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AS WE SEE IT

THOSE DURABLE BOTTLES

by J. Gordon Holt

I believe it was 1958 when I first heard a transistorized audio product. The Fisher TR-1 was a small battery-powered box that provided microphone preamplification and inputs for three magnetic phono sources.

I remember being completely bowled over by the sound. It did some things far better than any tubed component I had heard, and I was so impressed by those things that I did not at first detect the things the TR-1 was doing worse than tubes. I am confident that I would run screaming from the room were I to listen to it today, though a lot of its shortcomings were doubtless being masked by complementary shortcomings in the loudspeakers of that day.

Soon the TR-1 was joined in a proliferation of more sophisticated and better sounding solid-state components, some of which did many things well enough that I, and the audio community at large, was confidently predicting that Lee DeForest’s little glass bottle, the clumsy old vacuum tube with its finite life and its wasteful generation of heat, would be dead and gone within 10 years. Twenty-five years later, the vacuum tube is not only still with us, it is enjoying a renaissance among audio perfectionists.

What is the continuing attraction of this technological dinosaur? Certainly not convenience, reliability, or cost. A tube is very inconvenient to use, requiring as it does plenty of space around it for ventilation and a separate, high-current power supply for its heater. Its microphonic tendencies are evident in high-gain circuits, and a tube needs special flexible mounting to keep vibration away from it.

It’s not very reliable either; output tubes tend to break down at the drop of a hat, and even a tube that doesn’t suffer a heater burnout before its estimated lifetime will, as inevitably as a living organism, come to its demise. Even worse,

1 An amplifying vacuum tube consists of at least four basic components: the heater (1) which agitates the electrons on the surrounding cathode (2) so that they more easily escape, weaving their way through the grid (3)—which modulates the current flow—on their merry way to the anode (4).
the sound of many tubes deteriorates over time, a known cause of *tremens audiophilius*. Given enough time, every tube will wear out and have to be replaced. Which brings us to cost, another thing definitely not in the tube’s favor. Premium brands tend to be quite expensive, ranging from $10 for a low-current dual-triode 12AX7 to $30 or more for a high-current output tube like the EL-34.

What, then, *does* the vacuum tube have going for it? Nothing at all, except its sound. And that sound is so unlike solid-state sound that a tube enthusiast can tell one from the other immediately. Solid-state components tend to be crisp and sharply-etched at the high end, somewhat laid-back through the presence range (as though the instruments reproduced were slightly backed off from the recording mikes), and very taut and deep at the low end. Tubed components tend to be a bit soft at the extreme top (though this is less true for the very best modern components), rather forward and “alive” through the upper middle range, somewhat warm and ill-defined through the mid bass, and weak at the extreme bottom—again less true of the best designs (like the Berling 2100 and the EAR 509). They also seem to reproduce depth and front-to-back perspectives better than do transistorized components, sometimes with an uncanny feeling of 3-dimensionality around the sound sources.

The tube sound has been described as “musical” by those who like it, and as “euphonically colored” by those who don’t. It is in fact a little of both. Live-music highs do tend to be more soft than crisp, and the overall sound is somewhat warmer and richer in spectral balance than is usually heard from solid-state electronics. While many tubed components seem to overdo these qualities, it can be argued just as convincingly that many solid-state components underdo them, making the sound too lean, dry, and crisp. (This sounds like a discussion of fried chicken.)

Many observers have suggested through the years that the ultimate truth—true accuracy—may lie somewhere between the sounds of tubes and transistors. And indeed, there is increasing evidence that this may in fact be the case, as some of the best solid-state products come to sound increasingly like tubes, and tubed products have picked up the virtues of transistors: extended bandwidth at top and bottom. Yet the characteristic differences persist, and to those who hear those differences, there is often little choice. Either they prefer the tube sound, or they prefer solid-state sound. Yet few are able to explain their preference, except in such simplistic terms as “more musical” or “more accurate” or, lamely, “I prefer it.”

The continuing consumer interest in tubes still baffles most of the so-called scientific community—AKA the test-bench crowd. Seemingly unable to hear what all the fuss is about, or to cite measurements which correlate with the differences audiophiles claim to hear, they cast about for “rational” explanations of the observation that relatively high distortion measurements (tubes) should sound better to some listeners than products with vanishingly low measured distortion.

The most commonly heard explanation is that tubes “overload more gracefully.” This is often actually true, because the transistor’s superior (or exaggerated?) detail makes the tiniest amount of waveform clipping immediately and obnoxiously evident. Not only that, the nature of tube clipping is more like a compression (Fig.1) where the transistor-clipped waveform is an irritating-to-the-ear truncation (Fig.2). But that argument can’t hold all the water, because the things which distinguish tube sound from transistor sound are audible at all output

---

2 Pontius Pilate would have queried, “What is truth—tube or transistor?”
levels, including those far below the component’s overload point. (Nonetheless, many rock musicians prefer tubed amplifiers for use with their gee-tars and Fender basses because they do sound better when overdriven to the excessive levels beloved of all rock musicians.)

In truth, the reasons for a tube component’s unique sound are not clearly understood, although there have been some canny theories presented. Dave Hafler (president of the Hafler Company, which makes only solid-state electronics) has hypothesized that a lot of the difference has to do with the relative distribution and strengths of the spurious harmonics generated by tubes and transistors. For example, a tubed amplifier which measures 0.5% harmonic distortion might produce ¼ of that as 3rd-harmonic content and ½ as 4th, whereas a transistor amp with the same measured THD may produce ½ of that as 3rd-order distortion and ½ as 4th-order. And while the tubes may yield diminishing amounts of distortion with increasing order (5th, 6th and so on), the transistors may yield the same content at each harmonic all the way out to the 10th. This strikes me as being one of the most convincing explanations we’ve heard to date, but it hardly explains all those other differences.

Bill Conrad (of conrad-johnson design) thinks that tubes simply obscure less of the very low level information that give us subtle aural clues as to the size of individual instruments and their location in space. Others have speculated that tubes are “nicer” to electrons—that the electrons “like” travelling across a vacuum more than they like travelling through a semiconductor substrate.3

Tube clipping has slightly-rounding corners, yielding overload sound that is fuzzy rather than harsh. In both cases, actual clipping waveform depends on the component’s design.

An overload-clipped sine wave from a solid-state amplifier. The clipped corners are very sharp, indicating strong HF content and harsh sound.

It is probable that tubed amplifiers’ typical weakness at the extreme low end is related to the limitations of its output transformer, whose ability to deliver LF current is directly related to the size and weight of its iron core and is thus constrained by economic realities (as well as by its movability by anyone but a sumo wrestler). But the “aliveness,” midbass warmth,4 and seemingly enhanced depth all defy any explanation in terms comprehensible to design engineers.

Tubed component design remains rather much a black art, where measurements must at some point in the design

3 And no one wants to listen to an irritated electron.
4 The midbass warmth of tubes is actually not so mystical. Introducing a 30 Hz rolloff point in a solid-state amplifier would bring about midbass warmth also; in fact almost all rolloffs have audible results prior to the frequency where the rolloff commences on a frequency response graph.

Stereophile
process yield to the designer’s subjective judgments as to how the damned thing sounds and to heck with the measurements. This is a singularly unenviable position for any designer to find himself in, for the whole area of subjective evaluation is fraught with more pitfalls than the video game. (We who skirt these pitfalls on a regular basis can sympathize more than most!) First, he must divest his listening from personal biases, and listen for what he believes consumers will listen for — easier said than done. Then he must attempt to second-guess his target market in terms of what they will like and won’t. (I hear that, but will buyers consider it a strength or a weakness?) He must convince himself that the signal sources he uses for evaluation are, if not unquestionably accurate, at least representative of what his potential customers will use. And then there’s the question of his loudspeakers, and that’s a loaded question.

Perhaps, then, the main reason why the vacuum tube persists in audio is that it continues to provide the kind of listening pleasure that every audiophile envisioned in his mind’s ear when he got into audio in the first place.

All loudspeakers are colored. He knows that, intellectually at least. So are all amplifiers, more or less, including his prototype tubed amp. What speakers should be used in evaluating the sound of his amplifier? And best in what respects? Electrostatics, generally, tend to have scads of detail and, often, rather thin low end. For electrostatics, he should go for a soft, “sweet” high end and a full low end. But most dynamic speakers require just the opposite qualities from an amplifier: crisp high end and tight, controlled bass. Should the sound be tailored to one kind of speaker and slight the other? Or would he do better to compromise and end up with something that sounds passably good, but not superb on either? Decisions, decisions.

As a result of all this, good tubed electronics inevitably differ in sound from one to another, much more than do good solid-state units. This raises legitimate questions regarding the “accuracy” of any of them — they can’t all be accurate when they sound so different. But it also greatly enhances a buyer’s opportunity of finding an amplifier which exactly meshes with his favorite speaker to produce the best sound that speaker is capable of delivering. Thus, in a perverse sort of way, the variety of tube sounds can be an avenue toward incredibly listenable, satisfying, and accurate sound.

Tubes are not the only such avenue of course, though I won’t hesitate to admit that some of the best sound I’ve heard has been from systems using tubed electronics throughout. All of Sheffield’s recent recordings, as an example, are brought to us through the courtesy of all-tubed electronics. On the other hand, some of the best sound I have heard (in other respects) has been from solid-state systems. I could happily live with either, as long as they were hooked up to speakers which complemented their respective characteristics. Perhaps, then, the main reason why the vacuum tube persists in audio (when the transistor has replaced it in every other area of electronics) is that it continues to provide the kind of listening pleasure that every audiophile envisioned in his mind’s ear when he got into audio in the first place. I can’t think of a better reason.

JGH
TRADE-IN PRICES

Editor:
I have a pair of Hartley Concertmaster speaker systems which have only been used for about 24 hours. I wish to trade these in for a pair of $2100 Acoustat 2+2s. What price do you think I should expect to get for the Concertmasters?

John L. Fuller
Waterville OH

It's hard to say. If you bought the Hartleys recently from a dealer who also carries Acoustat, you might be able to get back much of what you paid for them. Otherwise, you would do better to try and sell them privately, because a non-Hartley dealer won't give you very much for them; you'll be lucky to get $500 for the pair.

Concertmasters currently go for $1670 new. If yours are in new condition, you might be able to get $1400 for them, but it is more likely that you'll have to accept something around $1200. If they are cosmetically damaged, you're looking at a private resale price of under $1000 for the pair.

XA 'TABLE CONVERSION

Editor:
I presently own an old AR XA turntable, a Dyna PAS-3X preamp, Quad 303 power amp and Quad ESLs. I ordered a Shure V15-VG to replace my -III, only to find that Shure has discontinued their spherical styli. I hesitate to purchase the V, yet a better cartridge may not be suited to the XA table. I am not thrilled with the idea of buying an expensive 'table just now to obtain a better arm, and the arm

you used to recommend for replacing the AR one does not seem to be available any more. I suspect that the -V may tolerate the AR arm better than the better pickups. Alas, alack, what to do?

Mark Stern
New York, NY

RECORDING ALTERNATIVES

Editor:
I enjoyed reading Mr. Sommerwerck's report on the relative merits of the Otari 5050 analog recorder and the Sony PCM-F1/SL-2000 digital system. Now I am curious about two other systems that he did not discuss.

Do the new Beta Hi-Fi systems offer any serious competition to PCM digital or, for that matter, to open-reel analog recordings?

Mr. Sommerwerck's article mentioned that one way to reduce analog tape's "smear problem" was to increase the tape speed to 30 ips. However, in shopping around for open-reel machines, I have yet to find one that will record at a higher speed than 15 ips. Can you tell me of a manufacturer that makes them or modifies current stock units?

Michael W. Healey
Chicago, IL

No one has loaned us a Beta Hi-Fi unit for testing, so all we can do is repeat what users have told us. The sound quality is apparently about halfway between 7-1/2 ips analog tape and digital PCM tape, although some users report that they can hear the system's compander "breathing." And whether or not it's of concern to you, most users feel that the quality of video from Beta Hi-Fi decks has slightly
less definition than does a straight Beta-11 VCR recording.

30-ips open-reel recorders are available on special order from several of the manufacturers of professional tape decks, including Ampex, Studer and MCI.

REPLACEMENT TUBES

Editor:
The cost of retubing a preamp today seems to be approaching the price of entire preamps just a few years ago. Some really intimidating prices for “reference quality” tubes have led me to extensive experimentation.

Actually, most of these so-called premium tubes are quite conventional sorts which have been relabeled. One case in point was a batch of 12AX7s that an audiophile friend purchased from a local dealer, which were identical to some Amperex ECC-83s which I had gotten at 1/10 the price. What did that tenfold price buy my friend? Well, the tube pins were gold plated, the store had its own brand on the tubes, and the glass bulbs were frosted, presumably to discourage scrutiny of their internal construction for comparison purposes. Now note that, although these tubes and my Amperexes were identical in construction, that does not necessarily mean they were made by Amperex. That company could have bought them, with Amperex labels, from the same firm that supplied and relabeled them for the local dealer.

The practice of relabeling is very common, and has been for many years. I have bought Mullard tubes that were labeled GE. And even the marked country of origin is not reliable. I have four 12AX7s which are identical in construction, characteristics and sound, and thus presumably originated at the same factory. Yet each is marked with a different brand name and country of origin. So specifying a brand and country (i.e., West Germany) is not enough to specify a particular tube.

There are, however, some excellent 12AX7s available generally, at reasonable cost. They can be identified, not by labeling but by internal construction, as follows: the bulb is slightly fatter than that of a typical 12AX7, and has a less rounded top. And the anode assemblies are smaller than usual. (See drawing.)

I’ve found these in quite a few places. Most recently they have been appearing in Radio Shack’s stock, but if you buy them there, check them out first, because Radio Shack’s brand is on several different makes of tubes. But don’t tell your friends that your Berning T-10 has Radio Shack tubes in it. It will suddenly cease sounding good to them.

Incidentally, the PL-509 tubes used in the EAR 509 amplifier are readily available from most parts jobbers as the 40KB6. Also, the Luxman 3045 amplifier can use KT-88s in place of its 3045 tubes, but an even better choice is the cheaper 7027A industrial tube, also widely available.

Dr. Stuart Yaniger
Philadelphia PA
Editor:

I received my second issue of your magazine today and have read it from cover to cover. I like what I have seen so far, mostly for contrary reasons. Like: The harmonious sound of dissonance!

But after digesting this issue (I ate it), I am really confused.

You like electrostatics. You rapture over them. You like the Thiel with reservations. But are they polar to the electrostatics? You casually mention that "Infinity once again had some of the best sound at the show." Another entirely different kind of system which employs drivers and Emits. I thought the Infinity 4.5s were long extinct. You rhapsodize about them.

I am dizzied by these swirls of ideas. All I ever hear and read about electrostatics is not good. In my first copy of your magazine, someone spoke of the hellish difficulty in placement of electrostatics for good stereo imaging. I am splendidly confused.

What loudspeaker gives the most transparent sound with excellent imaging?

Are the Infinities good?

I love classical music and no other. I am not attracted to Rock & Roll jukebox bass. I prefer the sound you describe in electrostatics but without the bother, so what do you suggest?

Ken Lausa
Lima, OH

Oh boy! If only things were as simple as you would like them to be.

Was it Confucius, Buddha, or Arthur Jones of Boise, Idaho, who said, "There are many paths to the gates of Heaven?" Whoever said it, it sums up the situation in audio today.

With the possible exception of the WAMMS (see above), there is no loudspeaker system which does everything better than any other loudspeaker system. The ones which image best are tiny satellite speakers which are limited in power-handling ability and have mediocre transient response. The speakers with the lowest distortion and best transient response are full-range electrostatics, but many of them don't image well and none will produce very high listening levels. The one electrostatic with incredibly good imaging (the Quad 63) sounds a bit dry with most power amplifiers and is quite limited in loudness level. The systems which produce the most clean output are all-dynamic systems, but only a few image really well and all but the very best are noticeably "slower" (in reaction time) than electrostatics.

The whole business is complicated by the fact that the sound of a given loudspeaker depends on what amplifier is feeding it and on what is feeding the amplifier. Replacing a superb preamplifier with another superb preamplifier of a different brand can make a superb speaker/amplifier combination sound mediocre. If a system is almost "there," replacing a cartridge can make it sound right-on or can make it sound worse. In short, there are no simple, easy answers to the problem of achieving satisfying reproduction of musical sound.

Twice a year we publish a list of Recommended Components for the benefit of readers who find it challenging to make their own mix-and-match mistakes. Even the compatibility suggestions that we include with that list offer no assurance that a particular combination of components will sound as good as that amount of money can buy.

For the benefit of those readers who want really good sound rather than the challenge of experimentation, we also publish periodic lists of recommended systems, consisting of components which we have found to be particularly synergistic. But not even those systems can be simply plunked down in a room and...
expected to work at their best. And if you already own a number of components and wish only to buy loudspeakers, you are playing high-stakes roulette, for a better speaker may simply reveal a lot of nasty things that your previous loudspeakers were mercifully obscuring. This is why electrostatics have such a bad reputation. They reproduce with embarrassing honesty every nuance of sonic crud fed to them—so honestly that there are only a handful of associated components in the entire world which are really ideal for use with them. And every last one of those components is horribly expensive.

Loudspeakers like the Thiel 04s get good reviews when they do more things right than one should expect for their price. The Infinity 4.5 is discontinued—and actually we didn’t care much for them. If you don’t want the “bother” of diddling a good speaker system into its optimum placement, your best bet is to find someone who specializes in high-quality home-music installations and work with him. Just make sure he knows what a live symphony orchestra sounds like, or you may end up with jukebox bass and a hard-rock middle-range squawk.

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ELECTROCOMPANIET
Preampliwire I

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PUBLISHER’S CORNER

THIS ISSUE

This is our Almost All-Tube Issue. There wasn’t really a concerted effort—I just saw a bunch of interesting reviews on tubed electronics coming up and decided to put them all together. The Conrad-Johnson PV5 reviewed by JGI is an exciting product: a $1500 preamp that rivals the best we’ve heard. Tony Cordesman looks at complete state-of-the-art tube systems from Audio Research and Conrad-Johnson Design. JGI reviews two recently introduced tube amplifiers, one (the Quicksilver) a superb execution of “traditional” tube sound, the other an innovative circuit by David Berning (the EA-2100).

Tony Cordesman also takes on three well-known British tonearms: the Alphason, the Syrinx, and the Zeta. While he’s at it, AHC manages to review the Sumiko “Arm,” the Souther linear-tracking arm, the Goldmund arm and ’table—and several other notable turntables. Anyone thinking of buying something for his display system will benefit from this article.

Two interesting speakers made it into our Almost All-Tube Issue—and neither use tubes! Larry Greenhill compares the Fourier 6 to the Spica TC-50 featured in our last issue. JGI takes on the remarkable Thiel CS3 on page ??.

Get to know innovative tube and transformer designer Tim de Paravicini on page ??, in an interesting interview conducted by Dick Olsher and Jerry Novetsky last June. Tim is the manufacturer of the remarkable Esoteric Audio Research 509 reviewed in Volume 6, Number 3—and he’s not short on opinions.

Telarc’s first 6 CDs, setting certainly the highest overall standard for any manufacturer in the medium, are reviewed by JGI, and we introduce Bob O’Neill (who also sells advertising for us) as a jazz music reviewer. Bob has a long history of jazz-listening, both live and recorded, and almost as long a history with high fidelity equipment—he was an original subscriber to Stereophile back in 1962.

NEXT ISSUE

One of our inspirations for the Almost All-Tube issue was a survey of budget tube preamps by Steve Watkinson (see below): the Audible Illusions Modulus, the Conrad-Johnson PV4, and the Counterpoint SA-7. Unfortunately, we found at the last moment that one of our review samples had been modified by the dealer from whom it was obtained. According to the manufacturer, this accounted for the anomalies we heard in its sound. Oh consumer, beware of random and undisclosed modifications! Many manufacturers we talk to disapprove of throwing extra capacitors at their products—even Wonder Caps—and we suspect they’re right. We decided to defer the entire tube preamp survey until Volume 7, Number 4 along with a potpourri of other equipment reports: 7 speakers under $500 reviewed by DO; the Acoustat Sixes by BS; the Nakamichi DMP-100 digital adaptor (similar to Sony’s PCM-F1) by BS; the experiences of JGI and BS in digital recording; the remarkable Eminent Technology and Souther tonearms; AHC’s reviews of the Fuselier 3.3 speakers and his encyclopedic assessment of our 6 major..
musical sources: analog disc, CD, PCM, cassette, reel-to-reel, and FM.

There's even more than that, but I just realized it can't all happen in one issue; it simply won't fit, even with our expanded size. You'll just have to wait and see what makes it in!

PERSONNEL

Our writing staff has just about doubled in the last two issues, just one of the signs of excitement Stereophile has been creating in the hi-fi business.

