WINTER CES IN LAS VEGAS
95 RECOMMENDED COMPONENTS
9 EQUIPMENT REPORTS
The Model 17 Preamplifier epitomizes Amber's dedication to sophistication made simple... and incomparable sound made affordable. Passive RIAA equalization minimizes phase shift and improves detail. While direct-coupled circuitry heightens strong, clean bass response. Recreating live-sounding sound is critical. But so, too, is controlling it. The Model 17 features three recording loops, contoured tone controls, high output headphone jack and bass-boost... making it ideal for beginner and audiophile, alike. Visit your Amber dealer. Hear the difference between mere components and fine musical instruments.

From the Amber Collection of Fine Musical Instruments:

The Model 17 Preamplifier.
The American computer industry was a little shaken up to learn recently that the Japanese micro manufacturers had gotten together and standardized their component interconnections, so that any Japanese computer will (supposedly) plug into any Japanese printer, modem, or competing computer, and work right off the bat. Anybody who has tried to fire up an Apple computer with a Diablo (Xerox) printer will appreciate what the Japanese move means in terms of compatibility. It means “For no-hassle interconnections, buy Japanese.” Another triumph of common sense over self-defeating competition!

This isn’t the first time others have fait accompli’d a standard into our laps. In the audio field the most memorable example was “home digital,” where the Japanese set the standards and simply told us what formats our amateur PCM adaptors and Compact Discs would use. Since they were the sole source of these goodies, we had no choice but to accept.

The Japanese have not done as well in other areas of high-end audio compatibility. But then, neither have the Americans. We still encounter preamps that won’t drive power amps (or have so much gain they are noisy), speaker cables that won’t fit speakers without adaptors or extensive fudging, and turntable bases that aren’t deep enough to accommodate half of the tone arms on the market. We don’t know why the meticulous Japanese haven’t brought order to this high-end chaos, but since they haven’t, here’s America’s opportunity to do what is becoming increasingly necessary—before it’s done unto us.

Here’s a small sample of what needs to be done:

**LOUDSPEAKER INPUT AND AMPLIFIER OUTPUT CONNECTIONS**

Nobody much cares what cable connectors are supplied with a loudspeaker that comes with 20 feet of #24 zip cord. The manufacturer of such a device is clearly oblivious of or indifferent to such niceties as low inductance, low DC resistance and high fidelity. (“Duh, what’s a damping factory? I bet it’s a place where they make humidi-fi-ers, yuk yuk.”) But $2000/pair speaker systems, or even some cheaper ones I can think of, were probably designed to sound a certain way by someone who listened to them before finalizing that design, and you can bet your lowermost buck he didn’t use #24 zip cord to connect his Stasis S/150 amplifier to them.

Perfectionist speaker (and amplifier) manufacturers are aware that speaker cables, and interconnects, are almost as important as the speakers and their crossover networks. Yet, if we are to judge by

1 Probably because they make only a small percentage of truly high-end equipment.
the haphazardness of the interfacing connectors they supply, their concern for maximal performance would seem to begin or end at the interconnects.

Most of the connecting devices available for speaker cable are wholly inadequate. When he was promoting his brute-force loudspeaker connectors (gold-plated and about the diameter of your average mouse), FMI's Mahatma Fulton used to pass out spectrum analyzer oscilloscope photos showing the voltages developed between a loudspeaker cable and the speaker itself when banana plugs were inserted in the circuit. These voltages represented signal losses, and the implication of those photos was enough to send a perfectionist running for his pacifier.

So, for our first high-end standard, let's adopt two varieties of amplifier-output and loudspeaker-input connectors: one for high current capability and the other for lower current applications. For an amplifier that can deliver unusually high current (say over ten amps) into a 1-ohm load, and for any loudspeaker which can benefit from such an amplifier, the only kind of connector which makes sense is a barrier strip with 5/16" screws (Figure 1). Although less convenient to connect and disconnect than banana plugs, barrier strips provide the next best thing to a soldered connection when it comes to making positive electrical contact. The smaller sized barrier strip should be abolished completely, for a reason I'll get to subsequently. Something even more welcome would be barrier strips with brass thumbscrews or wingnuts to provide lots of pressure without tools. We won't insist on those since we've never seen them available, but I think someone could make money manufacturing them.

For lower current applications, where very small amounts of in-circuit DC resistance has less effect, amplifier outputs and loudspeaker inputs should use the so-called 5-way binding post (Figure 2).2 Whenever 5-way posts are used, they must be spaced \( \frac{3}{4} \) inches apart so as to accommodate a dual banana plug for those who choose to use banana plugs. And when 5-way posts are used in the bottom of a speaker, they should have enough room around them to allow easy access for lugs or banana plugs, and should leave an easy path for even stiff speaker cable to exit.

For multiple-impedance amplifier outputs (as in most tube amplifiers), the “hot” 5-way posts can be grouped in a \( \frac{3}{4} \)-inch-radius around the ground post so connections may be chosen merely by rotating a dual banana plug and inserting it into any desired pair. The outer plugs should be spaced on 60-degree arcs to provide adequate clearance between them. We notice these things, since we're always connecting and disconnecting amplifiers; Precision Fidelity got a well-deserved pat on the back for designing their M-7A amplifier this way.

Most of the connecting devices available for speaker cable are wholly inadequate.

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2 It's called 5-way because there are supposedly 5 different ways of connecting to it, but I can only think of 4. These are: spade lug around the post, wire around the post, wire through the hole in the post, and banana plug into the post. Can anyone tell me what the fifth is?
CABLE CONNECTORS
Speaker cables, regardless of current capability or wire size, should be terminated with large (for #6 stud) spade lugs at both ends. Spade lugs will mate with large barrier strips, they can be used in a pinch with simple screwterminal connectors (which we shall hereafter refuse to recognize as a valid approach), or they can be easily attached to a dual banana plug for quickconnect/disconnect use (Figure 3). They are also the reason why small barrier strips on amplifiers are to be avoided, because large lugs won’t fit small barrier strips.

MISCELLANEOUS PROBLEMS
Audio interconnect connections: Power-amplifier inputs should never be spaced more than 5 inches apart. Many high-performance audio interconnects are permanently paired, with links that prevent their end plugs from being separated by more than a certain amount. And regardless of the configuration of the two amplifier channels—whether they have common or separate power supplies, for example—there is no compelling reason why their inputs need be placed more than 5 inches apart.

Phono-cartridge pins: Let’s for heaven’s sake standardize the diameter of phono-cartridge connecting pins. Different cartridges vary so much in this respect that it is almost always necessary to readjust the tonearm clips when changing from one cartridge to another; then, of course, the clips have an irritating habit of breaking off from the leads when so manhandled. There is an existing standard for pin size (DIN 98.1, Section 7.5.3, Fig. 2), but you’d never know it. Most American manufacturers conform to this, many Japanese manufacturers do not. But since the U.S. is Japan’s largest market for cartridges, we should be able to bring pressure to bear for the adoption of the DIN standard. DIN is, after all, supposed to be international.

The barriers (separating ridges) on a heavy-duty barrier strip are spaced 13/16 inch apart.

Four ways to connect to a 5-way binding post. (We haven’t figured out what the fifth way might be.)

Front panels: Here’s another area where the lack of a standard is more of a pain than a crisis, but it’s irksome nonetheless. Some components have extended front panels with holes in them for rack mounting; some don’t. All components should be provided with the means for rack mounting, whether this is an optional replacement front panel or a pair of brackets that one can screw to the unit’s polished wooden end panels.
MC Cartridge Output Ratings: In terms of actual signal output available to the user, today’s simple voltage ratings are almost meaningless. Because a moving-coil cartridge must generally work into a fairly low-impedance load, which knocks down its output voltage in inverse relationship to that load, MC output should be rated in terms of power, which specification would relate to the load impedance. This would allow one to ascertain its output voltage after its signal has passed through the step-up device that the cartridge will be used with.

Turntable Height: Now that the importance of acoustical isolation in a turntable is generally recognized, it should also be recognized that anything which destroys that isolation is a no-no. This has apparently not gotten through to a lot of designers. We still see new turntable models which are so low in height that the usually stiff cable coming out of the bottom of the tonearm pillar bears heavily on the unit’s bottom plate (or on the underlying surface if it doesn’t have a bottom plate). This provides an efficient vibration path between the “isolated” suspension and the surface under the unit, which is subject to loudspeaker-induced vibrations through the air or the floor. While it is possible (in some instances) to lift the cable out of the way by bending it upwards and fastening it somehow to the bottom of the pillar, this is often quite difficult to manage and should not be necessary in the first place.

If a ‘table is always supplied with its own arm, so-called “low-profile” design is dandy. The manufacturer can do his own fancy cable tying. But an ostensibly good turntable which is sold for use with any tonearm should not have less than 3-1/2” clearance between the top of its motor board and the surface directly under the arm.

Power Amplifier S/N Ratings: Since the gain (amplification) of a power amplifier cannot be varied (like a preamp, which has a volume control), the amount of hum or hiss audible from it under no-signal conditions (which is when hum and hiss are audible) does not bear any relationship to how much power it is capable of producing. So a power amp signal-to-noise rating which relates to full-power output (which is the way all are rated these days) has no significance in terms of actual listening. A power amp’s S/N should be related to 1 watt output, not to its full-power output.

None of the foregoing is really of crucial importance. People have managed to get audio systems working for over 35 years with few universal standards. Standards are just one sign of the maturity of any technological field, but by that criterion high fidelity shows evidence of retardation. What’s forgotten is that today’s consumer is different from that of 1950. Today we expect mundane things to go together neatly, easily, and with a minimum of hassle, so we can concentrate on the less mundane things (or just be lazy). And we have a right to expect the observance of standards.

What is perhaps so remarkable is the fact that, 36 years after the birth of the LP, these niggling little things are still not standardized! The Institute of High Fidelity Manufacturers, one of whose responsibilities is to establish standards, has been around for 30 of those years. What, I wonder, have they been doing all that time?

JGH
WHACKS

Editor:

Before giving you your whacks, let me first say that I've truly enjoyed the overall quality of your magazine during the year since I subscribed. My renewal check is enclosed.

Okay, now for Mr. Grump:
1. Regarding the inverse square law: You scoffed at the idea that a small amount of water on a turntable might improve the sound. In light of your recently published "Puzzler," wherein static electricity was seen to affect tracking force, this observation by a listener in a dry climate (such as Utah) might well be valid, especially if said listener played records with the turntable cover on.

2. The presence of a speaker fuse within an amplifier does not necessarily cause sonic degradation. An important factor is whether or not the fuse is located within the feedback loop.

Consider a lousy fuse with a DC resistance of 0.1 ohms (which is twice as lousy as most fuses). If this is located within the feedback loop, its effect on the sound diminishes in direct proportion to the amount of gain-reduction produced by the feedback. For example, a typical solid-state amp might have -40 dB of loop feedback. This represents a reduction in gain of 100. So our 0.1-ohm fuse would look like 0.001 ohm, which is comparable to the resistance of a moderate run of heavy-gauge wire.

3. In your review of the Esoteric Audio Research power amp, you made a big point of the dominance of lower-order harmonic distortion from tubes versus the higher orders from transistors. In the case of a power amp, the amount of second-harmonic is generally negligible (in fact, this is true of most even-order harmonics) because of the push-pull configuration of the output and driver (if any) stages which would otherwise constitute the major part of the distortion. Any amplifier exhibiting more second-order distortion than, say, third, must either have a poorly-designed input stage or bad imbalance in the push-pull circuits. This should come as a rude shock to Perreaux, considering their recent advertising. Okay, enough bitching.

4. In your follow-up on the Technics EPC-205Mk3, you said that "in most respects" it was the best MM cartridge you know of. In what respects is it not? I've had mine for about 18 months and I continue to be delighted with it. I've found its tracking ability to be not quite as good as that of a Shure V-15, but it tracks every album in my collection (although it didn't like a borrowed Telefunken 1812). I use it in a Technics SL-7 on a VPI base, and although I could perhaps get slightly better sound with a $3000 turntable and arm, I'd rather spend the money on records. The SL-15 (which comes with the 205) is an even better 'table, but it has been discontinued.

5. I'd really like to see more and better reviews of nonclassical recordings. If I am able to find good-sounding jazz records with interesting performances, your reviewers can too. Why don't you start with "This One's for Blanton" (Pablo 2310-721) by Duke Ellington and Ray Brown. A definitive disc if ever there was one!

6. A propos Sam Tellig's remarks about the psychology of component upgrading, a sobering experience might be had by listening to a really well recorded '50s-vintage record through the following 1958 system: Weathers FM pickup, Fisher 50A mono amplifier, Quad ELS speaker sys-

8 Stereophile
tem. Now, what was all that about the miracles of modern technology?

Stuart Yaniger, Ph.D.
Salt Lake City, UT

The water in question was placed under the location of the stylus when the tonearm was in its rest position, but the difference was noticeable while the record was playing (obviously). When I saw the setup, the turntable cover was not lowered, and the difference was reported to be instantaneously evident as the water was installed and removed from its assigned place. I did not hear a difference, and am still dubious that one could have been caused by the water.

I think the important sonic degradation caused by speaker fuses has to do with their variable resistance with temperature. After all, their very function is to heat up and even melt if enough current is passed through them. A property of steel (which is a poor conductor and could on its own degrade the sound) is that the resistance, and thus the effect on the sound, increases with increased temperature. Speaker fuses which are stressed near their melting point act like a variable resistor, changing their resistance in accordance with current demand.

Speaker fuses which are stressed near their melting point act like a variable resistor, changing their resistance in accordance with current demand.

SHREWED MODIFICATION

Editor:
Kudos for your review of the Vitason VS-1000 cartridge, obviously a very difficult cartridge to set up and test properly. I bought one, giving my Robertson EK-1 to the kids, and must say I am thoroughly impressed. A little-known fact is that the VS-1000 is available for $75 less in a version covered by skins from another part of the shrew's anatomy. This is the model I bought and installed in my old AR tonearm. I can not presently play more than a few seconds of music at a time without risking damage to the armature, but does it ever sound good! Need I say that the sound is exceedingly natural, and the workmanship is phenomenal. This is the stuff that makes audio great!

Postscript: You failed to mention that it comes nicely packaged by Vitaprod in a dark amber bottle.

Darrell Spreen
Albuquerque NM

THE SOUND OF PLUGS

Editor:
I read with interest your comments in "Good Bets, Possibilities and Improbables" in your Volume 6 No. 2, and would like to challenge your position that it is "improbable" that "Different Audio Plugs Sound Different."

It can be argued that different plug materials sound alike when the connector surfaces are clean, but this makes a number of assumptions about other characteristics of connectors, and everyone will agree that these do affect the sound. Among the most important are:

Plating Materials. These will affect the connector over time. Tin, silver, and nickel corrode, and poor gold plating will corrode or rub off with repeated insertions. Most "gold plating" is no more than flash-plating of infinitesimal thickness, on ma-
terial never designed to be gold-plated. **Insulating Material.** This should mini-
mize leakage between the Hot and Ground connections. Nylon is a good insulator,
easy to mold, and looks like the very expensive Teflon, the ideal insulator which Tiffany connectors use.

**Mechanical Design.** 1: The Hot should disconnect before the Ground, to avoid having high-powered amps blowing out speakers. 2: The center pin and grounding crown should rotate together, so that the fine conducting wires won't be broken when the connector is twisted. 3: The mating connector should fit firmly but not tightly.

**Cold Solder Joints.** These should be minimized because the wire is held in place mechanically, not by the solder.

LEMO and BNC-type connectors are used in high-tech equipment because, prior to Tiffany Connectors, there was no such thing as a good RCA connector, male or female. Considering the high price of our connectors, if different connectors don't make an audible difference, why are Conrad-Johnson, Krell, Klyne, and Cotter (among others) using them?

Michael T. Berns, President
M. Berns Industries, Inc.
New York NY

Gold does not corrode, no matter how shoddy the plating job.

As long as its insulation is 1 megohm or over in DC resistance, it is hard to believe that signal exposure to such a small amount of dielectric as in a plug could have any effect on the sound. It is not, after all, as if the audio signal is passing through that dielectric, as in an interstage coupling capacitor.

The points you make with respect to mechanical integrity, durability, and longevity of gold plating are significant. We have not run a test of an old common RCA plug against an old Tiffany (or other high quality connector). No methodology for such a test presents itself, but we will think about it.

High price has status value, whether or not what it buys confers any audible benefits. And Tiffany connectors are probably the best-made that one can buy, whether or not this affects their “sound,” so it is only natural that someone wishing to produce the best component that money can buy would elect to use them in it.

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**WHISTLING EARS**

Editor:
The interesting articles about listening perception in two recent issues of *Stereophile* prompted me to send a copy of an item about a strange phenomenon called “whistling ear” which appeared in the May issue of *Scientific American*. Apparently the effect is fairly widespread and, in my view, could be responsible for some of the otherwise inexplicable differences in the way some people hear musical sounds.

Burt Pratt
Wilmington, DE

The item clipping concerned the discovery by Patrick M. Zurek, of the Central Institute of the Deaf in St. Louis, that more than 22 out of 64 ears tested were emitting continuous tones in the 1-2 kHz range. These were picked up by a tiny probe microphone inserted in the subjects’ ears. And although few of them were aware of the tone, some were producing it loudly enough to be audible from nearby without amplification.

Zurek had not a clue as to what physiological mechanism was producing the tones. It remains an observation without a plausible explanation.
THE SCIENCE OF INTERCONNECTS

Editor:

Would you be so kind, if possible, as to send me any technical data on the science behind today’s discreet audio interconnects and speaker cables, and your thoughts on same?

T. K. Woodcock III
Akron, OH

See “The Sound of Plugs,” above.

HARSH ROGERS

Editor:

As a longtime subscriber to Stereophile (20 years) I am writing my first letter to ask you for assistance.

For many years I have desired a so-called super speaker system, and after reading AE’s comments about the Rogers LS-5/8 in issue 5-6, and having a friend who is a Rogers dealer, I finally bought a pair of them.

Well, there was some delay in taking delivery, and when they came I was out of town. The dealer auditioned them before I returned, using a big Conrad-Johnson preamp, and he told me afterwards he had never heard any speakers that could equal these. However, he had since sold the C-J preamp and is still waiting for another, so I took the speakers home and the dealer came over and installed them for me (in a 16’ by 32’ room).

The results were not good with my Audio Research SP3a-1, so then I tried a Crown preamp, a Carver 4000, and a Soundcraftsmen 2217. The Soundcraftsmen sounded best, but the speakers still sounded harsh and the highs were too bright. Maybe the 30-foot speaker cables are causing problems. But what preamp would you recommend for the LS-5/8 speakers?

Before I got the Rogers, I was using a pair of KEF 105s with the SP3a-1 and a pair of Marantz 9 amps with good results.

E. C. Moore
Edenville, MI

We are surprised that your sonic problem is at the high end rather than the low; your room is perfectly dimensioned to produce a series of severe (very severe if you have an 8-foot ceiling) standing waves at 16.4 Hz and multiples thereof. But to the problem at hand: Any number of things could be causing your speakers to sound rotten, but if you’re still using the Marantz 9’s, and you know them to be working properly, we would guess your problem is originating with your preamp or phono unit or both.

Tubed electronics are indicated for use with any speaker system that produces excessive high end from flat input sources. Similarly, the last thing you want with such a speaker is a cartridge with a tipped-up high end (you didn’t specify what cartridge you were using, or the arm). And with as long a run of speaker cable as you are using, it had better be something better than zilch cord! You might try Kimbers or Monsters; both are excellent.

It’s hard to guess, from 1000 miles away, what the major problem is, but if your dealer knows which end is up, he should be able to track down the cause for you.

TECHNICS EPC

Editor:

Once again you have alerted your readers about the potential benefits of an outstandingly good MM cartridge: the Technics EPC-205Mk III. Unfortunately, most of the review was devoted to a problem that may be quickly resolved. The cartridge is readily available in a “U” mount that eliminates the mounting difficulties you described. I paid $140 for
my unit in December, and have been satisfied. I found it better than my Shure V15-IV in all respects but trackability.

If others are interested in getting the Technics cartridge inexpensively and reliably (since Technics U.S.A. seems unwilling to import a sufficient number), they should contact Japan Audio Trading Co., Ltd., Saikaen Bldg., 4-33-21 Kamimeguro, Meguro-Ku, Tokyo 153, Japan. Delivery is by insured air mail. The instructions are in Japanese, but most of the necessary data was in the specifications section of our review. Anyone who has ever installed a cartridge should have no problems installing this one.

The problem AE encountered was with the U-mount adaptor itself. The cartridge’s output pins are much too small to attach standard headshell clips to (unless you squeeze them almost shut), and attaching the supplied connector block to the rear of the adaptor makes it too long to fit into most headshells.

How the cartridge sounds depends to a great extent on the preamp you use with it. With the few that we have on hand, its sound is quite cold and somewhat overbright, but it nonetheless does have an extraordinarily smooth and open high end. We are still looking for the ideal preamp to mate it with. We can say that it is less than an ideal mate for the Berking TF-10, Acoustat TNP, and Conrad-Johnson PV-5.

