizer, or a very dull-sounding reproducing system.

PATRICK. Original motion-picture soundtrack. *Music composed and conducted by Brian May*. Varese-Sarabande VC 81107.

This disc is marred by a steely high end, which is a pity as the music is most effective. The scoring is harp, woodwinds, strings, synthesizer and percussion. I have not seen this "thriller," but the jacket notes give an adequate summary of the plot (without giving it all away) to allow one to appreciate the music. Its atonality and fragmentary quality convey a shivery feeling of suspense and tension. If you're a filmscore buff, don't miss this one.

VIVALDI: Flute Concerti. Christopher Taylor, Flute. Philomusica of London Directed by Carl Pini. Merlin MRR 78107. (Available from Stephen Baird, P.O. Box 17947, Memphis, TN 38117. $16.00)

This, by nature of the music, is a low-key record. Christopher Taylor's solos are very much in the French style of playing although they betray some English robustness which suits Vivaldi nicely. The virtuosic technical demands of the C Minor Concerto are well met by Mr. Taylor. There are some "holy terror" passages
demanding extraordinary articulation and register changes — always a problem for the flautist. Mr. Taylor seems extremely comfortable with them. Carl Pini’s direction of the Philomusica is concise, with excellent tempi and charming phrasing.

The recording is good, although there is a hard high end. The harpsichord pickup is only fair, although it is balanced judiciously, I must say — audible but not overly prominent. The string sound has some wiriness, and the flute tone is slightly harsh. But all in all this is a good recording, and if the Baroque is your musical meat, you'll enjoy this disc.

BETHEL COLLEGE MALE CHORUS. Oliver A. Mogck, conductor. Ark 4079.

Like many other Ark recordings, this one suffers from an over-abundance of print-through (or groove echoes), which I must say is beginning to annoy me out of all proportion to its significance. The complete absence of it on other 'audiophile' discs makes its persistent presence on Arks all the more conspicuous and all the less acceptable. Otherwise, this is a fine recording.

The high end on this is gorgeous, the sibilants open and completely natural. There is a problem with the hall acoustics though, whose "swimmy" quality sometimes muddles the sound, but this is nonetheless a successful recording, with nice dynamic range. I would have liked a list of the selections, though; it's hard to read a record label at 33.3 rpm.

I do wish Mr. Fulton would outgrow his amateur-recording phase and address his microphones and his considerable recording talents to performers and repertoire that are more worthy of his efforts and of our attention. With other audiophile recording firms offering increasing amounts of solid musical fare, it is no longer enough that a recording merely offer lovely sound.


This has lovely bass and detail, and a steely high end which is a shame! The performances are in the main stunning. The program is movie scores, and includes the main titles from Gould's "Windjammer", John Williams' "Star Wars", Alfred Newman's "Airport", and John Moross' "The Big Country", as well as 'Morning on the Ranch' from Aaron Copland's "The Red Pony", the Epilogue from 'Things to Come' (Sir Arthur Bliss), a "suite" from Miklos Rozsa's "Tribute to a Badman" and his love theme from "That Hamilton Woman", the Prelude from Vaughan Williams' "49th Parallel" and William Walton's 'Prelude and Fugue' from "Spitfire".

These are all exciting performances, but I felt a lack of tautness and incisiveness in the "Star Wars" and the two Walton excerpts. These seemed a little too blase.

This is a great record for listening to and reminiscing about the films. But BEWARE of the high end. If there are any treble peaks in your system, this disc may well grow hair on your spine.


A few record collectors may remember an early Angel of this towering work for organ and full orchestra
From the Top of the Pile

An incomplete list of recordings on which superb performances are accorded excellent recording quality. Asterisks indicate super-fidelity recording.

CLASSICAL

BACH: Orchestral Suites 3 & 4
Merlin MRF-78901

*BACH/MALLOCH: Art of Fugueing
Town Hall S-20 or -21

*BEETHOVEN: Piano Sonata #23
(Appassionata) RCA Japan RDC-4

BIZET: Carmen Suite; GRIEG: Peer Gynt Suite
Telarc 10048

CALLIOPE: Renaissance Band
Calliope 101

Works by CARPENTER, MOORE,
NELSON Mercury Golden Imports
SRI-75095

*CHOPIN: Piano Sonatas 2 & 3
RCA Japan RCD-7

CHRISTMAS IN CAMBRIDGE
Capitol Internatnl SP-10567

*COPLAND: Appalachian Spring
Sound 80 (No record #)

DELIUS: Short Orchestral Works
Argeo ZRG-875

*ELIOT FISK, Guitar
Mark Levinson C-45-000-006

*GOULD Conducts Gould
Crystal Clear CCS-7005

GRAINGER Orchestral Selections
Mercury Golden Imports
SRI-75102

HANSON: 2nd Symphony
Mercury Golden Imports
SRI-75007

HEROLD/LANCHBERRY: La Fille Mal Gardé
London CS-6252

HOLST, HANDEL, BACH
Cleveland Symphonic Winds
Telarc 3508

IBERT: Escales, short works
Angel S-37194

*STEVEN KATES/Piatagorsky
Sonic Arts LS-13

KODALY: Complete Orchestral Works
London CSA-2313

*MACHO MARCHES, Cleveland Winds

*MICHAEL NEWMAN, Classical Guitar
Sheffield 10

*PROKOFIEV: Romeo & Juliet Excerpts
Sheffield 8

SAKURA (Rampal, Laskine)
Columbia M-434568

*JANOS STARKER, Cello Rectal
Denon OX-7171D

*STRAVINSKY: Firebird Suite
Telarc EL-10039

12 Cellists of the Berlin Philharmonic (#1)
Telefunken 6.42339

*WAGNER: Orchestral Excerpts
Sheffield 7

POP & OTHERWISE

*DARK SIDE OF THE MOON
Pink Floyd
Mobile Fidelity MFSL-1-107

*FOR DUKE (Ellington)
M&K Real Time RT-101

*HOT STIX, Ed Graham
M&K Real Time RT-106

Announcing Stereophile's MAIL-ORDER RECORD SERVICE. Big-label domestic records are easy to come by through any record shop. Ones not in stock can be ordered and received in a few weeks. Audiophile discs are much harder to procure if you don't have a local high-end audio store. So... we are now making available, by mail (or UPS if you prefer), most of the audiophile specialty discs. Available are: All Telarcs, Sheffield, Japanese RCAs, and M&K Real Times. Write for catalogs and prices to Stereophile Record Service, Dept. D, Box 1948, Santa Fe, NM 87501.
-- a recording that had to be considered a travesty of the original awesome sounds of the performance. The orchestra sounded thin and wiry, and the organ sounded as if it had been filtered to remove every last vestige of signal below 70 Hz. The giant was emasculated...

It was not known until recently that RCA had made a recording of that work back in the

Some record collectors may also recall

Some collectors may also recall a 1960 RCA release of Respighi's Pines and Fountains of Rome, with the Chicago orchestra under Reiner -- one of the most stupendous discs of an orchestra RCA ever made, and still a hair-raiser even by today's Direct and Digital standards. It was not however known until recently that RCA had been sitting on a recording of the monumental Jongen work by the same performing forces, made just two weeks after the Respighi. There are no records now in RCA's archives to explain why the Jongen was never released until now. Perhaps it was deemed to be of limited interest. (So why release it now?) Perhaps it was because sales of the Respighi proved to be such a technological disaster. (The disc had so much dynamic range that hardly any cartridges could even stay in the groove, let alone avoid distortion. It was promptly withdrawn and re-released in more-acceptable -- dynamically compressed -- form.)

This new Jongen just has to be one of the most awesome recordings ever made! It has simply unbelievable dynamic range, superbly natural instrumental balances, realistic depth (basically, two microphones, with a 3rd in the center for mono compatibility), and the most natural reproduction of instrumental timbres I've ever heard from a symphonic recording. Massed violins have that combination of lushness and rosinous edge that one normally hears only in the concert hall and, for once, the trombones are allowed to carry their proper weight, adding a feeling of power and massiveness that, frankly, I did not think it possible to get onto a disc.

The organ, which plays a more prominent part than I had guessed from the Angel release, puts out so much 32-Hz energy here that the grooves where it occurs are spaced almost 1/32 of an inch apart to accommodate it! The woofers on my RS-4.5s were pumping almost an inch back and forth, and every loose object in the room rattled until tied down.

Perhaps it should be added that the music, too, is positively hair-raising -- overblown, over-romantic, admittedly, but God what sounds it makes! The experience of listening to this all the way through can hardly be described. I won't try. All I'll say is, this is the recording of the decade! The fact that it came from RCA just makes the whole thing all the harder to believe. But believe I must. I heard it.*

CASSADO: Suite for Solo Cello;
SCHUBERT: Sonatine in D for Cello and Piano;
CHOPIN: Sonata in G Minor for Cello and Piano. Janos Starker, cello; Shigeo Neriki, piano. Denon UX-7171D.