Laurence Greenhill started out in Volume 7, Number 1 reviewing three expensive cassette decks. LG makes his living as a psychiatrist and as a teacher at Columbia. He has written in the past for Audio Alternatives, High Performance Review, and Stereo Review. He currently writes for Audio as well as Stereophile, and is very active in The Audiophile Society (Westchester County).

Anthony Cordesman made his Stereophile debut in our last issue with reviews of the Dayton Wright and Spica small speakers and an update on the Quad ESL-63. AHC's reputation in high-end audio comes largely from his 3-year association with The Absolute Sound, whose staff he recently left. While there, he impressed us as one of their writers who had the consistent methodology necessary to avoid the pitfalls of subjective reviewing. Now that we see his writing unedited, we see that he has a penetrating and wry sense of humor as well. AHC's absolute (there's that word again) integrity, fairness, and respect for the difficulties of creating sonic excellence in a product have established his reputation with manufacturers and readers alike.

Steven Watkinson wrote last issue's report on the SOTA Sapphire Star turntable, and is a newcomer to the ranks of reviewing. SWW makes his living as a lawyer in Phoenix, but has been participating in high-end audio for years now. His frequenting of CES shows in the company of Michael Dayton Wright and Richard Brown (of Brown Electronic Laboratories) has introduced him to numerous manufacturers; we now introduce him to you, the consumer.

Wilhelm Storrer worked as the music critic for Audio Journal, an underground journal published out of South Carolina until it bit the dust a year ago. WS' musical background and audiophile orientation impressed us when we read Audio Journal; he has ready to go a Previn discography, an impressive assessment of LaserVideo discs, and an extensive treatise on the authenticity of "Authentic-Instrument" recordings. His reviews of Compact Disc in this issue are somewhat remarkable: he finds a few that he likes!
The PV-5 is a "budget" version of Cj's $2850 Premier Three, but according to the manufacturer it embodies much the same kind of circuitry.

Tubed preamplifiers have a well-earned reputation as system busters. Many of them during warmup produce horrendous bangs or plops so severe that every speaker fuse in the system blows. If fuses are absent, or rated too high to protect things, the amplifier, speakers, or both are likely to blow up (not literally; they just twitch once and lie down dead). The PV-5 contains one of the most effective pop suppressors I've encountered, and produces no noise whatsoever during warmups and turnoffs. My Berning TF-10, on the other hand, produces a small plop when its delay relay turns it on, and a monstrous, fuse-popping thud when turned off. I have never given it a crack at an unfused system with a 500-watt/channel amplifier, and don't plan to.

The Cj is very quiet in other ways as well. At high listening level (100-dB peaks) with a 5-mV cartridge, hum and hiss were virtually nonexistent. And the PV-5 has scads of reserve gain; the volume control at the aforementioned listening level (with the Premier One amp and Acoustat 2 + 2 speakers) was at 11 o'clock, and measurement showed that there was an additional 9 dB of gain left. At 12 o'clock, in the absence of any signal (including surface noise), there was only a very faint rushing bbb. At full gain there was plenty of bbb but still no hum! All switched functions were completely free from clicks. (Note that slight DC leakage in the coupling capacitors of a high-level signal source can cause clicks which are not the fault of the preamp design.)

The reserve gain means that with most MM cartridges the volume control will be set rather low much of the time, a condition which can cause bad channel imbalance due to poor volume-control tracking in the 8, 9, and 10 o'clock range.
Such is not the case with the PV-5. Tracking accuracy between the two halves of the ganged control was better than .5 dB from 7:30 to 4 o'clock, which is unusually good. The advantage, of course, is that the preamp has enough gain to run many moving coil cartridges straight in, without a step-up device; more on this later.

Our first sample of the PV-5 (obtained around October '83) proved sonically to be a real puzzler. On bypass tests, with my inverse-RIAA input network (and using good CD and 15-ips tape sources), there was so little difference with the PV-5 in-circuit and bypassed that it was almost impossible to tell which was which. On this basis the PV-5 was virtually indistinguishable from my "reference" Berning TF-10 preamp.

But with analog discs the PV-5's sound was not nearly so neutral. It reminded me, in fact, of the sound of C-J's own Premier One power amplifier: slightly bright and forward, very much alive, with remarkably good rendition of depth and perspective and a warm and full but slightly loose low end. Despite the unit's extraordinary (for tubes) high-end response, highs were somewhat sweetened rather than airy and open, with a hint of some fine-grained texturing. It was perhaps not surprising, then, that I found the combination of the Premier One and the PV-5 to be a bit much with many speaker systems. Their colorations compounded one another, and the result was quite noticeable. But the disparity between what I heard on bypass and with a phono source still had me baffled. Response measurements using the same inverse-RIAA box revealed nothing amiss. The PV-5's RIAA and high-level sections were as close to being right-on as anything I've measured.

Right around the time I'd finished my report on the first unit, and concluded the PV-5 couldn't really stand up to my Berning TF-10, C-J asked that we return our sample PV-5 for "updating." According to C-J, all they did was "trim the RIAA equalization and change a few tubes," but the resulting change in the preamplifier's sound was not subtle. The latest version still has some of the sonic earmarks of tubes, but every coloration has been reduced to the point where it is merely a slight "tint" rather than an aberration.

For example, the original warmth remains, but there is less of it—quite little, in fact—and instead of the slight looseness previously observed, the midbass is now surprisingly taut and "gutsy." Bowed basses sound awesome: realistically round with all the bloom of the real-instrument sound. The string vibrations are so clearly defined that I had the feeling I should have been able to "count the cycles." Not only that, the low end has a gorgeously full, deep weight to it. In short, the low end is now superb, bettering the Berning by a small but significant margin.

It now surpasses the Berning in two other respects as well: depth and transparency. The PV-5 has such liquid clarity, and reproduces perspectives so well, that the sound is sometimes spookily real. The preamp is an utter joy to listen to, and should be heard by anyone who maintains an aversion to tubes—not to mention those of you who already love tubes and may be looking for a new preamp! If the PV-5 doesn't convince you, nothing will.

Extreme highs, markedly improved over the first sample, are quick and detailed, yet exquisitely delicate. The slight graininess in the first unit is virtually gone, save for a very subtle crispness. The Berning is just a hair sweeter at the top, but the difference is now so slight that in actual use it would be swamped by far greater differences between loudspeakers, cartridges and discs.

The PV-5 is still not quite as literally accurate as the Berning; it still has a slight forwardness and some brightness. The brightness may push some speakers and

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many recordings over the hill into shrillness, but I have yet to find a loudspeaker system that didn't respond to that forwardness by merely sounding more alive and realistic. This is one case where I have to say I'm more impressed by sheer seductive listenability than by accuracy. I keep telling myself that accurate is better, but accuracy by itself isn't why I derive so much pleasure from listening to the PV-5.

Interestingly, when driving C-J's Premier One power amp, this latest PV-5 almost seemed to disappear. I had the feeling that all I was hearing was the power amp (which, while superb-sounding on many top speaker systems, is more colored than the preamp).

In short, this has to be one of the world's great preamplifiers. It floors me that Conrad-Johnson has a still better preamplifier in their line, the Premier Three (see AIC's report elsewhere in this issue). It has not prompted me to turn in my Berning (for which my attachment is more than emotional; I paid good money for it), but it has made it clear that my 4-year-old TF-10 is overdue for an overhaul and upgrade.1

A honey of a preamp!

JGH

1 Those who have witnessed JGH's loyalty to the Berning over the last 4 years will appreciate what a large step it has been to find a preamp that outperforms it in a number of ways. Interestingly, Berning has just announced their first official updating of the TF-10 (although it's been modified in minor ways all along), and it's described as making "significant" sonic improvements.

LA

The Klyne SK-2A Pre-Preamp


Anyone who's played around with headamps, moving coil cartridges, and preamps knows that the results you get with any particular device depend to a large extent on what it's used with. All the different components interact strongly, making absolute recommendations very hard to come up with. Stan Klyne has addressed this problem by making his SK-2A headamp both very neutral in tonal balance and very flexible in use. There are areas where the SK-2a may be bettered sonically (in my opinion, by a narrow margin) in use with a particular cartridge or preamp; I doubt if there's any product out there which can equal its sonic excellence in a wide variety of situations.

Head amps, of course, wouldn't be around if it weren't for the low output of the best moving coil cartridges. There's a major debate in the high-end industry as to the necessity or desirability of a

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stepup device at all. It's maintained in some quarters that the only good head amp is no head amp—in other words, any preamp worth its salt should provide enough gain to amplify the output of an MC cartridge on its own (one magazine has gone so far as to practically dismiss those preamps lacking enough gain).

This position is appealing at first: certainly no device is better than even the most perfect device. That statement of the problem is inaccurate, however: the extra 26-30 dB of gain provided by stepup devices—be they transformers, solid-state, or tube—must be provided by gain stages, and those gain stages will foul up the sound to some extent even when they're in the main preamp. One does thereby eliminate a pair of interconnects, and anyone who's experimented with interconnects will recognize the advantage. My findings, however, were that the Klyne SK-2A, used with good interconnects such as the Monster Interlink Reference, benefitted the sound of a system even when inserted before a high-gain preamp (such as the Acoustat TNP), whose gain would correspondingly be either switched out or turned down. In other words, my finding is that a very good device can be better than no device at all! Nor was the Acoustat the only preamp with which this was found; the C-J PV5 gave the same result (in different parts of the musical spectrum), as did the PS Audio PS IV11, to a lesser extent. Stan Klyne reports hearing similar stories about the Spectral DMC-10 and ARC SP-10 preamps, both of which have adequate gain for moving coil cartridges straight-in.

At this point, we can't certainly explain this phenomenon, but there are some possibilities. High-gain preamps do all their amplification after the RIAA network, just as do low-gain preamps. The possibility exists that the output of MC cartridges "likes" to run through the RIAA stages at the higher level provided by a stepup device. The other, and more likely, possibility is that a stepup device that is extraordinarily well-regulated (as the Klyne is) affects the sound less than a preamp that is even slightly less well-regulated. The principal difference between the SK-2 and SK-2A versions of the Klyne, for instance, is regulation—and that difference is fairly large.

Consider yourself a very low-level signal, like the output of an MC cartridge. You're not very powerful, on the order of microvolts. If you have to face a preamp's RIAA stage and subsequent gain stages in this relatively anemic form, any slight perturbations of those gain stages due to voltage-supply inconsistency might knock you around quite a bit, changing your spectral balance and losing some of your detail. But what if your strength is made greater by a device whose only job is to increase your strength, and whose gain stages are regulated much more closely than the preamp's? Then those gain-stage variations in the preamp will have much less effect. This personification may be going a little too far, but I did hear beneficial differences using the Klyne ahead of some good preamps; this is my speculation as to the reason why.

How does the SK-2A sound? I compared it to two other excellent devices, one the 2A's predecessor, the SK-2, and the other the Counterpoint SA-2, which is widely recognized to be one of the best tube pre-preamps, and one of the best, period (our review of the SA-2 appeared in Volume 6, Number 2).

The sound of the SK-2A is very neutral. The low end is superb, bettered by none of the other stepups I've heard. The most immediately noticeable difference between the -2 and the -2A, in fact, was in the low end, which is surprising because the -2A was already better than anything I'd heard. Compared to our original Counterpoint SA-2 at the low end, the new Klyne would be laughably
better. Counterpoint, however, took our criticisms of the SA-2's low end to heart and figured out what was wrong with their earlier circuit. The SA-2 now has very respectable low end, especially for a tube unit: it is now fairly deep and quite tight, which the early SA-2 was decidedly not. If you really love bass, though, and have a speaker system that extends below 30 Hz you'll definitely prefer the Klyne.

At the high end, the SK-2A is very extended, just as the -2 was. Here, some people will prefer the high end of the Counterpoint, which is softer and subjectively less extended, just as you might expect from a tube unit. At this point, I should mention one of the tremendous advantages of the Klyne: it has externally switchable compensation for the rising high end found on many MC cartridges. Many competing devices have no provision for rolling off this high-end rise, and the few that do (like the Counterpoint) require you to turn off the unit, procure 1% capacitors in a variety of sizes, and install them in the sockets provided. In a tube unit you also have to leave the power supply off for an hour or so to lessen the risk of shock from high voltages—although you could simply count on your deftness to avoid those portions of the circuitry. The point is that this is a big pain in the neck—and if you want to try a variety of high-end rollofs (say 10, 12, and 14 kHz), the procedure has to be repeated for each choice. With the Klyne you can move a couple of DIP switches, while the music is playing, and assess the difference on the spot.

The importance of rolling off the high end of some of these cartridges shouldn't be underestimated. Of course, it used to be that all MCs took off above 12 or 14 kHz; now there a number of models (e.g., the Dynavector Ruby and Diamond) whose high frequency resonance doesn't begin until out beyond 20 or even 40 kHz, where it's much less noxious. The examples of the Monster Alpha-1 (which is very popular these days) that we had on hand, however, started rising at 7 kHz and were up 3 dB at 10 kHz. In fact, JGH had written a 1-paragraph pan on the Alpha, running it straight into a C.J. PV5, when I intervened with the Klyne. Presto, Change-O, you could now appreciate the Alpha's other virtues—pinpoint imaging, a marvelous sense of liveliness, excellent tracking—without listening to the spitty high end that was previously in evidence. There may be people out there who like MCs with their high end un-rolled off, but that's their preference for a sound which is definitely unmusical.

The area where the SK-2A is most improved over the -2 is the upper midrange. It was here that a readily noticeable difference could be heard between the original -2 and the Counterpoint SA-2. The Counterpoint was natural and a little laid-back, with excellent preservation of detail. The Klyne was a little bright, exaggerating the upper treble on loud cymbal crashes and the like. Over a period of time this tended to be fatiguing, though not greatly. The SK-2A is markedly better than the -2. The sound in the upper midrange is now extremely clean and direct, with no discernible (to me) overemphasis. There is still a significant difference between the Klyne and the Counterpoint: the Counterpoint is less direct and slightly sweeter—in fact, more tube-like. This is an area where one's personal tastes, and the system into which the pre-amp is to go, come into play. I've found that the Klyne works well in virtually all the systems I've tried it, but particularly in systems with tube preamps and/or tube amplifiers. For me, it's possible to get too much of the tube sound; using the Klyne instead of the Counterpoint in an otherwise all-tube system cleans up the sound a bit and tightens up the bass. The overall system balance
is better. In an all-solid-state system the Counterpoint might function in the same way.

Another area in which the SK-2A demonstrates its compatibility with tubes is imaging. The SK-2 was already excellent in the imaging department, and the -2A continues this tradition (though I didn't notice a significant difference between the two units—perhaps there's a difference on loud, complex passages). Many people love tubes because of their remarkable imaging capabilities, the rounded, 3-dimensional quality each sound source takes on. The Klyne complements rather than adds to this capability. The images appear very specifically, and the overall image maintains its non-relationship to the position of the speakers. The Counterpoint SA-2, on the other hand, seems to add something to the imaging effect, making the sound sources appear more 3-dimensional or perhaps adding a bit to the ambience. My impression was that this effect was at least partially due to the additional noise of the Counterpoint; a few informal experiments have been done, both here and in the U.K., that demonstrate an increase in ambience when noise is added to an otherwise quiet source.

Whatever the cause, the effect is definitely there. In general I preferred the imaging specificity of the Klyne along with its direct, clear upper midrange; the Counterpoint didn't fit quite as well with my system and my tastes, but this is a matter of taste and system-matching.

Another area in which the Klyne demonstrates its ease of use is input impedance-matching. It has long been known that moving coil cartridges function best into certain loads, which vary from cartridge to cartridge. Opinions on the correct load also vary considerably; Harry Pearson of The Absolute Sound prefers running all MCs into the 47K load which is standard for preamps. Peter Moncrieff of IAR seems to prefer running MCs into the lowest possible impedance because of the resultant reduction in treble distortion, but this has to be balanced against the decrease in S/N ratio which also results. I must confess that this is an area where I am not expert; I find the differences in sound relatively subtle and generally accept the recommendation of someone I consider expert (Stan Klyne includes advice for particular cartridges in his owner's manual). The point of the SK-2 series of head amps is that this impedance loading is externally switchable amongst 12 different values, and virtually any other value can be had by installing resistors internally. There are two big advantages: you can adjust values while listening to music and judge which is best on the spot; and you can switch between different cartridges (with different recommended load values) without the hassle of uncovering your pre-preamp (and perhaps turning it off for an hour) for each change. To be fair, there are other devices which offer this facility (the ARC SP-10 and Spectral DMC-10, and probably others), but none which offer it in conjunction with the high frequency rolloff mentioned earlier.

What is the economy involved in spending $695 for something that merely allows you to play MC cartridges, when a number of preamps these days already offer sufficient gain to do the job on their own? There are two points to be made. First, MC cartridges are not purchased for economic reasons. Most cost more than $300 and many are up in the $800-1200 range. Typically they last a year or two until the cantilever collapses, the stylus wears out, or the latest and greatest model comes out—and they're rarely upgradeable. But people love them, and the sound quality they're capable of. Certainly they should be made to sound as

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FOURIER 6 SPEAKER SYSTEM


Publisher's note:
This review is another in which the Spica TC-50 is compared to a comparably priced and sized speaker, the Fourier 6. For a complete review of the Spica, see our comparison to the Dayton Wright LCM-1 in Volume 7, Number 2. For additional comparisons to the Fourier 6, watch for Dick Olsher's review of 6 $300-500 speakers in our next issue.

The Fourier 6 has the special ability to generate large coherent sonic fields from a box small enough to slip into an ordinary shopping bag. The Six competes directly with another remarkable-imaging, compact American speaker, the Spica TC-50.

The success of both the Spica and Fourier does not arise from new discoveries, old alchemy, or any other audio magic, but instead from the application of computer-aided design (CAD) and good engineering. The 6 is the least expensive model in Fourier's current lineup, and to my ears the most coherent. Computer systems analyst/mathematician Bruce Zayde teamed up with Peter Aczel, formerly The Audio Critic, to apply proven mathematical concepts and CAD to the design of drivers, crossover network, and enclosure. The resulting model 6 produces a smoothly coherent, large sound field typically found only in much larger systems.

Similarly, John Bau created the Spica TC-50 with his Hewlett-Packard 9845, a dual module software package developed by Deane Jensen of Jensen Transformers, and Richard Heyser's time-delay spectroscopy (TDS) instrument, the Tecron system 10. The result of this CAD work, the prism-shaped TC-50s ($420/pr), employ a 1" tweeter and 6½" acoustic suspension woofer, with a unique crossover and enclosure.

Although the Fourier 6 also uses a 6½" woofer, it's of proprietary polypropylene composition (the Spica's is doped paper), and is housed in a 0.65 cubic foot vented fourth-order enclosure. Crossover slopes of 24 dB are used to divide the audio spectrum at 3 kHz, passing the high frequencies to a 1" soft-dome tweeter. Tweeter, woofer, and port run from top to bottom of the front baffle in vertical alignment, their close proximity supposingly helping the sonic coherence. Cabinet edges around the front baffle are beveled to reduce diffraction effects. Speaker cables are connected by means of banana-post speaker terminals, which I have found the minimum for making good electrical contact.

The accompanying literature recommends raising the Sixes off the floor; the stands sold by Fourier get them up 10". So mounted, the speakers angle up towards the listener, generating a sonic image with lowered apparent height. With eyes closed the music seems displaced downwards, somewhat like sitting in the balcony above the orchestra. Raising the sixes up on 25"-high stands stimulated some annoying room interactions, so the Fouriers were auditioned on their own stands.
Sonically, the Fourier 6s were well-balanced but a bit warm and rich-sounding. Their perspective on the music is close, bringing vocalists and solo instruments right up to the listener. Stereo imaging was strikingly good, with more than adequate depth. Dispersion was excellent with no evidence of a sweet spot. Centerfill was particularly good, lending a 3-dimensional, palpable quality to vocalists.

Instrumental timbres were reproduced well, particularly violin and cello. String tone was bright but not hard, resonant and sharp without being metallic. Piano music had richness, due in part to the Fourier's slight emphasis in the warmth region, yet male vocalists did not sound tubby—just clean and realistic. This upper bass accentuation did not get worse with increased volume level. The Fouriers maintained the same sonic fingerprint even when driven to 98 dB levels by a Levinson ML-9 (capable of 240 watts/channel). The bass drum whacks on the Telarc Compact Disc of the Cleveland Winds did not bottom out the Six's woofers. I found high-powered amplifiers like the ML-9 or the VSP Labs 150 worked best with the Fouriers.

What about the Spicas? They were cooler, somewhat bass-shy, slightly more dynamic-sounding, and displayed more horizontal directionality than the Sixes. In my listening room, swept frequency response measured at the woofer showed the 3 dB-down point to be 68 Hz for the Spicas and 58 Hz (with the microphone at the reflex port) for the Fouriers—a significant difference. The lack of lower bass in the Spicas, and the tightly controlled mid and upper bass, permits a good subwoofer (like the Entec, Janis, or RH Labs) to blend easily with TC-50s and does wonders for its mid and lower bass response. I find them most listenable and enjoyable when biamped and with a subwoofer; for this comparison, however, they were run full-range.