SUNDARY COMMENTS

Editor:
I continue to be impressed with Stereophile. To have kind words for digital, CX, and Peter Aczel’s Fourier speaker system all in one issue is almost too much to bear!

While digital is not perfect (sampling rate is too low), it is so much better than disc or analog tape that it hurts. One problem in comparing CDs with vinyl discs is that there are mechanisms in the analog mastering process which cause a lack of highs, so a system that sounds right with analog material will likely sound brighter (shriply?) with CDs.

I am a CX licensee, so I am familiar with the system (CBS never did manage to produce a decent demo disc). The laservideo CX system differs from the analog-disc one in two ways: the amount of noise reduction is limited to 14 dB, and the side chain is rolled off at 200 Hz (versus 20 dB and 100 Hz). Is it possible that the 60-Hz buzz you heard was actually a 30-Hz buzz with the fundamental attenuated? 1800 RPM ÷ 60 30 Hz.

Regarding the Fourier I, I heard a pair of them under rather favorable conditions (in Peter’s listening room fed by my MC preamp) and they sounded quite good to me also.

I believe a typo may have crept into your review of the Acoustat preamp. Nominal MC gain will be on the order of 60 dB at 1 kHz. While I am interested in how preamps respond an octave or two above 20 kHz, I must question the validity of a response plot out to 200 kHz being represented as RIAA response. The RIAA only specifies from 20 to 20 kHz. Perhaps a broken line above 20 kHz would help readers evaluate the significance of response errors in-band and out-of-band. The 500 mV nominal line level is used in IIF-202 (’78) and deserves to be semiofficial if not official.

In your discussion of the Mayware transformer, it is not technically correct to describe transformer ratios in decibels. A proper description would be 20X or 1:20. I grant that this is an esoteric point, but decibels refer to power ratios and transformers are not capable of power gain. The use of decibels for expressing voltage ratios has been generally allowed, for cases where the inputs and outputs of a circuit can be terminated by the same
impedance, and the proper power ratio will exist between input and output circuits.

John H. Roberts
Manchester, CT

What in heck is a side chain? It sounds like an untidy polymer molecule. You refer, we assume, to that arm (leg?) of CX's frequency-weighting network which makes the compander inoperative at low frequencies.

We know 60 Hz when we hear it! What we heard sounded like what is sometimes called intercarrier buzz, which often results when audio and video information are processed by the same RF and IF stages in a TV receiver. That buzz comes from leakthrough of horizontal or vertical picture-synch pulses into the audio, and since there is one of each per picture field, and there are 60 fields per second, intercarrier buzz is at 60 Hz.

You're right on the MC gain figure for the Acoustat preamp; we slipped a decimal place. 80 dB would raise the MC output to 5 volts. It should have read "60 dB of MC gain." Thank you.

On the "RIAA" plot, the response out to 200 kHz was shown only for the edification of the curious. It should probably have been on a different graph altogether but we didn't want to waste the space.

While it is true in principle that decibels refer only to power ratios, engineering convention ever since the early 1940s has allowed dB computations in cases where the load across the source, into and out of a voltage amplification or attenuation stage, is 10 times or more the value of the source impedances—that is, where the load has no significant effect on the voltage across it and the input signal can be considered a constant-voltage source. You are right, though, about the case of MC step-up transformers, because while most of these work into a termination much higher than their secondary impedance (typically 47,000 ohms across 2000 ohms), their primary value approaches that of the cartridges that feed them. Because of this it would seem to make more sense to rate MC cartridges in terms of decibels relative to 1 milliwatt, rather than in terms of output voltage. It would then be a simple matter to convert dB to output voltage into a resistive load, for calculating the ultimate output from a head amplifier.

VERITIES

Editor:
Your "Audio Verities" used to bring from me a chuckle and a nod of accord- ance. Why did you stop running them?

J. Tuchman
Atlanta, GA

Because our wellspring of wisdom ran dry.

SNOBS

Editor:
I really think you people are a bunch of [obscenity deleted] hardware snobs. You devote 8 pages of a 70-page issue to an intemperately enthusiastic report on a loudspeaker that nobody can afford, with a verbosity that would swell the heart of an Absolute Sound reviewer. And in the next issue you feel obliged to apologize for Quad's modestly-priced electronics because they are designed for "the music listener."

Exactly where do you people stand anyway? I see so much ambivalence sticking out from between your pages that I'm afraid I'll cut my finger on it. You have extolled the music listener and put down the "audiophile" for so many years that I thought you were one of us. (I consider myself more into music than hardware.) Now, suddenly, nirvana is a system that
only a Getty could afford, and a “music lover’s” preamp is something to be ashamed of. Bullbiscuits!

My Shure/Hafler/Fried system brings me as much musical pleasure as I care to pay for, for a miniscule fraction of what Mr. Wilson charges for his custom system and services. I hear music from it, not pin-point imaging or gut-ripping bass. I don’t hear either of these things in Constitution Hall, which is still my first choice as to where to put my music-listening dollars. My God, can you imagine how many Atlanta Symphony concerts I could attend for $42,000? And I wouldn’t have to wipe off a stylus, or a disc, or the entirety of two years’ income before taxes to do it.

Sure, I can hear differences between what my system does and what the Atlanta Symphony sounds like live, and I’m looking forward to upgrading in order to reduce that difference as soon as I see the justification for doing so. But I find it very discouraging, as well as ludicrous, to be told that I must pay $42,000 for the hope, but not the assurance, that a WAMM system would do that for me.

I am not going to conclude this letter with a demand that you cancel my subscription, because I am not a subscriber. I am one of those freeloaders you are always complaining about. But if I was a subscriber I would cancel, because I do not feel your scatterheaded approach to this whole field does anything more for the true music lover than sow dissatisfaction with what he owns and frustration about what he cannot afford to own.

Franklin Williams
Atlanta, GA

In 21 years of publishing Stereophile, we have never before done an 8-page report on anything—the report on the WAMM system was 7, incidentally. But we have been trying for many years to make the point that really accurate reproduction of music does cost money for “hardware,” and that lesser expenditures result in certain inevitable compromises. While we review a lot of affordable equipment, and compare it in our reports with comparably priced componentry, we nonetheless feel it is our responsibility to report what a buyer may be giving up by not “going all the way.” And in order for us to report in proper perspective what affordable components can do, it is necessary for us (and our readers) to know what is possible under no-holds-barred and, admittedly, impractical conditions.

The lengthy WAMM report was not intended as a buyer’s guide to nirvana, so much as a status report on the so-called state of the art. It was intended mainly to exemplify what is possible with today’s audio technology. We did not urge anyone to run right out and buy a WAMM. But when we say in a later issue that the $500 Dyspeptic 202 power amplifier or the $2000 Flatulent 1-F speaker system falls short in this or that respect of what is possible, you will know that we know what is possible. Without our WAMM report, you might not.

We did not criticize the Quad components because they were designed for the music lover; we were just pointing out to rabid purists that the Quad preamp has on it useful controls other than those for volume and balance, and for that reason they would undoubtedly find it hopelessly beyond the pale.

While we regret that we cannot answer most reader letters individually, we do read all mail sent to us, and we publish letters of general interest in the magazine.
The world's finest audio interconnect cable.

How to buy a $2000 preamplifier for $80

Unbelievable but true, Interlink Reference will improve your sound system to a degree normally associated with some of the world's finest preamplifiers and electronics.

Recall that first exciting moment when playing back one of your favorite recordings over a new piece of equipment ... The music sounded incredibly real. Details that you never knew existed on the record revealed themselves with stunning clarity. That's what you'll experience when you play your favorite recordings back using Interlink Reference cables in your sound system.


Use Interlink Reference to connect all the components in your sound system (including your $2000 preamp) and experience an entire new world of interconnect cable performance.

Meet the digital challenge

With the Alpha 1 moving coil cartridge by Monster Cable...

Analog or digital?
The Alpha 1 meets the digital challenge by reproducing your conventional analog disks with unprecedented accuracy. The new Alpha 1 utilizes sophisticated computer analysis of amplitude and phase response to produce superb dynamics, smooth quick transients, and a panoramic soundstage that recreates the original musical event with startling reality.

A rigid boron cantilever with a unique dual damper provides exceptional clarity and dynamic range without the "harsh" sound typical of moving coil designs. The Alpha 1's unique "magnetic feedback" control circuit eliminates unwanted "eddy currents" for a full soundstage and precise imaging.

So meet the digital challenge. Audition the new Alpha 1 at your nearest Monster Cable dealer. And rediscover how good your analog records can sound.
THE SPECTRAL DMC-10 PREAMPLIFIER

Stereo preamplifier and separate power supply with adequate gain for moving coil cartridges. Dimensions: 19" W by 2" H by 10½" D, control unit; 6" W by 2½" H by 10½" D, power supply. Weight: 18 lbs. Price: $2395. MANUFACTURER: Spectral Audio Associates, 592 Weddell Dr., Suite Seven, Sunnyvale, CA 94089. Phone: (408) 744-0142.

Spectral Associates' $2395 DMC-10 preamplifier represents a truly new preamp design and is one of the best-engineered units to appear in the high-end market in some time. Its 24-karat gold plated glass epoxy motherboard is stuffed with neat rows of instrument-class components—many of them polystyrene capacitors—making a visually stunning presentation. Using solid-state devices, it is innovative in offering a single-stage, 50 dB-gain phono section capable of playing a low-output moving coil cartridge without a step-up or headamp. Switchable input impedances, separate power supply transformers in a remote unit, and a high output, wide bandwidth MOSFET line section make the DMC-10 a hot performer. And best of all, the sonics are outstanding: wide soundstage, ultra-open top end, good dynamics, and rock-solid bass response. The DMC-10 brings value and true innovation back to high-end audio.
Initially introduced at $1600, the first Spectral DMC-10 preamplifiers proved themselves highly competitive in the price-no-object field. The units first appeared in stores in the late fall of 1981; at that point they undersold Levinson's new ML-10 stereo preamplifier by $1000 and out-paced Audio Research's SP-6C and SP-8 designs in functional reliability. Within six months the price had jumped. I purchased an early Alpha Series DMC-10 at that time because of its good price, excellent sonics and ability to amplify MC cartridges directly. Today's Beta Series DMC-10, which lists for $2395, still undersells all but one of the current Levinson preamps, not to mention the most expensive products from Audio Research and Conrad Johnson.

The Beta Series DMC-10 represents the current production version, differing from the Alpha Series in external logo, a 7 dB higher signal-to-noise ratio (102 dB altogether is claimed for the phono stage), lower phono output capacitance, lower distortion, and, best of all, 5 dB more gain in the line section. The Beta handles low output MCs better than the Alpha. Internally, the Beta features microDIP switching of phono input impedance, new J-fets in the phono stage, large square 8 µfarad coupling caps in the phono section, and user-adjustable line section trim controls to vary each channel's output over a 25 dB range. The overall preamp phono-in to main-out gain is 75 dB, very close to Levinson's $4,725 ML-7 preamp with L-3A modules.

The Beta version performed admirably in several bench tests using Nakamichi's T-100 Audio Analyzer. Phono RIAA curve, measured with Stanley Lipschitz's RIAA-inverter, was flatter than the instrument's tolerance of 0.25 dB, 20 Hz to 20 kHz.\(^1\) I obtained a phono overload point of 50 mv at 1 kHz, although the manufacturer states the real figure may be closer to 200 mv, if done by bypassing the tape stage. Signal-to-noise for the phono section was 89 dB. A weighting, phono-in to tape-out. Only 0.112 mv in was necessary for 1 volt output at main output jacks. The Accuphase AC-2 cartridge, which generates 0.22 mv at 5 cm/sec velocities, put out 112 mv from the DMC-10 at the tape out, good enough for tape decks or dbx decoders. The Alpha version of the DMC-10 had been unable to produce 1.6 volts out necessary to make my insensitive Threshold Stasis 3 amp clip, even at full volume. The Beta version clipped the same Stasis 3 at 1 o'clock on the volume control. So the current DMC-10 has more than enough gain for low-output MC cartridges and insensitive amplifiers.

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\(^1\) The tolerance of the RIAA inverter is actually greater than 1 dB, but the voltmeter I was using at the time set my measuring limit at .25 dB. The DMC-10 may well exceed in RIAA accuracy my measurements.
with 100 ohms. An Accuphase AC-2 cartridge sounded most dynamic with an 800 ohm load. What about moving magnet designs? The Shure V-15 Type V did not overload the preamp, and retained the same lovely top end heard on a Levinson ML-7.

Sonically, there were subtle differences between the Alpha and Beta versions of the DMC-10. Transparency, openness, wide soundstaging, and ultra smooth top-end response best characterize the Alpha preamp. No "sandy" or grainy treble response was heard. It imaged beautifully. Never have I heard another preamp spatially define so well, and set apart, the mandolins, drums, and two vocalists on Linda Ronstadt's "This Feeling" from her Prisoner in Disguise album. Both my Snell Type A/IIIs and the Sequerra Met-7s displayed a grainless, open, transparent high end with a wall-to-wall image. But the earliest production DMC-10 emphasized the wide soundstaging and exquisite top end at the expense of dynamic range and deep bass as revealed by direct, gain-matched comparisons with other purist preamps. A late model Levinson ML-7 preamp played with tighter, deeper, and better defined bass and far better dynamics; a late Audio Research SP-6C tube preamp was also more excitingly dynamic and had more bloom in the warmth region.

The new Beta Series has more than remedied the Alpha DMC-10's thin bass. The sonics of Spectral's Beta-board preamp initially seemed less wide open at the top. It turned out this seeming deficiency was really an artifact of the later version's improved bass response. Dynamic and bass tightness come through in the explosive, startling rendition of the drums in "The Higher You Rise," on Sheffield's Track Record. Gould's "Spirituals for Orchestra" (Gould Conducts Gould) shows the Beta's wide soundstage; the unit's transient speed was heard in the metallic clang of the gong in the "Protest" segment. Amanda McBroom's vocals in "Gossamer" (West of Oz) had a palpable roundness and threedimensionality. All in all, the Beta DMC-10's midbass and bass at least equalled that heard with my ML-7 preamp, which has been my reference for some time. The soprano and chorus singing "Julsang" on Cantate Domino were welldefined and separated on the new Spectral, with a solid bass organ foundation and good depth ambience cues in the Swedish cathedral. "Still Nacht," sung by a male chorus on the same disc, had a warm, resonant vocal timbre. As for detail, the Beta DMC-10 retrieved Bernie Krause's thumpy, subdued string bass with unusual clarity from behind the Weavers singing "Guantanamera" (The Weavers, Reunion at Carnegie Hall 1963). Kara Bonoff, singing "Only a Fool" (Restless Nights), showed unusual vocal resonance, depth of imaging, and wide soundstaging, with none of the electronic grain, edginess or hash heard on many other solid-state preamps playing this vocal piece.

The DMC-10's reliability has been improved in the Beta version, based upon Spectral's experience with the Alpha board. My Alpha unit developed a few minor glitches over the months I used it. Shorts in the volume control leads caused intermittent signal dropouts in my unit's right channel. It had a jumpy protection...
circuit which produced popping sounds in the system for the first day or so each time the unit was plugged in. Carefully grounding the DMC-10 to a water pipe reduced this problem a good deal. This "nuisance firing" has since been eliminated by the B-board's redesign. I heard no intermittent protection circuit firing in the Beta I tested.

What does the current Beta board Spectral DMC-10 preamp, now in production and available at audio stores, offer the consumer? The former Alpha unit's DC-to-light bandwidth—its upper -3 dB point is over 6 MHz—and superb high end response have been retained in the Beta. Bass response and dynamic range have been increased substantially. The early unit's unusually wide open top was an artifact of diminished bass, and as a coloration is not present in the newer version. At $2,395, the Beta DMC-10 is a good investment in high-end sonics and electronic reliability for the serious audio hobbyist. With its tube-like midrange, superb workmanship and cosmetics, and its ability to play moving coils without the colorations of a head amplifier, the DMC-10 (Beta) preamp is a worthy competitor with the best units out there. I.G

Author's Postscript:
Just before press time, Spectral came out with a third version of the DMC-10, the Gamma, to go with the similarly Greek-prefixed models reviewed above. The process of continuous upgrade is a mixed blessing because factory modification programs conflict with product line stability and play havoc with compulsive audio hobbyists who must have the latest. Mercifully, Spectral has come out with only three versions of its DMC-10 in the over three years since its introduction. This is a long enough time to persuade us that true improvements are in store with each version, as turned out to be the case with the Beta.

How does the Gamma differ from the Alpha and Beta? Other than the words "Series Gamma," visible on the main circuit board when the top cover of the preamp is removed, there are a number of circuit and parts changes. Although the Gamma employs the same basic circuit topology as the Alpha and Beta versions, it represents "a complete rethinking" on the part of Spectral. Along with other unspecified changes, the unit's original rail voltages have been increased from 15 to 25, thus optimizing the circuit speed for greater linearity, according to the manufacturer. One result of this voltage change is an increase in the phono overload rating from 150 mV to 320 mV. In addition, rectangular blue 1% Vishay resistors from Israel are used for precise calibration of the J-FETs and power MOSFETs, allowing them to run safely at the higher voltage.

Updates for both Alpha and Beta units are available at the dealer for a moderate price (get in touch with your Spectral dealer for details), with a turnaround time of 5 business days being quoted. Rapid updates are facilitated by the DMC-10's design, whose circuit board and rear panel unplugs from the chassis after the removal of a few screws, like a large computer card. This circuit board
is sent off to Spectral, who "remanufacture" it, return it to the dealer, and you have your preamp back in your system with a minimum of fuss—again, according to the manufacturer.

Should you go for the Gamma upgrade? Yes, and don't hesitate a minute. The narrow front-to-back sonic perspective of the Beta version has been greatly enhanced, and the foreground imaging is now needle-sharp. Amanda McBroom's voice on *West of Oz* (Sheffield Lab 16) becomes 3-dimensional and precisely located in space, with a realism and depth of field that is uncanny. The soundstage between the speakers is a full, consistent envelope of musical images, with none of the center-fill problems or spotty, concealed imaging I hear with some other high-end preamps.

The Gamma's tonal structure is much more even than the Beta's, with mids and highs better defined and much less dry, and more substance in the warmth region. Listen for the harmonically correct quality of Theresoe Juel's voice singing "Tiden Bars Gar" (*Opus 3's Test Record 1, Depth of Image*).

Dynamics, speed, and transient response are tops; drumstrokes and guitar chords erupt like firecrackers on the side one cuts of the *Track Record* (Sheffield Lab 20). The Gamma version of the DMC-10 now sonically betters the more expensive Levinson ML-7/L3A preamp (my reference) with its more 3-dimensional depth of image, midrange and treble detailing, and that knockout soundstage. When manufacturers make modifications like this we can only applaud. The fact that they can upgrade their product to such an extent and still charge no more for new Gamma preamps tells you a lot about Spectral.

**Linn LP-12 Valhalla Kit**


Scotland's Linn Sondek Corporation has jumped into the modification business with two customer-installable kits to upgrade their LP-12 turntable. The first kit, known as the Linn Nirvana, consisted of sturdier springs and a lower-compliance belt. Subtle improvements were noted in reducing midrange hash and improving the unit's signal-to-noise ratio in my system.

The latest modification, called the Valhalla, consists of a quickly installed circuit board which better regulates the AC line voltage driving the unit's synchronous motor. A crystal oscillator's output is divided down to 50 Hz, then filtered to form a pure sine wave, which is then amplified to a suitable level to drive the motor. The old heavy-duty on/off switch is replaced with a very lightweight click switch which enables or disables the divider chain to respectively start and stop the turntable motor. As a result, power is kept on the circuit board at all times when it is connected to the wall's AC supply. The manufacturer claims that the new Valhalla circuitry operates at its best when continuously connected to the AC line.

The new circuit board and on/off switch were installed in less than an hour, as supplied in kit form. The circuit board is already attached to a support bar that runs across the bottom of the turntable base. The turntable's previous tiny pc board, containing only three capacitors, has all its leads clipped during the kit installation, and is replaced by the cross-bar with the new Valhalla circuit board.
already on it. In contrast, the Valhalla circuit board is stuffed with many capacitors, resistors, and other high-quality components. A number of hookups need to be made after the board is installed in place: via a ribbon cable to the new on/off switch; to the AC line cord; and 4 wires to the turntable motor. The Linn turntable is best worked on from underneath, supported on both sides by boxes, much like working on the underside of a car using a lift. This prevents the turntable oil from running out of the well.

What was the result? Actually, the Valhalla kit is by far the most important improvement one can make to a Linn turntable. Immediately I noticed a substantial reduction in wow and flutter on piano recordings. Edvard Grieg’s “Aftenpa Høifjeldet,” Opus 68, as played by Kahi Laretei on her Proprius album Mot Kvllen- Om Natten had always been a problem with the Linn; some of the piano notes are held steadily for a measure or two, and wavering tones had been produced by the turntable, regardless of adjustments, new belts, etc. Now the tones are rock steady. Perhaps this explains the increased sense of clarity, definition of transients, and a subjective impression that the noise floor had been reduced to an even lower level than accomplished by the Nirvana mod. In any case, I strongly recommend that every Linn turntable user purchase and install this kit. It will not only keep up the value of one’s original investment, but the sound quality is greatly improved.