This is a stunning recording! Mr. Starker's technique is formidable, and the Cassado Suite is a show-off solo piece for virtuoso which, sadly, is rarely performed. With its Spanish flavor, it is not only exciting to play, but also to hear. The Schubert is a transcription of an early violin solo, meltingly lyrical as only Schubert can be. The coordination of Mr. Starker

* April fool! Ain't I a little stinker? JGH
Starker and Shigco Neriki, his accompanist, are a sheer joy. Chopin's Cello Sonata is a mature interweaving of the two instruments which makes no fewer demands on the pianist than the cellist. It is an exquisite piece of music. I have the feeling that Mr. Starker is playing right on the edge of his bow, the sound he elicits is so clean.

This sort of recording, solo instrument and accompaniment, is where digital cannot be equalled, as long as the miking is handled properly. I cannot fault the recording engineer, Masao Hayashi. His judgment seems almost flawless. Perspective and balance could be improved upon, and imaging seems slightly vague. But there is no evidence of control diddling on this disc, just a superb reproduction of some beautiful music. I truly felt as if I were having a private concert.

GAY and PEPUSCH: The Beggar's Opera. Nigel Rogers, Angela Jenkins, Shirley Minty, Edgar Fleet, Margaret Cable, John Noble, Chorus and Orchestra of the Academia Monteverdiana, Denis Stevens, Musical Director. ABC Classics AX 67046/2.

This is an elegant record. The voices are clear and in good balance with their accompaniment. Mr. Stevens has made some discreet changes to give consistent tessitura for the soloists as well as a firmer bass. They work.

It is a shame that the bawdy dialogue is not included in the recording, but a complete text is provided as well as excellent notes on the history of this ballad Opera whose appearance in London apparently displaced Italian Opera, which had been in vogue until then. Of interest, too, is that Kurt Weill borrowed the music from Mr. Peachum's first song for his "Three Penny Opera."

The (multi-)miking and mixing are well done. The surfaces too on this pressing were nicely quiet. This is not a high-powered recording by any means, but that would hardly suit the early 18th-Century character of the music anyway. All in all, if one enjoys this period, this makes a nice addition to one's collection.

RENE CLEMENCIC: Moliere (Original film score) Clemencic Consort directed by Rene Clemencic. Harmonia Mundi HM 1020

There is a lovely baroque feeling to this music, as well there should be, for Clemencic has drawn on several composers of that period for his film score. This is not to say that the music is staid and dull; there is both liveliness and wistfulness to these pieces, which truly typify the 17th Century. The scoring is delightful, with wonderfully delicate little percussive instruments and bits of baroque dissonance. In the sec-

SHAME ON YOU?
How would you feel about being an accessory to a theft? If you're loaning your copies of Stereophile to friends who haven't paid for the privilege of reading it, that is exactly what you're doing. You are also making it harder for us to do all those things you keep asking us to do for you.

If you have been party to these little thefts in the past, please desist. If your friends want to know what we have to say badly enough to want to borrow the magazine, tell them to subscribe. They'll understand.
tions "La Foire de Saint Laurent" and "La Foire de Toulouse" there is the most marvelous braying quality pinned down by a 17th-Century rhythm section.

"Theme de l'Amour" is a charming theme with variation, and the use of baroque instruments enhances the texturing of the entire score. The combination of clavecin, trumpet and percussion in "Le Combat des Enfants" is extraordinary, whilst the use of soprano voice and chimes in "Le Chambre des Miroirs" gives a truly shimmering effect.

The recording is very loudly cut, and there is a dullness at the top as well as a lot of electronically added reverberation (which I hate), but these flaws are not overly distracting. This record may not be to everyone's taste, but if you like the baroque, or unusual music, you'll enjoy this.

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**M&K's Digital Masterpiece Series**

---**RT-201.**

DUKAS: Sorcerer's Apprentice; CHABRIER: Espana; DEBUSSY: Fetes and Prelude to the Afternoon of a Faun.
---**RT-202.**

BIZET: Carmen Prelude; BERLIOZ: Rakoczi March; BRAHMS: Hungarian Dance #5; GINASTERA: Panambi Suite; RIMSKY-KORSAKOV: Procession of the Nobels from Mlada.
---**RT-203.**

All by the Philharmonia Hungarica conducted by Zoltan Rozsnyai.

This trio of releases marks M&K Real Time's debut in two fields: In serious classical recording, and in digital mastering.

None of the releases offers any programatic surprises; all of the works but one (the Ginastera, on RT-203) are classical warhorses, which means they have formidable competition from countless previously-recorded performances. In most cases there are other performances which are more exciting and better played. (There are some conspicuous booboos on the M&Ks, including a derisive snort from one of the reed instruments during a part of the Dukas where none of the reeds is supposed to be playing. This surprises me because, unlike a direct recording, a digital one can be edited.) I can say without hesitation though that none of the "competing" recordings can begin to compete with these M&Ks in terms of recorded sound.

These discs are being released in parallel versions: One series is processed for playback through dbx's disc-noise-reduction system (see the "Quickie" report in this issue), the other series is unencoded for "standard" disc playback. Apart from the total elimination of noise from the dbx-ed playbacks, there were other sonic differences which raised questions we can't resolve right now. (More about that subsequently.)

First, the recordings. All were evidently made under identical conditions, and all sound alike. The orchestra was just the right distance away from the mikes, and the hall acoustics, if not up to Boston Symphony Hall standards, are good enough to be unobtrusive. Direct-to-reflected sound ratios are excellent except for a subtle wiriness in the violins, and dynamic range is very wide on the "standard" versions of these. (It is stupendous on the dbx-ed version.)

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54
Bass is deep where called for, although the bass drum sounds a little flaccid, as though it was covered with a heavy blanket.

By comparison with the standard cuts, the dbxed ones sounded somewhat softer and sweeter at the high end and markedly heavier at the low end. Whether these differences were due to the dbx decoder we used (the "cheap" $110 home-type model) or to differences in the disc cuttings was something we could not ascertain without trying the professional-model encoder/decoder (used for the discing), and that will have to wait until after this issue goes to press.

Of course, the two Tchaikovsky works have the stiffest competition. These are very nicely done, but neither is better than very good. I have heard more drama and excitement from any number of alternative versions, yet the superior recording here does add a heightened sense of excitement to what are really nothing more than competent performances. (But with more than thirty alternative versions of each, I am not not going to nominate the best.)

The French works on RT-202 fare rather better. The Debussy Prelude in particular displays that tiptoe quality that is so essential to it. It is hard, though, for one reared on Fantasia and the extravagant Stokowsky performance of the Dukas to critique anyone else's interpretation of it, so suffice to to say that Rozsnyai turns in a rousing (if not inspired) performance.

If for no other reason, buy 203 for the Ginastera. It is superb! The other side could be distorted pink noise and I would still recommend the record. Fortunately the flip side is worth hearing too.

The Panambi Suite is in five movement. Moonlight on the Parana, with its delicate, shimmering percussion is a very visually evocative work. Invocation of the Powerful Spirits, for brass and percussion, is dynamically primitive; it not only quickens the pulse but give the audio system a good workout as well. Lament for the Maidens is a melancholy piece with a hauntingly wistful flute and violin duet. Rondo of the Maidens and Dance of the Warriors contrast delicate strings and percussion with sharp brass and deep tympani.

The reverse-side offerings on this recording are best described as chestnuts and should be familiar to all our readers. All are performed well, but the Brahms and Berlioz are especially well carried off.

Finally, I should add that I was immensely impressed with the dbx disc-noise-reduction system. Aside from whatever reservations JGH may have about what it does to the sound, there is something about reproduced music coming from a background of absolute silence that is almost unnerving. I was not aware of how tolerant I had become of the background noise from even quiet discs, and noisy ones drive me up the wall! There's a second benefit which I don't believe I have seen mentioned anywhere in other reports on the dbx disc system: The sound has an ease and transparency that I have never before heard from any disc. Whether this is because the dbx processing softens the high end (which it appears to) or because the dynamic-range compression which is fundamental to the dbx system allows the disc to be cut at lower, distortion-free levels remains to be seen.

Nonetheless, I really feel this noise-reduction system constitutes one of the major advances in audio
in recent years. I just wish it could have come 20 years earlier. As it is, the widespread adoption of this by the record-buying public could postpone the inevitable digital revolution for some years, by eliminating one of digital's most attractive advantages: its lack of noise.

MG

JGH Addendum:

These may not be the most exalted performances of these works ever recorded, but it is too easy to forget how really terrible the recordings were on those "immortal performances" from years past. We should also remember that more than 100 years of recording yielded only a handful of what are now deemed "classic" performances.

No disc of audiophile quality has, in my opinion, given us a definitive reading of anything. Immortal performances, at a recording session, cannot be planned, they just happen. They have not been allowed to happen for almost 20 years -- since the major record companies (the only companies that were recording orchestras until recently) instituted the practice of recording long works in bits and snatches, to be assembled later by the tape editor.

Direct-to-disc recording proved that a good orchestra can play for 20 minutes straight without fluffing, and many music lovers rediscovered something that patchwork recordings had deprived them of for years: the spontaneity and flow of a performance that was played without interruption.