The Fouriers played louder than did the Spicas for the same input level (i.e., they're about 3 dB more efficient), and definitely had more bass. After hearing of several acquaintances who fried their Spica woofers, I was hesitant to push this unfused speaker to its limits. Even so, the Spicas proved to be faster, punchier, and were better than the Fouriers on percussion and vocals. Instrumental timbres were reproduced as well as on the Fouriers, and in some cases better. The Sixes, however, excelled in their rendition of string resonance, in solid bass response (no subwoofer needed here), lack of directionality, and superb central imaging.

1 Some listeners to the Spicas find them downright bass-shy, but this depends on room placement, height from the floor, and associated electronics.

2 In fact, a glance at the frequency response curve indicates that it would be difficult to mate a subwoofer to the Fouriers.
The Spicas did best at producing an imaging envelope all around the speakers, with both depth and space. They generated a seamless, deep, 3-dimensional, wall-to-wall sonic image in contrast to the image heard mostly at stage center with the Fouriers. The Spectral DMC-10 preamp plus Levinson ML-9 amplifier system worked synergistically with the TC-50, yielding unusually precise and coherent imaging, and freeing the instruments or vocalists from any apparent connection with the speakers. Realism and transient speed equaled that of any system I've heard. Although neither speaker delivered the transparency of an ESL-63 electrostatic, both generated imaging with front-to-back depth presentation and accuracy of instrumental location not possible with my physically larger Snell Type As.

Both these small speakers have top, though not identical, imaging abilities. When deciding between them, most people will weigh the wider soundstage and greater coherency of the Spica against the better bass and more resonant sound of the Fouriers. To some extent the choice will depend on the future of your system: if you anticipate purchase of (or already own) a subwoofer, the Spica is a clear choice; as a turnkey system I prefer the Fouriers, by a narrow margin. Both systems are serious candidates for any audio hobbyist tired of the expense, repair bills, and shipping costs that come with ownership of huge monolithic boxes or finicky electrostatic screens. I welcome the day (right now!) that a pair of audiophile-quality loudspeakers can be lifted by one man and do not have to be shipped in refrigerator-sized cartons.
Thiel CS3


Thiel is one of those loudspeaker manufacturers, like Spica and Dahlquist among others, that pay close attention to detail.

The CS3 is time-aligned, phase-coherent,1 actively equalized to extend the low-end response, and designed for an unusually uniform impedance characteristic. As can be seen from the photograph, the enclosure is tapered and the edges rounded off. The taper provides the back-to-front offset for the drivers (to accomplish the time-alignment), and the rounding-off minimizes the effects of cabinet-edge diffraction.

Also worthy of note was the fact that the teak panels on the bottom front of both speakers had virtual mirror-image patterns of graining. That's what I mean by attention to detail. The cabinets have nice proportions and clean lines. They're more attractive with grille cloths in place, but even without them the speakers serve to decorate rather than intrude.

The CS3 has two sets of input connectors, which are supplied with straps between them. Removing the straps al-

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1 For the second issue in a row we must apologize for having no standard (other than our opinion) for evaluating manufacturer's claims of phase coherence. Again, we're not implying the manufacturer's claims are false.
SPEAKER SYSTEM

allows the system to be connected to two separate power amps for biamping. The connectors are so-called 5-way binding posts, and for once the designer had the foresight to recess these far enough into the enclosure to accommodate the length of dual or single banana plugs. There is even enough space around the plugs to allow easy access to them. More attention to detail! I should not feel compelled to praise things like this, but such common-sense considerations are surprisingly often overlooked.

The CS3 comes with a little black box that must be connected in-circuit at some point, preferably between the preamp and power amp (although the Tape Monitor loop will do) and then plugged into an AC outlet, preferably unswitched. The box contains active circuitry which, as with the ITC-1 system reported here last month, boosts the system's low end to compensate for the fact that each speaker has only a 10-inch woofer. Located late in the system's circuitry, directly ahead of the power amp, the equalizer is likely to contribute far less sonic pollution than it would if it were located, say, between the cartridge and preamp. When biamping, it is used only with the woofer amp and thus cannot possibly affect the higher frequencies.

This bass-boosting approach has been tried many times in the past, but it never caught on until recently because (1) few woofers could take that much LF boost without distorting or bottoming, and (2) amplifiers capable of producing enough power to yield clean low end at such elevated power levels were few and expensive. Times—and components—have changed.

Low-end boosting actually offers two advantages over the use of a large bass-
radiating area. The smaller the woofer area, the easier it is to locate the woofer where it excites the fewest booming-up room resonances; I believe this is one reason why the CS3 behaves as well as it does at the low end. The second advantage is that one 10-inch driver stores far less energy than one or two 12-inch drivers. Energy storage and re-release (later in time) is one of the major factors in low-end coloration, and one of the principal reasons some speakers are described as "fast" (low energy storage) and others "slow" (high energy storage).

The CS3s were in fact very easy to locate for optimum sound. I started with them at a distance of about 10 feet from the listening area and aiming parallel. Better and more stable imaging was obtained by centering them in so that their axes crossed about a foot behind a centrally seated listener, and this is the way they stayed for the balance of my listening tests. I felt no further inclination to fiddle with them.

My first reaction to this system was total incredulity! Never in my life have I heard such tight, deep bass from a speaker this small. In fact, rarely have I heard this kind of low end reproduced from anything at a comparable price. The Sheffield Drum Record heard through the CS3s is a tactile experience! I thought I had heard the lower limit on that disc, but it has more impact than I had thought. And with adequate amplifier power (I used a Threshold S/500 at 250 watts/channel, and would not recommend much less), the kick drum was clocked at 100 dB before the woofers started bottoming! Then I started to notice other things.

The CS3 seems better able to handle impactive bass (kick drum, bass drum, plucked double bass) than sustained bass. Bowed basses, for instance, seemed a little shy of that throom quality they have in real life.

The imaging on these speakers is nothing short of amazing. No matter where I sat, Amanda McBroom stayed centered between the speakers! Even when I walked to the right of the right-hand speaker she was centered. Sitting still, anywhere across the 6-foot spread of my sofa, I heard a balanced stereo stage and quite remarkable imaging stability from every voice in a performing group. I have heard this kind of imaging before, but never from a speaker that was this good in other respects. How good was it? Well . . .

Thiel claims response out to 35 kHz (-10 dB) for its 28-mm tweeter, and it shows. The CS3 seems subjectively to have almost no high-end limit. Brushed cymbals are crisp and brassy, vocal sibilants contain the upper FFFF component which is so often missing, and triangles and harpsichords cut effortlessly through the most turgid textures of full-orchestral passages. I don’t know what alchemy is at work here, because the system’s upper-range drivers look ordinary enough, and
the tweeter is a 1-inch dome, which I know for sure is incapable of that kind of high end.

The SC3 has quite remarkable detail, sounding more like a good horn-loaded system than a direct radiator in this respect, but without the usual horn-like raucousness and sizzle. In fact, LA and I were so bowled over initially by the sound of these speakers that we were thinking of calling Thiel and requesting a pair for every staff member. But as we have learned through years of listening experience, first impressions are not always reliable and certainly do not reflect the listening durability of a component—particularly a loudspeaker.

It took several hours, spread out over several days, for me to realize that there was something slightly wrong here. I first suspected it when I observed that the CS3 seemed to be exaggerating disc surface-noise ticks and pops. My first reaction was that it was just reproducing their transient content better than I am accustomed to hearing it, but it soon became evident that this was not entirely the case. The speakers were slightly exaggerating the upper brightness (lower treble) region; they were not steely, just somewhat hard.

Several discs and tapes later, I became aware of something that I think had been bothering me for some time but that I had not yet been conscious of. All recordings played through these speakers had a rather cold, slightly pinched quality. A large segment of the middle range sounded slightly depressed. Brass instruments were deficient in their characteristic bell coloration (best described as an awk quality, and illustrated by talking through open, cupped hands), and most woodwinds had their normal ratio of overtones to body-resonance sounds biased in favor of the overtones. The clincher here was an original tape I had made of a familiar tenor voice. It still sounded familiar, but its quality was unmistakably lightened.

The sound of our first sample of the CS3 varied with listening height, changing dramatically when one stood up. With my ears about 4 feet above the floor (representing a very uncomfortable bent-knees listening position), the slight hardness virtually disappeared. The reason for this became clear when I later ran frequency-response curves on the system: a change in height (of the probe microphone) from 36" to 48" caused the entire range from 4 to 10 kHz to drop by about 4 dB! The effect of this could be duplicated by tilting the speakers forward by about 5°. Obviously the tilt causes cancellation between the midrange driver and the tweeter, thus degrading the speaker's phase coherence. But my ears—and my meas-

2 We always run our frequency-response measurements after all listening tests are completed, so as not to influence our subjective reaction to the sound. One tends to hear things one expects to hear, even when they are not audible.
urements—showed that the frequency response was in fact better with this cancellation taking place.

When Jim Thiel heard the above comments, he was at first inclined to think we were nitpicking for the sake of finding fault. (That’s supposed to be part of the “underground”-magazine mystique.) When he subsequently ran some measurements, he found that the SEAS midrange drivers delivered for his first 100 pairs (of which our review sample was one) were significantly different in the upper part of their range from the ostensibly same midrange driver he had used to develop his prototypes. When running QC tests on the finished speakers this fault was not immediately obvious, but it showed up dramatically in curves run on just the midrange driver. Jim requested that we retest the CS3s, with “corrected” drivers hurriedly supplied by SEAS (the CS3 production line was shut down for nearly a month just when dealers were clamoring for samples).

The sound of the “correct” system was identical to that of our first sample except for one thing: the hardness, the exaggeration of disc surface noise, and most of the middle-range suckout were gone!

The slightly laid-back quality of our first sample remained (though with none of the hardness), particularly when auditioned from a low listening seat. The CS3’s sound would best be described as rich and a little polite rather than authoritative and startlingly alive. It still has that remarkably extended and clean high end, very punchy and deep low end, and pinpoint imaging.

The CS3 is not the last word in speakers, then, but it substantially outperforms most others of similar price. I think it should be given a fair hearing (in the home) by anyone seeking a speaker in its price range. You’ll know soon enough if it’s just the speaker for you.

JGH

LA Addendum:
JGH has not discussed the question of equipment compatibility, which is particularly important with the CS3s. I had a bit of experience in this area.

The CS3 goes both lower and higher than most other speaker systems, and will show up problems in those areas (e.g., below 40 Hz and above 16 kHz) that aren’t apparent on other systems. A tube preamp, for instance, that worked very well with the Spica TC-50s sounded terrible with the CS3s; low bass such as kickdrum was simply unlistenable. Another place to watch out for is the high end. The CS3s are quite flat from 16 kHz to 22 kHz. If you have a moving coil cartridge that starts to rise at 12 or 14 kHz, it may be listenable on systems with a rolloff above 14 kHz, but you won’t be able to tolerate that rise on the CS3s. Even if it doesn’t actually sound sizzly, the extra high frequency content will soon wear you out.

In amplification a little high-end softness might be in order, similar to what you get from many tube amps—but it should be a tube amp with little or no brightness. I was surprised to find that the Conrad-Johnson MV75-A proved to be an excellent match for the CS3s, albeit at somewhat limited output levels (96 dB if there’s a lot of low-frequency content; 98-100 dB otherwise). Some other amps weren’t nearly as good: the BEL 2002, which has very extended high end, was just a bit unrelenting (too much HF content); the VSP Labs 150 was murky in the upper bass and a little too rolled-off at the high end. My experience was enough to convince me that it’s essential with the CS3s to find the proper match in amplification; I don’t think I’ve found the perfect match yet, but I’m still trying.
TUBES AND THE STATE OF THE ART

THE AUDIO RESEARCH SP-10 PREAMP AND D-160B AMPLIFIER
THE CONRAD-JOHNSON PREMIER THREE PREAMP, HV-1a HEAD AMP, AND PREMIER FOUR AMPLIFIER

SP-10: stereo tube preamplifier with separate power supply. Individual inputs for two phono sources, auxiliary inputs for tuner, aux, 2 tape loops. Full switching amongst left, right, stereo reverse, and mono. Mute switch. Switch to remove 12 dB of gain. Switch to connect phono directly to volume control, bypassing all extraneous circuitry and switching. Serial numbers 92426032 and 92427030, 63127008 and 63126004 (both power supply and control unit have individual serial numbers). Price: $3,450 until 7/1/84 when price goes to $3,700. Source: manufacturer loan, loan from Steve Summerall.
D-160B: stereo tube power amplifier. Power: 160 watts per channel. Frequency response: +0.3 dB, 10 Hz to 50 kHz, full power. Weight: 115 lbs. Serial number: 32024017, price $6,000. Source: manufacturer loan.
MANUFACTURER: Audio Research Corporation, 6801 Shingle Creek Parkway, Minneapolis, MN 55430, (612) 566-7570.


Head Amp: tube moving coil stepup device, 28 dB gain, variable impedance matching internally (solder-in resistors). Price: $850.

Premier Four: stereo tube power amplifier. Power: 100 watts per channel. Frequency response: +0.3 dB, 8 Hz to 48 kHz, full power. Weight: 92 lbs. Serial Number: 5201018. Price: $2,950.
MANUFACTURER: Conrad-Johnson Design, 1474 Pathfinder Lane, McLean, VA 22101, (703) 734-9540.

It says something for the state of technology that, after a quarter of a century, there still is no authoritative explanation for why so many high-end audiophiles prefer tubes. Tubes not only refuse to die, they seem to be coming back. The number of U.S. and British firms making high-end tube equipment is growing steadily, and an increasing number of comparatively low-priced units are becoming available. There is a large market in renovated or used tube equipment— I must confess to owning a converted McIntosh MR-71 tuner—and there are even some indications that tube manufacturers are improving their reliability, although getting good tubes remains a problem.

These trends have passed long beyond the cult stage. While tube amplifiers still cannot provide the high damping factors or woofer control that is possible with transistor amplifiers, no one still claims that they soften highs or somehow romanticize recorded sound.1 There is a consensus among high-end magazines that the best tube units are exceptional in the areas of transient and harmonic detail, high frequency information, and imaging and soundstage data. Further, there is a similar consensus that the days when tube units provided superb midrange at the expense of the frequency extremes are long gone.

This brings me to the units under review: the Conrad-Johnson HV-1a head amp and Premier Three preamp combination, and Premier Four amplifier; and the Audio Research SP-10 preamp and D-160B amplifier. The amplification sets made by these two companies are arguably the state of the art in tubes. Arguably, because Beard, Berning, Counterpoint, Futterman, etc. are strong rivals, and because some would prefer the Premier One in the Conrad-Johnson line, or the newer Audio Research units (the D-70 and D-250 amplifiers), which come with better output transformers and a different regulation system.

Regardless of "who's on first," these two sets of components make a fascinating contrast; they also provide an insight into each manufacturer's design philosophy. Unlike many tube units, they can be used with most moving coil cartridges (more on this in a moment), and the preamps have sufficient output to drive most amplifiers. Both sets of equipment are clearly designed as "no holds barred" equipment: the price for the Conrad-Johnson combination approaches $7,000, the Audio Research pairing reaches for $9,500.

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1 For a somewhat different point of view, see "As We See It" in this issue.
TUBES VERSUS TRANSISTORS

There are striking differences between the two sets of equipment. Let me begin, however, with their similarities, and focus on how both the Conrad Johnson and Audio Research components differ from most transistor equipment I listen to. Let me also make the caveat that I have not had the chance to listen to the latest Threshold, Krell, and Levinson equipment in my home, and that I can only generalize about tubes versus transistors—tubes versus the ultimate high-end transistor units will have to wait for another issue.

I have tested both the Conrad-Johnson and Audio Research combinations using top quality turntables like the Goldmund and SOTA/Sumiko Arm combination, top quality cartridges, and speakers like the modified Quad ESL-63s, Thiel CS3s, Spicas, and Fuselier 3.3s. I have used them with Compact Discs and a wide range of FM Tuners. I have mixed and matched cables, including the Straightwire, Petersen, Discrete Technology, Audiosource, and Monster Cable Interlink Reference.

The end result had been that both the Conrad-Johnson and Audio Research combinations provide a consistently more accurate reproduction of music, voice, and speech than any transistor unit I have heard in my own home. This accuracy shows up in several key areas, and is evident with a very wide range of source material and over a long period of time.

It is tempting to focus on short-term differences, and to ignore the fact that you’re looking for equipment that gets the best out of a broad collection of records, tapes, CDs, and FM broadcasts, and on which you can listen for hours without reminders that your equipment is introducing unpleasant or constantly detectable colorations. By comparison, transistor equipment always has a distinctly less musical sonic fingerprint than does tubed equipment—either in the form of dryness or harshness in the upper octaves or a distinct loss of detail.

The C-J and ARC sets of equipment also offer amazing realism in the mid-range. This is a function of coherence and the ability to reproduce an amazing amount of detail without hardening or
softening, the ability to reproduce extremely detailed low-level harmonics, and the ability to provide wide dynamic range without effort—neither appearing to slow the music nor accelerating too far.

This superior coherence shows up clearly on those piano and violin records with both mechanical and musical detail: where the music is complex and covers the entire midrange; where scores are rustled, bowing sounds are clearly heard, the players move slightly, or there are extraneous sounds in the hall. To the extent that illusions are ever real, both the Conrad-Johnson and Audio Research systems seduce you into suspended belief: you listen as if it were live.

Tube units are famous for their imaging and depth, and for providing precise natural placement of the musician or singer. Again both these sets of equipment outperform the best transistors I've heard. Centerfill is excellent and the soundstage extends to the right and left of the speakers when the music permits it. Depth is natural. Imaging height is determined by the speakers and not by the electronics. Hall effects are clearer and less exaggerated. Transistor equipment can on occasion do a few of these things better, but never so many in combination.

Although neither the C-J nor the ARC equipment veil or roll off the highs, many audiophiles would enjoy simply to hear the upper octaves without the fatigue or irritation that comes from prolonged listening to their transistor equipment. The key subjective impact of the best tube units is that the highs will reveal any problems in the miking, but will sound natural with decent miking and on those records and tapes that actually do sound natural.

The best transistor equipment tends to be surprisingly in the highs. Even when it does not produce long-term listening fatigue, it tends to provide detail that you literally never heard before—in a concert hall, in a studio, or standing next to a musician. Certain aspects of the highs are emphasized relative to others, passages of music acquire unusual high frequency emphasis, a triangle will triple in size, the cymbals change character, or the female voice acquires new sibilants.

This can be fascinating—and even musical—but far too often it is not natural. Audiophiles raised on electronic sound
may not be as impressed by the virtue of the natural highs heard on tube equipment—since they may have grown up listening to nothing but transistor equipment, but the best tube units have highs that do not surprise you when you come back from listening to live music.

I should hasten to add, however, that the best tube and transistor units have been converging in their virtues, and that both the C-J and ARC sets of equipment share two important sonic limitations. The first is in the bass. Tube amplifiers have less ability than transistor amplifiers to provide the mix of output impedance and power that best controls a speaker in the deep bass. This is true simply with cone speakers; electrostatics and most planar speakers also perform much better in the deep bass with those transistor amplifiers that combine high damping factor, high power reserves, and the ability to drive low-impedance loads.

I don’t mean to imply that the C-J and ARC bass isn’t good. It is remarkably real in the mid and upper bass, and both sets of equipment provide a realism and transient detail in the upper bass that are missing from most transistor units. They have less bloom, less tendency to emphasize a fixed part of the bass spectrum, and do not make the trade-off between tightness and dynamic power that is common in many transistor units. The deep bass is one of the major thrills of the high end, however, and here the better transistor units walk away with superior performance. They have power and control in the deep bass; tube units do not.

The very best transistor units also win out in area of noise. The Premier Three preamp alone cannot be used with even moderately low-output moving coil cartridges like the Accuphase, Argent Diamond, and Dynavectors without the noise and gain mismatch seriously coloring the sound. Even a Koetsu Black is marginal and tends to have its highs rounded and masked, becoming slightly dry and lack-

ing in detail in the upper midrange. The Alpha-1 is also marginal, although the problem tends to be a drying up of the upper octaves and a lack of proper warmth and midrange balance.

The SP-10 or Premier-Three-plus-HV-1a (which are remarkably close in price) have just enough gain so that you can use any moving coil cartridge with a minimum of 2μV output. “Just enough,” however, means detectable hiss and noise. I have recorded such noise and superimposed it on the sound of much quieter transistor units (this is a rough-cut approach since it is impossible to do this without adding some colorations to the sound), and it is clear that it matters. Ironically, one has an expanded impression of depth or air; the unpleasant aspects are a tendency to mask the softest musical detail and harmonics, while adding a dry coloration in the spectrum where the noise is dominant. Worse, the imaging tends to alter. There is a feeling of expanded soundstage size and detail, but it is not natural and, although it is initially impressive, it eventually has the same irritating effect as exaggerated highs.