**Acoustat 2 + 2 Speaker System**

While I refuse to admit publicly how long I have been sitting on these before doing the report on them, I will say that it is probably a good thing I wasn’t in all that much of a hurry to get around to it. They did not sound very good in the room where I had initially installed them, and had I written the report on that basis it would have been lukewarm to say the least. I have now had the opportunity to live with the 2 + 2s in my usual listening room, which is more like a typical listening environment (19’ by 24’ by 9’ and moderately padded), and I am more than a little impressed. This is an extremely good speaker, particularly at its price.

The 2 + 2 resembles the Model Four in that it contains four of Acoustat’s full-range speaker panels per side, but differs from it in that two of the panels (per side) are stacked on top of the first pair to produce a radiating surface twice as high and half as wide as that of the Four. The result, particularly in the case of the black-grilled version we tested, bears a startling resemblance to the mysterious obelisk in 2001, A Space Odyssey: The 2 + 2 system towers almost to the ceiling (and at just under 8 feet may be too high for some ceilings), and although it is more graceful in appearance than a pair of Fours, it tends to dominate a listening room at least as much.

The stacked configuration is not, however, for cosmetic purposes; it is to improve the system’s vertical dispersion—a major weakness of the Model Four. A line-source radiator, such as a straight row of closely spaced cone drivers or a narrow electrostatic panel, radiates a broad pattern of sound at right angles to the line, but the dispersion angle parallel to the line tends to become increasingly narrow as the length of the line increases. Thus the Model Four, four panels wide but one high, has fairly good (although irregular) dispersion in a horizontal plane but produces a pronounced beam in the vertical plane. This causes the system’s spectral balance to change markedly when one goes from being seated to standing.

But an interesting thing happens when a line source extends from the floor all the way to the ceiling; the vertical beaming virtually disappears. With the 2 + 2s, there is hardly any change in sound with changes in listening height. You can be on the floor, the ceiling, or anywhere in between without shooting down the system’s high end.
There are other advantages to the 2 + 2's stacked configuration. Two side-by-side panels, rather than four, reduce by a factor of 8 the amount of interference between them (because each of the four interferes with all three of the others, while two interfere only with one another). Selective cancellation at various middle- and upper-range frequencies is what gives the Model Four its pronounced vertical venetian-blind effect—the tendency for sound sources to ping-pong back and forth from one side to the other as one moves horizontally in front of them. It is also what makes the Fours so difficult to orient properly, and gives them such a narrow “sweet spot” from which proper imaging is heard.

Another problem frequently encountered with wide electrostatic systems like the Four is excessive excitation of standing-wave resonances in the listening room. Most listening rooms have many resonant modes in the 60-120 Hz range, but with some experimentation, woofers of smallish radiating area can be placed so that they generate relatively little activity from these room resonances. But the wider the radiating area, the harder it is to avoid having at least part of that area in a location that sets off the room resonances. This, it turns out, is why the Model Fours tend to sound overly bass-heavy in all but the largest listening rooms, and why the 2 + 2s are much less prone to the problem.

In other sonic areas, these are among the most listenable speaker systems I've heard. Even their low end is better than I am accustomed to hearing from full-range electrostatics, most of which tend to be full but loose at the bottom. The 2 + 2s still don't have the awesome low-end detail of a large transmission-line system (let alone a very large horn), but their bass is very much in control, and it blends seamlessly with the upper ranges (thanks to the lack of a crossover). The high end is typical of electrostatics—open, airy, and incredibly quick in response to hard transients and subtle inner details in complex material.

The 2 + 2s are not, however, the most ultimately accurate speakers around. Although they will play cleanly at very high listening levels (over 100 dB), they are a little lacking in “punch”—what some audiophiles call “dynamics.” Loud, full-orchestral passages sound neither as loud nor as exciting as they do from some other systems. Part of the reason for this and (also) for their apparent ease in listening, is due to a somewhat laid-back quality, resulting from what sounds like a broad suckout in the brightness range (2-5 kHz). The user can, however, exercise some control over this problem by judicious orientation of the speakers. The suckout is minimized by toeing-in the speakers so their axes converge right at the listening seat, but this may add a slightly hard, steely edge to the sound. Somewhere between this toed-in position and that with the speakers parallel to the back wall you'll find the optimal combination of tonal correctness and imaging specificity.

The only real caveat about this speaker is one that applies to all systems with an electrostatic high end: it is shamelessly revealing of its source material. As an almost perfectly clear window on all that is fed to it, it reproduces every nuance of cartridge mistracking and electronics distortion in the signal. Thus, while the system itself only costs about $1000 per side, its introduction into your home is almost a guarantee that you will suddenly be unhappy with much of the other equipment you own. I tried these speakers on a variety of ancillary components. While they did very nicely with my standard Shure V15-V in an SME 3009 III tonearm through Acoustat’s own TNP preamp and TNT-200 power amp, they sounded almost unreprouachably good with
the Robertson EK-1 cartridge and preamp and a Conrad-Johnson Premier 1 power amp. Even with that impressive lineup, I was hearing a small amount of harsh crud at the high end that I didn’t care for. If it is possible for a speaker system to have too much detail, this is a candidate for that honor. It is certainly one of the most revealing loudspeaker systems one can buy, whether or not that turns you on. My personal feeling is that there are some things in reproduced sound which are better glossed over than heard, but at least a system like the 2 + 2 gives you an opportunity (via its treble adjustment) to vary the amount of such detail you hear.

In general I found the speakers to have far too much high-end snap to be listenable with most solid-state electronics, even with the high-end controls all the way down. Even with the TNT-200, the Threshold S/500, and the Eagle 7a (all good or superb amps), there was more extreme top than musical accuracy calls for. This was particularly true of Compact Disc reproduction, whose overtone and HF transient content were simply too much. Even with the Premier 1, CDs sounded most natural with the 2+2's high end pulled drastically down to around the 9-o'clock setting. This will not produce enough high end to satisfy most audiophiles, but it produces the most natural high end from CDs.

With respect to imaging, although the 2+2s are much easier to set up than the Model Fours, I cannot overemphasize the importance of symmetry in their orientation. Following Acoustat’s instructions for setup will yield the best result, as long as they’re followed exactly. Two degrees of toeing-in discrepancy (relative to the room’s side walls), or even an inch difference in speaker-to-listener distance can significantly impair the imaging. Even a small difference in the side walls’ reflecting characteristics will cause a perceptible channel shift towards the more reflective side.

When everything is right on, the 2 + 2s should place a mono signal at dead-center and no more than about 5% image spread towards either side. This stereo imaging accuracy and stability just wipes out anything I’ve heard previously from a large electrostatic. With the speakers placed as instructed, you can move to the side almost as far as one of the speakers before there is a noticeable shift of the stereo image. That’s better than many dynamic systems can do, and far better than most electrostatics. Unfortunately there is no position which will enable the 2 + 2s to image as well as the really good mini-monitors or satellite systems. In their best orientation, it will be possible for listeners on either side of the center position (the “sweet spot”) to hear good, balanced stereo, with the center position best.

In other words, I like this system as much as any full-range electrostatic I’ve heard. It doesn’t provide quite as much old-shoe comfortable listenability as the less revealing Watkins WE-1, but clearly surpasses the Watkins in terms of quickness and detail. Owning a pair of the 2+2s will also be a chastening experience for people who doubt that any power amplifier can be worth more than $2000. In fact I had my own doubts about expensive amplifiers prior to the arrival of the Premier 1; now I would find the C-J (or the more lovely but less powerful Paoli S.O.B.) hard to do without, especially on these speakers. It’s just unfortunate that both amps cost over $4000.

Finally, a word of warning to cat owners. These are the only loudspeakers I have ever had in the house that cats seem unable to refrain from climbing. My two cats, which haven’t scaled a tree in three years, reduced the 2+2 grille cloths to tatters in a couple of months. If you have cats that can’t be kept out of the listening area, be prepared to have them declawed or accept the unattractive consequences. JGH
THE DAYTON WRIGHT LCM-1 LOUDSPEAKER 
AND THE SPICA TC-50 LOUDSPEAKER

High quality, low cost loudspeaker systems are not an everyday blessing. The Rogers LS-3/5a has survived for more than a decade precisely because so few U.S. manufacturers sought musical accuracy as distinguished from high output and powerful bass. The economics of loudspeaker manufacture also don't lend themselves to economy. The cost of woodwork is driving the price of speakers up almost as fast as the cost of sheet metal work is escalating the price of electronics.

Both Spica and Dayton Wright, however, have come out with small affordable speakers that should earn the term "blessing" from even the most demanding golden ear. Better yet, they offer a range of desirable trade-offs. Rather than directly competing with each other, they provide different sets of strengths and weaknesses that allow the buyer to choose between them on the basis of his or her own taste in music and listening patterns.

No, you don't get a $5,000 loudspeaker for $500 a pair, and no, they don't make the Mirages, Spendors, LS-3/5as, and other good low-cost loudspeakers obsolete. But the Spica TC-50s and Dayton Wright LCM-1s do offer the kind of imaging, phase coherence, and musical integrity that have previously been available only at prices approaching $1000. They also are small enough so that few wives (or other partners of various sexes and species) are likely to object. Like Fords they come only in black,¹ and they do require mounting on stands and careful placement, but they are generally quite easy on the eyes unless you go in for the clean Greek lines of heavily carved Ionic mahogany and pre-Raphaelite Islamic inlay.

Enough deference to culture! Let's get down to the hardware.

THE DAYTON WRIGHT LCM-1


MANUFACTURER: The Dayton Wright Group, 97 Newkirk Road, Richmond Hill, Ontario, Canada, L4C 3G4, (416)884-8586.

The basic item here is a sloped-front speaker made of particle board fitted into self-jigging grooves and glued together with an elastomeric adhesive. A pulp board is bonded inside each panel to further reduce vibration. All surfaces exposed to public view (excluding the back) are covered in black grill cloth which is nailed in place—no naked speakers from this company!

Depending on which version of the new Dayton Rights you see at your dealer, you may get the impression that Mike Wright is building speakers out of cardboard and using staplers and electrical tape. The first models had no smooth wood surfaces to disguise the process of manufacture. The new units have Masonite panels on the back and bottom to cover up the fact that the speaker cloth is terminated with tape and glue.

¹ This has become not quite true for the Spica; it is now available in oak veneer for $450.
It is important to understand, however, that this lack of fancy finish involves far more than cost-saving. The LCM-1 is designed to remove enclosure colorations that are more or less inevitable when wood or veneer is used in a small box, and to eliminate a speaker grill that interferes with the radiating pattern of the drivers. The back and bottom of the speaker may seem "tacky" (or at least unfamiliar), but they represent a cost-effective way of minimizing the resonance and interference common in most small enclosures.

The front is heavily damped to minimize the interaction between the 7" woofer and 1" dome tweeter. The front panel tilts just under 20° to match the time alignment of the drivers to a "constant differential group time delay" crossover network. In the crossover, connections are soldered not clipped, and it uses air core inductors, polyester capacitors, ceramic resistors, and heavy binding posts.

The crossover frequency is nominally at 4 kHz. Frequency response is claimed to be essentially flat from 45 Hz to 18 kHz. The speaker is phase coherent, of moderate sensitivity (89 dB at one meter on axis), and capable of taking up to 150 true watts and of producing an output suitable for all but the zaniest rock freak.

Placement is critical which may be either a blessing or a problem. The manufacturer states that the speaker must be stand-mounted a minimum of 20" off the floor. The listener’s line of sight should intersect the speaker about 3" down from the top, and at right angles to the back of the cabinet. The backs should be parallel to the walls and, unusually in our experience, relatively close to the wall.

Actual listening tests confirm these recommendations. I would add that the speakers should be kept away from nearby shelves and furniture. Any furniture or equipment should allow a clear line of sight to the listening position. This same recommendation applies to the Spica TC-50, and to virtually any decent speaker system.

As for the sound, the Dayton Wrights offer an excellent frequency response at very different levels of dynamic energy from about 55 Hz to my limit of hearing. The deep bass is missing, but not the midbass, and there is little evidence of a bass peak or bass hangover. The result is that the LCM-1 produces far more realistic bass than most of its competition—the Rogers LS-3/5a and the Spica TC-50 in particular.

2 Unfortunately this is the manufacturer’s claim and not verifiable by Stereophile as yet—that doesn’t mean it ain’t so.

3 Even the low bass is not that missing in some rooms: at the Las Vegas CES the little DWs were putting out reasonable volumes at about 52 Hz, and were barely audible at 16 Hz. Visitors kept inspecting the corners for subwoofers.
I should hasten to note, however, that this means careful experimentation in terms of placement, the use of an excellent speaker cable, and the use of a transistor amplifier. The Dayton Wrights need lots of damping—something vacuum tube amps can't provide—and cables that solidly couple the speaker and amplifier. I would recommend the Straightwire, Kimber PR-8, and Livewire cables; avoid Monster Cable and rolled-off cables like the Levinson or Fulton.

Treble energy tends to fall off gradually within about a 90° arc from the front panel. There is no spotlighting, and considerable upper octave information is communicated even at comparatively long listening distances and reasonably far off-axis. The Dayton Wrights are notably superior to the LS3/5as and Spica TC-50s in this regard, and to most of the KEF speakers. They rival the Thiel CS3s, although they do not approach the Fuselier 3Ds.

The midrange is coherent and detailed and has considerable punch. Far too many comparatively inexpensive speakers compress the sound, and combine relatively slow driver response with an inability to handle the natural dynamic peaks in music. The Dayton Wrights rival much more expensive speakers in this regard, and they do so without changing in timbre, having one or more drivers suddenly go out of piston, or making the crossover area audible.

If this description of the DWs doesn't sound unusual, you may have to hear the difference for yourself. It is the key reason that I don't go around praising a lot of small acoustic suspension speakers that measure flat using sine waves at some given loudness, but sound like hell when playing music. The LCM-1s are far more "live" in every sense of the term than most of their competition. They literally blow the LS-3/5a away in this regard, and they again outperform the Spica TC-50s.

At this point, however, we come to some areas where the LCM-1s begin to show limitations. Their pulse response is acceptable, but they are not as fast or detailed as the Spica TC-50s, Fuseliers, or Thiel. Ribbons or electrostatics they are not. Their imaging is good to very good, compared with some of the competition. They place instruments and voices solidly, but their preservation of the faint harmonics that make imaging totally natural does not come up to the speaker's performance in other areas. They render low frequency depth information better than do the Spica TC-50s, but they lack the kind of midrange and upper frequency data the Spica TC-50s, Thiel, and Fuseliers can provide.

The LCM-1s do not match speakers in the $1000+ category when it comes to balancing all parts of the midrange, nor do they achieve the elusive balance between warmth and detail that can be found in the Quad ESL-63s and Fuseliers. They are good—better than the Spica TC-50s and possibly better than the Thiel 04as—but there is a tendency towards warmth. This area requires careful listening on the part of the prospective purchaser, not because their performance isn't good (to very good) but because even small compromises in this realm strongly affect the way in which different individuals will react to the speaker.

The LCM-1s also are not "big sound" speakers. As I noted earlier, they do not provide deep bass. Further, the image is clearly that of a quasi-point source. You do not get the impression of a big soundstage as from the larger Infinities (the smaller Infinities are useful only as coffins for irritating pets!), bipolar electrostats, the Magnepans, or the larger Dayton Wrights.

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4 To be reviewed by AHC in Volume 7, Number 3.
THE SPICA TC-50


This brings me to the TC-50s. Like the Dayton Wrights, they are relatively compact speakers weighing about 20 pounds each and having sloping fronts. Also like the Dayton Wrights they come with a basic black grill cloth, although with nice Formica side panels.

They are also similar to the Dayton Wrights in using a 1" dome tweeter and a 6-1/2" woofer. The woofer is acoustic suspension and the impedance varies from a low of 3.7 ohms to a high of 15 ohms. The impedance curve is smooth in the midrange, but the dip to under 4 ohms rules out poorly designed receivers or integrated amps—anything not rated for 4 ohms. It is with relatively inexpensive receivers, by the way, that most TC-50s are sold, according to the manufacturer. Unlike the Dayton Wrights, power handling is comparatively limited. Stick with 100 watts or less, and a really good 40-70 watt amplifier will be far better than a less transparent high-powered unit.

The Spicas differ from the Dayton Wrights in that they are an attempt to provide the best possible phase and time coherence at the price. As has been discussed previously, this is achieved at the cost of deep bass and extreme highs. The Spicas roll fairly gently in the bass on a frequency response graph, but have no strong bass below about 70 Hz. They fall off steeply after 12-14 kHz. Compared to the DWs and other very dynamic speaker systems, the subjective differences between loud and soft are less dramatic on the Spicas.

The TC-50s are, however, exceptionally flat in their frequency and phase response in the 300 Hz to 5 kHz region. The tweeter section of the crossover is first-order Butterworth (6 dB/octave rolloff), and the Spicas exhibit very little phase shift in the midrange. This allows them to rival electrostats in coherence and to outperform most ribbon designs. While they are definitely not as fast as ribbons or electrostatics, they also are not bipolar and avoid the problems of rear wall reflection and consequent delayed arrival of musical information.
This is, in fact, the raison d'être of the Spica TC-50s. They are an attempt to provide coherence in the frequency range to which the ear is most sensitive, comparable to that of the most expensive speakers available—but at a price below $500. They represent the result of very sophisticated work in time delay spectrometry and Bessel filter design supported by extensive listening tests. Further, they have exceptionally tight quality control to ensure that they meet specification. Each pair is individually matched within .5 dB using time delay spectrometry.

This emphasis shows up in the listening. The Spicas are slightly warm in the lower midrange and a bit recessed in the top octave, but they are exceptionally transparent and coherent. They rival the ESL-63s at providing low-level detail and harmonic delicacy from low to moderately high listening levels. The imaging is outstanding (after several days of speaker adjustment to get it just right), and violin and woodwinds are exceptionally natural.

Voice is just slightly warm, and percussion is slightly lacking in impact and bottom, although it is very fast, coherent, and tight. Brass is more detailed and correct, in terms of imaging and revelation of the mechanics of musicianship, than with any speakers in the price range, although it is slightly "toppy" (tilted towards the upper midrange) in timbre.

The Spicas have two minor problems in timbre that may or may not suit your taste. The first is a warm area extending from about 150 to 300 Hz. The second is a hump from about 5.5-7.8 kHz. These problems are minimized by very careful placement and proper choice of interconnects and electronics; they are perhaps more noticeable than usual because of the speaker's transparency and accuracy in other areas.

As for the soundstage, depth is slightly restricted by the limited bass response, but is otherwise excellent. Soundstage size is not equal to that of large arrays or planars, but is far more natural than with most small speakers. The rest of the soundstage information is excellent for a unit in this price range.

Low-level delineation of imaging and soundstage is superior to that of the Dayton Wrights and far superior to that of the LS-3/5as. The Spicas surpass the Thiel 04as in providing such information in the midrange and rival the Thiel 03as and Fuseliers. I would not say, however, that the TC-50s are equal to the ESL-63s in this respect or in their overall imaging and soundstage perspective, although the radiating characteristics of the Spicas produce a wider listening area.

Here, however, I should introduce a major caution. The Spicas require very careful placement to deliver their best performance. They should be stand-mounted, with the tweeter at approximately ear-level height when you are seated in the listening position. They should be angled so their fronts face the listener (rather than having their backs parallel to the wall), and placed in an isosceles triangle with the speakers equidistant from the listener, but closer to each other than to the listener. Two manufacturers will be selling stands suitable for the Spicas by the time you read this, and at least one will have adjustable height and speaker angling. Contact Spica for details.

The speakers are sensitive to rear wall proximity and should be 2 to 3 feet away from it in most rooms. The manufacturer recommends placement so that the speakers are not the same distance from the floor as from the rear wall. They also recommend placing them along the long wall of the room, as far away as possible from side walls. These recommendations are sound, and apply to all loudspeakers not specifically designed for placement in corners or close to the rear wall.

The Spicas are highly sensitive to the mix of placement, amplifier, and speaker...
They require a transistor amplifier with high damping factor, or else they will sound excessively warm in the upper midbass and lower midrange. They require very good, fast speaker cables. Livewire and Straightwire match the speakers well. Kimber 8PR is slightly less good. Monster Cable and Powerline add warmth and roll off the highs and definitely do not complement these speakers unless you are trying to romanticize the sound of a bright cartridge or compensate for transistory electronics. The TC-50s are equally sensitive to interconnects, and you should try Straightwire, Peterson, and Livewire to see which best matches your system.

The TC-50s are also very revealing of cartridge and head amp problems. They are exceptionally transparent from 5 to 10 kHz, and many moving coil cartridges and inexpensive step-up devices sound hard and edgy in this area. Wealthier audiophiles have already learned to compensate for this by buying very expensive cartridges and step-up devices. If you use such superior equipment with the TC-50s, you'll want to load your cartridge with a high impedance. With mediocre equipment, you'll want to load your cartridge down to about 80% of its recommended generator impedance; otherwise the distortion generated (and well-revealed by the TC-50s) will drive you crazy. If you are looking for a relatively inexpensive cartridge to match the revealing imaging and transient response, you should try the new Grados, a Grace F-9E, or the new F-9E Super.