Digital masters can be edited, but to date, the firms producing them have -- by and large -- approached music-making with the same kind of idealism they bring to recording. They have insisted on a performance for their microphones, rather than an exercise in playing, and have edited only when necessary. (In some cases, as in several of the M&Ks, they didn't even edit then.)

My point is that, with really good orchestra recording being done routinely these days, by Telarc, M&K, Crystal Clear, et al, under real-performance conditions, we may at last start capturing an occasional definitive interpretation in a recording that won't be considered hopelessly primitive 10 years from now.

JGH

I would like to urge our readers to Please support M&K and Varese-Sarabande -- M&K because they are doing excellent recording and, if encouraged by sales, can start investigating more-adventurous repertoire, and Varese-Sarabande because their choice of material is so interesting and, if encouraged, may do something about their hard high end. Both are fledgling companies trying to do the best job possible; both need your support until they have time to find themselves and respond to the needs of their potential market. Without our encouragement, they could go under, or decide to go out for the philistine audiophile who wants super sound and hackneyed programming. With it, either or both could ultimately be what we've been waiting for all these years: A super-sound source of music that no-one else records because it lacks mass appeal.

This is not to belittle the efforts of Telarc, who needs our support too. But Telarc is firmly established now as The Orchestral Audiophile Label, and seems committed to the rehashing (admittedly in gorgeous recordings) of tired old warhorses. Perhaps Telarc too may start being a little bolder in time. But with only 9 of the 100 Classics America Loves Best in their catalog, and those 9 selling like Kleenex in hay-fever season, it could be some time before we see a Vaughan-Williams symphony,
a Poulenc concerto or a Lambert ballet on the Telarc label. MG

MOUSSORGSKY: Pictures at an Exhibition; Night on Bald Mountain. Lorin Maazel, Cleveland Orchestra.

This is unquestionably the best recording Telarc has done to date. It is almost impossible to fault. If I were to pick nits, I would complain about a slight lack of air in the strings. The rest is, simply, superlatives!

The performances aren't quite that good, unfortunately. The featured work, the Pictures, is carried off well but without flair. The problem is one of phrasing, not tempos or dynamics. It is most evident in the Hut on Fowl's Legs, where the rendition lacks incisiveness and bite. Perhaps the cavernous reverb contributes here to the effect of legato when the effect ought to be staccato, but the result is a performance that is less compelling than it ought to be.

It is the flip side of this that makes the record worth the buying price. Leopold Stokowsky used to do such a hackle-raising rendition of this that all subsequent recordings have sounded tame to the point of ennui. Maazel's is the only alternative recording I have heard that could hold a candle to the old Stokowskis. The sound on this is absolutely awesome. Buy the record for this, and to Hell with the Pictures. This N on B M may never bettered within our lifetime.

JGH


Ever since Telarc started recording with a "purist" mike setup, they have been backing off their mikes with each recording. The Moussorgsky recording was right on. This one, I'm sorry to say, is bit too distant. The over-all sound on this is a bit heavy, which means that on a system that gives good balance at high listening levels, this recording will have to be played at a lower level to sound right. (Actually, it sounds more realistic that way because of the Row-M perspective.)

The performances of both works are the best Telarc has gotten yet. Sir Thomas Beecham did a better job with both, but not all that much better, and the sound was mediocre by today's standards. I'm willing to bet, though, that if you buy this you won't feel the need to buy another version for many, many years.

JGH

QUICKIES

 imaging was impaired by a noticeable vertical-venetian blind effect due in all probability to phase interference between the laterally-displaced tweeter and mid-range driver.

(No Mfr's Comment received)

VSM Audio Tuner Mods

VSM Audio offers modification kits for several oldie but goodie FM tuners: Dynaco's FM-1, FM-3 and FM-5, and the Scott LT-10. We tested an FM-3 and an FM-5 with the mods installed, and compared them with the original versions.

The differences were quite unmistakable. In both cases, there was noticeably greater stereo separation in the modified units and, particularly in the case of the FM-5, cleaner, sweeter sound with
Visce  any
[Image 0x0 to 389x605]

Sorry But Thanks Anyway

It is time to reiterate what we have said here many times before but still needs periodic reiteration: Because of the overwhelming amount of correspondence we receive, we are unable to reply individually to readers' letters and/or questions. We need and we appreciate your comments -- pro

an apparently more-open high end.
A marked improvement in both cases.
The modifications are in the form of replacement stereo-decoder boards. For the FM-3, the board is available pre-assembled for $29.95 or as loose parts (with instructions) for $19.95. For the FM-5, the board comes assembled only, for $29.95. Installation instructions are supplied with all boards.
Worth the money. VSM has an ad in this issue's Audio Mart, with their address at the bottom.
(No Mfr's Comment received)

dbx Disc Noise Reduction System
After preliminary tests: This does exactly what is claimed for it. It abolishes surface noise. The only surface blemishes it won't handle are those monstrous pops caused by deep scratches and gross pressing flaws (i.e., bubbles). It exaggerates those.
In comparison with un-dbxed versions of the same disc, the dbx playbacks had noticeably more (heavy) low end and a sweeter but slightly closed-in high end. We're not sure at this point which high end most closely replicates the original tapes, but there is no question about the low-end heavying. We hope, before our next issue, to be able to supplement the longer review of this with some observations based on our use of the professional version of this decoder.
(No Mfr's Comment received)

VIDEO (From page 39)
chines. But the fact of the matter is that no 1/2-inch VCR can approach the picture quality of professional open-reel videorecorders or even of the 3/4-inch U-Matic cassette machines. And there is certainly no 1/2-inch VCR available yet whose video (or audio) fidelity can begin to compare with what audiophiles take for granted in sound reproduction. And as long as VCR manufacturers strive solely for extended playing times, there is no reason to expect any improvement in picture quality for the foreseeable future. Perhaps the new breed of high-resolution TV receivers (as from Magnavox and RCA) will focus more attention on picture quality by underscoring the difference between what is attainable and what is currently being accomplished.
(No Mfr's Comment received)
magazine along with any reply that seems appropriate (or otherwise). But that, we're afraid, is the best we can do without a full-time letter-answerer, which we do not as yet have.

So, our thanks to those of you who've been shooting through the letters to us. But our apologies for not responding. We can do only so much in a given 3-month period.

Audiology

We just got through reading what is probably the best text currently available on the subject of hearing and hearing loss: "Audiology," by Hayes A. Newby (514 pages, Prentice Hall, 1979).

While the book omits much of what is currently known about psychoacoustics, its greatest weakness, to us, is its perpetuation of the outmoded audiological convention that hearing tests need not be carried out above a frequency of 8 kHz. The reason given is that higher measurements are unreliable because standing waves and cavity resonances between a headphone and the ear give inaccurate readings of thresholds. This is short-sighted nonsense.

It is stated several times in the book that many of the things that cause progressive hearing loss are treatable, and that the earlier they are treated, the less permanent loss will occur. But if the subtlest measure of loss that audiology can suggest is a "threshold" measurement at 8 kHz and below, progressive high-end loss can progress a hell of long way before it will be diagnosed.

Anyone who values his high-fidelity hearing should have his upper-frequency limit checked from time to time, not just his thresholds at lower frequencies. If an audiologist can't do this (and most can't), you can check it yourself with any frequency test record. (If in doubt about your loudspeakers, have a young person or a woman verify what the tweeters are delivering.) Any marked drop in high-end range that lasts for more than a few days should be presented to an ear specialist -- preferably one who is himself an audiophile. Others will probably tell you not to worry if you can still hear 8 kHz.

Note that temporary loss of high-end range can occur as a result of head colds, ingestion of certain medications (aspirin is notorious here), and one's emotional state of the moment. Longer-lasting high-end losses can signal sinus or middle-ear infections, as well as some other rather-more-serious disorders such as high blood pressure and neurological dysfunctions. So following up on a long-term high-end loss may save more than just your hearing acuity.

Who Cares?

A while ago, one of our subscribers had what he thought was a fantastic idea. Since phono cartridges (and arms and preamps) differ so much in sound, and no two "experts" seem to agree as to which are right (i.e., "accurate), why not sell a carefully mastered disc along with a one-to-one-speed tape copy of the master that the disc had been cut from. Then, anyone with a properly-calibrated tape machine could compare the sound of the tape with what he got from the disc. If the two sounded alike, he could be assured that his phono system was delivering the most accurate signal possible from all discs. ("Accuracy" here refers to accurate reproduction of the disc, including all its strengths and weaknesses.)
We encouraged the father of this brainchild to proceed with his project, because it could do more than anything else we can envision to bring some sort of order to the chaos that now characterizes disc reproduction. He proceeded to proceed, and while he was at it, inserted a Classified ad in Audio to announce the imminent availability of this unique subjective-evaluation tool. The result? Zilch! Practically no response at all. No one, it would seem, was interested in learning how accurate his phono system is.

Could this really be true? Are all self-styled audio perfectionists really outright frauds? Would they all prefer to continue living in happy self delusion, rather than question how good their systems actually are? Or was the ad, perhaps, not quite explicit enough? Or is Audio's readership comprised entirely of hardware maniacs who in fact don't really care how good their systems are? We have no answers to any of those.