The revised Conrad-Johnson head amp offers more gain and less of this coloration than the SP-10. It is by far the best commercial stepup device I have heard, although Murray Zeligman has a new tube head amp in prototype that may well be major competition, and ARC’s William Z. Johnson is working on a new transistor head amp design for use with the SP-8 and SP-10. Unlike most ARC and C-J gear, you can mix the C-J head amp with the ARC preamp and amp. Try using C-J preamps with ARC amps, or vice versa, and you get the worst of both sets of gear, not the best.

The HV-1a does not, however, permit input impedances much below 100 ohms without changing sound character and diminishing performance. This presents problems, because I am increasingly unhappy about high-impedance loading as

Stereophile
a general solution to the moving coil cartridge problem. Many of the best cartridges must be loaded down to well below 100 ohms for the best imaging as well as linearity of frequency and dynamic response. Furthermore, high-impedance loading often combines with tube noise to produce even more exaggeration of soundstage size, so that imaging detail is unnatural and irritating, with a tendency for the image to wander or appear in an unnatural location.

I should also note that both the SP-10 and the C-J head amp are sensitive to shock. The SP-10 is particularly sensitive in that its input tube—the 6DJ8—can become microphonic in use, or in transit. If you have noise problems, if there is more tube noise in one channel than the other, or if the highs sound slightly disembodied from the midrange on the SP-10, the chances are that changing a 6DJ8 will quickly cure the problem.

**The SP-10 Versus The Premier Three and Head Amp**

Now for the comparison. I tested both a new SP-10 and one borrowed from a local audiophile who had retubed it to his taste. The C-J HV-1a and Premier Three preamp had just been retubed, and I tested two variants of the head amp.

Both preamps are nicely styled and have good basic features. The Audio Research SP-10, however, wins hands-down on ergonomics. You have switchable gain, a choice between two turntable inputs or Mute at the phono stage, and switchable cartridge loading. For most high-end audiophiles these are useful controls. The Conrad-Johnson combination has a slight advantage because its balance control is infinitely variable while the Audio Research control is stepped—and yes, damnit, there are times when the ARC’s balance switch won’t “lock in” at just the right place.

Both units are big and involve two rack-mountable boxes. The SP-10 has a separate preamp and power supply; the Conrad-Johnson a separate preamp and head amp. The ARC equipment is a muted silver grey with knobs that match the panel, and the C-J equipment is in burnished gold with gold knobs.

Both combinations seem to balance out in terms of the sonic impact of switches and wires. The SP-10 normally needs to be operated in the bypass mode to do its best, and even William Z. Johnson would probably admit that the variable loading and dual phono input switches impose a slight sonic degradation. I would also strongly advise getting the optional long umbilical cord between the SP-10 power supply and the SP-10 preamp, and using side-by-side rather than over-under placement to minimize hum. You also need to pay exceptional attention to grounding; for some reason the SP-10 is very sensitive to improper grounding, interconnect termination, and AC line-plug orientation.

The Premier Three by itself is not particularly sensitive to grounding, but the C-J combination requires an interconnect between the head amp and preamp and is as sensitive to hum-field, grounding, and “AC polarity” as the SP-10. To get proper AC polarity you need to plug each piece of equipment individually to the AC so that each produces the lowest voltage from chassis to the ground on the AC line, with no interconnects plugged in to either the head amp or preamp.

Both preamps have the precise “feel” of expensive equipment, and both provide excellent sound. They do, however, sound different in several important ways. The Audio Research SP-10 has the flat, extended upper octaves of the very best transistor equipment, plus all the virtues of tubes; no transistor lover will feel slighted to own the SP-10. Its variable loading also allows a quick approximate calibration of the best loading for a given cartridge.
The end result is that the SP-10 almost seduces you into listening to upper midrange detail while loading a cartridge for the most precise imaging. Since the SP-10 is amazingly silent in its switching functions (even in Phono and with high gain), you may well start playing with the loading just to match an individual record. The outstanding merit of the SP-10 is in its top four octaves. You will hear more detail in a musically natural form in these octaves with the SP-10 than from any other preamp I've heard.

The Conrad-Johnson Head Amp and Premier Three, in contrast, do best in the three octaves above the bottom octave. They are strongest in the areas where tubes traditionally are strongest. You can, for example, hear the bowing sound on a violin more clearly than on an SP-10. Soundstage noises were clearer, because most occur in the frequency band where the C-J does best, and the C-J combination has superior imaging in terms of stability and centerfill.

The units differ in depth presentation. The ARC provides more upper octave depth information. The C-J provides more bass and lower-midrange depth information. This slightly favors the C-J for orchestral music, because more hall depth-information seems to be present in the frequencies the C-J favors.

Let me hazard another description of the two units. The SP-10 is ideal in reproducing closely miked chamber music, female voice, natural jazz, and other music where you might choose to sit within 30 feet of the performers. The C-J combination is ideal for reproducing the larger orchestra or musical combination, and opera. Both reproduce all music very well, but the two units tend to place you in different parts of the concert hall. The SP-10 brings you close to the music. The C-J is twentieth row center.

Another way of putting it is that the ARC preamp is "fast" and the C-J is "sweet." A pejorative way of saying the same thing is that the ARC is "hard" and the C-J is "rolled-off." So much for semantics; the point is that they are audibly different, and you should pay close atten-
tion to their characteristics in making your choice.

I will ignore the issue of which is best; this is a matter of taste, and a choice you can make for yourself. They are as different in sound as fine wines from the same district. You may find that the C-J combination performs slightly better with cartridges that have extremely fast highs with a slight rise, while the SP-10 benefits from a cartridge that has flat frequency response.

Although both units performed without fault during my listening, they require care and sense. Shock and rough handling are no-nos. Mixing tubes to try to improve on the designer is a recipe for trouble both sonically and in terms of reliability. Cautious cleaning of the tube prongs with Tweek, according to the instructions that come with Tweek, can be recommended. Regular retubing at the manufacturer’s recommended intervals is an unfortunate and expensive necessity.

**The Premier Four And D-160B Amplifiers**

The Premier Four is Conrad-Johnson’s attempt to provide the same or better sound than their Premier One at less cost and with less herniating size and weight. The D-160B has been heavily modified since the D-160A, and uses the same technology as the D-70, D-115, and D-250. It embodies William Z. Johnson’s latest transformer and power supply designs, his latest choice of capacitors and resistors, and the same independent regulation of screens, drivers, and front end. D-160s and D-160As can be converted to D-160Bs for $1500.

If Conrad-Johnson and Audio Research seem to represent different sonic philosophies in preamps, their respective sounds are converging in amplifiers. The Premier Four is flatter and more extended in the highs than my Premier One was. Even though the Four is cheaper and has less power, I feel it is definitely the better amplifier. The D-160B is a much better amplifier than the D-160A. There is far more coherence between bass, midrange, and top. The bass is linear and well controlled, and the highs are extended and clean without any hardness. Both frequency extremes blend smoothly into the midrange, and dynamics are excellent.

Both amplifiers provide exceptional transparency, imaging, dynamics, air, and musicality. It doesn’t sound precise to say that both will consistently provide new levels of natural musical detail on record after record, but it’s true. That is why they are worth the extra money. You pay for superior resolution in a highly enjoyable form, and not for the name, the technology, or the extra heat.

As for the differences, the Premier
Four again is strongest in the midrange and the D-160B in the highs. The differences described above for their preamps again emerge, but to a much lesser degree. If both amplifiers are given about two hours to warm up (the ARC is much more sensitive in this regard than the C-J), and are biased exactly as specified, the similarities are more important than the differences.

I will, however, give the D-160B a slight edge in controlling bass and in low-bass accuracy (although this may simply be a function of its greater power), and the highs are more linear and detailed. The Premier Four gets the edge in the midrange, and in the aspect of imaging that gives the best hall effects and centerfill. The differences are not so great, however, that I would throw another 200 words at them.

Some minor points. The D-160B should have a heavier terminal strip with raised barriers for connecting speaker leads. Choose your lugs very carefully, dress them to avoid shorts, use Tweek, and screw down hard. The same routine is useful with the Premier Four, but not as necessary.

Monster Cable Interlink interconnects work well with the ARC gear, but not so well with the C-J. Petersen, Straightwire, Livewire, and Discrete Audio interconnects work well with both. As for speaker cable, try Powerline II, Straightwire, Livewire, or the new Kimber Cable to see which balances out best with your system. The Discrete Audio cable works well with the ARC amps, but not with the C-Js.

In terms of physical layout, the D-160B is larger and more impressive-looking. Both are quasi rack-mountable—you need braces to support the hack. The D-160B uses quiet fans, while the Premier Four does not need fans. The D-160 has an LED power readout which is useful as a clipping indicator. The Four has an On light. Both warn you if the rail fuses go. Both have easily adjustable bias, but you get rear-panel metering with the D-160, and must use a long screw driver and an internal LED readout with the Premier Four.

The GE 6550 output tubes originally supplied with earlier units of the D-160B were prone to failure. ARC has solved this by going to different types of tubes, but ARC tube failures can be messy and require circuit-board cleaning and resistor replacements (a one- to two-hour job). The Premier Four uses EL34s which have very few problems; even with the 6550s on my Premier One, the tube and its fuse went out, nothing else. I would advise getting new tubes from ARC if you have the old GE's in your D-160; my GE blew dramatically and you won't want the downtime and service problems. Above all, never feed a large input signal into a tube amplifier with the speakers disconnected.

Even the best quality control procedures cannot protect you from the problems in today's tubes or the effects of power-line voltage fluctuation. Check your power line for the required voltage; if you run into problems, call your electrician or power company. Quite often a transformer on your local line may be malfunctioning due to age or a lightning strike.

You might consider the equipment made by Electronic Specialists Inc. (171 South Main Street, Box 389, Natick, Massachusetts, 01760, 1-800-225-4876). They sell a wide range of quiet line filters, power interrupters, and regulator transformers—although they sure ain't cheap. SOLA makes some good devices, but most hum along with the tune in ways that Linn would distinctly discourage. Consult with C-J or ARC before buying any given device; some can shut down your system in ways that may not be good for its life.

SUMMING UP
I cannot tell you whether my love...
affair with tubes as the *ne plus ultra* in high end will last through the next year or the next issue. I have recently found the Krell solid-state equipment to be particularly impressive, and there is one hell of a band of designers trying to make tubes truly obsolete. I must say that I would not buy tube equipment if I didn’t trust my dealer, as it is more trouble-prone than solid-state and you will need help and support.

Both the Audio Research and Conrad-Johnson electronics are, however, what the high end is all about. They are part of that elite group of equipment which leads the way towards filling the awkward gap between live performances and reproduced sound, and which allows you to explore nearly 100 years of recorded sound to its best potential. They, like virtually all high-end equipment, are luxuries and not cost-effective investments. While some of the best things in life may be free, none of them are cost-effective.

AHC

*Editor’s Addendum:*

While tubed and solid-state components are definitely sounding more like one another these days, I have yet to hear any tubed power amplifier that has as much extreme high-end energy as a good solid-state amp. Not only that, the character of the high end will be different. The amount of high end heard will depend on the loudspeaker’s HF characteristics, but even when HF “quantity” sounds the same the tubes always seem to have a rather sweeter, more “consonant” quality than the transistors. The transistor amps seem better able to reproduce sharp attacks. Which of these high ends is more “accurate” is open to question since there is no way to tell what is actually inscribed in the grooves without listening to them, and you can’t listen without an amplifier, be it tube or solid-state.

As usual, we must ultimately judge the end product—the in-the-room sound. In other words, I am not as prepared as AHC to declare that either tubes or transistors offer more accurate musical reproduction in all, or even most, respects, with all loudspeakers.

JGH

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**The LATEST in 100-Watt Tube Amplifiers:**

BERNING EA-2100 & QUICKSILVER

There could be no better illustration of the tube renaissance than the appearance, within a few months of each other, of two 100-watt tubed power amplifiers. As you’ll see from the reviews, they have two distinctly different views of what such an amplifier should do. One is almost the embodiment of the “tube sound,” while the other almost rejects the standard tube virtues in its search for an accurate and innovative sound. The two reports were actually written without respect to each other; comparisons are given in the Conclusion.

**BERNING EA-2100**

All-tube stereo power amplifier. Rated power: 100 watts/channel. Frequency response: +0/-3 dB 20 Hz to 50 kHz, full power. Weight: 40 lbs. Price: $2995.

MANUFACTURER: David Berning Company, 11007 Candlelight La., Potomac, MD 20854. (301) 299-8970.
Although one of the most innovative firms in the audio electronics field, the David Berning Company seems determined to keep as low a profile as possible. The company advertises little, does not actively seek out new dealers, and seems content to let potential customers seek it out, as though to say “Okay, here’s my product, take it or leave it.” Thus, even though both Stereophile and The Absolute Sound, in a rare outbreak of agreement, a couple of years ago declared Berning’s TF-10 to be one of the best preamplifiers available, most serious audiophiles are still unaware of the Berning Company’s existence. Perhaps the EA-2100 will change that.

My first reaction to Berning’s latest product was incredulity. Only somewhat larger than your average tubed preamp, the EA-2100 almost gave me a strained back when I first went to pick it up. You see, I knew it was rated at 100 watts per channel, and having just schlepped the identically rated 90-lb Quicksilver out of the listening area, I expected to encounter as much weight with the Berning. Instead, I almost lost my balance backwards. This amplifier is light! So light, in fact, that one was inclined to be dubious about its power-supply capabilities. After all, a proper amplifier, and particularly a tubed amplifier, has to be heavy because of its power supply requirements. Well, that’s untrue, at least when the amplifier uses Berning’s unique power supply.

The power supply departs from standard practice as soon as the AC leaves the on-off switch. In virtually all other power amps the AC goes through a power transformer, then through a rectifier and possibly a voltage regulator, and thence to the power supply capacitors (this is a simplified version). Not in the Berning! The EA-2100 first rectifies the AC. The DC output of the rectifier is fed to a fancy oscillator circuit which produces a square-wave output whose frequency can be varied from 50 to 70 kHz. This variable-frequency square wave goes into what’s called “an inductive tank circuit.” The key characteristic of this tank circuit is that it transfers power most efficiently at a particular frequency (50 kHz) and less effectively at higher and lower frequencies. David Berning runs the oscillator circuit at 70 kHz at no- or low-load conditions; that gives him the ability to “goose” the power supply under high-load conditions (voltage-sensing devices on the capacitors tell the oscillator what to do) by dropping the oscillator frequency to 50 kHz and making the tank circuit run more efficiently.

Following the tank circuit are the transformer and the power supply capacitors, just as in a standard amplifier—except that in the EA-2100 the transformer can be very small, in this case only 2 lbs. Why so small? Because the transformer is running at very high frequency—the large size of most transformers is there because they’re handling essentially a bass frequency (60 Hz).

The small size of the transformer is actually an advantage. Because the number of turns are low, the output impedance is low and the transformer can more easily replenish the capacitors. And because it’s operating at such a high rate of speed, there’s much less time for the capacitors to sag between “fill-ups.” I’m sure that the remarkable low end of this amp is directly attributable to this innovative power supply design.

Unlike Berning’s hybrid TF-10 preamp, which uses cascaded tubes and FETs to offset each other’s distortion characteristics, the EA-2100 uses tubes only. The outputs are General Electric 6L6s—a type I have never before encountered—which look like the kind that were used in pre-solid-state television receivers for horizontal output. The other tubes consist of a 6SN7 driver and two 12AT7s, per channel. The outputs are run in Class-B,4 and the amplifier runs very

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cool, particularly considering its output capability.

The Berning TF-10 is one of the most neutral-sounding preamps available. Its sonic earmarks hint almost dead-center between the slight laid-back quality of transistors and the alive, up-front quality of tubes. The EA-2100 is not quite so neutral, but does succeed at being one of the less "tubey" tubed power amps I have heard.

The most immediately noticeable things about its sound are its aliveness and immediacy. Although it has little of the spurious brightness of a typical tube amplifier (it does have some), the mid and upper ranges have a truly startling clarity and focus, and front-to-back perspectives are superbly reproduced. The really surprising characteristic is at the low end, where most tubed amps tend to be heavy and woolly (overly warm). The EA-2100 has a tightness and impact that sounds more like a high powered solid-state amplifier. In fact, the only respect in which the best high current solid-state amps exceed the Berning is through the bottom-most region (30-50 Hz—and very few systems go lower), where the Berning delivers somewhat less rock-solid punchiness. This low-end performance is even more amazing in view of the amplifier's weight, but is a tribute to the lightweight power supply—it really does its job!

Soundstage presentation is excellent—wide and spacious—as is stereo imaging, which is specific and stable. Extreme highs are slightly soft, as is frequently the case with tubes, but a little less silky-sweet than what you hear from the C-J Premier One, and noticeably less sweet than what you hear from the Paoli S.O.B. For this reason, I found the Berning to be less comfortable sounding with the electrostatics I had on hand, and particularly not an appropriate match for the Quad ESL-63. The Acoustat 2 + 2s sounded a bit hard and unrelenting, the first time I've heard that from the 2 + 2s driven by a tube amp.

On the Watkins WE-1 and the Spica TC-50 dynamic speakers, the enhanced depth and aliveness gave an even greater feeling of live music than I'm used to with my reference solid-state amp, the Eagle 7a. The slight apparent dulling of high end merely added musical sweetness without impairing detail. On the Thiel CS3 the improvement was even greater: that speaker's superb bass was not significantly compromised, the speaker's slightly cool and laid-back quality was compensated for a bit, and the high end was simply beautiful.

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1 Class B is typically frowned upon in audio amplifiers because of the notorious "crossover distortion" which occurs when the signal is transferred from the positive-amplification device, which then turns off, to the negative-amplification device, which must immediately turn on. The bad reputation comes primarily from transistor amplifiers; transistors have a very non-linear response characteristic as they turn on and off, and sound terrible in Class B. David Berning tells me that tubes are "soft enough and fast enough" so that whatever waveform distortion occurs because of the Class-B operation is minimal. The benefit of Class B to the owner of the amplifier is large: because the tubes are biased at such a low voltage, they run very cool and Berning promises tube life of 10-20 years (?), compared to the year or two typical for high-powered amplifiers.
As can be seen from the above remarks, an amplifier like this is different enough from the standard run that a rethinking of one's assumptions about tubes and solid-state is in order. My conclusion is that, on the right speakers, it's one of the most gorgeous-sounding and best tubed amplifiers I have heard, at a not-unreasonable price. Highly recommended.

QUICKSILVER


It would appear that there are still people out there who are unaware that this is the age of the transistor. Not only are tubed amplifiers not vanishing from the face of the earth, they are proliferating. Audio's equipment directory for 1977 listed three tubed power amplifiers. The same directory for 1984 lists over 30 of them, and the Quicksilver is not even included!

This very hefty (95-lb.) stereo power amp uses 8 EL34 tubes to deliver a rated 95 watts output per channel into 4 or 8 ohms. The unit comes with a plug-in milliammeter for setting bias, and detailed adjustment instructions are provided. But as is so typical of American designs, this adjustment is made more difficult than necessary. Bias is supposed to be periodically readjusted during the first 50 hours of operation, and should probably also be trimmed from time to time during the "many years" of the tubes' life. But bias adjustment requires removing the perforated metal cage, which is a minor pain, but becomes a major pain if the amplifier is normally stowed in an inaccessible location, simply because the thing is so hard to move!

The preliminary owner's manual supplied with our sample did not inspire confidence. There are various and sundry warnings about how the amp should be turned on (through two switch settings), during what phase of its life, and in every case the bottom line seems to be that not following the instructions might cause the output tubes to break down. This didn't happen while we were using the amplifier (passing it from staffers to staffers for their individual comments), but it had all of us a little hesitant about turning the thing on for fear of forgetting the warmup countdown. Ultimately however, our sample unit proved more reliable than several other tubed power amps we have tested in recent years: nothing blew up.

Describing the sound of the Quicksilver is a little more challenging than usual because it comes in two incarnations: triode and pentode. Not triode or pentode outputs, as one might guess, but triode or pentode voltage-amplifier/driver sections. The amp is now normally delivered with the triode boards in it, while

2 The model actually auditioned was the MS190, although the specs cover the MX190, a slightly later version. The primary differences in the MX version are larger output transformers and heavier gauge wiring (10 as opposed to 16). The manufacturer assures us that the audible differences are minimal.

3 See "As We See It" in this issue for a description of the standard triode tube. A pentode tube inserts two additional grids: a screen grid, which steps up the amount of current change occurring with a given control-grid voltage change; and a suppressor grid, which limits electron re-radiation from the anode. This results in more gain per tube; in the Quicksilver, the pentode driver boards have only one amplifying stage (one amplifying tube per channel), while the triode boards have two.
the pentode boards are available on special order for $165 per stereo pair. At the time I tested the amp, the pentode board was "standard," so I spent most of my time listening to that version of the amp.