**Summing Up**

The Dayton Wright LCM-1s and Spica TC-50s are not perfect by any means, but their choice of trade-offs is notably superior to those made for the LS-3/5a, or for any of the other small British speakers I have heard in recent years. This makes them superior to the Mirages and any of the small U.S. bookshelf speakers I have heard—none of which have approached the best British units in accuracy.

The respective virtues of the two systems are clear: the Spicas have better midrange resolution, harmonic detail, and imaging; the Dayton Wrights excel at dynamics, full frequency response, and accuracy of timbre. Each, however, does a good job of what the other does better. I could live happily with either pair of speakers, although I should hasten to say that I prefer the advantages I get with much more expensive units.

No, the Spicas and Dayton Wrights don't outperform speakers in the $1000+ bracket. The Thiels, Fuseliers, and Vandersteens offer superior value, albeit for more money, and the Thiel 04as remain a major rival for not much more money.

The true merit of the LCM-1 and TC-50 speakers is that they bring high-end sound much closer to the audiophile who has previously been forced to compromise so much at the below-$500 level that much of what this magazine discusses could not be accurately reproduced on affordable speakers.
VPI HW-19 Turntable


There is something refreshingly no-nonsense about the design and construction of this turntable. It looks as if someone just said, Okay, this, that, and the other thing need to be done. Let's do it. And then they did it. In appearance at least, it is about as simple a design as you're likely to find. What sets it apart from other simple designs is that this one is built like a battleship! Everything is heavy-duty.
(not to mention heavy), from the 10-lb., lead-laminated aluminum platter to the ¼-inch steel-reinforced subchassis.

The platter is of solid aluminum, without the usual hollowed-out bottom, and a ¼"-thick by 2"-wide band of lead is cemented to the platter’s underside. Besides adding weight, the lead damps out ringing resonances in the aluminum, yielding an unusually inert platter. Tapping it with the finger produces only a satisfyingly brief “tick,” without a vestige of ringing. No platter mat is supplied. The disc is supposed to go right onto the bare metal platter.

The subchassis is suspended on heavy springs at the corners, yielding a suspension resonance of around 5 Hz. The springs are damped by the tried and true method of stuffing their insides with floppy foam plastic, which makes for a suspension that combines good vibration isolation with a high degree of stability. It jiggleth not! The panel is made of what appears to be ½" particle board, and screwed to the underside of this is a heavy steel sheet with folded edges for added rigidity. The whole suspended assembly weighs 24 lbs! The AC synchronous motor is attached to the base, not to the floating platform, and is coupled to the platter via a thin neoprene belt.

At the right side of the top panel is the arm-mounting board. This 5½" wide board fastens to the underlying steel plate via six heavy screws, spaced symmetrically so the board can be turned end for end. Thus, if you wish to install a different arm, requiring a different sized hole, you just rotate the board by 180° and you have a fresh corner through which to drill the new hole. As the table is supplied, there is only one large tonearm clearance hole in the supporting steel sheet, so only one arm can be mounted at any one time. If you wish to go to the trouble of cutting another large hole through the steel, I see no reason why two arms couldn’t be permanently installed on the VPI.

This turntable has plenty of torque. Not as much as direct-drive ‘tables, but enough to get it up to speed in a bit less than one revolution, and more than enough to use any of the record cleaning brushes on it without having it grind to a halt in mid-wipe. And, blessing upon blessing, the HW-19 is high enough so that tonearm cable dressing is no problem at all. There is no interference with the cable from any tonearm I’ve seen. In truth, though, this is of less importance with a heavy turntable than with lighter ones, because the heavier the suspension, the less it will respond to vibrations passed through the tonearm cable from the underlying table-top. Still, it’s nice to come across a high-quality ‘table that I don’t need to criticize for such a simple thing as height.

Ah yes, but how does it work? This is the best turntable I’ve had the pleasure of using to date. Perhaps I was psyching myself, but the solid appearance seemed to me to be reflected in the sound, which had a tautness and detail (particularly at the low end) which I have yet to hear equaled by any other turntable. The bare metal platter worked better than I had expected it to. I never had an instance of a disc rattling against it, and it seemed to do as good a job of absorbing vinyl resonances as the acrylic platter on the Pink Triangle—which has me a little baffled. Considering their vastly different densities, and thus (presumably) their differing ability to accept energy passed to them from the disc, it seemed to me that they should sound a lot more different than they did.

This judgment applies only to the VPI turntable we ended up with, many of whose parts were changed from the original. This aspect of product review is particularly frustrating. Here are the parts which were updated over the time of our having the turntable: the motor pulley; an added capacitor to the on-off switch; a new bearing-and-spindle assembly; a
new and much heavier subchassis; and finally a new motor. The only unaffected parts were the platter, the tonearm board, the outer frame, and the switch. For those of you who may own older VPIs, I’ll go through the changes wrought by each modification.

The original motor pulley had a square interior cross section and tended to slip, particularly in warm weather or if the bearing was tight; the new pulley has a curved interior cross section and grips the belt (which has a corresponding round cross section) better. We changed the pulley ourselves, but don’t recommend this for the general user. The procedure was difficult and may have damaged the motor.

Without the capacitor that was added across the on-off switch, a loud pop came through the loudspeakers when you turned the table on or off—even when the turntable was on a separate house circuit. Adding the capacitor solved the problem, but if you have to be sure and use a .1 µF cap; we used a .15 µF cap and got continuous jiggling in the motor when it was off.

The new spindle is much more highly polished than the old one. It was difficult for us to evaluate the effect of just the polishing because our original spindle was binding and the turntable ended up running a little slow.

Recently we were sent a new subchassis with heavier steel reinforcement—this after I’d discovered (but had not yet reported to the manufacturer) a bit of audible drumminess from the fairly heavy original. While this last update was successful at accomplishing its purpose, I feel that more work needs to be done because of it. Specifically, some new way of adjusting the suspension should be devised. The old way consisted of turning the springs into and out of threaded sockets installed in the base. This could be accomplished from underneath the turntable, which is a pain in the you-know-what, but frequently it was necessary to remove the subchassis. With the old subchassis this was difficult enough; with the new heavier subchassis (and no convenient handles) only finger-wrestling champions will succeed without damage to their digits. And the underneath-the-table method no longer works: the new cork pads on top of the new springs don’t slip beneath the subchassis. We’ve made a number of suggestions to Harry Weisfeld, the designer, but as yet there has been no further update to solve the problem.

And finally we replaced our original motor with one from another VPI table, to eliminate clearly audible rumble. In truth this is not an update, only a defective part. You can check your VPI table without a silent groove: simply slip the belt off the motor pulley, turn on the motor, and put your ear to the subchassis. If you hear nothing, you’re O.K.; on our original sample it was easy to hear the motor running. As mentioned above, the motor may have been damaged in the process of changing the pulley—but then, we feel we shouldn’t have had to change the pulley!

As you might guess from the above, reviewing this turntable has been more like witnessing an ongoing birth than testing a finished product. Ordinarily this would turn us completely off, but the turntable VPI now sells really works well. When you look at the quality and ruggedness of the parts they use you can see that you’re really getting an excellent value. We’d sure appreciate one more change, though: make the suspension easy to adjust. Once you’ve got the suspension adjusted, this is a clearly recommendable product and a good deal.

JGH
SONY CDP-701ES COMPACT DISC PLAYER

Fully programmable Compact Disc player with remote control. Price: $1500. MANUFACTURER: Sony USA, 1 Sony Drive, Park Ridge, NJ 07656.

The first generation of CD players had been on the market only a few months when the second generation started to appear. To me that looks as if the second generation was just about ready to go when the first was released, which would imply a clever marketing ploy rather than product evolution.

Although it was not mentioned in Sony’s literature (or if it was I didn’t see it), I am willing to bet that the “ES” following the 701’s model number stands for Esprit, which is Sony’s no-holds-barred (i.e., cost-no-object) component line. Sony’s CDP-101 was reviewed in Volume 5, Number 10, so I won’t reiterate in detail the features of the 701 which duplicate those on the 101. Suffice it to say that both come with an infrared remote control (the same for both models), and while the 101 offered every convenience except programmability (random track play) and search by index number, the 701 does it all!

The 101 had no direct-access track-selector buttons on the unit itself; track selection by number could only be done from the remote control. On the main unit, you selected track 4 by pressing a track-advance button three times (each disc starts at track 1). The 701 has every necessary control on the main unit, and almost everything but the programming and time/index functions are duplicated on the remote control unit.

In addition, the 701 uses dual (separate for L and R) D/A converters, a stronger servo (laser head-positioning) system to improve mechanical shock resistance, a heavier-duty drawer-activating mechanism (it even sounds smoother when it activates), and higher-quality components than the 101 (better capacitors, for instance, although probably not Wunderkappen). It also has a three-year warranty as opposed to the 101’s one-year.

Programmability allows you to preset
the order in which the tracks on a disc are played, even omitting certain ones if desired. But since the "program" you choose can only be drawn from one disc (the one currently in the player), I'm not sure how much value that will be to users. Most people who record nonclassical music discs onto cassettes do so in order to choose the program they want, but this is usually drawn from several different disc sources.

I am also uncertain about the value of the indexing feature for home music listening. Most of us listen to entire bands from beginning to end, and on those occasions when we want to repeat a particular section over and over this can be done without the indexing feature, on both the 701 and the cheaper 101. As a purely practical consideration, there are very few CDs around which are indexed, while practically all are search-coded by track number. The few that are indexed also have equivalent elapsed-time read-outs for the index locations, and even the nonprogrammable 101 can be made to search out a location (to the second) by using the fast-scan buttons, either on the main front panel or from across the room via remote control.

Interestingly, the 701's access time (the time taken to seek out a specified place on the disc) is slightly longer than that of the 101. On one disc it took the 101 six seconds to get from the start of band 1 to a spot 54 minutes through the disc. The 701 took 8 seconds, and the Kyocera (reviewed in Volume 7, Number 1) took 9.

I still prefer the slide-out drawer to the drop-in bin (used on the Kyocera and a number of other players) for disc loading. Apart from the fact that a drawer forces the user to handle the discs by the edges, it is simply more convenient to use. And the 701 is even more convenient than the 101 in this respect. The drawer in the 101 is ringed by four little ledges that the disc sits on when you load it—the mechanism lifts it off those ledges while playing. But the disc must be properly seated on them in order to load. If it's hung up on one ledge when you close the drawer, the player says uh-uh, and the drawer slides out again. The 701 lacks these ledges, so a disc can simply be dropped into the bin from an inch or so above it, automatically aligning itself with the playing spindle.

Everything about the CDP-701ES worked flawlessly. In fact, one of the things that amazes me about the new CD technology is that even though brand-new it seems to be already debugged. At the time of this writing, I have worked with three CD units, all with very early serial numbers, and apart from what I felt to be some clunky behavior in the Kyocera DA-01 (like "rewinding" to track 0 when there is no such thing, and "fast-winding" in increments of 15 to 30 seconds), not one has actually malfunctioned.

Some people, watching with fascination as the little disc drawer on the Sony CD player slides in and out, have wondered, "What would happen if I had my finger in there when it closed?" Not that most adults would do this, but a child might have an uncontrollable compulsion to try it. As I am in the business of testing equipment, I gave in to my childish, uncontrollable compulsion. What happens is that the drawer just comes to a

1 Numerous reports from the field, and our experience with both samples of the Kyocera, would suggest that this is much more true for some players than others. Even the Sonys, which in our experience have worked almost flawlessly, have had significant differences reported with respect to shock isolation and overall reliability. My recent visit to Technics in Japan, where I was able to observe the process of construction and quality control, made it clear that aligning a laser-reading servo mechanism, and keeping it in alignment, is no simple matter—it requires all the resources a company can manage. Factory technicians confirmed that moving a player around, or shipping it, required significant precautions, not all of which were known when the players were first released.

Stereophile
halt, exerting no more than a few ounces of pressure. No pain, no pinch, not even any stripped drive gears. We should know by now that when it comes to human engineering the Japanese are generally several steps ahead of us.

The 701 provides every convenience feature that the CD system has to offer, and it even sounds better than the 101 and the Kyocera—not dramatically so, but definitely better. You may not hear the difference at all, or you may feel it’s like night and day. (Remember that some people feel that all CD players sound awful.) But whether the improved sound and programmability of the 701 are worth an extra $600 to you is something only you can decide.

JGH

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**ITC-1 Speaker System**


Readers should be careful not to confuse this company, which is known as Innotec for short, with another company manufacturing loudspeakers called "Innotech." They are different companies—we don’t know which of them is responsible for choosing a name so confusingly like one of its competitors.

The ITC-1 is unusual in several respects. It’s one of the very few three-way speakers of this small size, and it uses an active “black box” add-on equalizer to fill out the speaker’s low end. An 18-dB/octave rolloff below 50 Hz is used to limit cone excursion at low frequencies, thus theoretically reducing Doppler-effect distortion as well as harmonic and inter-modulation distortion.

The so-called Bass Distortion Reducer (commendably, they do not call it an eliminator) connects between the preamp and power amp or, at some risk to one’s associated equipment, into a preamp’s Tape Monitor loop. The latter arrangement has the potential for damaging one’s system, as clearly spelled out in the instructions, because the BDR has some gain and its outputs are in phase with its inputs. This means that if the input selector is switched to Tape Play, the device will go into full-level acoustic feedback at some low frequency, with the potential of damaging your power amp or loudspeakers. This could only occur, however, if the preamp does not have a legitimate tape-loop monitor facility, which disconnects the recorder outputs when switched to Source. ITC warns users about this in bold type, but where the risk exists a warning may not be enough. One moment of forgetfulness and POW! My advice: either connect it between preamp and power amp, or just forget the whole thing. (There are no Tape connections to the BDR unit anyway, so putting it in a tape loop would prevent you from using the tape-monitor loop for taping or anything else.)

Like most small systems, these speakers are quite uncritical of room placement. As long as they are at least a couple of feet from the nearest walls, raised 30 inches or so off the floor (preferably on the proper stands), and toed inwards
towards the listening area, that's all the placement they are likely to need. One thing they do not need is bass augmentation from the room corners. These speakers have, in fact, the most awesome low end I think I have ever heard from a system even approaching their small size. The BDR really works! It gives these speakers truly amazing low-end heft, yet allows them to reproduce signals with strong deep-bass content at high listening levels (up to around 100 dB!) without audible strain. Even so, it shouldn't be concluded that the deep bass is up to the standard of truly full-range speakers, or of good mini-monitors with good subwoofers. After all, the bass rolloff is 18 dB/octave below 50 Hz. The ITC-1 is for the listener who wants small size and doesn't want to fool around with subwoofers sometime in the future.

Imaging is quite remarkable as well, although I have heard excellent imaging from so many small speakers by now that it no longer comes as a surprise. Images are firm and specific, and the full stereo stage is preserved, without imbalance, across a listening area as wide as 45° about the center axis (the line running from midway between the speakers to the middle of the listening area). Depth and perspective are very well reproduced, although the speaker has a slight tendency to back things off.

The ITC-1 has superb overall balance, which makes it sound very much like a big, big system. Bass quality is also surprisingly good, having warmth without boominess, but detail at low frequencies is only fair and the speakers are quite power-hungry because of their low-end boost. Extreme highs are rather soft, even with a good solid-state amplifier, but they are exquisitely smooth and sweet—perfectly suited for Compact Disc reproduction (which tends to have more extreme top than analog sources). In comparison with the best systems, the intervening range is slightly veiled, dryish, and a shade steely, with very good (but not excellent) inner detailing. None of these problems are improved by adjustment of the middle-range and tweeter-balance controls. It is in fact a tribute to the design accuracy of these speakers that rotation of either balance control away from its Flat (vertical) position makes the system sound less smooth than when both controls are set at Flat.

For its size the ITC-1 is very expensive—enough so that it gets some very stiff competition in terms of performance from a number of other systems, many costing substantially less. Mini-monitors, however, are built to a size, and not necessarily at a low price. They are intended for use where larger speakers are impractical or undesirable. At $200 more than the best of the conventional minis, the ITCs are significantly more expensive but tremendously superior in terms of bass range and low-end power-handling to any speakers their size that we have heard. They cannot provide as deep or taut low end as other minis with tacked-on subwoofers (an arrangement that would cost more than the ITC-1s), but they provide an excellent set of tradeoffs between size, sound, and price.

The little instruction booklet provided with the ITC-1 is useful and informative, even including an invitation to write or phone the company if you encounter a problem your dealer can't help with. Unfortunately the booklet lists neither address nor phone number, but you'll find both at the head of this report.

These aren't for every audiophile, but they're the ideal choice for those with tight space requirements or a disinclination to allow larger speakers to dominate the listening area. JGH
PHILIPS/MAGNAVOX FD-1000 COMPACT DISC PLAYER

Dimensions: 12½" W by 10½" D by 3" H; 7" H with cover open. Price: $599

MANUFACTURER: Magnavox, North American Philips Consumer Electronics Corp., P.O. Box 6950, Knoxville, TN 37914.

What, a high-fidelity product from Magnavox? The company that 20 years ago had a reputation for building massive, polished-console boom-boxes and was scornfully referred to in audiophile circles as Maggotbox? Some important things have happened to Magnavox since those days. Mainly, it became a subsidiary of the Dutch Philips company, co-developer of the laser video disc and now the Compact audio Disc. The Magnavox CD players are actually made by Philips for U.S. distribution by Magnavox.

This is the smallest and by all accounts the cutest-looking CD player yet. It has a high degree of what I call wantability—you just look at it and you want to take it home. It is also the most slickly packaged audio product I have seen in years. Supplied with it is an impressive-looking plastic "album" containing all the pertinent paper work (including a block diagram of the system), which will totally bewilder anyone without a powerful technical background. I suppose its intent is to impress buyers by overwhelming them with the complexity of the thing. Also supplied is a cleaning cloth and a rather bright-sounding Pop sampler disc. The disc is labeled Sampler USA, which makes one wonder what the Europeans and Japanese get with their FD-1000 and whether it might have better sound.

Like most CD players, this is shipped with transit screws (two of them) which must be removed before operating the unit. Outside of that, setting up involves nothing more than plugging in a pair of
cables (included). There is even a little compartment in the "album" for storing the transit screws, in case (Heaven forbid!) the unit has to be shipped off somewhere for repair.

The FD-1000 is a top-loading unit in which the disc spins horizontally. Press a button on top of the hinged lid, and it swings open automatically—smoothly and slowly, like a portal gate. You drop the disc in, push the lid shut, and you're ready to go. Disc removal is a little awkward, as its edges are not quite far enough above the bottom of the well to allow you to get a good grip on it. Southpaws have even less depth—not even ¼ inch—to get into. This poses some risk of scratching the playing surface due to dropping. Sony's bottomless slide-out drawer is still the most convenient for removing discs, allowing easy purchase either on opposite edges of the disc or, if you prefer, between one edge and the center hole. Both the Magnavox and the Sony, however, are far preferable to most of the bin-loading systems, which defy disc removal except by grasping the playing surface (which, despite CD manufacturers' claims about immunity to fingerprints, is a no-no). The lid is of clear plastic, which means a visible buildup of finger grease (or frequent cleanings) unless one can get into the habit of always closing it by pressing the metal disc at its center.

At $599 this is one of the lower-priced CD players on the market. Cheaper ones are now available from several companies, notably NAD, Pioneer, Technics, and Sony. The FD-1000 includes most of the operating features of which the CD system is capable. The only features missing here but found on other players here are (1) remote control, (2) track or passage selection by time or index number, and (3) audible fast forward and reverse cueing.

There is no timing indicator on the FD-1000. Instead there are two horizontal rows of 15 green LEDs. When you turn the unit on, all 15 of the top LEDs light up. When you start a disc playing, the laser reads the disc's "table of contents" and the top LED display changes to show you how many tracks (up to 15) are on the disc, while the bottom row shows what track you are playing. If you wish to start with a track other than Number 1, you hold down a button marked Select, until the bottom LED has moved across to the track you want. You then have about 10 seconds to push Play or, if you change your mind, to do nothing, in which case play will start with Track 1. If you try to select a higher track number than is on the disc (15), an Error LED will light up and the unit will go back to the start of Track 1.

To advance to the track after the one you are playing, you merely punch the Play button once. Going back to the preceding track is a bit clumsier. To do this you must hit Stop, then call out the track you want with the Select button, then punch Start.

You can program a disc so that only certain tracks play, in any desired sequence, even including the omission of unwanted tracks. Or you can select certain tracks to be omitted, although with this mode (called Take-Out programming) you cannot rearrange the playing order of the others. Up to 15 tracks can be programmed.