So let's see how Stereophile readers would respond to this? How many of you would be willing to pay $20 to $50 for a disc and a custom-made tape (suitable for your particular open-reel tape recorder, or one you can borrow) that would reveal how accurately your phono system is reproducing the sound of the original program source?

We're not asking for orders. Please do not send money if you're interested. What we're looking for is concrete evidence of a commitment to the kind of accuracy in music reproduction that all audiophiles pay lip service to but, apparently, not too many of them live by. Just register your vote on this so we can take a tally. If there's enough interest in the venture, it will proceed and you'll hear further details about it in future. If not... Well, we'll think about that if the occasion arises.

We should emphasize that this is not a Stereophile project. It is simply an idea that was proposed to us by a subscriber, and sparked our interest. If it is carried out, it will be entirely his baby. But we'll be one of his first customers.

Erratum

In our last issue we gave the impression (inadvertently) that the new RCA videodisc system ("Selectavision") uses a mechanical stylus/transducer to convert the recorded pits into electrical impulses. It doesn't. The stylus serves merely to guide the "tone arm" through shallow grooves that contain the pits. The "transduction" takes place through detection of varying capacitance changes between the conductive disc surface and a conductive surface at the front of the stylus.

A Landmark Goes Under

"Direct from Cleveland," Telarc/Discwasher's landmark recording -- the first D-to-D of a major orchestra -- is being laid to rest at last.

Sonically, the disc was nothing to write home about, thanks mainly to the mindless over-use of multi-miking (and not very good miking at that), but it deserves a place in history for having been the first orchestral D-to-D ever made. (It also, as of now, has the very dubious distinction of having been the worst. Still -- as General Custer once observed -- history is not always made by victories.)

Despite its shortcomings, this is a disc that every serious record collector should own, if for no better reason than that it is bound to appreciate in value.
It went over so badly with audiophiles that you may still be able to pick up a copy from your local high-end audio dealer.

Sloppy Mod
Some time ago we received for review another one of those countless modifications of Dynaco products -- this one a PAS-3X preamp. We figured "What the Hell, let's fire it up and see what it sounds like." That was when we noticed some ominous-sounding rattles from inside the nice looking cabinet. Just to be safe, we decided to open the thing up and take a look around inside before plugging it into the AC, and it's a ruddy good thing we did (See photo). Had we plugged it in, there would have been a spectacular fireworks display.

It was obvious that much of the mess was a result of rough handling in shipment on the way to us, but it was also obvious that much of the damage was suffered because heavy parts (like large capacitors) weren't tied down, but were dangling from the ends of their connecting wires. That may be okay if you're lashing some parts together to see for your own edification if they work, but for any other purpose that is bad workmanship.

We never did find out how that particular PAS-3X mod sounded. We probably won't, until the modifier (who should be happy to have his anonymity preserved) learns some of the basics of wiring practice.

TDK Counterfeits
Imitation may be sincere flat-tery but it can also be a thorn in the side of the imitated.

TDK, the tape manufacturer, reports that their popular Super-Avilyn C-90 cassette is being counterfeited in the New York City area. They are upset, not only because they are losing sales to the counterfeiters, but because the inferior performance of that cut-rate tape is giving the genuine article a bad name which it doesn't deserve.

According to TDK, here's how you can tell whether that TDK SA C-90 you got for such a bargain price was really a bargain at all:

LINER INDEX CARD: The printing on the counterfeit is darker and slightly splotchy/smudgy, particularly the "C-90." The performance and warranty details are missing from the counterfeit.

OUTER WRAPPER: The counterfeiters have a non-functioning cellophane opening strip glued to the outside of the outer wrapper. The "TDK Cassette" on it is printed in a style and shade different from that on the real thing.

PLASTIC BOX: The genuine box has a finger indentation for opening, the counterfeit does not.

SHELL: The counterfeit's printing is darker and blotchier than the real thing. The counterfeit's viewing window is smaller and has a raised edge; the genuine one is flat.

TAPE: TDK's SA tape is brown, the
counterfeit is dark gray.

BULK CARTON: The carton containing 10 counterfeits is printed only in brown instead of brown and green, and has no lot (batch) number hand-stamped on top.

PERFORMANCE: The real thing is excellent cassette tape; the counterfeit tape sounds poor and may handle poorly (wow, flutter, jamming).

If you come across any of these ripoff cassettes, you could do us all a favor by contacting Ken Kohda (VP and General Manager) at TDK, 755 Eastgate Blvd., Garden City, NY 11530, and supplying him with the name and address of the dealer you bought them from.

Video Notes

Judging by the rate of development in the videorecorder field, now is probably the worst time imaginable to invest in a home VCR.

To date, two VCR formats — VHS and Beta — have shared the home videorecorder market. Hundreds of pre-recorded programs of all kinds are now available, usually in both formats (but not, of course, interchangeable from one to the other). The past year has shown consumer preference swinging toward the VHS format, which could portend the demise of Beta and, ultimately, a cutoff of Beta hardware and software.

Meanwhile, several other new and incompatible videotape systems are being demonstrated or are in final stages of development, and some have enough attractive features that they could challenge VHS for adoption as the "final" standard format for home use. VHS, too, could become obsolete.

Pre-recorded cassettes are hideously expensive — up to $70 for some feature-length films — and many buyers are finding them a waste of money because they feel no inclination to watch most films more than three times. In response to this, there is now a gathering proliferation of tape-swapping clubs, as well as several rental services (one under the auspices of Photomat). At present, the MCA-Magnavox videodiscs offer far better picture quality than the cassettes at much lower prices, but the discs (and some of the players) have been exhibiting annoying malfunctions, and both are still in such short supply that no one has yet seen fit to start offering the discs on a rental basis. Meanwhile, RCA will soon be unveiling their videodisc (incompatible, of course), which they claim (unofficially) will outperform Magnavox's and will feature cheaper recordings as well.

The current crop of so-called portable VCRs cannot be considered as much more than primitive, despite the ingenuity of design that allows them to achieve fidelity comparable to that of the larger VCRs. We can expect, within not too many years, to see one-piece portables combining VCR and camera in a hand-held unit not much larger or heavier than some current Super-8 sound cameras. (Philips has already demonstrated a VCR that records on a 1/4-inch-wide tape.) That, to us, is the kind of thing we should wait for.

Our advice as of now is: If you want to build a permanent collection of video material, wait until the smoke clears before committing yourself to any existing system. If you just want a means of time-shifting your viewing of aired programs, by all means get a VCR, but be prepared to sacrifice picture quality for extended playing time.

Any audiophile tempted to investigate the video field should realize that even the best video quality attainable today is very low fidelity. Color rendition can be superb, but picture resolution is inferior to that of the
smallest motion-picture-film format: Super 8. In other words, state-of-the-art video quality is roughly equivalent to an audio signal with a 5-kHz upper limit. The average TV picture is acceptable only because of its small size. Large-screen projection systems reveal how truly lacking in detail the video medium is. (Next time you see a 70-mm motion-picture presentation, make a mental note of the angle of view the picture occupies, observe the detail, then see what you get from your TV receiver when you sit close enough to duplicate that angle of view.)

Several Japanese firms have exhibited prototypes of high-resolution video systems -- incompatible with all broadcasting systems -- whose detail compares favorably with Super 8. Certain computer graphics displays exhibit even better resolution, rivalling 16-mm film. Hollywood is interested in using videotape instead of film because of its erasability, its ease of editing (without cutting) and its ideal adaptability for special effects, but with 70-mm film being Hollywood's standard for detail rendition, videotape at its current best falls far below what Hollywood can use.

Obviously, if the TV-viewing public were the only arbiters of video quality, there would be no incentive to improve matters. Most videotapes are oblivious to detail until it deteriorates to the point where they can't tell Mork from Cronkheit. But with Hollywood's money backing Japan's innovativeness, video resolution will be improved to the point where, in the not-too-distant-future, today's home systems will be considered hopelessly low-fi.

Manufacturers' Comments

Shure V-15-IVG

(The following was received too late for inclusion in the last issue, where the report on that cartridge appeared.)

In your report, it is stated that "The standard version (is fitted) with an elliptical stylus,..." While the geometry of the diamond on the Type IV does, indeed, qualify to be called "elliptical" in the broadest sense, it is significantly different in many ways from what has come to be known by audiophiles as an "elliptical stylus." It is uniquely different in its basic geometry, in the methods employed to generate that geometry and, more importantly, in its contribution to the precision of phono playback transduction. We consider it to represent a meaningful advance in the art. We call it "hyperelliptical."

The basic tip geometry of the hyperelliptical stylus is generated by a unique process by which two identical, ground conical surfaces intersect to produce the frontal profile, which is a hyperbola. After this intersecting edge is radius and polished, the geometry of the finished tip is such that all conceivable horizontal sections from near its end up through the tip-vinyl contact regions are elliptical sections. Ordinary elliptical or bi-radial tips are elliptical, at best, only in the horizontal section through the very center of the contact regions. Also, the "footprint" of the hyperelliptical tip is a tall, narrow ellipse. With all the additional ellipticity going for it, the term HYPERelliptical seems quite appropriate.