Sonically, the most descriptive thing that can be said of the Quicksilver (with its pentode boards) is that it is tube-like. It has the typical good tubed amp's aliveness, richness, warmth and almost-holographic depth. Inner detailing is superb but, for those to whom spaciousness is the be-all and end-all, I must report that soundstage presentation from the Quicksilver is not quite as wide as I have heard from some solid-state power amps—the Eagle 7a and the Threshold S/500. Bass is deep and full, tending slightly towards heaviness through the midbass region. LF impact is good but not in the same league as that of the best solid-state amps, nor indeed as good as the Berning 2100 or C-J Premier One from the tube world. Highs are rather soft but exquisitely sweet and musical—comparable in quality to our top-rated Premier One.

Driver-board replacement is simple and straightforward. You remove four anchoring screws (two per board), unplug the original boards, plug in the alternate boards, insert the tubes and replace the screws. There are adjustments on each board to optimize performance, but they require the use of a distortion analyzer, which I do not own, although Quicksilver president Mike Sanders maintains that the adjustments are not critical, and that the boards can be used as set up at the factory. The triode boards effected an interesting change in the sound. The high end became noticeably sweeter yet with no apparent loss of detail or "snap," the overall sound became subtly warmer, and depth (perspective) increased almost to the point of exaggeration. This increase in depth was a remarkable effect, and not at all unpleasing.

Not surprisingly, the Quicksilver is at its best driving electrostatatics, which tend to complement perfectly its own characteristics. With Acoustat 2+2s for example, the sound with the triode boards (which I preferred) was about as good as I have heard from those speakers, although not quite as velvety-smooth at the top nor as tautly controlled at the bottom as with the Paoli S.O.B. Although I had not had a chance to try the Quicksilver with Quad ESL-63s by the time this report was written, I would be willing to bet that this would be one of the best driving amplifiers around for that speaker system. Its power rating is almost exactly what the 63s call for, and the Quicksilver's lush liveliness should flesh out the ESL's slightly dry sound with solid-state amps.
I am not nearly so enamored with the sound of the 63s with solid-state amplifiers as are a lot of other critics.

The Model MS190 Quicksilver has been on the market for 3 ½ years, and the manufacturer reports only 2 amplifiers returned out of 85 produced; probably we can assume that the MX190 will be also very reliable. Sonically, it must be ranked at the top among tubed amplifiers, along with the Paoli S.O.B., the C-J Premier One and Premier Four, the Berning EA-2100, the ARC D-160B, and the EAR 509. (The EAR and the Paoli sound rather un-tubelike in some respects, and should be considered on their own merits rather than as "tube amplifiers.") I can heartily recommend the Quicksilver for use with electrostatics, but I feel that its suitability for dynamic speakers will depend very much upon the individual speakers. Those which produce good musical balance with your average solid-state amplifier may well sound rather heavy and slightly dull with either configuration of the Quicksilver, although less so with the Pentode boards. However, a dynamic speaker like the Thiel CS3, with its extended high end and tightly controlled bass, could do very well with this amp.

In short, this is a very fine amplifier at a price which a year ago I might have thought was steep, but which is just average these days for a 100-watt tube amplifier. The choice between triode and pentode boards increases substantially your ability to make the sound of the amp appropriate to your system.

**CONCLUSIONS**

These two amps are rather difficult to compare because they sound so different. If you like "tube sound," you are more likely to be happy with the Quicksilver, because it embodies more of what are generally conceded to be the positive (and, by tube detractors, negative) attributes of good tubed components. If you like solid-state bass and tube midrange, the Berning approaches this rare amalgam more closely than any other amplifier we have tested. For the best "tube highs," choose between the Paoli S.O.B. and the Conrad-Johnson Premier One, although the Quicksilver comes remarkably close to the Premier One at the high end, and at a much lower price.

Of these two, the Berning is tighter and more controlled at the low end and is, overall, probably the more neutral-sounding of the two. The Quicksilver is warmer through the midbass and sweeter-sounding at the high end, and thus fares better with electrostatics. The Berning, despite its somewhat softer-than-solid-state high end, really does much better than the Quicksilver with most dynamic speaker systems. In fact, with many dynamics, certain aspects of the Berning's sound (its aliveness and depth) were preferred to the sound of our current favorite solid-state amp, the Electron Kinetics Eagle 7A.

This description should not serve to minimize the uniqueness of each product. With electrostatics, or with a dynamic speaker which "likes" its midbass warmth and soft high end, the Quicksilver's remarkable depth presentation and otherwise lush sound could make a wonderful music system. Likewise with the Berning; its combination of tight low end and remarkable aliveness will work perfectly in some systems. Both of these are superb-sounding amplifiers, but both have definite "earmarks" which are going to make loudspeaker choice exceedingly important if one is to achieve the best sound either is capable of. If you're going at things the other way around—starting with the speakers, and seeking the ideal amplifier for them—these two should certainly be on your list of possibly state-of-the-art amplifiers to try with those speakers.

JGH
And The Meaning of Life

A Progress Report by Tony Cordesman Surveying the State of the Modern High-End Tonearm: In-Depth Reports on the Syrinx, Zeta, and Alphason Tonearms; Considerations of the Sumiko "Arm" (designed by Dave Fletcher) and the Souther Tonearm; Not to Mention an Appraisal of the Golmund System.

I have the unfortunate feeling that it may be impossible to discuss today's tonearms or turntables without entering the twilight zone. We have been so conditioned by Ivor the Terriblebottom that we can only end the cult of the Linn by replacing it with the cult of the SOTA, or the cult of the month.

We seem to be losing sight of the fact that no tonearm or turntable can avoid a host of engineering compromises that must color the sound. These can be reduced, or new colorations can be traded for old, but the laws of physics ensure that any design will have many problems in terms of resonance, vibration, static and dynamic geometric effects, compatibility with any given cartridge, and so on. There is good empirical evidence that these errors are audible, even when they are almost impossible to measure in any way agreed upon by engineers.

The choice of a turntable or tonearm is, therefore, always a choice between flawed systems. The issue is always one of choosing which mix of compromises sounds most musical with a wide range of records. There are so many variables at work that measurements or tests are only indicators—and often poor ones—not ways of deciding who's on first.

The units under review exemplify these points. They include three very high priced British tones arms: The Syrinx PU3, the Zeta, and the Alphason. All are priced at the cult level: you really must believe in a tonearm to spend $700-$1,000. One—the Syrinx—is not yet ready for cult status. In contrast, the Zeta and Alphason are top contenders.
THE SYRINX PU3, AN INTERIM REPORT

Pivoting undamped tonearm with gimbal suspension.
Effective mass: 13 grams. Length: 225 mm.
Price: $700. Serial Number: Not applicable.
Source: Reader loan.
IMPORTER: Krell Industries, 1225 Connecticut Ave.,
Bridgeport, CT 06607. (203) 874-3139.

The Syrinx is a $700 cult arm you may have to be occult to love. The PU3 has had teething problems even in the U.K. All too frequently it's been delivered with the bearings too tight, causing considerable friction. This was true of the first PU3 I tried during a trip to London a year ago, and Martin Colloms confirmed this, finding 85 mg. of friction in the lateral plane on the unit he tested for HFNRR.¹

I have had the opportunity to try two PU3 arms, both on loan from their owners. The first was evidently an early model and had fatal bearing problems, recalling the Syrinx PU2—itself a major contender for a Golden Turkey award.

These bearing problems in the first sample were compounded by a wired-in interconnect which hardened the upper midrange (just what your average moving coil needs), and by a delicate wiring assembly that was exposed when the arm was loosened at its base and which could lead to serious electrical and mechanical problems if the arm was rotated too much or raised too high.

The second sample had acceptable bearings, but otherwise had the same problems. It was a good tonearm, but the bearings still weren't up to the price, and the sound was degraded by a hard sounding cable.

¹ 15 mg. of friction laterally is considered very low, anything up to 50 mg. acceptable.

This is a pity because the PU3 does have great potential. Unlike the PU2, the PU3 has a good flat cartridge mount; more importantly, you can rotate the arm for azimuth-adjust and alter its extension from the pivot to set overhang. This allows you to fine tune cartridge alignment with an ease unmatched by the other high-end pivoting arms I've worked with.

Further, the tonearm tube is rigid and vibration-free, and the effective mass is around 13 grams. This makes the Syrinx slightly more compatible with a wide range of cartridges than the Zeta, although not up to the standard of the Alphason.

Watch these pages for an update on the Syrinx. Dan D'Agostino of Krell, a perfectionist if there ever was one, is now the importer and tells me that current samples still have the same hard-wired cable but have been improved in manufacture, have eliminated the bearing problems, and measures have been taken to reduce the risk of strain to the tonearm wiring. Just as this issue goes to press I have received one of the most recent Syrinxes (the first one obtained with Krell as the importer), and it shows promise.

Based on our experience so far it is
impossible to recommend the Syrinx PU3, in spite of the promise it shows. Until our update is published, I suggest you call the importer (203-874-3139) to make sure any unit you are offered for sale is one of the newer models. I would not personally take the risk of buying a used or older model, and would be careful about any direct imports from the U.K. Syrinx just doesn’t seem to have the quality control that justifies the risk of importing an arm without a warranty.

**THE ZETA**

Pivoting gimbal-bearing undamped tonearm with non-removable headshell.

- **Mass of tonearm:** 16 grams. **Length:** 225 mm.
- **Weight of entire assembly:** 20 oz. **Price:** $875.
- **Source:** Importer Loan. **Serial Number:** 8306029.
- **IMPORTER:** Reference Monitor International Inc., 6074 Corte del Cedro, Carlsbad, CA, 92008. (619) 438-1214.

The Zeta is a medium to high mass pivoting tonearm with a fixed headshell and great rigidity. It is made in the U.K.—but unlike some U.K. tonearms, it is made very well. The machining is lovely. The base and gimbal block are equally impressive: they are one massive machining. This makes VTA adjustment a pain, but it also minimizes coloration. Like the Sumiko Arm, the parts are thermally bonded rather than glued.

The bearing design approaches the Arm in quality, and they’re exceptionally "tight." The bearings are even guaranteed for life, although whether this is the life of the buyer or the life of the arm is not specified.

The counterweight allows the use of a variety of steel inserts to vary tracking weight and dynamic mass, but the counterweight-tonearm combination is not suitable for either very low-weight cartridges like the Van den Hul Feather or very heavy cartridges like the Koetsu Lead and Audionote Ironwood. Let’s say 6-12 grams, although you can always try other cartridges. There is no calibrated tracking weight adjustment. Fine tuning requires moving the assembly and using a supplemental tracking force gauge.

The bias adjustment is also uncalibrated and must be set by ear. This can be acutely annoying for the uninitiated, and a wrong adjustment can give the sound poor imaging or a hard upper midrange (as can misassembly of the counterweight parts—something that is all too easy given the lack of instructions). The tonearm lift is well designed and easy to use; the arm fits securely in its holder when not in use.

The geometry checks out well, and a small two-point metal protractor is supplied. This will work quite well if you know how to use it. You’d better, as the manufacturer does not provide instructions for the arm, and the importer is forced to improvise. (A marvelous example of what seems to be a basic genetic defect in British exporters). The other aspects of setup are comparatively easy,
however, and the arm should mount well to virtually any high-end turntable.

The phono output is via the standard 5-pin DIN socket; the cable that comes with the Zeta is even worse than that which comes with the Syrinx, and should be replaced with a Straightwire, Livewire, or Peterson interconnect to get best performance.

The Zeta is relatively heavy, acceptable but not ideal for the more delicate turntable suspensions like the Linn or Pink Triangle. It is better suited to units like the SOTA, or to most direct drive units, which can take tonearms of relatively wide-ranging weights without technical problems or endless fiddling.

Several more important constraints are imposed. The effective mass of the Zeta is rated at about 16 grams, but seems slightly higher (this is another parameter that sounds easier to measure than it is!). While Martin Colloms rates the arm as suitable for compliances of 7-14 cu, I would suggest a more conservative 6-12, with preference for the lower compliances.²

This makes the Zeta well-suited for use with medium to low compliance moving-coil cartridges having limited body resonance or vibration. It does only moderately well with cartridges like the Linn Asak and Audioquests which have very “live” bodies. It does exceptionally well, however, in coupling to most other moving coil cartridges. With a decent interconnect cable, it provides outstanding performance from the Koetsu Black, the Argent Diamond, the Accuphase, and Monster Cable Alpha. It does not, however, work well with moderate to high compliance magnetic cartridges, and seemed slightly massy for the lightweight Talisman.

² The importer would beg to differ on this point, at least in the case of one cartridge. He also imports the Goldbug Brier and insists it sounds best, even with its compliance of 16 cu., in the Zeta.

I should note that my initial review sample, and others tested in British magazines, have low (rather than exceptionally low) friction. While some experts prefer very tight bearings and the accompanying slight friction, this trade-off sharply affects the Zeta's ability to get optimal tracking from high compliance cartridges. Since the tonearm is a bit heavy for high compliance cartridges this is unlikely to be a big problem; in any case, the importer is ready to help if you do encounter problems with such a cartridge—he cleaned up my review sample promptly.

In any case, the Zeta will not be all things to all people. It is far less easy to adapt to a wide range of cartridges and turntables than the Alphason or the Sumiko Arm, with their better-chosen primary mass and wide range of counterweights.

Used under proper conditions, however, the Zeta outperforms the Linn Ittok and the Helius in providing a smoother and more detailed upper midrange...

If used with the wrong cartridges—those that are low in mass, have moderate to high compliance, or have vibrating body shells—it will produce poor bass, track badly, harden the highs, dull the imaging, and collapse the soundstage.

Used under proper conditions, however, the Zeta outperforms the Linn Ittok and the Helius in providing a smoother and more detailed upper midrange, and rivals the Fletcher Arm and Alphason in overall sound quality. It is flatter in frequency response and dynamic performance than the Souther Arm, but less detailed and accurate in the upper midrange, highs, and imaging.
If I were to hazard a summary description of its sound under optimal conditions, I would describe it as slightly rolled off in the upper octave but extended in the bass. There is not the significant loss of midrange information and detail that I find with many arms, such as all the Linns and Graces.

This may make the Zeta less than ideal for use with tube equipment that also softens the highs, but makes it a good match for most transistor equipment. The Zeta suits speakers with tight bass, and is a good match for ones with extended treble and which favor a definition of “flat” that gives them considerable treble energy. This includes most British loudspeakers, the Thiels, the Quad ESL-63s, etc.

**The Alphason HR-100s**

Pivoting undamped tonearm with gimbal bearings of tungsten carbide.

Mass of arm: adjustable in approximately .3 gm increments from 10.1 grams to 14.0 grams.

Length: 229 mm. Price: $750.

Serial No. 1344. Source: Reader Loan.

IMPORTER: Music and Sound Imports,

30 Snowflake Road,

Huntingdon Valley, PA 19006.

(215) 357-7858 or

(516) 585-4746.

Like the Zeta, the Alphason is a beautifully machined pivoting arm designed for great rigidity. The cartridge mount and tube are made out of a single S-shaped piece of titanium, and seem deader than the Zeta and closer to the Sumiko Arm in this respect.

The Alphason’s bearings are very tight and yet have extremely low friction. Like those on the Fletcher arm and Linn Ittok, they require careful handling. Do not twist the arm relative to the pivot or install a cartridge when the arm is mounted rigidly in place.

The basic design is relatively low in mass (11 grams). Like the Arm, it uses a variety of counterweights. Unlike the Arm, it uses brass headshell inserts to match mass to cartridge weight and compliance. The arm comes with clear instructions on how these are to be used, and proper use is mandatory. Without the use of the proper weight under the headshell to achieve a resonance around 10-12 Hz, there is a strong loss of upper midrange air and the apparent depth of the soundstage is truncated.

You should select the counterweight so that its location is as close as possible to the pivot, while still getting the proper tracking force and low-frequency resonance and avoiding, where possible, use of a brass weight at the cartridge mount. You can get advice on the best counterweight for your cartridge from either your dealer or the importer. The counterweights are exchangeable free of charge, or you can buy extras ($30-40) if you’re a cartridge-change buff. The importer is Mel Schilling (215-357-7858).
I should note, incidentally, that proper low-frequency resonance in a cartridge is critical to proper sound. You or your dealer should check this after you install the cartridge just as you should check tracking. You can use commonly available test records like the Shure or Ortofon, adding or subtracting weight to get the proper behavior.

The Alphason is more flexible than the Zeta in your choice of cartridge, and should be compatible with any current cartridge. Only lovers of the old ADGs, or importers of a few experimental Japanese high compliance moving coil cartridges, need worry.

The Alphason uses the string-and-weight bias system, which is calibrated in notches and needs very careful listening for adjustment (you will probably need more bias than the instructions recommend). The notches on the bias adjustment are just a bit too far apart, and purists may end up cutting new notches with a jeweler's file. The cueing device works well, but the location is slightly awkward. The headshell fingerlift is poorly designed and could well have been omitted.

The Alphason installs quickly and firmly without tricks or fiddles, using the same size mounting hole as a Linn Ittok. Like the Zeta, Ittok, and Sumiko Arm, VTA adjustment is a laborious process which involves moving the tonearm pivot up and down in the base. As with the Zeta, Fletcher, and Ittok arms, there is no azimuth adjustment—something as important as VTA, and correctable in these cases only by laborious shimming at the tonearm base.

The cable that comes with the arm is little more than a convenience, to use until you buy a good one. You will need a Peterson, Livewire, or Straightwire to get the sound this unit is capable of, and it is capable of very good sound indeed.

I said earlier that the Zeta, used under optimal conditions, rivals the the Alphason and Souther arms, not to mention the Arm. The Alphason is generally a notch closer to the Arm and the Souther and—like them—is flat and extended with a great deal of detail. It would take more technical measurement than I am capable of to figure out whether the Alphason or the Arm can do a better job of ensuring the right cartridge resonance with a broad range of cartridges.

I would give the Arm a tiny edge in terms of detail, imaging, and lower midrange neutrality, but the Alphason is superb in the highs and upper midrange. It is clearly more neutral in the upper midrange than the Linn Ittok, but not as detailed as the Souther, although it seems more linear in terms of frequency response. Nice! Very nice.

**THE ZETA AND THE ALPHASON VERSUS THE ENTIRE UNIVERSE**

The Zeta and Alphason are both expensive and very high quality arms. I could live with either in my reference system, although I would probably choose the Alphason because it offers greater flexibility of cartridge choice and because I use tubed electronics, which mate less well with the Zeta. The Alphason's emphasis on a strong, clean upper midrange and high end suits my system, but this is no reason you should clearly rank one above the other.

In broader terms, I would still rank the Sumiko Arm as slightly in the lead as the best pivoting arm—although this a is hard and uncertain choice. I also have to note that the Alphason is only $700 (as opposed to $1200 for the Arm), and it may well be more cost-effective to spend the extra money on some other part of your system.

The Souther arm sounds, quite frankly, different. Its merit is extremely high resolution of detail over the entire record,
and its sonic character is so different that I believe you really must hear it in comparison with a top pivoting arm. I wouldn't attempt a ranking between the Souther and the Alphason, Arm, and Zeta. The only tonearm I would firmly say is superior to all four is a properly adjusted Goldmund, although I might add the Dennesen had I the opportunity to try it in my system.

All the above arms are good enough that the synergistic match between a given tonearm, cartridge, turntable, and system is likely to be more important than the intrinsic differences between the tonearms.

Moreover, an absolute ranking may be unrealistic. All the above arms are good enough that the synergistic match between a given tonearm, cartridge, turntable, and system is likely to be more important than the intrinsic differences between the tonearms. I also test such arms in a setup where the turntable is isolated from my speakers in a separate and well-insulated room. In many setups, system-specific acoustic breakthrough will dominate the choice of arm.

All tonearm designs produce some resonances in the midrange with any cartridge. In good tonearm designs, a category where both the Zeta and Alphason belong, this vibration is limited, as illustrated by the test results obtained by Martin Colloms in Hi Fi Choice and Hi Fi Neus. These tests show that the Zeta, Alphason, and Sumiko Arm all have good tonearm resonance sweeps.

Further, every cartridge introduces its own colorations, as does each different turntable. While good tonearms protect you against the kind of mismatch where cartridges with vibrating or resonant bodies color the entire system, they also are more revealing of nuances that will then have to be matched to your system.

**Turntables, Cults, and System Matching**

This brings me back to my point about making a cult-object of the turntable or tonearm. Having said that the Zeta and Alphason are top-ranking pivoted arms (within the limits that I have just described), I cannot go on and tell you exactly how they will compare to other top arms with other top cartridges on your particular system. There are simply too many variables involved.