The fast cueing mode is halfway in speed between Sony's Fast and Fast-Fast modes, and quite a bit slower than the Kyocera's (which was so fast it was almost useless). The briefest touch on the Philips' Fast button advances or backs up the head by about 3 seconds. (The slower of Sony's Fast buttons can increment by less-than-1-second intervals.) However, the FD-1000 is irritatingly slow when scanning over large spans of playing surface, as when moving from Track 1 to Track 10. The access time of every CD player
varies according to the number of indexing points in the program, but while it took the Sony 101 six seconds to start playing Band 9 of a typical disc, from a band-one start, it took the Magnavox 16 seconds. And unlike the Sony, the Magnavox does not allow you to hear the program while you fast-forward, which makes it difficult to locate the passage you want, particularly if you’re not entirely familiar with the music. (Is the section I’m hearing now ahead of or after the section I’m looking for?)

The FD-1000 is remarkably immune to external jarring, from all directions. In this respect it was a hair better than Sony’s $1500 CDP-701ES, which was the most shock-resistant CD player I had encountered prior to this one. Tracking stability in the 1000 was superb—again comparable to the 701ES: not once was there a glitch or a dropout, even from discs which have acted up on other players.

But how does the FD-1000 sound? Although there is no mention of this in the literature, and no indication of it (that I could find) in the block diagram, this is supposed to be one of those CD players which use oversampling and digital filters, resulting in less phase shift at high frequencies. The block diagram supplied does show separate D/A converters and what appears to be a digital filter. Thus it should, in theory, sound better than what we’ve come to regard as conventional players, like the Sony 101. Does it indeed sound better? Indeed it does!

Sony’s 701ES player sounded very slightly sweeter and more open at the high end than their 101. The Magnavox sounds slightly sweeter and more open. In all other respects the three are essentially indistinguishable. But that one respect counts for something, particularly when the comparison is made between this and the Sony 101 alone, without considering the 701; these two have to be counted as sounding quite different, with the Magnavox coming out ahead.

For $100 more, the Sony 101 is much more flexible and has better human engineering. But with the Compact Discs I have on hand, the Magnavox produces less of the high-end irritation which many people have claimed to be an inherent weakness of the CD system (and which is indeed noticeable on many discs), and does so without any audible attenuation of extreme high end. The measured high-end response of the two units is in fact identical.

In other words, the Magnavox FD-1000 is the best-sounding of the CD players I have auditioned, which only confirms what I had heard about the unit before I tried it. This, by the way, is the player on which Telarc bases their claim that their CDs sound identical to their original master tapes.

This is one little honey of a machine, sonically so good that it may be some time before it is surpassed. Since the sound is what we’re after, not the operating features, this is the player on which I do most of my CD listening. JGH
The SOTA Sapphire was the first, and the most successful in terms of sales, of the new generation of high-end American turntables. As such, the SOTA can be viewed as leading this country's resurgence of interest in high quality turntable production. At the time of the SOTA's introduction in 1981 it was the only high-end turntable manufactured in the U.S. Since then American-made turntables have appeared from the likes of AR, Maplekoll, Sonographe and VPI.

In retrospect, the reasons for the SOTA's success seem obvious. The turntable is visually and constructionally impressive and instills in the buyer confi-
dence that he is receiving value for money. It is easy to set up properly, even by one not technically inclined or blessed with secret knowledge, and once set up right it stays that way. Isolation is excellent; even a firm rap of the knuckles on the plinth while a record is playing does not produce an adverse effect. Finally, and most importantly, the SOTA offers first-class sound quality.

Riding on the crest of its success, SOTA has introduced a new, up-market version of its turntable. Labeled the Star Sapphire, the new model is identical to the standard SOTA except for more costly cosmetics and the inclusion of a vacuum record-clamping system. The cosmetic changes consist of a wood-veneered top panel (matching the plinth) and a more substantial dust cover. The vacuum system and cosmetic changes do not come cheap: the Star’s price tag is $550 higher than the standard SOTA.

Setup of the Star is identical to that of the standard SOTA except for slipping on a vacuum tube and setting the vacuum level control. Setup took about 40 minutes, most of it spent freeing the turntable from its packaging materials. A Sumiko MDC-800 tonearm and Talisman S cartridge were used for evaluating the Star. The rest of the system included the Dayton Wright MG-10mk2 speakers, the BEI.2002 amplifier, and the Dayton Wright head amp and preamp.

1 The author purchased the unit used for this review before beginning evaluation of the product. Thus, the possible effect of personal bias (the tendency to reach a conclusion which supports the decision to purchase) must be considered by the reader. However, it should also be noted that the reviewer did have an opportunity to use a Star for four days before committing to purchase.

2 The Star is an addition to the SOTA line, and not a replacement for the standard model. A factory vacuum conversion kit for existing SOTAs is supposed to be made available for approximately $400.

Since the arm and cartridge were previously mounted on a standard SOTA, I only had to move the old armboard to the new turntable. SOTA’s manufacturing tolerances are quite impressive—the old board fit the new table as if they had been hand matched. A quick check with plumb line and protractor indicated that the angle of the armtube relative to the surface of the platter had changed by less than a quarter of a degree, and listening established that the VTA/SRA setting had remained right on the money. There was only one flaw noted in the review unit. The control panel cover, as it came from the factory, was too wide. A short session with some sandpaper corrected the problem, but one has the right to expect more from a turntable of this price.

Operation of the vacuum feature proved hassle-free. The molded elastomer platter mat has an upturned outer lip which forms a seal against the thickened rim of the record. After the vacuum control knob is set at the desired level, a rubber plug is slipped over the spindle to make an air seal around the hole in the record.

When the turntable is switched on, the vacuum pump starts up and air under the record is evacuated through two small holes in the platter. A high vacuum is created for the first four seconds and supplemented by continuous evacuation at lower suction while the record plays. The pump’s rather prominent hum (similar to a severe ground loop) during the startup period prompted anxiety the first time around. After the vacuum is reduced, pump noise drops to an unobtrusive level. Pump noise might prove a problem in a small room when listening at low levels; I was able to place the pump (which is housed separately) far enough away so it was totally inaudible.

A major criticism leveled against vacuum record-clamping systems is that they damage records by extracting the plasticizers from the side of the record exposed.
to the vacuum (see Volume 6, Number 6, p.16 + 17). Plasticizers are used in records to keep the vinyl compliant, and if a sufficient loss of plasticizers occurs the vinyl will become hard and brittle. When played in such condition, the stylus knocks chunks of vinyl from the wall of the groove, and the result is a very noisy, permanently damaged record.

SOTA claims, based on “hard and extensive research,” that the Star avoids this problem by employing a very low vacuum. Their research indicates that a vacuum of 7″-8″ of mercury (or higher with premium vinyl) is needed before plasticizer migration occurs. Since the Star applies continuous suction (rather than a one-time initial suction), 4″-5″ of mercury is applied when turned on, but this drops to 1″-3″ while playing.3

I can confirm SOTA’s claim of no record damage. After using the Star for three months, I have noticed no damage to my records. In fact I lent several records to a manufacturer who played them numerous times on the Star at last summer’s CES. Ten months later, I detect no deterioration (other than normal record wear) in these records.

I was somewhat skeptical that such a low level of vacuum would be sufficient to clamp a record properly, but use of the Star has convinced me. For those who must see to believe, the upturned outer edge of the platter mat is compressed when an adequate vacuum level is achieved, allowing visual confirmation that all is working well. After playing several hundred records at an altitude of approximately 1300 feet above sea level, I never once failed to obtain or maintain a vacuum, even with the vacuum control knob only a third of the way up.

For this review the Star was compared with the standard SOTA ‘table. Since the standard SOTA has not been reviewed in Stereophile, a few words are in order. I acquired one in the fall of 1982. The superiority of the SOTA over the Linn and Thorens ‘tables I had previously used was apparent after only a short listening session. The SOTA had a cleaner, more detailed midrange, tighter and more extended bass, and far less harshness or glassiness in the high frequencies. Most important, the SOTA had significantly less coloration than the other ‘tables. Particularly noticeable was the absence of the upper bass/lower midrange hump which plagues the Linn. The only immediately apparent anomaly was a mild hardness in the upper midrange which occasionally made the music sound overexcited. This problem was eliminated by a change to the new SOTA mat which was introduced last summer.

The SOTA was also a more convenient and practical ‘table. Lack of isolation from vibration was a constant problem with the Thorens and an occasional problem with the Linn. Placement is critical with both ‘tables; sound quality could vary significantly depending upon location and sturdiness of support. The SOTA was virtually unaffected by placement. It could be located anywhere in the listening room and on any piece of furniture strong enough to support its 50-pound weight. The additional advantages of automatic speed selection and adjustable pitch soon became appreciated conveniences. Even better, the SOTA required no further adjustment once it was set up.

The Star Sapphire retains the convenience and practicality of the standard SOTA, while adding the feature of vacuum holdown. Is it better than the standard SOTA, and if so, by how much? In a word, the Star doesn’t do anything enormously better than the standard model, except when playing severely warped records. Rather, the Star seems to do everything

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3 We at Stereophile applaud the move to a low-vacuum system, considering the problems we had with Technica’s vacuum disc stabilizer (Volume 6, Number 6). We must point out, however, that we have seen neither SOTA’s research nor independent confirmation. LA
somewhat better. Overall, the sound is more relaxed and natural. Music is presented in an effortless manner and the entire system conveys the impression of less strain. This doesn’t mean the sound is laid back: when tension is present in the music, the presentation has an awesome impact that leaves one clinging to the edge of one’s seat.

Turning to specifics, bass extension and weight are not noticeably improved, but the bass is tighter. Good bass lines on jazz or popular recordings are easier to follow and string bass notes are more readily distinguished from drum beats. On classical music, the double bass section becomes precisely located and the bass lines more distinct. The natural explosiveness of a bass drum struck hard is well conveyed, and the sweet, slow buzz of the tuba is captured properly.

It’s in the upper midrange and high frequencies, however, where the Star most exceeds the performance of the standard SOTA. The mild hardness of the standard model was reduced substantially. The upper frequencies seem to open up, presenting a more natural ambience and allowing the subtleties of delicate passages to be more easily discerned. High frequency tones from synthesizers and percussion have greater purity, and differences between similar-sounding instruments, such as high-hat and crash-and-ride cymbals, are more apparent. However, mistracking on high-frequency passages, if present, also became more noticeable. Precise cartridge alignment is critical if the Star’s advantages at high frequencies are to be preserved.

This purity is preserved throughout the frequency spectrum, and particularly noticeable on pianos and brass. Up till now I’ve harbored a malevolent desire to strangle all recording engineers for what they’ve done to the sound of pianos; now I think that at least some have managed to get it right.

This clarity and increased definition in the midrange can be startling. Problems in recording technique, such as microphone switching, overloading, and cross-field effects, become more obvious. Excessive noises, particularly those made by musicians, are clearer and readily identifiable as to cause. Recording problems in the bass range become more obvious as well. It is easier to distinguish cutting lathe rumble (evident on some older American records) from the traffic and foundation vibration noise common on British recordings of chamber groups. The effects of eigenmode reinforcement and infrasonic resultants on organ recordings not employing a high pass filter are more pronounced.

Perhaps because of the increased definition, an improvement was noted on transients and intertransient silence. Particularly with electrostatic speakers, the Star sounded faster; notes started and stopped with more lifelike precision. The subtle details present at the start of an instrumental attack are captured with remarkable accuracy.

While not effecting any obvious improvement in soundstage width or depth, the Star did achieve a more precise, tighter center focus, with less horizontal smear. The first impression was of reduced soundstage width, but width actually was unchanged; in fact, the standard SOTA sounded slightly loose in comparison with the Star. While soundstage depth did not increase, the apparent depth presented by the Star was more convincing. It simply did a better job of persuading me that I was hearing music from a 3-dimensional space.

Surprisingly, significant changes in the sound can be made by varying vacuum level. On most records the best setting of the vacuum control knob seemed to be a quarter to a third of the way up. At this level, all the benefits of the vacuum feature were obtained. Increasing the vacuum level above this optimal setting
caused a dulling of the overall sound and a noticeable loss of dynamics (not to mention the increased possibility of leached plasticizer).

Even with the vacuum set at the optimal level, I experienced some apparent loss of dynamics compared with the standard SOTA. Conversations with representatives of SOTA confirmed that they also had noticed a loss of dynamics on the Star, but only when the vacuum level was set too high. They suspect the problem may be attributable either to overdamping or to inherent variations in the thickness of records, but they concede they really aren't sure. Left unexplained to me is the slight loss of dynamics I experienced when the vacuum was set optimally.

One possibility is that the apparently greater dynamics with the standard SOTA is in fact only an increase in transient-induced harmonic distortion, as when an electric guitar is played through a fuzzbox. The greater harmonic distortion caused by the fuzzbox makes the guitar sound louder, even though there is no increase in the measurable sound pressure level. Turning off the fuzzbox results in a perceived loss of dynamics.

I found a way of restoring the lost dynamic level, but with some cost in detail and perhaps record wear: increasing the tracking force of the tonearm. The sacrifice of detail indicates to me an increase in distortion; even so, the level of detail and definition remains better than the standard SOTA, and perceived dynamics become as good. While the theoretical question remains disturbingly unanswered, it is possible for the user to restore the lost dynamics (which are perhaps false).

Finally, it seems necessary to say something about the advantages of the Star on warped records. Since my collection is not well endowed with severely warped records, I went out and borrowed some. Severely warped records do sound better on the Star; even so, they couldn't be made to sound as good as flat ones. I find SOTA's emphasis on the Star's advantages with warped records to be misplaced and unfortunate. The Star should not be purchased with the belief that it will produce great sound from warped records. Most badly warped records seem to have other flaws as well, which simply become all the more apparent when played on the Star. The Star is at its best with good records. It makes them sound marvelous. The absolute amount of improvement obtained may not be as great as the improvement with badly warped records, but the end result is far more rewarding.

We come now to the final evaluation: Is the Star worth its extra cost? On the basis of sound quality alone, I have no doubt that the Star is well worth its asking price when used in a state-of-the-art system. The improvements over the sound of the standard SOTA are subtle, but they become more and more obvious with extended listening. It is clearly better sounding than any of the British 'tables' I have heard. The Star is a reference quality turntable; I consider it state-of-the-art. In view of the cost of other premium turntables, the Star's price certainly seems reasonable and must be considered as offering excellent value for the money.

Author's Postscript:
The above review was written based on the initial price of the SOTA Star, which was $1250 (the current price of $1400 is reflected in the specifications at the head of the article). The price increase of approximately 15% does not alter my conclusion that the Star offers excellent value for money. What the price increase does do is make the standard SOTA with a factory-installed vacuum system an even better value. I leave it up to the individual reader whether the cosmetics of the Star are worth the extra $150.
The Model Two + Two represents a new standard of excellence in full-range-element electrostatic speaker design. It combines the sonic advantages of Acoustat's Professional Series speakers with the aesthetics, economy and durability of their critically acclaimed home speaker systems.

Vertical dispersion in the Two + Two is essentially perfect due to its "floor-to-ceiling" vertical line source design, and horizontal dispersion is extremely uniform. Bass response is amazingly powerful and well defined. And, because it is efficient, the Two + Two is easily driven by many medium powered amplifiers.

Plan to audition the Two + Two electrostatic speaker system soon. You'll be amazed by its breathtaking realism, imaging and depth. You'll appreciate its sensible price.

Omni Sound
4833 Keller Springs Rd.
Dallas, Texas 75248
(214) 931-6664
CES always hypes me up. The carnival atmosphere, the multinational crowds, the many familiar faces, the hubbub, the wheeling and dealing, the rooms and booths brimming over with the latest, shiniest, highest-tech offerings of the electronics industry—all these make me feel marvelously euphoric and put an uncustomed spring in my step that belies the fatigue I feel after four unremitting days. But I've noticed in recent years that my excitement is not shared by everyone around me. I noticed it again this time in Las Vegas.

Although many audio exhibitors seemed to be feeling up because lots of dealers were placing orders, there was the same prevailing sobriety as in recent years, when things were a lot worse and some people were predicting that high-end audio was dead, a victim of video and home computing. But perhaps there was more justification for the lack of enthusiasm this time. Beta Hi-Fi and the Compact Disc had already become old hat, and there was nothing of comparable significance unveiled at this show. The only really new thing evident was Kodak's 8-mm videotape format—with the cutest little (Japanese-designed and manufactured) camera and tabletop VCR you ever saw. But whether out of sour grapes or not, some industry insiders were already predicting that 8-mm video would lay an egg. Sony's all-in-one BetaMovie, they observed, was more convenient, more compatible, more available, and offered longer playing time, albeit in a bulkier, heavier package.

The situation was much the same in high-end audio. On display in the Las Vegas Riviera Hotel were many new models of preamps, power amps, and loudspeakers and a few new cartridges, tonearms, and turntables, but nothing revolutionary, earthshaking, or ultimately exciting. There were probably incremental qualitative advances on all fronts, but by and large the audio field as of January '84 could be pretty well summed up as more of the same.

That "same," however, was notable for the very high quality of analog disc reproduction observed in many of the exhibit rooms. In fact, I thought it almost ironic that high-end audio seemed to be celebrating the first anniversary of the Compact Disc by finally getting its analog-disc act together. I have never before heard discs sound this good in so many rooms. Indeed, the overall quality of sound at this CES was dramatically better than at any previous one. Only a handful of rooms were featuring the kind of drive-you-out-the-door sonic uglies that have typified previous shows.

Simply because there was so much good sound at CES, we are eschewing our usual room-by-room rundown for a shorter roundup of what I felt to be the highlights of the Las Vegas show. If some exhibitors feel thus slighted, we apologize. But even they will have to admit that the "new products" they showed this year were more or less rehashes of what they have shown in past years.

A few writeups were done by LA and are indicated by his initials at the conclu-
A COUSTAT
The company that made the word electrostatic utterable in the same breath with the word reliable has finally pared a system down to its ultimate bare bones. The One + One is a single electrostatic panel stacked atop another single electrostatic panel to produce a system that is a mere 11 inches wide by 3 1/2 deep by almost 8 feet high. Available either "straight" or with an additional small (about 18-inch) subwoofer cube, the One + One had surprisingly deep bass even without the subwoofer, and it images better than any other Acoustat system. The price is $1395 a pair—the lowest price yet for admission to the electrostatic speaker club. Will the Half + Half be next?

Also introduced by Acoustat was their TNT-120 amplifier, topologically and stylistically similar to the TNT-200 we've liked so much. Considering that Acoustat has two years' experience building the 200, modifying its design as it goes, the 120 may sound even better than the 200 we reviewed, though at a lower power rating (120 watts per side). It uses the same transconductance FET circuity employed in the 200, and is priced at $795.

Acoustat Corp., 3101 Southwest First Terrace, Fort Lauderdale, Fl. 33315

A PATURE
Apature showed the lowest-priced moving-coil cartridge we have seen yet: the MC-150, priced at a mere $100. The specs on it look pretty good, although I am suspicious of a small 6 kHz frequency-response hump shown on the manufacturer's own blurb sheet. Nonetheless, we hope to report on this in the near future. Apature, RFD 1, Preston, CT 06360

B EDINI
Bedini was demonstrating some "interface modules" which, when connected between amplifier and loudspeakers, are claimed to eliminate the detrimental effects of speaker cables. Their demo was generating impressive sounds from a couple of smallish speakers connected to one of their own amps via what looked like cheap, twisted-pair, 24-gauge wires. Gary Bedini seemed so afraid of revealing any proprietary information about the devices that I came away wondering if they weren't in fact some kind of put-on (or ripoff, depending on how you look at it). All he would tell me was that they do not contain any active devices, nor any transformers.

We were promised a pair of these for testing, and our curiosity is eagerly awaiting the opportunity. Bedini Electronics, Inc., 13000 San Fernando Rd., Bldg. No. 9, Sylmar, CA 91342

B ERTAGNI
BES had an attractive little fountain display in which several jets of water cascaded off the front of one of their flat-panel speakers, to demonstrate how waterproof their outdoor speakers are. The in-the-house models come in four sizes (small thru large, generally speaking) are made of the same basic material—a kind of expanded plastic—but are not supposed to be watered.
The manufacturer’s name, by the way, is pronounced “Ber-tahn-yee.”

**Bertagni Electroacoustic Systems, Inc., 345 Fischer St., Costa Mesa, CA 92626**

**DAHLQUIST**

The first really new speaker system from Dahlquist in God-knows-how-many-years is News. The prototype (no model number as yet) of a 5-way dynamic system sounded superb, with remarkably deep, taut low end, which is something the DQ-10 had little of at all. Phased array was a term invented to describe the DQ-10; the new speaker differs by having the drivers vertically aligned (fundamentally a better design technique)—hence the term “vertical phased array.” Imaging was very good, and the sound had a more alive quality than the DQ-10. The new system is expected to sell for around $1800 a pair.

*Dahlquist, Inc., 601 Old Willets Path, Hauppauge, NY 11788*

**DUNTECH**

Everyone keeps trying to find a way of getting loudspeakers flat enough and thin enough to hang on the wall, like video displays. The Duntech PCL-3 is yet another such attempt and, if a brief listen was any indication, it is better than most.