But performance, after all, is the important criterion. The geometric details of the hyperellip-
tical tip result in playback improvement in three areas:

1. Its gentle end radius does not reach into the bottom of the record groove (unlike most so-called "long contact" tips) where dust and other debris can collect and cause pointed tips to stumble and produce noise.

2. Its narrow side radius allows it to trace the fine detail in the record groove with significantly reduced distortion.

3. Its tall "footprint" distributes the force on the groove walls to minimize indentation and wear in playback.

The hyperelliptical tip, when compatibly mated to the remainder of the cartridge's moving system, provides a means toward achieving the ideal phono cartridge—one that accurately retrieves all the information on the record, and one that leaves the record unscathed so it can be enjoyed again and again with undiminished excellence.

Frank J. Karlov, Manager
Electromechanical Development
Shure Brothers, Inc.

Audionics Composer

Perhaps we did over-estimate the quality of encoding on most available SQ discs. Some small modifications have been made in the Composer since initial production commenced, and I would like you to try one of the current-production versions.

Charles Wood
Audionics of Oregon

Okay, JGH

Dayton-Wright XG-10 Speaker System

There must be some mistake. We have never before encountered a complaint about the extreme high end of the XG-10. We did have some criticisms of the 5-kHz range, but the variable resistor allows that to be corrected. We urge you to re-check your findings before criticizing the XG-10 for something which may not actually be a fault of the speaker.

Jerry Kemper
Odin Studios
(Distributor)

Reviewer's Addendum:

The sound we heard from two sets of (stacked) XG-10s at Las Vegas showed that the speaker could produce excellent sound with the addition of hang-on tweeters. But why include tweeters in the speakers as sold, if these cannot reproduce adequately the range they are supposed to span? Would it not be better to omit the piezo tweeters, leave spaces for Pioneer or Decca ribbons, and reduce the system price accordingly? Alternatively, jack up the price of the system and include the ribbon tweeters.

Letters

The Taste of Digital

I'm renewing my subscription to Stereophile, partly because I want to see how you like the taste of the words you indiscriminately spoke in favor of the Sony PCM-1 when you have to eat them. I am not dogmatically opposed to or in favor of this type of system, so I found it disconcerting when you described a diminution of 'air' in the recorded sound of the PCM-1 but attributed it instead to phono mistracking distortion exclusively! To me, this is something that wants objective verification, to say the least. It would also seem, from the PCM-1 review, that Sony has developed the world's first audibly distortionless transistors and put them in the output stages. I'm not even going
to ask how Sony could reconstruct a 'stable' 21 khz sine wave from the extremely chopped up output from the D/A decoder without some falsification of sound quality ensuing.

Thomas M. Dawson

Digital Dead End

There is one aspect of digital audio which bothers me very much. Its fidelity is directly related to the sampling rate and number of bits available for quantization, but the cost of digital hardware increases sharply as either of these factors are increased. Thus, there is a strong economic reason for manufacturers to set these parameters as low as possible in home digital audio components, so as to keep the price within reasonable "audiophile" limits. When standards for sampling and quantization are set, we can be assured they will be geared to someone's idea of what constitutes an "acceptable" set of compromises with perfection.

The problem here is that, once the digital standards are established, the sonic fidelity of digital equipment will be frozen, probably forever. Analog recording is open-ended, so to speak, in that the existing standards allow for limitless improvement as the technology advances. The very nature of digital audio mitigates against any future improvements, because any digital recording that uses a higher sampling rate or greater quantization than the standards dictate, in order to increase the fidelity of the recording, will be completely unplayable on any "standard" digital player. The result of this will be a virtual dead end in audio. Is this what we really want?  

Ted Kiley

We see your point; we just don't happen to agree.

To begin with, many analog audio standards are just as restrictive as digital standards will be. The RIAA disc-playback curve, for example, puts a definite cap on the level that can be cut onto a disc. The low-end flatten-out causes frequencies below 50 Hz to produce impractically large groove undulations, while the high-end boost prevents any significant increase in middle-range modulation level because this would cause modulation velocities at high frequencies that no stylus could begin to trace. The FCC bandwidth allocation for each FM station limits its high-frequency response to 15 kHz, while the standard 38-kHz "sampling rate" of stereo FM transmissions is no less immutable than the (typically) 44-kHz sampling rate of digital audio systems.

Actually, analog standards have not been all that unchangeable. Whenever new technology has called for a revised standard, the revision has been made. The result has, occasionally, been loss of interchangeability with materials incorporating the previous standard, but we've managed to take

Ad Quote

"The SP-4 surpasses our best vacuum tube preamplifier in the most important areas." (Excerpt from a current Audio Research product catalog.)

"We suggest that this (SP-6 vacuum-tube) preamplifier will provide the state-of-the-art reference well into the '80s."

(Excerpt from the same Audio Research product catalog.)

Moral: It is better to change horses in mid stream than to try and ride both of them at once.
that in our stride well enough. Examples which come immediately to mind are the standards for disc equalization (starting with the LP curve, through a plethora of simultaneous different "standards," to the RIAA curve); for tape equalization (for open-reel, then cassette, then for iron oxide, then for chromium dioxide); and the standard for "line level" (previously 1.25 volts, now 0.5 volts). Others include the switch from the 78-rpm disc speed to 33.3, the switch from 2-track to 4-track for domestic open-reel recorders (a regression in fidelity for a reduction in tape cost), and adoption of the Philips compact cassette as the "standard" home tape format.

Digital standards may indeed "freeze" the fidelity level of our signal source, but it will freeze it at a level far above what most of us have ever gotten from the stereo LP. The fact that a very small amount of extreme-high-end signal may be lost (and that is arguable) as a result of the standard digital format is of far less significance than the fact that, for the first time, we will have complete freedom from resonant colorations through the entire audio band, plus clean bass well into the infrasonic. (A recording studio can get sound from a stereo LP that is virtually indistinguishable from the original tape -- if it pre-equalizes the disc to sound like the tape when the disc is played on its "reference" cartridge/arm/preamp system. The chances of an audiophile duplicating this are negligible.)

If it is found that there are sonic imperfections in digital audio due to limitations imposed by the digital standards, then improved digital systems using different "standards" and costing more money will be made available to those who can pay the price. If they go over, the new "standards" will become established standards.

The biggest problem with analog equipment, as we see it, is that it is too subject to user "adjustment" in too many parameters which affect the sound. Tape must be biased and equalized properly, and tone arms and cartridges must be properly mated and adjusted in order merely to get their maximum (flawed) performance. Digital recording and playback systems cannot be adjusted; they either work properly or they malfunction grotesquely. There is no room for doubt as to whether they are working "at their best." This certainly cannot be said of any analog device.

To us, the potential advantages of digital signal sources far outweigh what disadvantages may ultimately be uncovered when we've lived with them for a while. And you need have no doubt as to what will happen if disadvantages are revealed; the existing standards will be changed if necessary to eliminate those disadvantages.

**PCM Sampling**

In reference to your comment about current PCM sampling rates being adequate, that can be true only of one waveform (a sine wave) at those upper frequency limits. In other words, given a frequency f and a sampling frequency 2f, the system would be unable to differentiate between, say, a sine wave vs. a triangle vs. a square wave vs. any other complex periodic waveform. Now of course the relevant question is, is there any musical signal information not of a sinusoidal nature above, say, 20kHz?

Steven P. Cadenhead
Sound Storage Recording Co.

We do not believe the waveform of
any fundamental frequency above 20 kHz (or even 15,000 Hz for that matter) is relevant to music reproduction. The first overtone of 20 kHz is 40 kHz, and although it can probably be proven that a small number of people can hear frequencies as high as 30 kHz, we fail to see where reproduction out to 40 kHz could possibly contribute anything but ridiculously inflated cost to a music-reproducing system.

There is mounting evidence that, whenever trained listeners have been able to detect changes in high-end response range substantially above 20 kHz, it was found to be due to phenomena which were affecting signals in the range below 20 kHz.

There is no doubt that musical sounds do produce overtones extending as far out as 50 kHz (and probably farther), but what most of us hear as a result of these bat’s-radar overtones are their difference tones (resultants) which extend below 20 kHz and which are, as a consequence, already within the auditory range of most people even before those musical sounds are picked up by recording microphones. Disc playback then introduces a whole new set of above-20-kHz signals which result from imperfect tracking of the groove modulations, and must by consequence be considered as a form of distortion unique to disc reproduction. Audible differences between components which relate to their ultrasonic bandwidth are purely a reflection of how well they cope with these mistracking distortions, and have nothing to do with those components' ability to reproduce ultrasonic information that may have been present in the original signal. To attempt to record the original ultrasonic overtones, as some audio gurus are advocating, will simply cause them to intermodulate with the mistracking impulses from the disc, producing more audible difference between competing amplifying devices that are already having trouble coping with the IM between mistracking and the program content below 20 kHz. This will of course then be interpreted by those gurus as further evidence that ultrasonic overtones are not only audible, but are important for the reproduction of music.

We are less confident about the matter of phase shift below the high-end cutoff point. There is disagreement among experts as to whether that is or is not audible at all. (We are inclined to believe it is.) If indeed it is, there are circuits which can be used to eliminate phase shift from filter networks, and whose use should obviate any subjective criticism of the necessarily heavy filtering that must be used above 20 kHz in current digital recording systems.