Each cartridge seems to have its own set of secrets in terms of the preferred arm or turntable/arm combination. For example, cartridges with thin metal bodies are generally more sensitive to tonearm resonance interactions than those with more solid bodies, but this assumes

Look at the turntable system as a palette that you must use in coloring the music to your taste, and you get a more realistic picture.

You can easily match tonearm mass to a given turntable's type of mounting board and suspension—something the SOTA turntable permits, but few others.

Look at the turntable system as a palette that you must use in coloring the music to your taste, and you get a more realistic picture. No arm you can buy will be completely neutral. It is up to you to balance the colorations of what you buy to make the illusion as real as you can, and a reviewer can only lead you part of the way.
THE GOLDMUND—A CULT FOR THE WILDLY EXTRAVAGANT

I am particularly cautious about making absolute judgments at this time. I have spent the last two months comparing the Goldmund Studio Turntable and T-3 arm to various other arms, including the revised Souther and the Arm, and to the Oracle Delphi, SOTA, and VPI turntables. Regardless of the combination of arm, turntable, and cartridge, none have matched the Goldmuns when using a properly set-up medium-compliance moving coil cartridge.

The Goldmund T-3 arm and Studio Turntable will simply reveal more natural musical detail on virtually any good record.

I have the feeling that Harry Pearson and Dave Wilson of The Absolute Sound are right: the Goldmund represents a higher order of resolution than the competition. The Goldmund T-3 arm and Studio Turntable will simply reveal more natural musical detail on virtually any good record.

The Goldmund combination does not call attention to sudden shifts in harmonics, dynamics, transparency, air, or imaging as much as do the Zeta, Arm, Souther, Itok, SOTA, Oracle, Linn, or VPI. It also makes the differences between these arms seem less important. Using the Goldmund as a standard, I keep getting the impression that switching amongst these other (very good) arms and turntables involves simply trading colorations rather than lessening overall coloration.

Fortunately, the Goldmund T-3 arm and Studio turntable system are also maturing to the point where they are becoming comparatively easy to live with as well, if not to buy. The Goldmund system has had three problems:
1. a very delicate arm design requiring extreme care in setup and adjustment;
2. a lack of meaningful instruction, setup, and service data;
3. an importer who had to send every unit back to France for service.

Past and prospective buyers will be happy to know that the situation is improving. Goldmund now has a U.S. service facility at International Audio Technology, headed by Pierre Duval. It is open from 1-5 PM on Monday-Friday and can be reached by calling (703) 777-1084. Goldmund also has developed a number of important modifications to the T-3 arm that adapt it for voltages in different parts of the U.S., solve some wiring and grounding problems, and end previous problems with cueing. These changes are available for T-3 owners at their dealers.

Equally important, Goldmund has developed new setup techniques, and acquired added experience with difficult cartridges. The setup adjustments require an oscilloscope and dealer expertise, but greatly reduce the need for followup adjustment and maintenance. Any Goldmund owner should contact either his dealer or Pierre Duval to see if modifications or adjustments are indicated.

More important, the T-3 arm now comes in a T-3B version. It reflects about 10 years worth of practical experience, and is a much more stable and reliable design than the T-3.\(^3\) It has a thicker mounting plate, a VTA adjustment and scale, refined belt drive and side drive circuitry, improved control unit circuitry, and better grounding.

\(^3\) AHC has his old T-3 "maintained" about once every 3 weeks due to slight changes in the ability of the arm to follow the groove, which are evident in the sound on a high resolution system.
The T-3B and revised T-3 allow me to sharply upgrade my judgment on the cost-effectiveness of the Goldmund. This is good news for the audiophile who has the money to indulge in luxury, but lacks the patience to fiddle or deal with unreliable products. They may not be the best tonearms in the world, but they are certainly the best in my experience for the medium to low compliance moving coil cartridges that most high-end audiophiles prefer. They offer truly outstanding midrange and upper octave detail, tonal neutrality, soundstage information, and low-level transient information. The bass will be dependent on the tightness of cartridge-to-tonearm mounting and mass loading, but is also excellent and at least the equal of the competition.

There is also now a “baby” Goldmund system comprising the T-5 arm and Studioette turntable. The T-5 arm does not maintain perfect tangency at all times and is less accurate than the full straight-line tracking or “cage” system used in the T-3B. The Studioette also has a less neutral-sounding suspension than the Studio. The lower priced combination sells for $3,400 versus $4,900 for the T-3B and Studioette. Such a savings may even be worth it; even today $1,500 can buy a round or two of drinks during intermission.

Several warnings, however, concerning the Goldmunds. First, an improperly placed T-3 can react to extraneous light because of its infrared sensor. Second, the unit needs a regulated power supply in areas with wild swings in AC line voltage; moreover, a few early T-5s were distributed that need adjustment to U.S. line-voltage conditions. And finally, the dealer setup and service manuals and improved instruction books are being worked on, but are not yet finished.

Talk to your dealer to make sure that he has someone who has been trained by Goldmund in setup and will give you proper support. The Goldmund still involves a lot of dealer effort and not all are making it.

CULTS FOR THE MERELY PROFILIGATE

As for the best turntables for pivoting arms, I still prefer the SOTA Sapphire to the Linn, Oracle, and VPI. Concerning the Linn Valhalla, I feel there’s a risk of transforming a Celtic cult into a neo-Newtonian one—and I have a revised VPI that may yet create a Big-Appletonian cult. The Linn seems to be something of a kit—there is no way to be sure it is properly set-up, or even that it’s been delivered with all the latest washers, condensers, and other liturgical rites. Moreover, the Linn’s midbass and deep bass are not competitive with the SOTA.

At the same time, I feel that the SOTA Sapphire’s midrange—and particularly its upper midrange—is not materially more accurate than the Linn, and may now be not quite as good. The Sapphire has been revised to use an external power supply (which should have a better plug and socket!) and uses a separate, rather than bonded, rubber turntable mat. This later model also has a mechanically better interface between the tonearm mounting boards and the turntable base, and probably a host of other tweaks.

I welcome most of these changes in the Sapphire, but the mat change bothers me. I have never been all that confident of the accuracy of the SOTA’s midrange, and I find that the new mat softens the upper midrange. The result is euphonic, but I am concerned that violins that I know to be modern—that is, slightly hard and piercing—suddenly become Italian and antique. Neither violins nor harpsichords sound as accurate as on the very best Linns, although I prefer the Sapphire for bass and woodwinds. There also is a slight loss of soundstage detail and imaging precision, and purists must now move the mat around to get the best
interface with a particular record—a fiddle that seems to be the incurable price of a separate mat!

This is correctable (for a mere $160) by using the Goldmund mat and record weight instead of the SOTA. This cleans up the sound of strings on the SOTA without any extra hardness or brightness, although I still prefer the Goldmund Studio. I should note, however, that you may not hear much difference if you aren’t using absolutely top grade equipment, and that the difference will be subtle even when using such equipment. SOTA also has a new record clamp of its own under development and feels this may do much the same thing at a far lower price.

Go for synergy in your own system and trust your own ears. Analogue record equipment is getting better and better, but choose culture and not cult.

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An Interview With Tim De Paravicini

by Jerry Novetsky and Dick Olsher

Tim de Paravicini is president of Esoteric Audio Research, a British manufacturer of tube amplifiers, and a world-renowned designer of tube equipment and output transformers. The opinions expressed by Mr. De Paravicini do not necessarily reflect those of Stereophile or its staff.

Stereophile: I thought we’d begin with a little background. Where were you born? What kind of education did you get to prepare you for a career in audio?

De Paravicini: I was born in 1945 in Nigeria, of all places, of British parents. My father was in Nigeria at the time as a geologist. I was taken back to England at the age of 7 for education, and there I went on to what we call Technical College and did Electrical Engineering. During my youth audio and radio had been a passion of mine as a hobby. I was building AM radios for picking up DX stations, and then moved on to modifying the music system that my family possessed.

S: How did you learn about the design of amplifiers and tuners?

DP: Initially, at about the age of 13, I started constructing them from articles in the hobbyist magazines. Since I couldn’t afford to buy all the parts I needed, they had to be stripped from old radios and televisions from scrap yards. My frustration at the performance of those construction projects forced me to look at their design. I ended up having to try and be innovative, starting from square one to come up with my own improved design.

S: How did you then become involved with the audio industry?

DP: I started out working for computer companies as a customer engineer, and at the age of 21 I decided to go to South Africa because I was fed up with the politics of England and thought I would prefer a warmer climate. And pay scales were supposed to be much better in South Africa than in England. I carried on for a short spell there in the computer industry, but I made lots of personal contacts with people in the audio industry...
by acting as a consultant to many hi-fi dealers and the record industry. I also set up a small business building transformers for other companies. At that time I did a lot of consulting work for the Lux distributor in South Africa, and on one of the visits of Lux’s president and sales manager we got into a discussion, and they threw me an invitation to go to Japan. The idea appealed to me.

S: What was your involvement with the Lux 3045 tube amplifier, which has become rather a legend?

DP: Lux had a separate department called Luxkit which manufactured kits like the Dynaco kits in the U.S. for the hobbyists of Japan who wanted to have the satisfaction of building their own. Luxkit was responsible for development of tube products. I looked at all the tube amplifiers that Lux had made, and I said to the guys, “None of them are good. I can do better.”

In those days, 99% of Japanese products were old wines in new bottles.

S: What kinds of problems did you see?

DP: In those days, 99% of Japanese products were old wines in new bottles. They kept the same innards and just did a repackaging exercise. I felt that this was epitomized by the Luxkits. Nothing much was innovative. Nonetheless, Lux had already a good reputation in Japan for their superior output transformers.

So I put together a couple of prototypes and said, “This is how a tube amplifier should perform.” Lux reviewed them and okayed production on one of them—a mono amplifier because with that kind of power, a stereo version would have been too heavy for practicality.

S: The 3045 was primarily your own design?

DP: Yes. But some of my design was compromised for cost. Everything in Japan is compromised on cost.

S: Well that’s true of any product. You put in what you can afford to and still keep a reasonable retail price. Were there any companies that you felt were going all out?

DP: Well, in Japan there were no other companies that could match Lux on high-end products. But Technics would occasionally put out a super-expensive amplifier or loudspeaker to say, “Here is our flagship.” They would sell maybe one, and people would not take it seriously, but it was there as a credibility identifier.

S: What kind of acceptance did the 3045 have from the company and from the public at large in Japan?

DP: It took off quite well. Lux wanted to develop their own output tubes. They wanted to perpetuate the triode because all the guys in the company still maintained that the triode was the best. They were looking to make a high-powered triode, and in conjunction with NEC they developed this using basically the parts from a beam-powered tetrode, reconfigured and wired as a triode. It was packaged and dressed to look like a 6550 or a KT-88 with a nice metal band at the bottom to make it look pretty. Luxman’s idea was that by using your own tubes, you get a monopoly on the servicing of the product. Unfortunately that tube proved to be a disaster. It wore out very fast. And it wasn’t quite as rugged as it was expected to be. Japanese tube-manufacturing technology still could not match that of Europe. That is why in all Lux preamps they were using Telefunken 12AX7s for the critical stages, rather than any of the Japanese tubes.

S: So they recognized, themselves, the superiority of the German tubes.

DP: Right. And Lux has made some conventional power amplifiers using KT-88s, that famous amp called the NB88. That
was a mono amplifier made in the late '60s. Of crude performance, but it had a good reputation. The Japanese audio maniacs loved KT-88s. They loved all things obscure.

Unlike the Westerners the Japanese like tubes for their appearance as well as their sound.

S: It was a matter of which tubes looked best rather than which circuitry was better?

DP: That's precisely it. And that is still true to this day.

Among other products I developed there were things like the C1000 preamp unit. My design object was to build a preamp that measured better than any other on the market—anywhere in the world. And it started the so-called spec wars.

S: You mean we can all blame you for the spec wars.

DP: I confess. Once I'd done all that, I started to wonder why there were still differences between all the different products and tried to evaluate the significance of slewing distortion and the mechanisms of feedback in amplifiers.

S: Did the C1000 have tone controls?

DP: It had switchable tone controls that could be brought into play when needed, because at that time the market was not yet ready to accept the "purist" approach on preamplifiers. Especially coming from Japan, it had to have all the usual bells and whistles. Even in America most equipment had tone controls, and lots of people

**Even in America most equipment had tone controls, and lots of people still love to play their systems with the bass full up and treble full down.**

S: How satisfied were you with your own designs at that time?

DP: I'm never satisfied with any of my designs. That's the whole point. You have to go forward. If you're satisfied, you're finished and you might as well close up shop and go home.
S: It must be frustrating, though, working within the confines of a big corporation such as Luxman and having to be told what direction you'll actually take.

DP: I wasn’t so strapped. They listened and discussed whatever concepts were thought of. And they were receptive to good ideas. So I had quite a significant amount of influence, even though it was never shown to me that I had.

S: I understand you became dissatisfied then with Luxman. What caused this?

DP: There was a point where either I stayed with the company in a fixed position until my dying days or I went on to greener pastures. Because I was a foreigner I couldn’t move up through the hierarchy of a Japanese company. I had taken a Japanese wife, and we decided then to seek greener pastures. So I thought, “Where else can I go?” I couldn’t make credible products from any of the small countries. South Africa, Australia, etc. are not recognized exporters of high quality equipment. So it was America, England, Germany, or Holland. I ended up going back to England, and when I got there I became associated with Tangent to try and develop a new range of products. Then Tangent got into financial difficulties. I said, “Well, what am I going to do now? I'm going to go it alone.”

I felt they had gone down the usual blind alley because they had just lifted their circuitry from early 1950s textbooks.

S: What did it sound like?

DP: It sounded tolerably acceptable; it had a pleasing quality. It was smooth and easy to listen to, but it measured horribly. Any reviewer that measured it would have shot it down in flames. It needed to be polished up. And so, within the confines of the mechanical layout that they had chosen I decided to overhaul the whole thing, while keeping the overall sound quality similar to what they wanted. I wasn’t going to try and sell them my viewpoint on the sound quality.

My viewpoint is that tubes and transistors should sound alike.

S: Which was what?

DP: Well, my viewpoint is that tubes and transistors should sound alike.

S: You mean tubes and transistors should be capable of equal accuracy.

DP: In essence, yes.

S: All of your work seems to have been done with tubes. Is that mainly because the people you became associated with were using vacuum tubes, or did you choose vacuum tubes because you felt they might have had more promise?

DP: I felt basically that tubed power amplifiers just have fewer problems to be overcome.

S: What are the problems with transistors?

DP: Well, feedback is one. Some of it is always necessary to get distortion down to a reasonable level, but transistors take less well to it. Transistors are deficient in speed, overload capability, ruggedness and so on.

S: You feel that tubes are faster than transistors?

DP: Well, they are developing transistors that are the equal of a tube. But these are still very costly.
S: Could you comment on T.I.M. problems in tubes vs. transistors?
DP: In Japan I was doing a lot of research on the problems of slewing distortion in amplifiers. I was able to detect the fact that the amplifiers, when fed with music which contained a lot of transients, were being overloaded by them. That’s transient intermodulation distortion.
S: Why does this happen?
DP: Because there is a slight time delay through an amplifier. The feedback that should prevent the overload doesn’t get back to the front of the amplifier until after the transient has already overloaded it.
S: So it’s a tube’s superior overload characteristics that make it less susceptible to T.I.M.
DP: That and its higher speed. The second reason I felt tubes would be easier to work with was that transistors had to be run in Class-B or Class-AB in order to keep them from overheating. Transistors did not like heat, and consumers didn’t want large heat sinks. This meant lots of feedback, to try and cover up the cross-over distortion at the point where operation switched from one output transistor to the other. This was not a problem with tubes, because for home audio they had traditionally been run Class-A.

In other words, the heavier the output transformer, the better it is likely to be. As there is no substitute for CC’s in a car, there’s no substitute for iron in an audio transformer.

S: Getting back to transformers. What’s so unusual about your designs?
DP: The transformers are conventional inasmuch as I use copper wire in the winding.
S: What about winding techniques?
DP: I prefer to keep that proprietary.
S: How do you address problems such as phase and hysteresis distortion?
DP: Phase characteristics are basically a matter of how you wind the coil structure, which is what I don’t wish to discuss. The hysteresis is a function of how much magnetizable material there is in the core, so the larger you make that, the less significant hysteresis will be. And the lower the frequency, the more significant hysteresis becomes. In other words, the heavier the output transformer, the better it is likely to be. As there is no substitute for CC’s in a car, there’s no substitute for iron in an audio transformer. But the expense goes up very markedly, so there is a practical limit.
S: Well, we’re sort of getting up to the present. Let’s go back to the TVA-1. Was Michaelson and Austin’s TV-10 as successful as the TVA-1 in terms of sales?
DP: In many ways it was. The point is that in Europe people didn’t need the higher power, so the 40-watt/channel TVA-10 was more than sufficient. But for those who wanted a no-holds-barred design, the next step was to be the M-200. M & A wanted to have a nice, big, flashy, impressive-looking amplifier and that was the M-200.
S: What’s the rated power?
DP: Two hundred watts. That’s 200 watts right across the audio band. It embodies topology similar to the 10 but with a lot more output and a bigger and better output transformer.
S: This was designed in what year?
DP: Around ’77 or ’78.
S: Okay. So now TVA is out of business? Then who was showing the amplifier at CES? I saw it there.
DP: It was Audio Access out of New Jersey. A couple of Chinese fellows, one of them is named Andy Liu. They apparently had gotten an import arrangement with TVA. In the meantime, TVA filed for bankruptcy. At least that’s what I hear. I
haven't seen word of it published, though.
S: I see, this is an unconfirmed rumor then.
DP: Well, yes, but it's come from at least half a dozen different sources.
S: Now we're in 1978? What next?
DP: I had already designed the prototype of the EAR 509 while I was consulting for TVA. And when I decided to quit TVA, I was reluctant to part with the design.
S: Why?
DP: Because I had done some unique things in it. And because I had for many years promoted the PL-509 as an output tube, and I did not wish to give the idea to someone else.
S: Well, the 509 in some ways does sound like no other amplifier I've listened to. Tremendous depth.

So if you increase the amplifier's damping factor beyond 10, the actual damping on the speaker remains for all intents and purposes unchanged.

DP: Well, as I say, I felt that I had an amplifier which met practically all my criteria. I'm not saying it's the ultimate amplifier, but I admit that it is very good. I felt I had something that was good, compact, efficient. I had a design that had all the qualities of a solid-state amplifier, the ideal bases, clean lower and mid range, very tight, with lots of current capability.
S: We're looking at a damping factor of only 20, right?
DP: Yes, well, it may only appear to have a damping factor of 20 but that needs to be clarified. People have latched on to the idea that damping factor is the only important criterion for tight bass.

Now a conventional dynamic speaker is essentially an electric motor in series with an 8-ohm resistor inside that motor—if you measure the voice coil terminal it measures 8 ohms DC. Now if you put a screwdriver across those two terminals, you have put an infinite damping factor on that loudspeaker, right?
S: Right.
DP: But that electric motor has still got 8 ohms in series with it to damp its motion. It hasn't really got a short circuit. Now, if instead of the screwdriver I put an 8-ohm resistor across those terminals, that electric motor now sees 16 ohms in a series, so in fact it's got half the damping that it had before, which is expressed as a DF of 2. If we lower that resistor from 8 ohms to 1, for example, we now have a damping factor of 8. That electric motor is now seeing 9 ohms, which is only 10% larger than 8 ohms. We're closing the gap towards that perfect 8-ohm resistor, so if we go downwards from below 1 ohm to ½ and then ¼ ohm, we're getting ever closer to that 8-ohm minimum. It just doesn't buy you anything, because you can't get below 8. So if you increase the amplifier's damping factor beyond 10, the actual damping on the speaker remains for all intents and purposes unchanged. Whether you have a damping factor of 1000 or 100,000, the speaker really doesn't know the difference.

The ideal amplifier should recover from an overload infinitely fast and not have any subsonic misbehavior.

S: Then why is it that amplifiers with very high damping factor usually give the tightest bass?
DP: The reason amplifiers sound appar-

1 Actually, the DC resistance of an 8-ohm impedance voice coil will measure about 5 ohms—but the rest of the argument still holds if you adjust the numbers.

JGH

Stereophile
ently tighter or looser is not their damping factor but the amount and the quality of their feedback and their low-frequency stability under dynamic conditions. The bandwidth, the frequency response, the way it clips, the way it recovers from clipping are all problems that are really of great concern. They are all signatures of the amp's sound characteristics.

The ideal amplifier should recover from an overload infinitely fast and not have any subsonic misbehavior. What I am trying to do is to come as close to that as possible in a transformer-output tube amplifier. That is why my amplifiers may sound as if the bass is thin—simply because there isn't this overhang.