Utilizing conventional (although shallow) driver units, most of its design has gone into minimizing the horrendous midrange cavity-resonance peaks which usually mar such designs. Each speaker measures 23\(\frac{1}{2}\)" by 16\(\frac{3}{4}\)" by 3\(\frac{1}{2}\)", and frequency response is claimed to be within \(\pm3\) dB from 55 Hz to 20 kHz. Actually, it sounded a lot smoother than the \(\pm6\) dB allowed for in that spec. Bert Whyte, who was in the room while I was there, was also favorably impressed and has already announced the Duntech as the most natural-sounding speaker he’s ever heard, in the pages of *Audio*.

*Distributed by W&W Audio, 4821 Mc-Alpine Farm Rd., Charlotte, NC 28226*

**FANFARE**

This new company was showing its Tempo, a small bookshelf speaker that seemed to produce unusually nice sound for its $450/pair list price (East coast; West coast is $425). Aimed at the “average” audio buyer, the slogan “Fanfare for the Common Man” was clever, appropriate, and conducive to appreciative groans.

*Fanfare Acoustics, 4650 Arrow Highway, F-4, Montclair, CA 91763*

**FOSGATE AUDIO**

One of the most talked-about exhibs in High-End Hall was a video demonstration featuring a projection TV system (the Kloss “portable”) and Fosgate’s Tate II surround-sound decoder.

The Tate Decoder was the first device which, through the use of “logic circuitry,” made SQ surround-sound work the way it always should have, but it came along too late to save 4-channel disc reproduction from oblivion. Jim Fosgate’s Model II uses three of the Tate chips to provide surround sound from SQed discs, ordinary stereo discs, or Dolby-stereo-encoded video discs and tapes.

Fosgate showed two very noisy excerpts from the James Bond Octopussy and Spielberg’s *Raiders of the Lost Ark* LaserDiscs, with picture quality as good as I have ever seen from an NTSC video source, and positively mind-boggling sound! The power amplifiers—rated at a mere 10 watts per channel, from tubes—were overloading at the high end, but the middles and lows were stupendous, far better than one hears from most movie theatre sound systems. I was certain there was deeper bass than the 40-Hz limit of laserdiscs, and indeed I later learned that Fosgate’s demo system included a dbx low frequency synthesizer, which creates LF fundamentals from their overtones.

The price for the decoder and remote control (but no amplifiers) is $624.95.

*Fosgate Research, Inc., 437 S. Monte-zuma, Prescott, AZ 86301*
GREG

Another new entrant in the high-end audio rat race, Greg showed two rather conventional-looking but promising-sounding multiway systems: a floor-standing one named Greg ($900 a pair) and a bookshelf system named "The Little Entertainer" ($340 a pair).
Greg Acoustics, P.O. Box 29105, Baltimore, MD 21205

ILP

The first consumer products from a company previously only supplying parts to manufacturers, the 1d1 and UPs are compact preamp and power amplifier units available either as kits or ready built. The tiny (about 2-1/2" by 5" by 10") 1d1 has impressive-looking specs and offers the bare practical minimum of controls: volume, balance, and a three-position selector for MM phono, tuner and tape. The Model UP power amps, which aren't much bigger than the preamp, are mono units available in several models: bipolar or MOSFET, with power ratings from 60 to 120 watts. (One bipolar stereo model is 30 watts per.) Distributed by Gladstone Electronics, Inc., 1585 Kenmore Ave., Buffalo, NY 14217.

IMAGED STEREO

Another name new to us, this firm was demoing what they call The Imager—a floor-standing speaker system of modest size which is claimed to produce the imaging accuracy and stability of a small satellite system—a claim we can vouch for, having heard it. (Their literature reads as if the system turns your room into a concert hall, which it doesn't.
Imaged Stereo, Inc., 2265 Westwood Blvd., Los Angeles, CA 90064

KIMBER KABLE

RKB Industrial, the manufacturers of Kimber Kable, were attracting visitors to their room with free 3' samples of freshly wound interconnect cable. They had set up a clunky but efficient cable-braiding machine which, except for being spanking new, looked like it could have come from Dickensian England. Shades of the Industrial Revolution!

This was all to point out that Kimber is actually part of a much larger company whose business is making industrial cable; Ray Kimber has control of his audiophile product from the copper ingots through the application of insulation to the final braiding of insulated strands. Kimber's literature goes to some lengths to point out the advantages of this kind of control, making distinctions between the methods and speeds of drawing the copper into strands, the treatment of the copper along the way, choice of insulation, etc. They were also introducing a new product, available as 4VS (13.9 gauge) and 8VS (10 gauge) which "represents the results of some long term research." We haven't tested either the new or old Kimber Kable (I just hate it when people use Ks for Cs), but I came away from my talks with Ray convinced that he knew a helluva lot about cable manufacture.
MAGNUM ELECTRONICS

Magnum was showing and demonstrating their FM Power Sleuth signal booster, which can effect a dramatic improvement in the quality of reception from feeble FM signals.

Magnum's Marv Southcott also introduced me to something more FM listeners should know about: a complete directory of all FM stations in the U.S. Called the FM Atlas, it can be ordered for $6.95 from FM Atlas, Adolph, MN 55701. Distributed by Castle Marketing, P. O. Box 219, Alexandria Bay, NY 13607.

MARTIN-LOGAN

Not new at this show (it was first shown in Chicago last June), the Martin-Logan Monolith is the first curved diaphragm wide-range electrostatic speaker ever to be mass produced. And this was the first time I had heard it.

The Monolith is actually a two-way system, with its electrostatic element crossing over at 100 Hz to a 12-inch cone woofer in the lower part of the cabinet. There is no provision for biamping, although the manufacturer claims that the system's use of a heavy-duty crossover (see photo) makes biamping both unnecessary and undesirable.

I heard the Monolith in two rooms, M-L's own and that of Win Labs. Most immediately noticeable was the speaker's imaging, which was at least as good, and as seamless, as that of the Quad ESL-63. Sound quality was better in Sao Win's demo than in M-L's, but I was unable in either to judge how well the woofer blended with the electrostatic element. Martin-Logan, P.O. Box 741, Lawrence, KY 66-44

MAPLEKNOLL

In the Apax Marketing room, Mapleknoll (formerly Colony) was showing a new compact version of their air bearing turntable-tonearm unit, to be priced at $695. Considering that the full-scale version of the air bearing turntable and arm lists out at $1800, this new model must be considered a bargain. In fact there are very few high quality turntable-arm combos at that price. Of course, it remains to be seen if the compact version is pretty much as good as the full-scale unit. Apax Marketing, 18002 Lamson Rd., Castro Valley, CA 94546
**MEITNER AUDIO**

Meitner was one of two manufacturers displaying preamps with remote-control units. PS Audio was the other, though theirs is still in prototype form.

Meitner’s connects to their PA-6 preamp via an umbilical cord. Controls are for volume, mute (-20 dB), channel balance, and absolute phase (also known as signal polarity). The remote unit processes only DC control signals; no audio signals are passed to or from it. Volume and balance are adjusted via DC control voltages in the main preamp unit.

The price is $1400 including remote control and its interface module.

**Monolithic Sound**

Many perfectionists have observed through the years that tubes seem to sound better in early amplifying stages than transistors, while transistors are better in output stages. Monolithic (another new name) unveiled a $1600 integrated (all on one chassis) preamp/amplifier embodying this allegedly best-of-all-possible-worlds.

Rated at 100 watts/channel output, the 100ti contains switching which allows to biamp operation. When so converted, the unit provides its own 100-Hz 6-dB/octave crossovers.

**Nitty Gritty**

Nitty Gritty, which seems able to crank out new record cleaning systems as regularly as other companies turn out new preamps, was showing what may be the ultimate record cleaner. The Pro is the first such device to wash and dry both sides of a disc simultaneously.

Unlike previous NG machines, this one motor-drives the disc (via a rubber drive puck), and has a 1/2-horsepower vacuum motor to “vacuum a record bone-dry on both sides in just 15 seconds,” to quote NG’s literature.

NG also sells a specially formulated cleaning solvent for use in cleaning 78-rpm discs, which have somewhat different cleaning requirements than vinyl discs.
One of the most attractive and unusual-looking tonearms I have seen is the RP1-XG from Odyssey Engineering, a Scottish firm which has recently established a U.S. distribution office.

Made of silver-anodized aluminum (arm tube and pillars) and gold-plated brass (everything else), the RP1-XG features a solid metal cartridge mounting block, full adjustment of all parameters, and a choice of three easily changeable arm tubes to match a variety of cartridge weights and compliances. In addition, its mounting base looks similar enough to that of the SME 3009-III that it might be an easy direct replacement for that arm.

If the Odyssey sounds as good as it looks, this could be the arm of the year, even at $795.

Odyssey Engineering (USA) Ltd., 3 West 37th Ave., San Mateo, CA 94403

**ORION BLUE BOOKS**

Thinking of selling your old Panasonic turntable or JVC videocassette recorder? Looking for bargains in used home electronics? Orion Publishing may be able to help.

The Orion Blue Books list the original prices and typical used prices for everything from amplifiers to electronic musical instruments, in four volumes entitled *Professional Sound, Camera* (film-type), *Audio*, and *Video*. Each Blue Book has over 200 pages of listings, and costs between $35 (Video) and $95 (Audio).

Orion Publishing Corp., 1012 Pacific St., Suite A-1, San Luis Obispo, CA 93401

**PS AUDIO**

Having made their name in low-cost electronics (the first product was an under-$200 phono stage introduced about 5 years ago and claimed to "make any preamp sound better," due to its ±.1 dB RIAA accuracy), PS Audio is now tackling the ultimate preamp, called the PM-1. Paul McGowan is faced with a tough
dilemma: he’s committed to solid-state technology but admits that there are ways tube preamps simply sound better. In an effort to solve his dilemma he’s broken the “sound” of tubes into four categories of advantage:

(1) Much easier to listen to.
(2) Greater ability to resolve low-level detail.
(3) More dynamic headroom and contrast.
(4) A tangible sense of you-are-there.

Paul’s solved three of these problems, but has found the fourth more resistant (reportedly it’s now been solved as we go to press and the preamp will be ready for production in July). PS will not release this preamp until it sounds as good as the best tube units—while retaining the solid-state virtues of low maintenance, superb low end, and extended highs.

The new preamp will also have an optional remote balance and volume control which has been worked out most ingeniously. Paul loves the idea of controlling balance and volume from your listening seat but abhors the idea of running the signal to and from a control. His unit operates the volume and balance controls through little dc motors that are controlled by the remote unit. Even better, he’s incorporated a logic circuit so that you can make adjustments from either the remote unit or the controls on the front panel without switching back and forth between them. If you think about it, that’s a tricky problem to solve.

By the way, the S of PS Audio (originally Paul McGowan and Stan Warren) has moved on to new pastures in Eugene, Oregon, where he’s formed a company called Trusonics. No products from them to date.

LA
PS Audio, 3130 Skyway Dr. # 301, Santa Maria, CA 93455

RAM TUBE WORKS

RAM (the initials of its founder and president, Roger A. Modgeski) Tube Works has come up with a new gimmick for marketing vacuum tubes. They use a special computer program (for the Apple II) to automatically test five parameters of 128 tubes simultaneously and deliver a hard-copy printout of the test results for each tube. The printout is then attached to the box for that tube, allowing the tested tubes to be quickly sorted by quality grade for noise and microphonics. (Distortion is not measured.) This not only allows you to match tubes to your budget but to each other, so that both channels of your preamp, for instance, sound the same. RAM’s prices for the tubes are then predicated on their measured quality; for a 12AX7/ECC83 they range from $10 to $17.

RAM was also showing a prototype of the world’s most expensive head amp: an all-tube unit priced at a staggering $2500! It uses six dual-triodes per channel (in parallel, because the lower the impedance the lower the noise) and floats the amplifying sections on high-compliance suspensions to minimize microphonics.

RAM Tube Works division of RAM Labs, 126 East Haley, Suite A-15, Santa Barbara, CA 93101

SAWAFUJI DYNAMEC

If that name isn’t familiar, it could be because Sawafuji Dynameca is a new name on these shores. A family-run business established more than 60 years ago, SD started in the electronics business by producing headphones, the original model of which is still available and is claimed (by SD) to be “one of the most sensitive, robust, and modestly priced headphones on the market.” They now also have a small line of unusual “Dynapleat” flat-panel loudspeakers which use multiple voice coils to drive the panel from many points over its surface, à la electrostatics. Sawafuji Dynameca was at CES seeking U.S. markets.

Sawafuji Dynameca, Azumi Bldg. 4-13-7, Sotokanda, Chiyoda-ku, Tokyo 101, Japan
Peter Snell was showing a prototype of his latest Type A speaker, the A/III. Snell has always placed great emphasis on ruler-flat frequency response (typically ±1.5 dB in a room), and the A/III is no exception. It has a new woofer in a somewhat larger cabinet, an extensively reworked crossover for the midrange driver (which has been repositioned on its baffle), and an added rear-firing supertweeter for more extended high end. No longer can the Type A be placed right against the rear wall—at least not if you want to hear the supertweeter.

The results were impressive. Using Esoteric Audio Research electronics, the A/IIIs produced thunderous low end and spectacular imaging, particularly for a CES. Placed only about 18" from the rear wall and nearly 12' apart (I was sitting about 8' from the speaker plane), the Snells projected a seamless soundstage with almost unnaturally sharp focus. The midrange and high end were excellent; truly a speaker to be reckoned with. Just before press time we learned that the A/III, which will actually go into production, will have a 12" woofer (they were using a 10" at the show), and has been measured flat within .75 dB (!) from 600 Hz to 18 kHz.

Since we've reviewed and been mightily impressed by a number of "phase-coherent" speakers, I asked Peter Snell how he got such good results (in a product that the public has clearly liked over the years) without an emphasis on phase coherency. Snell feels that even frequency response, both on-axis and up to 90° off-axis, is the primary job of any loudspeaker. Within the limits of flat response he pursues phase coherency as much as possible, but has not been able to pursue both goals in an absolute manner. Since truly phase-coherent loudspeakers can only be so in one listening position, they tend to place less emphasis on off-axis response, and some don't sound good off-axis. We'll be interested to hear the new Snells when they're introduced in May at the new price of approximately $3490.

**SOUND LABS**

The recent lack of prominence displayed by Sound Labs, who a couple of years ago were vying with Acoustat for the most listenable, reliable and affordable electrostatics, was somewhat ex-
plained at CES. Tragically, Roger West (the designer of all Sound Labs products) has been afflicted with an ear ailment that has required 3 separate operations—one of which coincided with the show in Las Vegas. Can you imagine a more serious problem for a high-end speaker designer? Our sympathy goes out to Dr. West, who has been one of the most committed and involved high-end manufacturers of our acquaintance.

Awaiting his return, Sound Labs has been in a kind of holding pattern, producing their old and enduringly popular models but foregoing the innovation which high-end companies need to create excitement amongst the audiophile public. We wish Dr. West a speedy recovery and return to the designing forefront. LA

SOUTHER ENGINEERING

Lou Souther, designer of one of the more successful straight-line tracking tonearms, introduced a cute little gadget called the Clever Clamp—a lightweight record clamp made of clear plastic which allows one to read the record label while it is in place (and to use it with his own arm, which fits over the disc spindle). It looks overpriced at $15, but it seems no one will sell anything for less than 8 bucks anyway (see the review of the "Pig" record clamp in Volume 6, Number 6). *Souther Engineering Corp., 429 York St., Canton, MA 02021*

STREETS ELECTRONIC SYSTEMS

Streets has been around for some time under the name Bipolar Electronics, but they changed their name to that of the President and designer, Barry Streets, sometime before last summer’s CES. At that time they introduced the Model 950 power amp to replace the Bipolar Model 850. Aside from looking much better, the 950 offers greater output capabilities and extra refinement in high frequency reproduction. We had a Model 850 for a few weeks over a year ago, and it performed very well. Unfortunately it had to be returned before a complete evaluation could be made, and there has been no 950 to follow in its footsteps.

At this winter’s show, SES brought out their first preamp, a Model FET 1000 for $1750. *Streets Electronic Systems, P.O. Box 2797, Livermore, CA 94550*
Wharfedale Option 1

This year's WCES was the anniversary of Stereophile's erroneous announcement that Wharfedale had gone out of business (there had been such a report in the British press, but Wharfedale was rescued by Peter Newman). Not only is Wharfedale not going out of business, they're spearheading their re-entry into the U.S. market with a $14,000 flagship loudspeaker, the Option 1. The literature for this product makes much of its dipole dynamic-driver design. All that's really involved is woofers and midrange drivers on opposite sides of their respective cabinets wired out of phase with each other, so they move forward and away from the listener in unison. As far as I know nobody's tried that before. Further emphasis is placed on thewoofer section's being oriented parallel to the rear wall rather than perpendicular to it. In the parallel mode, according to Wharfedale's measurements, markedly less room resonance is stimulated.

While the Wharfedale engineers had obviously used much ingenuity and spent skads of money on the Option 1 (whose unusual appearance is actually kind of attractive—like an industrial sculpture), I feel they have still further to go. I wouldn't have been able to commend the sound had it a $2,000 price tag, much less a $14,000 one.
GREATEST ABUNDANCE

What components were seen in greatest abundance in the Riviera’s High-End Hall? The Talisman cartridge, SOTA and Oracle turntables, Audio Research preamps, Threshold, Krell, and Audio Research power amps, Spica TC-50 and Sound Labs A-2 speakers. There was no preponderance of any one tonearm.

NEWS

So much for the hardware. Other items of interest were informational. For example:

A reliable source reported having been given a Compact Disc that someone had made in his garage, and that it played all the way through on a Sony CDP-101 player “without a glitch.” This is news of enormous import, because it means (1) CDs can be made at far lower cost than previously estimated, which is good, and (2) CDs can also be pirated, which is not so good. One of the attractions of the CD, for record manufacturers, was the apparent impossibility of piracy. With piracy now more than just a possibility, some who have been thinking of “going CD” may have second thoughts.

Telarc records is going big-time. Company president Jack Renner said that recording plans for the foreseeable future include sessions with some major orchestras and conductors, of works which are less war-horsey and more musically substantial.

Reference Recordings too will be following their highly acclaimed Symphonie Fantastique with more symphonic recordings in the future. Their latest is a truly stupendous production of Respighi’s Church Windows, with the Orchestra of the Pacific. (They played an excerpt from it on a 15-ips tape copy.) RR also earned my nomination for having the best sound at this year’s Winter CES, through the courtesy of Spectral electronics and the Entec granite turntable (with the Breuer arm and Koetsu Rosewood cartridge) and Entec’s ribbon speakers and cone subwoofers. Of course, a very large plushy room helped. All of these companies, with the exception of Koetsu and Breuer, have sort of a common pool of management and employees, and are housed in the same building in Sunnyvale, California.

Finally, I would like to thank, on behalf of all of Stereophile’s crew, Las Vegan Bill Seneca (of Promethean fame) for locating a place for us to stay, which seemed impossible three weeks before the show. Lest you readers think we’ve been squandering your subscription dollars in the City of Sin, the name of our motel was the Mini-Cost Motor Inn, and mini-cost it was.
ARE TIFFANY CONNECTORS WORTH THAT MUCH?

Yes and No. It all depends on how much you want to enjoy the hi-fi system on which you have already spent a great deal of money.

A hi-fi system is a chain with each component a link, the weakest link deciding how "weak" your entire system is. And that weakest link often turns out to be your interconnect cable.

The cable itself requires additional links and, until TIFFANY CONNECTORS were available, the connector was the weakest link in that chain, like a $.10 lock on a $100 chain.

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POB 16543 Tampa, FL 33687

OEM/Export: M. BERNS INDUSTRIES (212-869-4580)
Box ‘D‘, NY NY 10028

THE WATKINS LOUDSPEAKER

Reviewers have described its sound as being musical, convincing, realistic, detailed, accurate, listenable, and absolutely superb. It has "revived" audiophiles who were "burned out". Electrostats have been traded in on it. Manufacturers are using it to listen to their design work. It has been used by elite companies at CES. It is a dynamic loudspeaker. It is the Watkins WE-1.

Even in view of the above, we do not consider the WE-1 to be perfect. We are confident, however, that there are none better.

For complete specs, write or call: Watkins Engineering
1019 East Center St.
Kingsport, TN 37660
(615) 246-3701
Electrostatic speakers, like vacuum tubes, are a high end vice. They are expensive. They require loving care. It seems to take years for the product to go from initial introduction to design maturity, and even then it takes extensive tweaking to bring out their best. The Quad ESL-63 is a good case in point. I have finally broken down and bought a pair as part of my reference system, but this is the fourth pair I have had in the house, and there have been several important modifications:

1. I have changed the grille cloth for a much lighter and more transparent cloth. You can read through this one, and it is close to having no grille cloth at all.
2. I am using a new and far more rigid stand.
3. I have replaced the snap-in speaker cord terminals with heavy binding posts to allow the use of top-grade cable.
4. I have bypassed the large 220 µF electrolytic capacitor at the speaker input with a mix of polypropylene capacitors.
5. I use a subwoofer with some program material—that which requires exceptional dynamic range or has very heavy bass content.

Up to a point, these are relatively minor modifications. They are, however, supplemental to some equally important modifications made by Quad, and they involve the deliberate rejection of more drastic modifications suggested by others.