It should, we think, be mentioned that FM stereo broadcasting uses a lower sampling rate than does PCM audio recording. Yet we have yet to find anyone who felt there was anything "peculiar" about the high end of FM stereo. Admittedly, most stereo FM transmissions are nothing to crow about, but most of the problems we hear are a result of indifference to audio quality on the part of the broadcasters rather than of inherent limitation of the medium. Many audiophiles who have heard live (or well-taped) broadcasts from Chicago's WFMT have wished they could get as good sound from their audiophile-type discs.

Maybe there are subtle imperfections in digital audio -- after all, nothing in audio has been perfect yet, so why should this new technology be perfect? And it is almost certain that some digital recording systems will be better than others. (One well-known recording engineer reported to us that, in some respects, the semi-professional Sony PCM-1 system
appeared to be better than the fabulously-expensive Soundstream system that is used for all the Telarc masters.) But we are beginning to observe, though, that most of the objections raised against PCM recording have been from people who have never tried it, and who are trying their level best to fault it on the basis of often-misconceived theoretical objections or, worse, of pure "gut" reactions.

Perhaps there is something offensive to the musical esthete about the idea of those sublime sounds being chopped into little bits and then re-constituted like frozen orange juice. Perhaps the compulsive-diddler audiophiles fear digital because it is so cut-and-dried, and delivers the best possible sound without offering them the opportunity of "adjusting" the sound to suit their personal taste (or lack thereof).

Recordings Preservation

Here are some comments on the article "The Preservation of Sound Recordings" by Jerry McWilliams (Vol. 4, No. 5).

Two years ago we took a tour of the Thomas A. Edison Laboratory in West Orange, NJ, where we listened to one of the later phonographs using a thick flat disc. The person giving the demonstration said the same side of the same disc had accumulated several thousand plays! The stylus was a diamond and the tone arm was alleged to be tangential.

Being an old timer, I seem to recall that the Library of Congress at one time suggested treating discs with diluted ethylene glycol. Ugh!

With regard to the edict that records must be stored vertically and without pressure from adjacent discs, I would like to point out that they are shipped flat.

Moreover, when cartons are stacked there is great pressure at the bottom. It would be interesting to know how the cartons are warehoused.

The advice that cellophane shrink wrappers should be removed as soon as the disc is purchased is OK, but is overblown by the manufacturers of the discs. They like to blame disc warps on the shrink wrap (which the retailers insist on). Hence the pressing plant has a ready "out" for the warped discs they inadvertently produce.

Incidentally, warps in addition to the ones the manufacturer has built into the disc can be aggravated by the average record jacket. Most domestic jackets have one kind of paper on the front and another on the back. Changes in humidity cause the jacket to curl one way or the other, bending the disc with it unless under reasonable pressure. [There is something to be said for the "flimsy" jackets used overseas.

--JGH]

Vinyl discs are advertised as "unbreakable" and that is true for all practical purposes. Even icy-cold vinyl is almost unbreakable.

I doubt if any audiophile having a modern pickup with any shape stylus should have any concern about record wear. See my monograph on Record Wear, published in the July 1977 issue of the New York Audio Society newsletter "S/N."

Bits of black vinyl from trimming the edges and punching the center hole sometimes get wedged in the groove, causing a loud pop and sometime groove jumping or repeating. When this happens, it pays to examine your disc carefully, and if the light is just right you may be able to see the offender. A sharpened cardboard matchstick can be used for loosening the foreign matter. This problem crops up more often in stereo.
discs than in mono.
Yes, it is well not to wet a disc or treat it with any compound. To keep one's discs clean, it will help to use a disc brush to pick up the last bit of dust. Breathe on the record to produce a slight haze of condensation on the surface, then quickly use the brush before the haze disappears.

It is commonly stated that vinyl discs require anything from hours to days to relax after one play. This may be true, but certainly can't be heard, and so for all practical purposes is just so much hokum. Again, see my afore-mentioned monograph.

With regard to straightening warped records, why risk heating them when they can be de-warped cold? It just takes more time.

Joy detergent is mentioned for washing real dirty records. Joy may be the best thing for trying to make a dirty disc usable, but bear in mind that the makers of detergents are free to change their formula at any time. Also, if you use compressed air for drying, beware of oil spatters from the compressor mixed with the air.

Henry F. Robbins
Gillette Gramophone Group

Less-Formidable MG
We must prefer Ms. Margaret Graham, Contributing Editor, in one of her less-formidable moods. Rest easy, Ms. Graham—your reputation as a reliable reviewer is intact.

You seem to get right to the point on the plus or minus factors on each disc. We have agreed with your judgment so far on those discs which we've purchased.

Having a woman as a reviewer is a much welcomed addition. Mrs. Edwards too has much better hearing sensitivity in the high frequencies, as do most women. This shows in your evaluation of cymbal sound—open and natural high end—lack of proper sheen on violin sounds, etc. We're happy knowing that we're getting a "full-frequency review" for a change.

Charles Edwards

Pop Stuff
Surveying a few back issues, I have noticed that none of the "popular" stereo lines (Pioneer tuners, RCA records) is reviewed or recommended. Do you ever investigate their quality, or do you feel that since they don't understand the needs of audiophiles, they are incapable of producing anything of decent quality? I would really like to know how you decide what equipment is worth testing.

Steven Jackson

With the exception of a few of Yamaha's and Kenwood's tuners, we have found few Japanese electronic components that can compete sonically with comparably-priced domestic products.

The two major US record manufacturers seem unable to produce anything but sonic dross: RCA and Columbia are unswervingly committed to tasteless multi-mike gimmickry and stridently shrill high end (with or without low end, depending on whim). Recent Londons are consistently hard-sounding (zinc-tank sound) with boomy mid-bass and no deep low end, while Angels continue to vary, unpredictably, from excellent to mediocre. Recent Angels tend to be generally good although sometimes rather nasal-sounding. Old Londons, with the Cinemascope-screen logo ( ), can still occasionally be found in stores and are usually well worth snatching up. Their Stereo Treasury releases, on the other hand, are pretty bad, with the usual London
hardness and boom. Early (pre-1962) RCAs are often excellent too, if not recently re-mastered. Later efforts stink. Early Angels are almost consistently lousy. Columbia, it would seem, has produced good stereo recordings only through error or oversight.

Scuttlebutt has it that both Columbia and RCA are "deeply concerned" about the increasing competition from "audiophile" discs, but we're willing to bet they haven't the vaguest idea how to combat it. After 10 years of dedication to the view that audiophiles and their wants are irrelevant, it is unlikely that anyone now in their employ has even the foggiest idea of what a good recording is, let alone how to make one. Five years ago, we volunteered our services to help RCA and Columbia produce a no-holds-barred symphonic recording, as a marketing experiment. They weren't interested.

Now they are feeling the effects of that indifference in the one place where they are capable of feeling anything: In the corporate pocketbook. Our heart bleeds for them....

We try to test equipment that looks as if it has the potential for providing the best sound for the money, or that readers have asked us to test, or both.

Rega Turntable

Having just read the Vol. 4, No. 5 issue, I noticed that your recommended component listings for turntables listed the Denon, Linn, and AR turntables. To date, however, I have not seen any mention in Stereophile or any other of the "underground" magazines of the Rega Research Planar 3 table. This British table is designed very much along the lines of the Linn-Sondek; although it is next to impossible to obtain in England, it is fairly easy to obtain in the U.S. Except for the Linn, I feel the Rega Planar 3 is audibly superior to every table I have heard (I have not, however, compared it against the Denon direct drives). It is, unlike the Denon DP-2550, quite immune to external shocks and acoustic feedback. Considering that it costs $360 to the Linn's $875 (and probably rising), I think it is the most accurate table on the market for the money. If you can get ahold of one, I think you will be very pleasantly surprised.

Stephen Scharf

Incidentally, the Rega Planar 3 was included in our list of 'tables that most European reviewers liked these days, but it was incorrectly listed as the "Vega."

We will endeavor to get a Rega for testing ASAP.

Skating Force

Could you clarify for me the phenomenon of skating force? I understand that this normally causes a tone arm to move inwards towards the center of the record, but if this is the case I should think there would be extra pressure applied by the stylus to the outer wall of the groove. Yet all the anti-skate devices I have seen act to pull the arm outwards rather than inwards. What's the story here?

T. F. Gilcannon

This is more easily illustrated than explained.

In the diagram below, the circle is the record label with its central dot being the spindle. Line A is the tone arm with its base at B and the cartridge stylus at C. Line D is the offset axis of the cartridge. Line E is the disc radius which, ideally, should be perpendicular to the
cartridge axis at the stylus tip. Finally, curved line F represents part of the groove that the stylus is riding in, and the large arrow is the direction of groove travel.

At point C, where the stylus contacts the groove, friction between the stylus and groove creates a pull in the direction of line D. This force has (as diagrammed) a Southerly component and a Westerly component (small arrows). The Southerly component exerts a pull against the base of the tone arm. The Westerly component has nothing to restrain it except the groove wall.