Most tube amplifiers cannot deliver current. They have a rated power into one rated impedance and the minute the impedance deviates significantly on either side of that, their power output goes to pot. I designed the 509 so it would still maintain its rated power down to 3 ohms. It had a peak current capacity—something I don't publish in the specs but that should be mentioned—of 12 amps. That is one of the reasons for the exceptional tightness of the bass. It can keep the speaker under control, and that's why a cheap 10-watt receiver will often bottom its woofers. The amplifier loses control totally, and you end up with a damping factor of less than 1, momentarily. From a superficially high figure it disappears, then the speaker lets go and it goes back, crash!

S: Okay. How did your own company get started?
DP: I and a partner formed Esoteric Audio Research with what amounts to about $1000. We built the first pair of 509 amplifiers, sold them, and went on from there.
S: Which brings us up to the present time. You have other products available now. How would you say your design philosophy is different from those of other companies in the field?

Most of these companies' products appear to be variations on a theme, like Paganini's.

DP: I feel that the other companies in the tube field are tending to follow each other in their approach to circuitry and performance. I have tried to be different and go off in a completely different direction. Most of these companies' products appear to be variations on a theme, like Paganini's. Although they do have better products than they had 30 years
ago, they are all evolutionary developments from earlier products; the topologies and the basic principles inside them have remained the same. They only have small improvements in such things as more generous power supplies. But they haven’t dealt with the severe deficiencies in the designs—the behavior of bass and overload recovery, feedback, and a myriad other problems. So in other words their designs are not all that different from amplifiers made in the ’50s and ’60s.

**S:** Are you implying a lack of real talent for innovation in the industry?

**DP:** Sure. Most of them are probably college dropouts or engineer dropouts or what have you. People who haven’t been into audio from childhood and haven’t spent all their working life in the industry. A lot of them were hobbyists who made their hobby into a business.

**S:** Where are the talented people going, then? What fields do they go into?

**DP:** It’s a sad fact that the talented people often take the money route and go into the industries that pay the megabucks. Computers, video games, etc.

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**Even in Japan the pace in audio design has slowed down dramatically in the last four or five years. There is a stagnation because of the lack of incentive. There’s not enough marketplace demand. I blame a lot of this on the audio magazines. The mighty word is Gospel, and people believe it . . .**

**S:** Well, there isn’t big money to be made in high-end audio. Especially high-end tube audio.

**DP:** That’s right. Even in Japan the pace in audio design has slowed down dramatically in the last four or five years. There is a stagnation because of the lack of incentive. There’s not enough marketplace demand. I blame a lot of this on the audio magazines. The mighty word is Gospel, and people believe what’s in print much more readily than they believe what is verbal. But the words they print have caused more confusion than enlightenment. And they mislead.

**S:** You’ve brought up a couple of interesting words here. You said “Gospel,” and you’ve occasionally used the word “mysticism.” There seems to be a lot of that sort of mystique, of things being reported which are in fact just imaginary or hype. How have we come to this?

**DP:** It isn’t just the magazines that are into hype. There’s a certain well-known company in Scotland run by a man with a Germanic-sounding name. The manufacturer has been instrumental in building up a mystique behind his products which has given him control of the turntable market in the U.K. That turntable is no longer compared to other people’s products, but is taken as a reference even if it isn’t the right reference. Don’t misunderstand me; it’s a very good turntable, but it isn’t perfect. Some others are better in some respects. But I think what we need is healthy skepticism of claims by manufacturers, even if you have got the technical background necessary to challenge something right on the spot. I think it’s just the reasonable thing to do. But for some reason audiophiles are highly susceptible to wild speculative assertions: e.g., moving coils are better than moving magnets, gold contacts sound better than chrome, and so on.

**S:** It makes it hard for somebody with a truly better product to get a fair hearing.

**DP:** Well, people won’t go against the grain. The population tends to prefer a status quo. Human beings are conserva-
tive by nature.

S: Now digital is being touted as the serious alternative to the analog disc.

DP: The only good thing that's coming out of this digital syndrome in England is that people in the high-end industry are seriously questioning the capabilities of the digital disc, and there is now an incentive for people in the reviewing profession to find answers as to why digital is not so good. The mathematics have been around a long time to prove that digital is not all that good, but unfortunately they have been buried and are not fully understood by many people. Suffice it to say that now there are viewpoints being expressed that digital has many, many problems that are insoluble.

S: Insoluble, no matter what the technology, no matter how much we work on these problems?

DP: Yes. The problems are that we have to increase both the bit rate and the clock rate of the system. The other problem is that the system is being promoted by a couple of high-powered companies: Philips and Sony. They have decreed that one doesn't need better than this level of performance, and that's it. So they're going to force people to accept the lowest common denominator.

The mathematics have been around a long time to prove that digital is not all that good, but unfortunately they have been buried and are not fully understood by many people.

S: If these standards were improved and other areas advanced, would we then have a chance for digital becoming a true high fidelity medium?

DP: Yes, but the problem is now one of compatibility. Any change whatsoever from the present standards on the digital disc immediately makes existing software unusable.

Now in the analog record system one can take a record made 50 years ago and still play it on a modern turntable and retrieve the music. It may not be of the best quality, but it is retrievable. This is important because music is such an important emotional part of a human being. The pride of owning a good record collection can be a lifetime of records collected, and one can still pick up records that are 20-30 years old and play them. But with a digital system all previous recordings are unplayable. And if you change one parameter of that digital system, all previous digital recordings will be unplayable.

Another point is that a 12" album is a joy to look at. You buy the record because there's a gorgeous picture on it . . .

If the digital disc is going to continue in its present format, then it will only end up as an ideal system for the automobile, because it is a small package that is easy to store. It is rugged enough to withstand the temperature variations in a motor car, but whatever you do with a digital system you will not improve the technical sound quality. So you carry on with the status quo and let the system drift downwards to the bottom of the pile while analog continues to improve until . . .

S: You don't see the Compact Disc player as serious competition to the LP?

DP: Only for people who don't care about sound. It'll be like cassettes which have taken over more than half the market in prepackaged music. But I think that the digital disc will supersede the cassette.
very rapidly.

S: But you can assemble your own cassette program from other sources, like FM—you can’t do that with a Compact Disc. A lot of people I know buy records only to dub them onto cassettes. But they’re not audiophiles.

DP: But they are really an insignificant percentage. Another reason the LP record has always been so successful is its fast access time. Another point is that a 12” album is a joy to look at. You buy the record because there’s a gorgeous picture on it, and there’s room for lots of text on the back. The jacket is an ideal sized format. You don’t buy books that are 3”x3” to read. But the digital disc doesn’t lend itself to this. There’s nothing appealing in a store about a Compact Disc in its silly little bubble pack.

S: What kinds of advances do you see forthcoming in audio, then—real advances—and what areas do you feel can be most improved?

DP: The advances that have still got to come are predominantly at the recording end of the chain and at the loudspeaker end. Okay, the amplifier and preamplifier still have room for development, but loudspeakers are where there’s the most room. There are still unexplored technologies open to us for converting electrical energy into sound. I think the electrostatic planar system will see a resurgence with a vengeance.

Solid-state amps will, unfortunately, ultimately become the norm. Tube amplifiers have a finite period in the market, because tube manufacturing is drying up. Tubes probably have another 45 years of viability, but after that it’s going to be difficult to obtain them unless one or two companies have enough money to start manufacturing them again.

S: I understand you have a 500-watter at EAR.

DP: That’s right. The Colossus.

S: 500 watts is awesome for a tube amplifier!

DP: And if somebody comes along with a competitive product, I shall go on to a 1-kilowatt tube amp. You’d have to use ordinary TV tubes. But I feel confident that long before tubes are out of the picture, I will have got some solid-state designs that will equal their sonic performance.

S: We’ll have to judge that aspiration by the high standards you set for the 509. I wouldn’t want those transistor amplifiers sounding any less musical.

DP: Neither would I.
good as possible, particularly if it involves investment in hardware, which is normally upgradeable and spans the life of many cartridges. The Klyne SK-2A, in my experience, sounds better than an MC cartridge run straight into a preamp, and better than virtually all the built-in preamps I’ve heard.

Second, the Klyne offers the flexibility to change cartridges readily and accommodates itself to their particular needs more readily than anything else I’ve seen. For a reviewer, this is invaluable; given the rapid rate at which new MCs are introduced and surpass the old ones in performance, I think it would be invaluable for a true MC-lover as well.

A few questions remain unanswered. How does the Klyne compare to the other high-end stepup devices, such as the C-J IV-1-a (see elsewhere in this issue), the Music Reference RM-4, the solid-state stepup Bill Johnson of AR is working on, the Aulos head amp from Onyx, the tube prototype created by Murray Zeligman? I don’t have those units on hand and can’t answer the question—but AHC does, and will address himself to a head amp survey in the next issue or two, after he gets the latest update of the Klyne SK-2A (its regulation is being slightly improved still more). Should you update your Klyne SK-2 to a -2A for $160, or your SK-1 (the very first product made by Klyne) to a-1A for $90? This last update does not turn the -1 into a -2A, but is a considerable improvement. The 2 to 2A conversion I would recommend to anyone. The difference between the two units is substantial and important: it’s in that portion of the frequency range which contributes to fatigue and can subtract from listening pleasure. Not only that, you probably have the money since you could afford the -2 to begin with! It is harder to evaluate the -1 to -1A upgrade, especially since I haven’t heard either. I suspect you might do better to save some more money and buy a brand new stepup of some kind—though if you don’t buy a Klyne you’ll probably miss the convenience of all those switches.

One other note: Klyne Audio Arts, though they’ve only been in business a few years, goes out of its way to make you feel that you’ve purchased a fine product from a company that really cares about you and respects the money you’ve spent. The SK-2A comes packaged in deep foam, is very attractive to look at, and comes with a Lucite cover (to hide the 20 DIP switches) which is itself covered with paper to prevent scratches in transit; a wooden “stylus” (pointed stick) is even supplied for moving the DIP switches without hurting their little plastic nubs. The owner’s manual is thorough and informative; one of Klyne’s ongoing expenses is the procurement and testing of the latest MC cartridges for the best input impedance and IIF rolloff settings, which then is relayed to the head amp purchasers. Nor does Klyne gouge you when they improve their products. The update mentioned above, while not cheap, is definitely a good deal: you get all new circuit boards and a newly regulated power supply for your $160. Klyne is a company that cares about you; their head amp is one of the best sonically and definitely the easiest to use.

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<sup>LA</sup>
MANUFACTURERS' COMMENTS

THE ALPHASON HR-100S

Dear Larry:

Anthony Cordesman's review of the Alphason HR-100S Precision Tonearm indicated gratifying appreciation of this fine product. Let me add the following:

In designing the HR-100S, the major contributing factors to rigid cartridge support were identified and quantified by Computer Aided Structural and Vibration Analysis. This led to the development of the unique, patented headshell/arm-tube configuration, which not only gives a major improvement in rigidity but also in energy control. The headshell is of a closed "box-section" construction, as opposed to the usual open section (Sukiko) or cantilever (Ittok), offering increased rigidity in both bending and torsional modes with minimum mass. The headshell is fabricated homogeneously with the arm tube, eliminating any join which would compromise rigidity and increase effective mass. The low effective mass of the headshell allows a very thick wall tube to be used for the arm-tube.

The material selected for the arm-tube/headshell is titanium which not only has an extremely high strength/weight ratio, but is also acoustically quite dead; hence any vibrations induced in the arm-tube/headshell are structurally damped and rapidly decay.

Two other small points:

(a) The Alphason HR-100S imported into the U.S.A. by Music and Sound Imports is supplied with a 5-pin DIN male plug installed in the arm pillar. This enables the purchaser to simply "plug in" any of his favorite interconnect tonearm cables. I mention this point as the Alphason HR-100S is supplied hard-wired to all other parts of the world.

(b) As per the suggestion of Anthony Cordesman, Music and Sound Imports is now supplying its own RW/MS-1 Coaxial Signal Lead Tonearm Cable with the HR-100S at no additional cost in place of the tonearm cable originally supplied.

Thank you for the opportunity to provide this additional information.

Mel Schilling
Music and Sound Imports

A clarification: AHC recommended that a different cable than the one originally supplied be used, not that the specific RW/MS-1 be used.

ZETA TONEARM

Gentlemen:

Many thanks for conducting a review of the Zeta tonearm.

It always seems to me that all reviewers consider their sole function is to find as many complaints, problems, or faults as possible. In this advanced, computerised and technologically superior space age we live in, I have yet to read about a perfect product. Why can't reviewers with their obvious wealth of hands-on experience design this elusive perfect product? As a distributor only interested in the very best, I would be only too pleased to sell and promote such a product, but until then I suppose I will just have to be content with the Zeta.

We purposely do not specify whether the bearings' lifetime warranty is for "the life of the buyer" or, "the life of the arm," in order to baffle those who may ever stop to think about it; indeed I wasted several days endeavoring to come to a sensible conclusion. The nearest I came to clarification was that I anticipate most
discerning Zeta owners to happily take it with them when they depart this world, thus satisfying the lifetime warranty on either the owner or arm.

The Zeta was not designed to be all things to all people and the design criteria were carefully chosen, including the effective mass, to facilitate only the best cartridges and turntables currently available. This obviously and rationally precludes matching the Zeta with most budget items, except on a temporary basis when on an upgrading trail. In other words you don’t put cheap oil in a Ferrari. The chosen materials and mass have successfully been combined, resulting in the Zeta possessing substantially lower structural arm resonances than any other. Substantiating resonance plots are available upon request and were conducted by an independent body using expensive B & K accelerometers. Plainly stated, arm resonances drastically affect and mask the true performance of a cartridge, therefore colorations will be reduced relative to the reduction in resonances.

Our own extensive experience and that of customers, has shown that: the Zeta is easy to set up including VTA (although we like the dealer to do this), is compatible with all turntables when intelligently set up, is only marginally heavier than an Ittok and therefore is not a problem on Linns, Pink Triangles, or any others with delicate suspensions, although turntables like the SOTA or Michell Gyrodec do intelligently address the compatibility of arm mass vs. suspension resonance and compliance with more accuracy. Stunning results have been achieved when using the Goldbug Brier Cartridge, which has a dynamic compliance of 15 cu, with the Zeta; therefore we will continue to stick by our recommended range of 6-15 cu. Although I have not tried the Asak or Audioquest cartridges in the Zeta, logic tells me that if they have resonant bodies, then they would surely benefit from dissipating that energy through a rigid substantial arm instead of inevitable exciting a flimsy arm?

The tonearm cable supplied with the arm gives adequate results and does not conceal the performance of the Zeta. However, I would recommend for ultimate performance, after and only after the correct cartridge has been chosen, that improved connecting cables be considered. Only then can the performance of the cable be truly evaluated to complement the cartridge.

The most immediately noticeable improvement area, when comparing against other quality arms, is certainly in the bass which is more extended and "tight" due to its controlled structural resonance characteristic. This cleaning up of the lower octaves reduces the level of intermodulation, contributing to the amazing clarity and articulation of mid and high frequencies the Zeta is capable of. By the many various cartridges measured, none displayed any "rolling off" in the upper octaves, although they did sound less edgy, which is again a function of the remarkable low structural resonances.

As a final comment to prospective tonearm customers I always say, "Listen for yourself with open ears,” as everyone’s individual preconceived conception of accurate sound is different. Thank you for giving me the opportunity to reply.

John Bradford
Reference Monitor International

Stereophile 67
For years VPI has been world renowned for its superb turntable isolation base, the VPI HW-2. Now, after 3 years of research and engineering, VPI has introduced a turntable based on the outstanding isolation properties of the HW-2. VPI went back to basics in its approach to produce the ultimate turntable using dynamic 15 ips master tapes as a reference.

VPI uses only high precision machined parts in its construction, no stampings or castings. A space-age, self-lubricating material is used for both the vertical and horizontal bearings. The 12 lb. platter is lathe-turned from solid aluminum and lead to achieve greater moments of inertia and superb non-resonant qualities.

The result—a precision analog turntable capable of extracting all the information contained on your records—right down to the lowest frequencies. The HW-19 allows dynamic range response unavailable with other turntables—paralleled only by 15 ips master tapes. Simple, yet dynamic—the VPI HW-19 has it all, and for only $665.*

Listen to the unique experience of the HW-19 and all the other VPI quality products at your local audio specialty dealer. Call 212-738-3269 for his name and address, or write to VPI, P.O. Box 159, Dept. UM, Ozone Park, NY 11417

*Suggested retail price.
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*Pat. No. 4,319,096
SONIC DEVELOPMENTS D-235 AMP

We tested an early model of this $325 power amp several years ago (in Volume 4, Number 8) and a later, improved version in Issue 5, Number 1. The later version got a very good review on the basis of its sound, but was reported to have made an odd showing on distortion tests. Only later did we find that our IM analyzer was giving erratic readings. So we accepted another sample for testing.

This one sounded a little better than the second sample and, with our IM analyzer operating properly, measured very well also. We will not cite the measurements because it's not our general policy; suffice it to say that the only reading we got was the analyzer's .02% residual distortion, and nothing measurable from the amplifier at all.

Sonically, this little 35-watt/channel amp displays a high-end quality almost equal in smoothness and openness to that of the very best solid-state amps we have tested (that's right, including Threshold's S/500 Status and the Electron Kinetics Eagle 7A1), and inner detailing that is not too inferior to those super-amplifiers either. In fact, the only real differences between the D-235 and the highest-priced solid-state amplifiers are in low-end heft and solidity, and available volume level before overload sets in. And in view of the D-235's paddling power rating, it can put out a truly astonishing amount of signal before the first signs of strain set in, first at the high end (where a steely quality starts to appear) then at the bottom. Overload is exceedingly graceful, and recovery from it is surprisingly fast.

Apart from the slight sparseness through the low end, the D-235 is a remarkably neutral-sounding amp, with none of the usual solid-state brightness-range suckout or high-end tizz. In short, this is a real little sleeper.

The amp is available only from the manufacturer, at 734 Clarewall Ave., Upper Montclair, N.J. 07043. It comes with a 2-year parts and labor warranty.

CD DRAWELS

The other evening, JGH made an interesting disc very about the drawer-loading CD players which seem to be gaining in popularity over the bin-loading models these days. When the player is turned off, the drawer can't be opened. When you're playing your favorite CD some evening and lightning strikes nearby, take out a power supply diode in the CD player. The drawer is closed, with your precious disc in it. But you can't reach the little knob that operates it. You spin it without that disc until the player comes back from being repaired.

When you ship the player off, include with it a note stating politely that there's a valued disc in there and you want it back or else!!

REVOX B-710 CASSETTE DECK

In his report on this high-end cassette player, JGH expressed some skepticism about the inherent accuracy of an elapsed-time display for a non-digital medium such as cassette tape. Those doubts have subsequently been dispelled. Going from one end to the other of a 43-minute recording, the timer consistently allowed zeroing-in on the start of a section to within one second, which is incredible! This is in fact almost as good as the accuracy with which a CD locates the start of a band, although a cassette can take a lot longer to get there. Larry Greenhill found similar accuracy with the B&O 9000 tape deck; apparently there are techniques to overcome tape stretch, as well as temperature-related expansion and contraction. Either that, or those effects have much less effect than we thought.

1. Of course, unless you're blessed with two CD players, you won't have a player from which to hear the disc, so the additional loss of the disc is not too crucial.
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FEATURE REVIEW
by J. Gordon Holt

SIX CDS FROM TELARC

BEETHOVEN

Piano Concerto No. 5 (The “Emperor”)

Rudolph Serkin, Piano
Boston Symphony Orchestra, Seiji Ozawa conducting.
CD-80065.

I have never been a fan of Seiji Ozawa, feeling that his interpretive approach is too often cold and detached. That is not true of this performance of the “Emperor” Concerto. In fact, my only criticism is that the performance seems at times a little too broadly romantic, where somewhat tighter phrasing would be in order. Ozawa and Serkin have turned in one of the most satisfying musical performances in Telarc’s catalog, which contains a remarkable number of lackluster performances.

The recording is also one of Telarc’s best, although I continue to wish they would get a little closer to the orchestra: the perspective is always row-M, not most concertgoers’ ideal location. The massed-viola sound at the beginning of the second movement is simply ravishing, some of the richest, smoothest massed-string sound I have ever heard reproduced. Unfortunately, there is the now-familiar sense of some strain and wiriness from the violin sound when the orchestra is playing full-blast. Telarc uses the Schoeps “Colette” microphones, whose string-pickup sound I have never liked as much as the old (and long-discontinued) CM-60 vacuum-tubed mike. Brass sound is excellent, instrumental balances impeccable, and the piano slightly wiry—though in the manner of a wiry-sounding piano, rather than a wiry-sounding recording. There’s no scintillating percussion or floor-shaking bass drum here to use for audio demo, but this is one of the best classical releases on CD to date.

BERLIOZ

Symphonie Fantastique.

Cleveland Orchestra, Lorin Maazel conducting.
CD-80076.