**Grille Cloth**

Quad has manufactured the ESL-63 with two grille cloths. Neither is particularly good. The change was made in September, 1981, but even the new grille cloth affects the sound from the midrange up, as well as high frequency response. The ESL-63s are extremely directional above about 8 kHz and they benefit from either no grille cloth or as little as possible.

It is not easy, incidentally, to know when a cloth is good. There are some—like burlap—which look transparent but have terrible acoustic effects. I eventually found a thin strength knit with very large
open holes in a netlike fabric. I would advise no grille cloth if your roommate can stand it.

As for removing the wood plate on top, this will help reduce vibration—particularly on the older ESL-63s. You can, however, make the same improvement and keep the styling intact by removing the top plate, unscrewing the screws in the bottom, and rubber-cementing a thin layer of rubber between the plate and the top of the speaker.

The ESL-63s are extremely directional above about 8 kHz and they benefit from either no grille cloth or as little as possible.

**BETTER STANDS**

As for stands, the issue is a bit complex. The ultimate ESL-63 freaks modify or replace the frames and stands to the point where they rebuild the speaker. The results are impressive, but equivalent to major surgery. John Nork, in a recent review in *The Absolute Sound,* suggests adding the Quadrapod speaker feet from Linn to the rather shaky stand normally sold by Quad. His suggestion is a good one. The feet are available from any Linn dealer in the U.S., and hold the stands more rigidly to the floor. Rigidity can be further improved, incidentally, by using thick two-sided adhesive tape between the stand and the base of the ESL-63s.

Better stands are available in the U.K. from the same people who make the Pod feet for Linn. A rigid stand absorbs the ESL-63's considerable energy transfer to the speaker frame at frequencies below 200 Hz. They will do more for ESL-63s with the older style frame (serial numbers lower than 11601) but they will improve any pair of ESLs. Equally important, a high stand will raise the tweeter axis to ear level and greatly reduce the effect of floor and furniture in absorbing upper octave energy and altering the speaker’s imaging. The Quads are acutely sensitive in this regard.

A warning, however: In some rooms, for some Amityville (or Amway) Horror-like reason, the effect of rigid mounting, plus feet that dig through the carpet into the floor, is to darken the speaker’s sound and deprive it of its life and air. The only thing you can be absolutely sure of is that the speaker needs to be high enough off the ground so the image is not altered by the floor, and the center of the diaphragm is at ear level.

I also should note that the instruction manual is dead right about angling the speaker to face the listener at a 30°-40° angle to the rear wall. This not only broadens the soundstage, it also reflects part of the back wave away from you and allows the front wave to dominate your perception of the music via the Haas effect. If you do not angle the speaker this way, you either have to move it too far back, or fix it with the Quadrapods.

A rigid stand absorbs the ESL-63's considerable energy transfer to the speaker frame at frequencies below 200 Hz ... they will improve any pair of ESLs.

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1 Volume 8, Number 32, pages 66, 94-96.

2 The Haas precedence effect is the observation that a sound coming from two different sources will be heard as coming from only the source it arrives from first, as long as the difference in arrival time does not exceed a certain threshold, e.g., 50 milliseconds.
far from the rear wall for proper frequency balance or you get a slight confusion of information from the sound bounced off the rear wall.

Finally, I advise against such modifications as treating the rear wall to absorb sound or adding a backwave absorber directly to the speaker. This reduces the apparent high frequency image and alters timbre. If you want this speaker, leave it as a dipole radiator.

**USING BINDING POSTS**

As for the use of binding posts instead of clamps, I should note that this modification and the bypassing of the input capacitor were suggested by Steve McCormick of The Mod Squad, 542 Coast Highway 101, Leucadia, CA 92024 (619-4366455).

Steve sells a kit for such modification ($80) as well as some *ne plus ultra* conversions of the Quad 405 amplifier ($600) for true Quad fanatics.

The binding post modification sounds small, but it isn't. We tend to think of cone drivers as very sensitive to speaker cable and impedance, and ignore these factors when it comes to planar speakers. It ain't so. The ESL-63 is extremely sensitive to both the amplifier and the speaker cable, and to how well the cable makes contact with the speaker. I can recommend Straightwire and Discrete Technology speaker cable for the best bass response with amplifiers that can really control the Quads, and Kimber Cable for units where the midbass becomes too full.

As for the amplifier, I can tell you that the Conrad Johnson Premier Four does a slightly less good job of controlling the bass than the Audio Research D-160B. Otherwise the CJ excels in the lower midrange and the D-160B in the upper midrange. Generally the overall amplitude response of the Quad and its apparent timbre are incredibly sensitive to the amplifier you use. The VSP Trans MOS, for example, produced jarringly powerful bass, the Acoustic Electronics 2.2 was a little light but very tight and well controlled, and the PS Audio 2C Plus went deeper than the vacuum tube units but not as deep as the VSP.

I have, incidentally, rejected the option of rewiring the internal circuitry of the speaker. There simply is too much wire of light gauge in too many coils and operating at too high voltages to play around. Using good speaker cables makes sense, but enough is enough.

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**The ESL-63 is extremely sensitive to both the amplifier and the speaker cable, and to how well the cable makes contact with the speaker.**

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**BYPASSING THE INPUT CAPACITOR**

As for the input capacitor, use normal polystyrene or polypropylene bypass techniques, or buy the Mod Squad kit. Do not remove the original or replace it with another capacitor. The unit is shunted by a 1.5Ω resistor to fine-tune the frequency response, and is not simply a DC trap.

Such bypassing cleans up the highs from about 1500 Hz up, with the improvement steadily more apparent as you go higher in frequency. The speaker becomes more transparent, the highs are more extended and better balanced, and the apparent listening area becomes slightly larger.
**SUBWOOFER**

In general, subwoofers do not mix with electrostatics and ribbons. I am not a fan of the Acoustat hybrids because I can hear a mismatch between the electrostat and the cone woofer. I never liked the AR-1/Janszen combination, and Dave Wilson is the only man I have ever met who can mix and match cone and electrostat and come out coherently.

Nevertheless there is at least one unit that offers a sane combination of features, price, and outstanding quality. This is the Acoustic Electronics RP1. It is a two-piece system selling for about $1,300. One piece is a rackmounted electronics console with a Class-A crossover operating at around 100 Hz, a built-in servo amplifier, and a front panel with a test tone control, straightwire bypass switch, phase adjust switch, and volume adjustment. The second unit is a single dual-coil servo subwoofer. It takes one long cable to connect the two units. The subwoofer is small and convenient to place.

Properly adjusted, and it may take a week or more of tweaking to place and adjust, the RP-1 will blend in very well with the Quads. Unlike the AudioPro and some other units, it inflicts only minimum coloration on the sound. You can hear it affect the signal passing through the crossover through the best tube and transistor gear, but very faintly and only using the very best sources—e.g., the fastest moving-coil cartridges. Whatever the phase adjustment really does, it also helps the blend. The M&K, Dahlquist, and Audiopro simply don’t sound coherent with the ESL-63s, and neither did most homemade units I tried. I can’t speak for the Entecs and Janis’s, however, and can scarcely claim to test subwoofers regularly.

In any case, the RP-1 does more than add the bottom octave (or most of it—the unit depends on room effects for powerful bass below 30 Hz). It frees the Quad frame and diaphragm of what can be very serious vibration problems, and adds excellent dynamics to the Quad’s other virtues. Depending on the vintage of your Quad, it can truly save the sound from what are often very serious resonance effects. It also can clean up the area around 80–130 Hz, which very often is slightly exaggerated or warm in Quads and which can contribute to a darkening or slightly bass-heavy sound.

**REPLACING THE PROTECTION CIRCUITRY**

Thanks to Ross Walker, I was able to replace the power protection circuitry in my ESLs. This (which is not really a modification) made the most important difference of all because it turned out that my amplifiers had already partly burned out the key resistors in both speakers. The original R1a/R1b and R2a/R2bs are the four blue resistors in parallel in the upper right-hand side of the clamp detector board, upper being defined as the side with the input lead holes.

These four resistors affect the sound and the protection, and they are power as well as watt sensitive. Many U.S. amps (but very few British ones) can fry the hell out of them. Worse, they can go into a quasi clamp-down mode and limit speaker dynamic response while doing nasty things to your amplifier. I suspect that most Quad horror stories come from the fact that the speakers have been overdriven for extended periods and the resistors either burned out or were damaged enough to produce significant distortion.

My strong advice is to look inside your speakers, and if you see four very tall thin blue resistors in the place I have described, rather than four normal, greyish-brown, power resistors, contact Quad USA (695 Oak Grove Avenue, Suite 3A, Menlo Park, CA 94025) to buy two new.
boards. Two of the eight resistors in my pair of speakers did not have telltale brown marks from overheating, but definitely were out of value. Further, Quad made several modifications to this board between July 1981 and April 1982, and a pair costs only $105 for the parts. Go for the new board on principle.

More generally, take Quad at its word and don't go for superpowered amplifiers. Quad recommends a maximum of 100 watts. Resistors or no resistors, more power will not help, and driving the speakers with significantly more than this power is likely to damage the speakers or produce premature clamping. I found that the Conrad Johnson Premier One was simply too powerful, while the Premier Four and Audio Research D-160B worked well, and amps in the 75-100 watt category got something close to Quad's specified output.

Beware, however, of the American power trip. We've got some amplifiers with RMS wattage ratings of 150 watts (or less), but with the reserve power to weld armor plate. One careless interconnect pop with such units and you have trouble.

**QUAD'S MODS**

This brings me to a rather touchy area. Every manufacturer continuously upgrades their product, is vulnerable to supplier problems, and tends to experience problems with export markets. I should be careful to state, therefore, that it is not criticism of Quad to point out that they have made some substantial modifications of the ESL-63 since it hit the market in 1981.

These are described on pages 15-16 of the most recent owner's manual, and the punchline is that the Quads with the new protection circuit and serial numbers above 11601 are likely to be substantially better than the earlier units.

---

*We've got some amplifiers with the reserve power to weld armor plate.*
The most important modifications were made as follows:

July 1981: Fixing the clamping level and increasing the shutdown time to 4 seconds.

August 1981: Modification to eliminate sparking between the shroud and transformer core strap.

April 1982: Speaker modified to reduce dust cover resonance. Serial no. 11601 and above, louvres modified to reduce resonance. Earlier versions have slots in the sides, and louvres are now white.

Date unknown, circa mid-'83: Introduction of new protection circuitry.

Please do not panic. This does not mean you should run out and sell your old ESL-63s and buy new ones. If you can't hear a problem, the chance is that all your problems can be cured with simply a new protection circuit. I would, however, tend to spring for a new pair of 63s rather than buy a used one; after all, just guess which used ones hit the market first! I also would insist on opening used units to check the power resistors for browning or damage, and on a very demanding audition. And if you choose to ignore this sterling advice, caveat emptor, sucker!

BAD MODS

This brings me to the other modifications I have tried. Virtually all of them deal with major changes to the protection circuitry, or its elimination. I would strongly advise against such changes and would not pay a nickel for any unit that had them.

Quad's new protection circuit does everything sonically that defeating the sniffer coil, defeating the clamp or detector, or other drastic surgery will do. It also will keep your speaker alive one hell of a lot longer.

I presided over the terminal illness of one dealer-modified unit. It died slowly and without grace, and the modification was clumsy (cold solder joints, differences between each speaker in the pair) and did nothing for the sound.

I tested the various modifications on my own unit after careful consultation with Steve McCormick and Quad. The mods helped with the old protection circuits (remember they were partly damaged) and did nothing significant with the new protection boards. (Different yes, better no.)

Moreover, these modifications are heavily dependent on the use of an amplifier which will never overdrive the speakers. Good luck! There are so many trade-offs involved in terms of voltage relative to time that I think you'd be out of your gourd to risk a speaker system this expensive.

If you do want to play, however, I suggest you write Quad or consider the Mod Squad-converted 405 amplifiers. I also suggest that if your dealer offers such modifications, you get a written warranty with at least several years of coverage.

I presided over the terminal illness of one dealer-modified unit. It died slowly and without grace...

THE SOUND

As for the sound, I find the modified ESL-63 to be the most coherent and musically integrated speaker I have yet heard. The Stax 81 may be more accurate in the midrange, but it lacks extension and dynamic range. The ESL-63's clarity and ability to provide fine musical detail more than make up for the top and bottom
extension and dynamics they, in turn, sacrifice to the Acoustats. They are cleaner and more coherent than the West Sound Lab speakers I have heard to date; as for the newest Dayton Wrights (Model XG10, Mk.II), I have not heard them under conditions where I can make a judgment. Not only that, the Acoustat 1 + Is are coming, as well as the Stax F83s.

For anyone who loves detail, low-level harmonic accuracy and air, a properly modified and set-up pair of ESL-63s may be the speaker to own.

WAMMs or IRSs they are not, but they are an order of magnitude cheaper. They may not be superbly dynamic, but they certainly are acceptable. The bass may be limited, but 40-45 Hz is good. The treble may be slightly beamy, but my modified Quads solve many of the problems in upper midrange transparency and precision heard in the first units I tested, and the natural imaging is second to none. Nothing I know of is quite so revealing of musical detail using the best moving coils over the entire midrange.

At $2800 in the US—or £1052 for the ESL-63s and £51 for the Stand and Deliver stands from the U.K., plus shipping and no warranty—a modified pair of Quad ESL-63s can now provide you with a top quality and fully competitive high-end speaker. For anyone who loves detail, low-level harmonic accuracy and air, coherence, compatibility with a wide range of rooms, avoidance of biamping and fussy electronics, and ability to listen musically to a very wide range of source material, a properly modified and set-up pair of ESL-63s may be the speaker to own.

AHC

3 Here the Editor would beg to differ, and AHC’s notes about amplifier compatibility seem to concur. In our testing of the ESL-63, amplifier choice was crucial, and we’ve heard from a lot of users who agree.

JGH

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MANUFACTURERS' COMMENTS

NELSON-REED 6-02/B SPEAKER

Bill and I would like to respond to your kind review of our Model 6-02/B speaker as it appears in this issue. Here are some factual updates:

Nelson-Reed manufactures the following products: a. The Model 5-02 Mini-Monitor (12"H x 8"W x 6"D, $450/pr.) designed to compete in size and design with the LS 3/5a or Pro-Ac Tablette. b. The Model 6-02B (19"H x 12"W x 9½"D, $550/pr.) designed to provide the best possible sound quality and frequency range vs. size available, regardless of cost. c. The SW-1201 (18" cube, $450) center-channel subwoofer to be used with a pair of 5-02s or other minis. d. The TW-1202 ($650/pr.) single channel subwoofers designed for use in pairs with a pair of 5-02's, to create a carefully matched, full-range, 3-way audiophile system.

Your review of the 6-02/B is well done and well-listened. Our concern lies only in one area, and that is what might be called "positional," i.e., the comparison of the 6-02/B to other systems. We agree that the midrange on the 602/B isn't on par with the LS 3/5a or the Tablette. It isn't on par with the Nelson-Reed 5-02 either, but it is, we feel, decently close, and, much more important, better than any speaker its size covering accurately anywhere near its frequency range.

Your comment that, quote, "These are the first bookshelf-size speakers we've heard which reproduce a reasonable version of the entire musical spectrum," is a high compliment to us, as that is exactly what they were designed to do.

Many of our customers frequently say things like, "Nothing under a $1000 a pair or anywhere near the size comes close." In short, we wanted to produce a speaker that for the vast majority of reasonably serious music listeners would more than suffice to satisfy wholly.

We feel, as you, that our goal has been reached. If ultimate accuracy is the ultimate goal of a customer, we usually recommend 5-02s to start, with addition now or later of one SWE 1201 or a pair of TW 1202s. All are fully modular. Model 5-02s may be successfully used without a subwoofer as they have a much lower (and cleaner) frequency response than other minis of their size.

Again, thanks from Bill and myself for a thoughtful, enthusiastic review. Stereophile is a real service to all. If any reader would like a write-up of the Nelson-Reed approach to the maximizing of loudspeaker performance through contemporary technology, please write to my attention.

Ron Nelson
Nelson-Reed
15810 Blossom Hill Road
Los Gatos, CA 95030

AUDIONICS CC-3 AMPLIFIER

Thank you for your fair and honest appraisal of Audionics as a company and of our CC-3 amplifier.

Over the years, we have striven to design and manufacture products that are sonically accurate as well as reliable and a good value for the money. We review and update our designs as necessary, but we attempt to make them as good as possible before we offer them to consumers. We attempt to avoid field modifications and customer dissatisfaction.

As you mentioned in your review, this is a conservative approach and not quite as exciting from a marketing and PR standpoint as fabricating monthly "breakthroughs" and then offering up-
dates for $300 a throw. We seem however to have acquired many thousands of satisfied customers through the years as a result of this philosophy. We at Audionics would prefer that our products become legends based on their performance and value rather than on the basis of any individual personality within our company.

Charles Wood, President
Audionics of Oregon

WATKINS WE-1 SPEAKER
Thank you for the review of our loudspeaker. It is a pleasure to receive the review from a magazine with the straightforwardness and integrity of Stereophile.

I should mention that our upgrade (occurring immediately after the review) was instigated by Mr. Holt’s observation of a lack of upper bass definition. He was correct and we have improved the WE-1 in this area.

Concerning the WE-1 being amplifier-sensitive, I really believe that a significant part of this observation is the speaker actually resolving the sound of different amplifiers.

Let me also cast a vote in favor of digital sound. We have found some excellent (and very musical) sound on some of the better CD recordings. For instance, listen to the "Emperor Concerto" on Telarc CD-80065. It is at least the equal of anything I have heard on analog.

Finally, congratulations on Stereophile becoming number one in circulation among the subjective review magazines. You have earned this position, and we wish you every success in the future.

Bill Watkins
Watkins Engineering

SPICA TC-50 LOUDSPEAKER
I would like to make some comments on the review of our TC-50 speaker.

The reviewer’s impressions of the TC-50 seems to be very much the same as those of others who have listened to it. For me, that is encouraging, for I feel that the successful manifestation of a clear intention should experience a greater unanimity of opinion about its effect—good or bad.

The interfacing and setup “precautions” given in the article faithfully reflect our own experience, with a couple of exceptions. First, the proper listening axis of the speaker is slightly lower than the tweeter, being at the center of the height of the cabinet. Second, speakers are not sensitive to interconnects, although they can reveal the effects of interconnects. If they cannot, they are masking that effect. Third, careful setup and placement is necessary in any system where one is hoping to recreate a 3-dimensional event. Ask the people setting up holograms how important geometry is to their success. It is no different in audio.

Last, if one has an inexpensive receiver (most of the world does!), our experience is that one is still better off with a coherent speaker. Tone controls are better used to correct for problems in the system than problems in the room (as they most often are), and this can be done without upsetting the proper timing relationships throughout the midrange.

I appreciate the honesty which prevails in your review process.

W. John Bau, Director
Spica
Santa Fe, NM
Personal Recommendations by
Jonas Miller
Every listed item is judged “great value” in its price category.

**Cartridges**
Grado GTE+1 $15, Joseph Grado Signature 8 $200, Joseph Grado Signature 9 $300, Alpha 1 $475, Dr. Sao Win Ruby $650, EMT Van Den Hul $1260, Hi Output $400.

**Tuners**
NAD Schotz $338, Sony ST-S55ES $450, Quad FM4 $625, Tandberg 3001A $1195, Revox B261 $1500, Sequera $6000.

**Preamps**
NAD 1020 $198, Quad 34 $625, New RGR $800, Perreaux Class A $1090, Counterpoint SA5 Tube $1595, New Cotter pre-assembled w/case $2975.

**Amps**
NAD 2150 $278, Hafler 220 $460, Quad 405-II $675, Perreaux Mosfet 100w $990 - 200w $1550, RGR 100w high current $1195, Citation 150w $3500 - 250w $7500, Counterpoint SA-4 100w mono tube $4,495 (pair).

**Integrated Amps**
NAD 3120A $218, NAD 3150 $398, Sony TA-F555ES 100w $640, Tandberg 3012 100w $995, Revox 251 100w w/remote $1500.

**Turntable**
New NAD $248, Thorens 146 audio lift $350, Revox 795 $599, VPI $665 plus arm, Oracle Alexandria $995, New Nakamichi Dragon $1740.

**Tone arms**
Sumiko Premier MMT $225, Dynavector DV 501 $600, Alphason titanium $750, Dennesen air bearing, straight line tracking $1400.

**Speakers**

**D.A.D. Players**
NAD 5200 $648, Sony 610ES w/remote $890, Sony newest best model CDP 701ES $1500, Selected D.A. Discs by M&K, Telarc, Delos and others.

**New Video Department**
Proton 19” and 25” monitor components $600 and $1050, tuners $400, Newest Pioneer Laser Disc player $800, Sony Beta hi fi VCR SL 2700 BH $1500, Fosgate Tate Ii surround sound component $575. (This processes ambient information and encoding from Laser discs and beta hi fi VCR cassettes. Enjoy movies and musicals equal to or better than anything seen or heard in the great movie houses.)

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**JONAS MILLER SOUND**
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A few years ago, audio salesmen were pushing a certain extremely mediocre power amp on the basis that it was priced at a dollar a watt. This is the way unknowledgeable customers have chosen receivers for years. “Let’s see, the Sony has 50 watts for $360, but the Hitachi has 40 watts for $370. Guess the Sony is a better buy.”