Note that this is not an inward push, it is a pull force.

Archibald & AR

I received and enjoyed your most recent issue of Stereophile. My compliments to your new writer, Mr. Archibald, whose prose is commendable for its restraint and generally excellent command of the language. The problem is not getting opinions about stereo equipment, but rather reading English which describes the listening experience in a meaningful way.

The purpose of this letter is to request your advice concerning the modification of the AR turntable to adapt another tonearm to it. You have mentioned that this turntable can be satisfactorily modified to accept other arms, but you have not said how or where. I do not know the names of anyone who modifies AR turntables to accommodate different arms nor do I know which arms function best when mounted on it. I like my ARXB turntable and would like to have it modified if it seems like a sensible thing to do.

Thomas M. Higgins, III

We do not know of anyone who presently offers modifications of the AR turntable for other tone arms. Ours was done by Precedent Audio's Murray Zeligman, but we're not at all sure he would welcome more invitations to do this.

We'll have detailed instructions for doing the job in an upcoming issue (or in this issue if space permits).

Idiotic Response

I have read elsewhere the contention that a frequency-response deviation of as little as 0.2 dB is audible under certain circumstances, so components should strive for response which is at least as linear as that. Isn't this rather idiotic when we must use these components with disc recording and reproducing equipment that often deviates from flat response by as much as 3 or 4 dB, not to mention loudspeakers which do well to achieve +/- 6 dB?

Hank Aaron

Not really. We question the audibility of a 0.2-dB deviation regardless of circumstances, but if you series-connect two components having similar 0.2-dB deviations, the result is 0.4 dB which is most certainly perceptible under many circumstances.

The underlying principle in
perfectionist audio is that, if you can't cancel out response colorations in one component via complementary colorations in another, the least one can do is try not to exacerbate them in any way. When three electronic devices are connected in series, it takes extremely little response deviation in each to cause a significant coloration from the three.

"Fugueing" Equipment

The following is in response to an inquiry from us about the equipment used to record a recent Town Hall release:

"The Art of Fugueing" was mastered on analog magnetic tape, the single-mike version (engineered by Ron Hitchcock) with an AKG C24 fed to a modified 3M two-track tape recorder (courtesy of Bud Wyatt and Sheffield Lab) and the multiple mike version using a variety of microphones including Neumann SM69, U67's and the old RCA 10001 velocity microphones. This latter version was mixed by an expert film music mixer, Dan Wallin, who goes back to the days of live radio. Danny used a Neve console which fed directly to a Scully two-track tape recorder. We also had a 24-track back-up which was utilized in the re-mixing of 5 of the 21 selections (see if you can guess which ones!).

Originally, I had hoped to record "The Art of Fuguing" direct to disc for Sheffield Lab, but Doug felt that the newness and difficulty of the music presented a very high risk. He proved to be right.

Flaunt It!

As an audiophile who relates to music, you are a special kind of person. But who would know from outward appearance? Don't keep it a secret any longer; flaunt it, with a Stereophile shirt.

It has no advertising hype, no cutesy-pie slogans, no artistic creations. Just our distinctive logo with the grounded f, in gaudy black on white, as proof that you care enough about the musical justification for audio to support the only independent magazine that concurs.

The price? Absolutely FREE, plus a nominal $8 for handling, mailing, and profit.

Please specify size: Infra-bass (Ex L), Lows (L), Middles (M) or Sheen (S)

Send your $8 for each shirt to:
VESTMENT, c/o Stereophile, P.O. Box 1948,
Santa Fe, NM 87501.
as the final versions of this recording involved months of editing.

Lincoln Mayorga
TownHall Records

P.S. The "TownHall" label, formerly known as "Sheffield", has been a personal vehicle for my own eccentric notions since 1964 and has no connection with Sheffield Lab other than neighborly goodwill. The name was recently changed to "TownHall" in order to avoid confusion.

Digital and Video

I enjoyed the 4-4 issue of Stereophile, especially the PCM coverage. For your information, it appears that Betamax heads last from 500 to 1000 hours and cost between $200 and $300 to have replaced. VHS machines are a bit better with a life expectancy of around 1500 hours. Replacement cost is about the same.

Consumer's Union implied recently that video service centers will be rolling in money when all these new video recorders start showing signs of wear on heads, belts, clutches, servos and so on.

I agree with your "As We See It." Digital technology is destined to revolutionize not only audio but all the electronics within the next few years. (The "Speak and Spell" toy is entirely based on 3 ICs and a cheap speaker -- digitally programmed.)

Kurt M. Wiley

The reaction of many audiophiles to digital audio is more than a little reminiscent of the initial reactions to the LP and to stereo. Purists who were locked into the old ways fought those innovations with fanatical fervor at the outset. Most were eventually convinced of the superiority of the new formats, but few ever admitted that they had been wrong. We don't expect the digital story to be any different.

Mr. Wiley, incidentally, has just accepted a job in the audio, etc. division of the Walt Disney studios in sunny California. We envy him, while offering our congratulations.

More Sounds of Tubes

Recently I was rereading your September 1978 issue in which you commented on the brightness of tube electronics in a couple of reports. This corresponds with my own observations over the years, especially when certain tubes are used by the equipment manufacturer. The sonic performance of a tube may vary from one circuit design to another, but in general they seem to fall into certain sonic categories -- from bright to dull, from very high grain to very low grain, and from very spacious to very two-dimensional.

My experience with tube electronics dates continuously back to the late 1950s with a few deviations into solid state. My observation is that the sonic "flavor" of the various tube manufacturers has in general not changed very much over the years. I have noticed, however, that sonic quality has deteriorated in the last few years, as certain manufacturers stopped building audio tubes. Unfortunately the trend is toward poorer tubes, just as we are getting better tube electronics.

My comments are as follows: TELEFUNKEN 12AX7: (Physically shorter than normal. Telefunken has apparently stopped manufacturing this tube and is supplying another tube that is not as good under its name, possibly from an outside source. Supplies of the original design may still be available from suppliers.): One of the best 12AX7s ever made.
Sonically they sound dull in some circuits, but when they are mated to a proper circuit they let the music through like no other tube. Excellent for use in any Audio Research amplifiers or preamplifiers especially the D76A, D150 and SP6-A.

MULLARD 12AX7: This tube can sound on the dull side in some circuits. Also lets the music through but with a technicolor quality. Second best choice to the Telefunken. Use in any Audio Research component.

AMPEREX 12AX7 (made in Great Britain): Standard tube used in Audio Research components up to the SP-6. Sound quality is substantially different from the Mullards and Telefunkens. The sound is on the bright side with a moderately spacious quality. Grain is moderate.

AMPEREX 12AX7 (made in Germany, called the "Fat Amperex" because of its larger envelope): Used in the initial production of the Audio Research SP-6 as well as the Paragon preamplifiers. The over-all sound quality is about the same as the other Amperex except that it has a very spacious quality. Grain is moderate to low but the artificially bright quality of the tube prevents it from being rated on a par with the Telefunkens.

AMPEREX 12AX7 (made in Holland): Used for years by Marantz in the Model 7 preamplifier. Unfortunately, production of this tube has deteriorated over the years to a point of being unacceptable. Was one of the best, as I remember.

RCA, SYLVANIA, G.E. 12AX7: Forget them!!

INTERNATIONAL (made in Japan): Audio Research is using them in their latest production runs. The sound is definitely on the dull side. They seem to have low grain with a moderate amount of spaciousness, but they color the sound dark grey.

SYLVANIA 6CG7: The best of this model tube. Has qualities similar to the Telefunken 12AX7. Recommended for any Audio Research or Marantz amplifiers.

SYLVANIA 12BH7: Similar in sound to the 6CG7, but for McIntosh amplifiers.

G.E. 6CG7: Used by Audio Research in many of their amplifiers. They have a sound quality similar to the Amperex 12AX7. Much too bright.

RCA 6CG7: Used by Audio Research in many of their amplifiers. They have a dark quality, possibly to offset the brightness of the other tubes they chose. They also seem to fatten up the bass.

GENELUX KT-88 (made in England) (Gold Lions) (matched pairs): Best of the 6550 pentodes. Sounds slightly more musical than the G.E. Highly recommended for the Audio Research 76A and D150 amplifiers and McIntosh MC275.

G.E. 6550: Used in all Audio Research tube amplifiers. Very good quality but sound is on the bright side.

TELEFUNKEN 6CA7: Best for Marantz and Dynaco Stereo 70 amplifiers.

AMPEREX (Holland) 6CA7: Next best to Telefunken but on the bright side.

RCA 6L6GC: Later version (now discontinued) was best. Good for use in McIntosh MC240.

My observations are based upon the use of various high-end products over the years -- most of which you have had on your recommended list at one time or another.