I found this inexplicably unsatisfying. Maazel’s tempos are faster than Kojian’s on the Reference Recordings Fantastique yet the performance seems a little superficial by comparison. The one on RR is not the definitive performance of this work, but it carries more dramatic force.
than this one and in some ways is a better recording. The RR's brasses have more weight (although no more bite), massed-violin sound is more natural (it's a bit steely on the Telarc), and the bass drum on the RR is much more satisfyingly fat. Considering the awesome bass-drum sound Telarc has gotten in the past, the deficiency on this CD is surprising. Here there is more whack than thud. Cellos and basses on the Telarc are, however, much better than on the Reference Recording. Given the overall better sound produced by Reference Recordings and Kojian's superior performance, this one is not really a challenge. Not one of Telarc's best.

ORFF

Carmina Burana.
Atlanta Symphony Orchestra and Chorus, Robert Shaw conducting.
CD-80056.

This is a hair-raising recording, surpassing even Telarc's own high standards for sound, but the performance misses the boat. It is dramatic and exciting but entirely lacking the Rabelaisian humor intrinsic to the work. Carmina Burana is all about carousing and debauchery and generally getting one helluva good time out of life, but you would never know it from this straitlaced rendition. If you're curious to find out how this piece should be done, try to find a copy of the old DG recording with Eugen Jochum (139-362). It's a primitive recording, but the performance has not, in my experience, been equalled.

STRAVINSKY
The Rite of Spring
Cleveland Orchestra, Lorin Maazel conducting.
CD-80054.

Telarc's inflexible recording technique fails here. This is stark, harsh music, which is simply unsuited to the kind of distant perspective and cavernous hall ambience delivered by Telarc's mikes. On top of that, add one of Lorin Maazel's most limp-wristed interpretations, and we come up with a real turkey. Compare it, for example, to Decca/London's Rite with Dorati or Mehta, or to the one on Mobile Fidelity with Muti. Multimiked or not, those are far more convincing recordings.

TCHAIKOVSKY
1812 Overture; Capriccio Italian; Cossack Dance (from Mazeppa)
Cincinnati Orchestra, Eric Kunzel conducting.  
CD-80041  
This was reviewed in its analog form in Volume 4, Number 5, and there is little to add to that review except to say that the hard-to-track cannonshots on analog are absolutely lethal on CD—though not hard to track! If your power amp is capable of ripping your woofers apart, the cannonshots will give it the opportunity to do so. Telarc's warning in the booklet (and on the album cover) should be heeded. Despite the in-house presence of two 200-watt/channel power amplifiers, I have yet to hear these appalling thuds reproduced at higher than modest levels without obvious evidence of something overloading. And if anyone can assemble a system that will reproduce those sounds cleanly, and without attenuating their low end, I would not at all be surprised to hear about broken windows.

The recording is typical Telarc, with all the positive and slightly negative things implied thereby. As usual there is that tendency towards steeliness when the whole violin section digs in, but considering the bulk of material released on CD to date, this is one of the best orchestral CDs you can buy. As with the analog version, this is still an almost ridiculous challenge to a reproducing system—a challenge which, if met, would prove nothing of musical worth about the system's fidelity.

The attention this recording has received because of the 1812 has tended to obscure the fact that the Capriccio is one of the best renditions of this warhorse that has been recorded in recent years—better in some respects than the one with Fiedler on the Crystal Clear label. The Cossack Dance, on the other hand, is a bore.

VIVALDI  
The Four Seasons  
Boston Symphony, Seiji Ozawa conducting.  
Joseph Silverstein, violin solo.  
CD-80070.  
I am so sated with the endless procession of Seasons over the past five years that I was considering passing this one up. Fortunately I bothered to audition this one from Telarc because it is one of the nicest of the whole crop. Telarc has used good judgment here in moving the BSO's strings out of Symphony Hall, whose sound is just too warmly resonant for a work as light-textured as this, and into
the drier, more pristine acoustical environment of Wellesley College's Houghton Chapel. The sound is very good, with only a trace of massed-violin shrillness, and that is the only thing which prevents this CD from being a Definitive Disc. But the performances are elegant, and the sound more than adequate. This is our first Top-of-the-Pile CD!

HOLST
The Planets

The Berlin Philharmonic and RIAS Chamber Choir, Herbert von Karajan conducting.
Deutsche Grammophon CD 400-028-2, DA 2532 019.

This justifiably well-known recording is famous because auslander von Karajan "came, saw, and conquered" where the natives had done no better than so-so. Well, not quite. Solti, Ormandy, Rattle, and Gibson has each given us excellent performances, but here Karajan outdoes himself with judicious tempi and finely delineated balances of the orchestra's choirs.

So, why does the vinyl disc of this performance sound better than the CD? Even if only marginally so? First, my basis of comparison: a Kyocera DA-01 on the one hand, a Win Jewel cartridge in the Souther linear arm on a Linn-Sondek deck fed to the to Aulos head amp (by Onyx) on the other. The CD and the DA both were congested in the loud passages (4:16 to 6:12 of Mars, for example) due to multi-miking, but the CD exhibits ringing not present on the DA in these louder passages—there's a synthetic brightness created. Why was this absent in the DA? My guess is that Deutsche Grammophon has a better D-to-A converter than Kyocera can afford to put in its home-user CD player, so the sound transferred to the vinyl LP was cleaner than the sound converted by the Kyocera. Any other explanation begs further, unanswerable-at-this-stage of our digital knowledge, questions.

Please note: I now play all recordings with a db Systems Precision Phase Inverter in line. Multi-miking tends to make hash of phase coherency, and switching the phase of a single channel will quickly tell any listener if a recording is mini- or maxi-miked. Deutsche Grammophon multi-mikes with a vengeance, and tends to have a shallow midrange.

This CD was separately auditioned on a Sony, but the sound was even worse than that from the Kyocera. Then, at a recent meeting of the Mid-Carolina Audio Society, we heard it on the Yamaha CD-X1. The sound was slightly better than what came from the Kyocera: in essence, the most obvious ringing had disappeared.

All those at the meeting could distinguish between the LP and the CD versions of The Planets, even when they couldn't explain exactly the differences they were bearing. A few preferred the LP sound, but most preferred the absence of noise on the CD.

The Planets is a production of the DG team of Breest-Glotz-Hermanns. The recorded acoustic clearly reveals an empty Philharmonic Hall, save the musicians, and there are sounds of stringed-instrument bows tapping wood surfaces and other background noises that the absolute quiet of CDs so quickly reveal (you hear much the same noises in early staged stereo operas). I can recommend this recording without hesitation for the performance. DG's multi-miking and congested sound strike me as a bit tragic, though not unusual, and I'd like to hear the CD version on a ring-free player to see if it possibly comes up to the standard of the DA.

Stereophile
OFFENBACH
Overtures
Berlin Philharmonic, Herbert von Karajan conducting.
Deutsche Grammophon CD 400 044-2. (DA equivalent is 2532 006.)

This CD sounds rather awful. Five overtures and the Hoffman Barcarolle make up hardly three-quarters of an hour of sound—considering the quality, perhaps I should be thankful for brevity. I won’t call it music—the louder passages are congested to the extent that a 1950’s transistor radio could equal our latest and most miraculous storage medium as exemplified here. Recorded in Philharmonic Hall, Berlin, by Guenther Breest, Michel Glotz, and Guenter Hermanns.

Why does DG so often get terrible digital sound while Philips does so well? We can’t simply blame “multi-miking,” so often suggested by reviewers as the source of all our woes, for both DG and Philips multi-mike. The point is that there are as many ways to multi-mike as there are to mini-mike. One can multi-mike with anywhere from two to six basic mikes to “touch-up” or “spot” special voices within the ensemble, much as Philips does. Or one can put close-up mikes on each choir, and use maybe two extras well out into the auditorium to add-in the recording venue’s characteristic sound, much as DG usually does. Or one can place several mikes over the ensemble, one (perhaps even a stereo single-point mike) per group—but at a reasonable rather than close-up perspective. I wonder if this latter is not London/Decca’s approach. Each of these approaches yields a different sound, and DG’s in Berlin has been among the worst.

It provides good sound at low levels, but when the going gets rough phase cancellations interfere with smoothness of sound. A high overall level, combined with such a phase mish-mash, seems to trigger excessive ringing in the D-to-A converters and sharp filter networks of the CD playback. Such ringing would have been laughable in any Williamson-circuited hi-fi amplifier of the fifties, but it now seems to be acceptable to our colleagues over at High Fidelity and Stereo Review in these permissive eighties.

Releases like this one should be boycotted until DG is “forced” to bring out good recordings—which they can do (see below). My advice on DG is to wait until you’ve seen a review in print which is willing to address sound quality before you lay out your dollars for one of their CDs.

BACK TO BIRDLAND

Freddie Hubbard, trumpet; Ashley Alexander, double trombone; George Cables, piano; Richie Cole, alto sax; John Dentz, drums; Med Flory, alto sax; Andy Simpsons, bass. RealTime Records RT-305

This is good music. Freddie Hubbard was hailed as the “new Miles Davis” in the 70s. Davis, of course, veered toward electronic jazz/rock, but Hubbard remained true to what might be called “contemporary bebop.” Hubbard rarely plays badly on any record and this one is no exception; his technique is flawless and his conception exciting. There is a very nice trombone solo by Ashley Alexander in “Stella by Starlight,” and Richie Cole on alto sax is always hard to fault.

Although the record has all the trappings of “audiophilia” (“M&K,” “Real-Time,” “digital recording”), the sound is closely miked and has a closed in feeling—the cymbals don’t sound quite real, and the star, Hubbard, seems to be recorded at a higher level than the other musicians. On the other hand, the recording is very clean and the surfaces good, something you don’t always find on jazz records.

Altogether, a mixed bag. RNO

76

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THESE ARE THE REMARKABLE small loudspeakers whose smooth response and open, dimensional sound are at least on a par with the finest units of many times the 202’s size and price.

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Robertson Audio: Plenty of Moxie

When serious music lovers want Moxie — and plenty of it — they’ll settle for nothing less than Robertson Audio’s Forty Ten Power Amplifier. What’s Moxie? Energy! And that’s what first-time buyers of power amps want as do audiophiles upgrading their systems.

Here’s what Peter Moncrieff, Editor and Publisher of the International Audio Review (IAR) said in Issue #28:

“The Robertson’s sonic superiority is usually so dramatic that people don’t need to spend much of their time to hear the obvious...You should listen to the amp for yourself on music and then the amp itself will become (Robertson’s) most eloquent spokesman.

“This power amp adds other virtues to its sonic excellence. It’s surprisingly affordable ($895). Despite this and its modest 60-watt per channel rating, this amp’s tremendous current capability gives it an awesome 950 watt per channel Moxie power rating.”

SPECIFICATIONS — 60 watts (8 ohms) 120 watts (4 ohms)

For a complete reprint of the IAR Report, write Dept SR, Robertson Audio, P.O. Box 8449, Van Nuys, CA 91409. Phone (818) 994-9244.

In Canada: May Audio Marketing Ltee/Ltd., 646 Boul. Guimond, Longueuil, Quebec, J4G 1P8. Phone (515) 651-5707.
THE AUDIO CHEAPSKEATE

THE AUDIO CHEAPSKEATE'S GUIDE TO BRITISH HI-FI DEALERS

BY SAM TELLIG

Going to Great Britain this summer? Caught you just in time! Here is a list of some of the most reputable high-end dealers in Britain. It's highly selective—you may have a favorite dealer who's not on the list.

The good dealers in Britain tend to be hard to find. That's especially true in London, where one place you should not go shopping for stereo is Tottenham Court Road.

Happy shopping. Generally speaking, you can save one-third to one-half on U.K. hi-fi products by buying over there. Be careful what you decide to get, however: products that will likely need service or backup support (like tonearms and esoteric speakers) may not be a good deal for you. The North American importers of such products will not welcome your request for warranty service. In fact, they won't do it, period.

LONDON AREA

Grahams Hi-Fi Centre, 86-88 Pentonville Road, London N1
Heinritz & Kirk, Ltd. 35 Moscow Road, Queensway, London W2
Studio 99, Ltd. 81 Fairfax Road, Swiss Cottage, London NW6
Sound Organisation, 1 Cathedral Street, London Bridge, London SE1
Subjective Audio Ltd., 204 Camden Hill St., London NW1
Billy Vee Sound Systems, 248 Lee High Road, Lewisham, London SE13

ELSEWHERE IN BRITAIN

Russ Andrews Hi-Fi, 34 Northumberland St., Edinburgh
Audio Centre, 284 Glossop Road, Sheffield
Audio Excellence, 134 Cwys Road, Cardiff
Audio Projects, 45 Headingley Lane, Leeds
Basically Sound, School road, Bracon Ash, Norwich, Norfolk
Doug Brady, Kingsway North, Warrington
W.A. Brady, 401 Smithdown road, Liverpool
Cam Audio, 110 Mill Road, Cambridge
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Rayleigh Hi-Fi, 44a High Street, Rayleigh, Essex
Reading Hi-Fi Center, 6 Harris Arcade, Friar Street, Reading, Berks.
Sound Advice, 162 Alcester Road, Mosley, Birmingham
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The Audio Cheapskate Takes On The Orient

The HK 825 Preamp and HK 870 Power Amp

The Denon PRA-1000 Preamp and POA-1500 Power Amp

By Sam Tellig

"All the Japanese amps are the same," I remember the dealer saying a few years ago. "They just don't deliver the current. That's why they sound like they have no guts."

Generally, I think that was true. I remember Japanese amps like the Sanyo P-55. Give them an easy load and they sounded fine. Ask them to drive a difficult load and they pooped out.

I once had the opportunity to listen to a Threshold S/150 next to a Hitachi HMA7500—both rated at 75 watts/channel. The amps could hardly have sounded less alike. The Threshold delivered greater clarity and was more dynamic. Bass was tighter, firmer. It was "only" a 75-watt amp, but you got the feeling that it could drive almost anything—and it could. The Hitachi, on the other hand, sounded a little sweeter, as MOSFET amps tend to do, but it didn't deliver the punch. It didn't have the Threshold's price tag, either. Both amps have been superseded by new models—the S/150 Series II and the HMA8500.

Now we have at least two Japanese amps that do deliver the punch. The Harmon/Kardon HK 870 and the Denon POA-1500. You want current, you got it. You have a pair of Acoustat 2+2s that you can't drive with your typical Japanese amp, these will drive them. Not only that, these amps sound good.

Neither amp redifines the state of the art, but at their price points ($500 for the Harman/Kardon, $695 for the Denon), they don't aim to. They simply offer very good value for the money, as do the preamps that go along with them, the Harman/Kardon HK 825 and the Denon PRA-1000.

Yeah, but who's going to know? The snob audio reviewers won't pay much attention. And if the mass-fi mags get their hands on this equipment, they'll make it seem like everything else—"a worthy contender" . . . "a winner in its price range" . . . "we could find no aspect of its performance that could be faulted." And on and on, the same old crap month
after month.

Let's look into the Harman/Kardon gear first. H/K, whose fortunes sagged rather low when they were owned by Beatrice Foods a few years back, is now one of the hotter brands around. H/K can't compete with the likes of Pioneer or Sony or Yamaha on the basis of brand recognition; if Harman/Kardon gear is to move out the door, dealers have got to sell it.

Now there are two ways to get dealers behind a brand: offer free trips to Las Vegas or Hawaii, or offer superior sound. Harman/Kardon has opted to offer superior sound.

Not that I'm in love with everything Harman/Kardon makes. I was somewhat disappointed with their T60 turntable (they have new turntable models on the way). But everything else I have heard from H/K offers excellent value for the money—receivers, cassette decks, and now the H/K 825 preamp and H/K 870 power amp. You can safely recommend Harman/Kardon receivers to your non-audiophile friends. The H/K 825 and 870 are pieces of equipment that you might buy for yourself.

The first thing I noticed is that the H/K amp can make my Quad ESL-63s play loud with plenty of punch. Very interesting. The Quads sounded great with jazz, and even good on rock. As for classical, I could have wished for a slightly smoother and sweeter midrange. Not bad, however. Not bad at all. Especially for the price. And remember, the Quads are very unforgiving.

The Acoustat 2+2s are another speaker that's also tough to drive. So after a few days, I took the H/K amp and preamp over to a friend who owns a pair, driven by an Acoustat TNP/TNT preamp/power-amp combo. These Acoustat electronics are about twice as expensive as the Harman/Kardon stuff.

I actually preferred the Harman/Kardon power amp to the Acoustat—it sounded more dynamic and more detailed, although less sweet in the treble registers. My listening partner did not agree—preferring the sound of his Acoustic amp, but he had to admit that the sound quality was very close. He told his brother-in-law to run right out and buy the Harman/Kardon gear.

Comparing preamps, we each concluded that the Acoustat TNP is slightly superior to the Harman/Kardon—a little more dynamic, somewhat deeper and firmer in the bass, and a touch smoother. However, the differences were subtle. The Acoustat preamp should sound better—it's twice the price.

The H/K 825 preamp features defeatable bass and treble tone controls, each with two turnover points, a rather drastic high-cut filter for playing old and scratchy records, and a built-in moving coil head amp. The moving coil head amp, while probably better than those built into most preamps, is not the greatest I have heard—particularly with very low output moving coils like the Ortofon MC100, for which there isn't enough gain. It's fine with a Dynavector Ruby, though. At $400 list for the whole package, it would be hard for you to do better—for the money, that is.

Comparisons are always suspect when you no longer have one of the amplifiers on hand, but the H/K 870 reminds me very much of the Threshold S/150 (the old Threshold, that is; I haven't heard the Series II). The Threshold is more expensively built, but the sound is similar: very clear, very detailed, very crisp and very dynamic, if perhaps a tad brittle. If you like the sound of Threshold but can't afford it, you might listen to the Harman/Kardon—a few dealers carry both.

If you're buying amps by the pound, as I recommended a while back, the Harman/Kardon is an excellent buy at $13.16 a pound. The Denon POA-150 is a fine buy, too, at $14.18 a pound. The Denon, which lists for $695 (vs. $500 for the H/K) is a 49-pound behemoth. Un-
fortunately, it's not only big, it's ugly in a
way that only Japanese products can be.

I cannot stand looking at this amp, with
its dreadful fake-plastic woodgrain
side panels (the same awful fake plastic
with which some of Denon's turntables
are clad). Inside, though, there is beauty
where it counts. The quality of construc-
tion is superb, and so is the sound. This
is a very, very good amp for the money—
along with the H/K 870, it may offer the
best value on the market today.

H/K says that their 870 puts out 60
amps of "instantaneous" current (that's a
lot). Denon says it's not going to get into a
"pissing contest" with H/K over current—
it's their shtick, not Denon's. Anyway, the
Denon and the Harman/Kardon sound
very much alike.

The Denon seems to offer just a little
more refinement than the H/K 870 in the
area of definition and detail—it should:
there for $200 more. And like the H/K,
the Denon's got real muscle. I got the
feeling this amp could quickly destroy
my Quad ESL63s if I didn't back off. The
only thing I could have wished for was a
little more midrange smoothness and
sweetness—that special quality I find in
the Quad 34/405-2 combination. The Quad
equipment sounds (and looks) positively
puny by comparison with the Denon gear,
however.

The Denon preamp is a good per-
former, too. I feel its moving coil section
is better than the Harman/Kardon's, al-
though there is still not enough gain for
a very low output cartridge like the Or-
tofon MC100U. The moving magnet sec-
tion, which is separate, worked well. This
preamp revealed in full the superiority
of the Shure V15-VMR over the original
V15-V.

I'm not thrilled with the tone con-
trols, since there are no switchable turn-
over points, but the controls are of ex-
cellent quality. There's a high-cut filter,
which takes effect above 7 khz—quite a
bit more useful than H/K's filter, which
cuts in above 6 khz. But the Denon, very
curiously, lacks two features which some
might consider essential: a Mono switch,
which makes the preamp useless for all
my old records; and a headphone jack
(there isn't one on the Denon power
amp either).

Here's something else quite curious.
I'm still down on CD, but I would have
to say that CDs sound better with the
Denon combination than with any other
equipment I have used—and I credit the
preamp even more than the power amp.
It may be that the Aux inputs of some
preamps tend to overload with the signals
from CD players. (Both the Denon preamp
and the H/K have separate CD and Aux
inputs, by the way.)

Okay, which is better—the Harman/
Kardon gear or the Denon? I'm going to
pull a Julian Hirsch and tell you that both
combinations have merit—and I mean
that (not to imply, of course that Julian
doesn't!). I think the Denon equipment
sounds a little better—it has slightly better
definition. I also think the Denon equip-
ment is better built. The advantage of the
Harman/Kardon gear is that, if you're on
a tight budget, it's a product you can buy
with which you'll be happy for some
time. The advantage of the Denon prod-
ucts is that you can spend a bit more—
still not getting into the stratospheric
range of really high-end gear—and get
closer construction and somewhat better
sound quality. Both combinations offer
excellent sound for the money.

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1 Come on, Sam, I doubt they actually said that. LA
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