One item in my system that has been indispensable is a high-quality variable AC line transformer and an undamped line-voltage meter. Normally the AC is set at 120 volts, with the output tube bias adjusted for that voltage. Any drift of the line voltage and subsequent bias can be easily corrected. I have found that changes of plus or minus one volt can affect the over-all sound quality.
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Reprints and Back Issues

Some years ago we ran off 1000 copies of a softbound reprint of our first 12 issues. It sold so well that we went then and did likewise with our second 12 issues, which is also moving quite nicely thank you. Supplies of both have dwindled gratifyingly, but both are still available for $25 each (although Volume 1 won’t last much longer). If you are curious about how, and why, this whole business of perfectionist audio got started (It was all our fault, remember!), these two reprints are a compact history of the whole sordid affair. But if you want them, we’ll advise ordering these now, because when they’re gone, that’s that. We will not reprint them again. Who knows? They may become collector’s items.

Both, by the way, are 8½ by 11-inch size (That’s the way we were!). Volume 1 has 240 pages and covers the years 1962 to ’66, and Volume 2 has 290 pages and covers up to Spring ’71.

Also available in limited quantities, for $3 each, are original copies of back issues numbered: (Volume & Number) 3-2, 3-3, 3-5, 3-6, 3-7, 3-9, 3-11, 3-12, 4-1, 4-3 and 4-5. See the subscription coupon on page 80 for ordering information.
quality of a system.

David Moore

We are more than a little dubious about that last assertion. Perhaps a 5-volt change, but not likely a 1-volt change.

Sound Guard

After all these years of readership, I hope I'm in line for one small niggle to niggle, re Sound Guard and Jerry McWilliams' comments thereon. ("Preservation of Sound Recordings," Issue 4-5).

Here in the middle of the Atlantic Ocean, records for mature listeners aren't come by easily. So, naturally, we spell record care RECORD CARE! To that end, many of us put the very first playing of a new record on tape. Before Sound Guard I recorded ticks and pops along with the music on my pristine records.

Now, on the basis of experience involving the use of almost a dozen bottles of Sound Guard -- I Sound Guard every new record I receive immediately after removing it from its jacket! The result? Velvet background silence--utter and complete! And that silence continues on the records themselves, even after repeated playings. (It's often more convenient to play the record than to take the time to spot it out on the tape.)

Now -- Jerry McW says he hears that "Sound Guard is easy to misapply." That's correct -- it sure is. However, it's just as easy to apply correctly! Perhaps easier. Here's how:

Use a Sound Guard Record Care Work Pad, after blowing the dust off it with a can of compressed air. (The pad keeps the record from slipping, and perhaps scratching, on a clean towel.) Then, go around the record twice with short, quick spritzes of Sound Guard with the sprayer held no more than four inches from the record. Don't be stingy with the spray.

Immediately start buffing -- clockwise -- hard, with some pressure. (Don't bear down, but exert enough pressure so you have to grip the buffer to keep it from turning over in your hand.) Then, after you think you've buffed it enough, buff it at least as much again!

NOTE: Start buffing while the Sound Guard is still moist, and buff more than you think is necessary -- long after you can see no trace of the Sound Guard liquid. Don't try to "economize" on either the spray or elbow grease.

P.S. Sound Guard for "used" records? Forget it!

Oeveste Granducci
Virgin Islands

Although we have yet to see evidence that Sound-Guard actually damages grooves, we nonetheless share Mr. McWilliams' reservations about any substance being applied permanently to a disc.

We suspect that the ticks and pops you used to record from "pristine" discs were a result of nothing more than dirt on those discs -- dirt which was removed by the buffing step of Sound-Guard application. We have observed that most non-audiophile-perfectionist-type discs are substantially quieter if cleaned prior to the first play with a Discwasher or a Keith Monks disc launderer. In those instances where we then treated the discs with Sound Guard, there was no further reduction in noise.

We have in fact found that the seemingly-inevitable buildup of small ticks and pops on older discs is almost totally erasable by proper wet-washing (most easily accomplished with the Monks cleaner), as long as the disc has not
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sustained any scratches along with the accumulated dirt.

Strained Speakers?
Symptom-wise, how does one tell when a tweeter on, say, a two-way conventional speaker system, is being over-driven? (Or does it go all at once?) I'm interested because of comments by you of how certain speakers sound when they are driven too hard.

Also, I have noticed that some records appear to be recorded at lower volume levels than others. Does that mean they require additional amplifier power (and more system wear and tear) for reasonable levels? For example, with the volume knob at 3 o'clock and sound level less than 90 dB, I worry that speakers and amp are being stressed.

Finally, are there reasonably priced "dB meters"?

Cotty O'Leary

The sound of an over-driven tweeter depends upon the range it is covering. With a two-way system, where crossover to the tweeter takes place at between 300 and 1500 Hz, tweeter overload usually sounds like a fuzzy edge overlaying the sound, similar to the sound a kazoo makes. (If you've never heard a kazoo, fold some tracing paper over a hair comb, hold it gently to your lips, and say "oooh" to it. The kazoo will be added to your voice sound.)

When a tweeter crosses over at 5 kHz or above, overload may be audible as a subtle tizzing sound or may not be audible at all. Actually, it is almost impossible to overload a tweeter which comes in at 5 kHz or above because the energy content of music is far less up there than at lower frequencies. The middle range or low end of the speaker system will overload first. The greatest danger to tweeters is not overload from program content but from amplifier clipping. (This is why tweeters are more often ruined by modestly-powered amplifiers than by high-powered ones.) Damage is not usually instantaneous (except in the case of electrostatics), and since amplifier overload is usually very audible as a shattering or clicking noise, there should be more than enough time to turn down the volume before harm is done.

The "work" that amplifying equipment is required to do depends on how much power the amplifier is delivering to the speakers, not on how much amplifying it must do in order to deliver that power. If you are feeding an average of 5 watts power to your speakers, it makes absolutely no difference to the amplifier whether you have the volume control at 3 o'clock or at 1 o'clock.

Radio Shack sells what is probably the least expensive sound-pressure meter available. The price: $39.95.

Tip Sensing
In regard to your Vol.4 No.2 Miscellany item "The Tip-Sensing Secret," moving-coil cartridges are not alone in providing suppression (attempted?) of longitudinal stylus motion.

Currently available non-moving-coil cartridges I know of which utilize a tension wire for this purpose are the Goldring 900, Grado F. Series and Signature Series, and the JVC X-1. In fact, both the Grados and JVCs are constructed in a fashion virtually identical to that of most moving-coil pickups; that is, a high-tensile tie-wire, coaxial to the pivot-tip axis and rigidly fixed to the body, both establishes the pivot-point and holds the cantilever to the record on a cantilever cartridge.
lever back under a slight tension.

After more than 25 years of analyzing pickup design, I believe that the main shortcomings of most commercial cartridges arise from complex resonances in their moving parts. While the ideal of perfect accuracy of mechanical motion can be approached, it is probably unattainable where the design must be geared to mass-production techniques.

Edward Nudo

IVIEd Tape

I have one of the IVIE analyzer systems you reported on several issues back, and have been trying to use it for tape-recorder set-up, but cannot seem to get it to work properly.

No matter how carefully I go through the set-up routine, I cannot get the IVIE to read flat response out to 16 kHz. The best I can do is get the response flat out to 8 kHz. At that point, the 16-kHz octave on the IVIE reads 2 dB down. This is not right, as I have verified with an oscillator and a VTVM that the recorder is actually flat (at 15 ips) to around 18 kHz. Why the discrepancy?

Dr. William Frager

We warned you (in our report) that the IVIE IE-10 readouts can sometimes be tricky to interpret. This is an example.

You must remember that, when using pink noise as a signal source for the IE-10, each LED on the display registers the total energy within its respective frequency octave. The 16 kHz designation for the uppermost LED on the IE-10 identifies the center point of the octave between 12 kHz and 24 kHz, and reads the total energy through that entire octave. If your recorder's response is flat...
to 18 and falling thereafter, the total energy in that octave will be reduced and the LED will give a lowered reading, even though the response up to 18 kHz may be perfectly flat.

The most precise tape-recorder setup is accomplished using a sine-wave generator and an audio VTVM, according to instructions supplied by the recorder manufacturer and specifics provided by the tape manufacturer. The IVIE can do almost as precise a job on remote locations where large test gear is unavailable, as follows:

Set the IE-20 generator to maximum output on pink noise and adjust the recording level to -10 dB for 15 ips (or -20 at 7.5 ips). Switch the recorder to meter Tape Play, and set the IE-10 Resolution to 1 dB and approximate Zero level. Adjust bias in the appropriate channel for maximum 1000-Hz output, even if this involves lighting 2 LEDs at once. Carefully adjust the recording level until

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two 1000-Hz LEDs light equally brightly. Then increase bias current until the top one just extinguishes. This is the 1/2-dB overbias point.

If the adjustment is being made for a 7½ or 3-3/4-ips speed, do not adjust for extinction of the upper LED. Adjust for maximum brightness on the upper one and minimum on the one below it. This maximum-output (peak-bias) point will provide the widest attainable frequency response with the lowest noise and distortion that can be obtained at slow running speeds.

Readjust record level if necessary to produce the flattest possible over-all response display, then adjust record equalization until the 8-kHz LED reads the same level as the lower-octave ones. Switch from Play to Record and back, and adjust the appropriate potentiometer for identical levels at 1000 Hz. Repeat the preceding steps in the other channel and you're ready to record.

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