Silly? Of course. But such habits die hard. Who among us doesn’t bristle a bit at paying $1,000 for a 100 watt per channel amp? Or tend to look kindly at companies such as Hailer for offering so many watts for the dollar. In the case of Hailer, they are good watts for the dollar.

My point is that we do take dollar-per-watt into account, whether we admit it or not. But maybe there’s something better than dollar-per-watt—and just as simple to calculate. How about dollar-per-pound?

I have gone through the last Audio directory and calculated the cost per pound for certain power amps. Lo and behold, the amps with the lowest cost per pound generally offer the best sound—for the dollar, that is.

The Harman/Kardon 870, for instance, sells for $13.16 a pound, the Hailer DI1500 for $15.62 a pound, and the Amber 70 for $18.09 a pound. All excellent values. The Quad 405-2, on the other hand, sells for $23.75 a pound and the Sony Esprit TA-N902 sells for $72.73 a pound. Not such good values.

There are some surprises, too. Why should the Hitachi HMA-8500 sell for $21.13 a pound while the comparably powered MOSFET Hailer DI1-220A sells for $17.31 a pound (and a miserly $13.46 a pound as a kit)? The Carver M400 sells for only $1.12 a watt, adding both channels. Okay, but wait a minute. It also sells for $49.89 a pound. You go listen to the amp and tell me which figure is more relevant. Look at the $2,500 Krell KSA100—it’s really only $22.73 a pound, and reports from England are that it’s one of the best-sounding amps available (we even hope to review one ourselves). And look at the Marantz SM1000—it costs $1.55/lb. more than a Mark Levinson ML.

This exercise is not as silly as it appears. The heavier the amp, generally speaking, the better the construction and the heftier the power supply. In fact, it’s reassuring to realize that we’re actually buying something with our dollars, that it’s frequently necessary for the manufacturer to spend a lot on parts in order to deliver good sound. And those parts are heavy.

Sam’s advice? Forget dollar-per-watt. Instead, factor dollar-per-pound into your power amp decision. It probably makes more sense than any of the various “specs” the manufacturers furnish.

(continued)
Music consists of both sound and silence. The pauses in music are as important as the peaks. A new circuit design, now in all RGR products, cleans up residual “time smear” which otherwise blurs these spaces. This results in astonishing dynamic contrasts from all recordings—78’s to CD’s! ROCK, POP, JAZZ, and CLASSICAL all benefit from the improved dynamic accuracy and imaging. Additionally, background noise from analog records or tapes is reduced. For a brochure on this new RGR System Technology, call or write Robert Grodinsky Research.

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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)
RECORD REVIEWS

Feature Review

BEETHOVEN
Sonata in G Major, Op. 96, for Violin and Piano

ENSESCU
Sonata No. 3, Op. 25 (in Rumanian Style)

David Abel, violin; Julie Steinberg, piano.
Wilson Audio W-8315

Oh, what a breath of fresh air this is! An audiophile recording of real music that isn't bombastic, overblown or high-powered.

Imagine, if you can, a private recital in your own home by two consummate artists who play these works for their own delight as much as for yours. Imagine sound so completely and disarming natural that after 30 seconds you're unaware it's reproduced. That's what this record is all about.

I could rhapsodize endlessly about this record, but I won't. Suffice it to say that if you think there's even a remote chance you'll like the music, you will be positively mesmerized by this recording of it. I'm forced to wonder, though, what would have happened to the sales of chamber-music recordings (traditionally the worst sellers) if ones like this had been available ten years ago.

I am being restrained about this record simply because my inclination is to go completely overboard. Could you envision a recording of piano and violin getting Stereophile's coveted Definitive Disc Award? I can. This may be next.

JGH

LA comments:

I won't be so restrained. To my mind, this is one of the most significant records I've ever heard. It, along with the Tafelmusik and Symphonie Fantastique records from Reference Recordings and the Strauss and Dvorak record from Sheffield, marks the breakthrough of audiophile record companies into the mainstream of classical music. This is welcome news indeed, particularly coming from Wilson Audio. Dave Wilson's recordings have tended to favor the spectacular, although his organ recordings have been well received by a larger audience.

Even more interesting, this record retains the virtues of an audiophile evaluation record. The violin sound captured on this disc is astonishingly real; when heard both at CES and at my home it sounded as if the violin was right in the room! It's the first time I've heard this

1 Holt's law of recordings—"The better the performance, the worse the sound"—is being soundly pilloried these days. Its repeal may soon be necessary, which would not make Holt at all unhappy.
effect with a violin, and a gorgeous violin it is. As a bonus, we hear the piano’s lower registers rendered very convincingly: lots of authority, but not overpowering. This recording was done with Dave’s faithful Revox A77 (modified); I can’t wait to hear what he does with his new tape recorder from John Curl.

Not only that, the performers, as mentioned by JG11, appear to be in love with their music-making. This record captures the feeling of being at a truly inspired performance—which is one of the really exciting things about music, even when the performers are not internationally known. Steinberg and Abel appear to have played together a lot. Steinberg tends to be the more forceful performer, Abel the more lyrical.

The two pieces contrast greatly. The Beethoven sonata is one of his more gentle and lyrical pieces; the Enescu is passionate, almost violent. Each piece is presented in a unique style—one might almost not suspect the performers were the same. I enjoyed the Beethoven more, but I think the performers were more excited by the Enescu. Overall, it’s hard for me to imagine a reader of this magazine who would not be delighted to own this record.

## TAFELMUSIK

**Popular Masterworks of the Baroque. Works by Handel, Pachelbel, Vivaldi, Bach, Purcell, Telemann**


In German, *Tafelmusik* means table music; usually music to be sung at table, presumably in a tavern. It is also the name of this group of young musicians, described as “Canada’s original-instrument baroque orchestra.” Tafelmusik is also the name of Reference Recordings’ debut in the area of musicians’ music (as opposed to show-off recordings).

Note that although “original” instruments are played here, they are not “ancient” instruments—those wheezing, asthmatic, impossible-to-play machines of torture so popular with musicians dedicated to the authentic re-creation of Renaissance music. Many of the instruments played by Tafelmusik were made between 1600 and 1800, when some of the finest strings and woodwinds in use today were
crafted. (The others are recently-made copies of originals.)

These are spirited performances of mostly well-known Baroque pieces, including the notorious Pachelbel Canon with its less-often-heard Gigue. This is the first time I have ever heard the Canon come across as anything but a melodic dirge. While many people find baroque music performances unexciting, I think on this record there’s a tendency to take things too fast. It makes for refreshingly animated renditions of the "Water Music" and Purcell’s "Abdelazar" incidental music, but Bach’s familiar “Air” from the Orchestral Suite #3 in D comes off sounding perfunctory.

The recording is so good that it is hardly there at all! It is completely natural, liquidiy transparent and effortless, with just the right amount of reverb and space around the instruments to place them in a real acoustical environment—but not so much as to call attention to itself.

This is an “audiophile” disc of genuine musical worth. Despite my misgivings about some of the tempos, I hope the excerpting of the longer works on this record doesn’t mean there won’t be recordings from Tafelmusik of the entire works at a later date—with engineering by Keith Johnson, of course.

JGH

**HANDEL**

**“Water Music” (complete suites)**

English Baroque Soloists, John Eliot Gardiner conducting.
Erato Compact Disc ECD 88005.

Handel’s "Water Music" is made up of three suites. The two in F and D major use horns and trumpets and were probably played on King George’s barge. The third suite in G major/G minor uses flutes and piccolos and is more intimate. It was probably played during the supper at Chelsea (maybe we should start calling it Handel’s "Table Music"). All three suits are given superb performances here by the English Baroque Soloists under John Eliot Gardiner. The playing is absolutely impeccable—no easy task with "original instruments."

The recording is superb: the ambience is just right, although people with tone controls may wish to tame the extreme highs. The brass especially can take on an edgy quality at times (I think it’s the nature of the instruments, not the recording process). In fact, this is one of those Compact Discs you might buy just to prove to yourself how spectacular the medium can be—that you also get an excellent performance is a bonus.  

TG
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Morel's drivers, manufactured to the strictest tolerances in our own factory, incorporate several notable technological advancements. Utilizing hexagonal voice-coil wire, unique magnet structures having no stray magnetic fields, and special adhesives and coatings, the Morel drivers are exceptional in rise time and coherence.

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**DVORAK**

**Symphony No. 9 in E minor, Op. 95 (“From the New World”)**

The Chicago Symphony, James Levine conducting.

RCA RCD 14552.

Sonically, this recording is spectacular. It’s a most auspicious start for RCA (thank goodness, CD is one technology RCA is not trying to replace with an inferior version of its own). For all intents and purposes, everything about the recording is perfect—dynamic range, ambience, balance. Congratulations are in order to producer Thomas Z. Sheppard and recording engineer Paul Goodman for showing us how wonderful a Compact Disc can sound!

Fortunately, the performance, too, is first-rate. I would describe it as invigorating (very much in character for the Chicago Symphony), making up in bite for what it lacks in lyricism. Z. Grover Schiltz, the English horn player, is particularly fine and the tonal beauty is perfectly captured—I don’t think you could ask for finer orchestral playing overall. This is one Compact Disc that belongs in everyone’s library.

**RICHARD STRAUSS**

**Also Sprach Zarathustra, Op. 30**

The New York Philharmonic, Zubin Mehta conducting.

CBS CD 35888.

The Compact Disc can easily hold 70 minutes of music, but this disc holds less than 32. CBS could easily have rounded it out with another Strauss piece, but chose not to. Still, this stinginess might be excusable if the recording and performance were top-drawer. Unfortu-
nately, neither is. Not that the recording is bad—it just lacks a little in dynamic range and presence. The program notes don't say, but this was probably recorded in Avery Fisher Hall, which may be the problem (the acoustic tends to be rather dry and harsh).

When the young Bela Bartok first heard this piece, he said that it "struck me like lightning." Had he heard this performance, he probably would have had a different reaction. The work should sound awesome, and here it does not. Too bad, because there is some excellent solo violin playing by Glenn Dicterow. There will undoubtedly be many more Compact Disc releases of this work. The short playing time and less-than-excellent performance make your decision easy: wait!

Ravel

Bolero; Alborada del Gracioso; Rhapsody Espagnole

Dallas Symphony Orchestra, Edouard Mata conducting.
RCA CD 14338

An interesting change from the sound of the Polygram group, this has its problems too, as well as bearing out my long-standing contention that the better the performance the worse the recording.

This is one of a handful of Boleros I have heard that were done right. The tempo at the end is exactly the same as at the beginning, which is the way it should be—but rarely is. The broadness of the scoring, shortening of phrases, and growing volume suffice to build to the climax of this protracted crescendo, but few conductors seem able to resist the urge to speed things up near the end.

The other two works here are given the same well-considered treatment, which adds up to three marvelous performances on one record. Unfortunately . . .

EMI seems able to use multimiking and still end up with something that sounds two-miked. RCA came to its senses a few years ago and kept their heavy hands off the mixing board to a large extent, but they are still multimiking, and they are still not doing it as well as EMI. Happily gone (and forever, I hope) are the zooming-back-and-forth woodwinds, but still with us, I regret to say, are the weird instrumental placements: trumpets far right, woodwinds sometimes in the center, sometimes left of center, sometimes right of center. There is also that gratuitous stridency, although it is not as bad in this recording as in most. There's a nice feeling of depth and hall space, and instrumental timbres are reasonably accurate. The best I can say is a great performance and a bearable recording job.

JGH
Sidereal Akustic Model Four

Finally, a full range dynamic loudspeaker with speed and accuracy beyond even the finest electrostatics. Without the size, complexity or sonic drawbacks of these systems. Designed from its inception to provide an essentially flawless recreation of the original sound field, the Sidereal Akustic Model Four Loudspeaker System is startling in its life-like, three dimensional realism.

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Sidereal Akustic Audio Systems Inc. 619/726-3150
4035 Oceanside Blvd., Unit G57, Oceanside, CA 92054
After having sold an estimated 350,000 players to US consumers, RCA has now announced abandonment of its CED videodisc system. RCA has assured CED owners it will continue to supply additional software titles "for the foreseeable future."

Upcoming Telarc releases slated for early 1984 include Beethoven's and Schubert's 8th Symphonies and excerpts from Prokofiev's "Romeo and Juliet" ballet, to be followed towards the year's end by Handel's "Messiah" and an album of "popular science-fiction film themes." As-yet unannounced is a block-buster release for large pipe organ and orchestra that should gladden the hearts of audiophiles everywhere.

JVC, who seems to delight in one-upping Sony at every opportunity, is about to try again. Just when the aurum populi was prepared to accept Compact Disc as the new standard for high-tech sound recording, JVC has announced their own digital audio disc -- AHD -- which is of course completely incompatible with CD. AHD stands for Audio High Density, and is claimed to provide "better reproduction quality and longer playing times" (as if anyone felt the CD's 71 minutes to be too short). Like RCA's now-defunct CED video disc, AHD uses capacitive sensing of ridges recorded in a grooved injection-molded disc.

BRB, a new audio-electronics manufacturer whose first three products were about to get favorable reviews in these pages, has thrown in the towel. It seems they made the mistake of courting "that other magazine" first, and ran afoul of its quixotic tendencies. A pity; their preamp was a real winner!

Edward Catalano, founder and guiding genius of The LAST Factory, died suddenly in March. He will be missed, but his contributions to analog-disc preservation and reproduction will not be forgotten until the black disc is a thing of the past.

Gary Giorgi, former VP of product development at Mobile Fidelity records, has resurfaced as president of a new firm importing Fidelity Research products. Its address: P.O. Box 1079, Simi Valley, CA 93062. Gary is "... a new video system that will produce C receivers and VCRs reliable to the best from Lé..."
Components listed here are ones which we feel to be the best available in each of four quality classes, based on all of the information available to us at time of publication.

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

Some of the listed items are discontinued models ($), retained here because their durability and performance distinguish them as “classics,” and because they are sometimes available at substantial reductions below their original cost. Upgrade modifications are available for many of them.

Component classes are as follows:

**CLASS A**: Best attainable sound, without any practical considerations; “state of the art.”

**CLASS B**: The next best thing to the very best sound reproduction, with cost definitely a factor.

**CLASS C**: Somewhat lower-fi sound but far more musically natural than average home component high fidelity.

**CLASS D**: Satisfying musical sound but significantly lower fidelity than the best available. Below this level, system colorations start to become so great that selection must rely more upon personal taste than considerations of accuracy.

The order in which components are listed within each class has nothing whatsoever to do with relative quality. The current format for Recommended Components, in which a capsule review attempting to give the “feeling” the component has in home use, is a departure from tradition; we will appreciate whatever comments our readers have on this new format. Attempts will be made to publish an updated Recommended Components in every other issue.

**TURNTABLES**

(A)

**Goldmund Studio**
Not reviewed by JGH, but AHC has made detailed comparisons to most of the other top tables. In return for your $4900 (turntable with linear-tracking arm) you get gorgeous appearance, direct-drive, fussy setup, and a degree of tonal neutrality and resolution not found in other turntables.

**SOTA Sapphire Star (vacuum hold-down)**
Again not yet reviewed by JGH, but SWW has found this to be somewhat better in all respects than the standard SOTA, itself an excellent performer. The vacuum holddown feature has significant importance in resisting acoustic feedback and damping vinyl resonances. This unit uses constant low vacuum rather than an initial high vacuum.

(B)

**Linn-Sondek LP-12**
The Linn has been the standard against which newer turntable designs have been measured for ten years now. Although somewhat more colored than the other tables, the Linn is an extremely good performer—though it can be slightly harder to use (e.g., changing from 33 to 45), and notably difficult to set up. Still the standard by which many people judge turntables.

**Pink Triangle**
This latest entry from the U.K. has an extremely soft suspension unsuited for use with very heavy tonearms, a solid acrylic turntable platter, good attention to detail, and excellent sound. Its recent introduction allows for no track record with respect to reliability or importer relationships.

**SOTA Star**
The first high-end American table since the original AR, the SOTA is easy to set up and use, attractive, ingenious in design, and sonically excellent. Early versions have had some problems with warped tonearm boards in humid climates, but later production is supposed to have solved this problem.
The design of the VPI has been evolving for over a year (new motor pulley, new spindle and bearing, reinforced subchassis), so be sure and get the latest version. The result is a mechanically solid, well-engineered product with very good sound. You'll find the suspension harder to adjust than the SOTA, but less finicky than the Linn; the problem with adjustment may be addressed in the future.

**AR (new)**

The new version of the AR is the only truly low-cost turntable (at $300) which we can heartily recommend. Compared to the original AR, it has much better cosmetics, seems sturdier, has provision for either its own tonearm or yours (a huge advantage over the original), but seems to have a less effective suspension. It's not as good as the turntables in group B, but is still very good.

**C J Walker CJ-55**

This was our original low-cost special, but its $400 cost and somewhat chintzy-looking construction must now relegate it to a lower echelon. It still sounds good; attention must be paid to dressing the tonearm cables correctly to prevent excessive transmission of vibration.

**Goldmund T-3t and T-3b**

Tested by AFIC, the Goldmund tonearm is usually found in conjunction with the superb Goldmund turntable. It is for use with medium to low compliance cartridges, and offers outstanding preservation of midrange and high frequency detail, soundstage information, and is tonally neutral. Comes with a preamp-like control center for raising and lowering the tonearm.

**SME 3009-III**

Excellent for high-compliance cartridges, the SME offers good tracking and reasonably easy adjustment of all parameters. Non-resonant but a little soft sounding.

All excellent; to be reviewed in Volume 7, Number 3:

- Alphason
  - "The Arm" by Sumiko
- Zeta
- Linn LV-X
  - A good, relatively inexpensive ($200) arm for use primarily with moving-magnet cartridges. Very rigid and quite non-resonant, the LV-X offers tight bass, excellent detail and focus. Comes with non-standard removable headshell for easy cartridge changes.
- Mayware Formula 4—new
  - Not perfect and a little fussy to set up, the latest incarnation of the Formula 4 is fairly non-resonant, low-mass, and works well. Not distributed in the U.S., it can be purchased from the U.K. for about $100—truly a bargain!

**Robertson EK-1**

The $3200 price tag of this strain-gauge pickup includes a state-of-the-art preamp/control unit—not usable with other cartridges. Slightly warm, very lush, seductive sound; very much like master tapes. Moderate compliance.

**Shure V15-VMR**

Exceedingly neutral midrange and bass, slightly soft high end, high compliance. You sacrifice a bit of detail for unsurpassed tracking ability, excellent reliability, and listenability.

**Technics EPC-205 Mk III**

Exceedingly smooth sound, tonally neutral, excellent trackability, a bit lacking in depth presentation.

**Monster Alpha 1**

Superb tracking ability, tonally very neutral, excellent rendition of detail, very smooth and effortless. Somewhat rising high end.

**Dynavector 17D**

Medium-compliance MC cartridge, very detailed sound but a bit lean and cool—though not nearly as much as the Dynavector Ruby (2MR). Superb rendition of high frequencies—response out to 100 kHz! Our samples had tracking problems with high velocity midrange passages. Now replaced by the model 17DS, not yet auditioned.

**Promethean Green**

Medium-compliance MM cartridge (actually a reworking of the Grado F3), decent trackability, unusually good rendition of depth, spaciousness, and detail, somewhat soft high end.

**Sony XL-88**

Excellent trackability, neutral midrange and bass, slightly "hot" high end. One of the best MCs tested, and modestly priced.

**Shure V15 VG**

Somewhat softer top end than the VMR (above), otherwise identical in compliance, trackability, and sound.

**Astatic MF-100**

Very high compliance, superb trackability, somewhat wispy high end, very neutral overall sound.

**Shure M95-EJ**

Neutral tonal balance, softish high end, good trackability, high compliance.

**Grado F3+**

High compliance, warmish balance, excellent depth and spaciousness.

**Vitason VS-1000**

Awesomely expensive, almost infinitely compliant, incredible trackability, but subtly lucid and fictitious.

**Yamaha CD-X1**

Excellent disc-handling features and sound a shade better than the Magnavox; the best that we've heard from CD players.
Magnavox/Philips FD-1000
Attractive to look at but a little clunky to use, the Magnavox offers CD reproduction that is superior to all but the Yamaha.

(B) Sony CDP-701ES
As many programming options as were offered in Sony's original model 101, this second generation player has even more: virtually all features on both main unit and remote-control; search by index number; heavy-duty drive mechanisms; high grade capacitors; index selection of individual tracks. The sound is better than the 101 and comparable to the Kyocera, the user-convenience overwhelming, the cost high ($1500).

(C) Sony CDP-101
This first CD player has been surpassed in sonic quality by a number of second-generation players, but its ease of operation is still almost unequaled. JGH has found that this player sounds significantly better with most CD software if a filter is used which drops response by about 2 dB at 10 kHz. A new, and as yet untested, version of the 101 is reported by other magazines to be sonically equal to the Magnavox.

PREAMPLIFIERS
(A) Berling TF-10
Our current reference, this hybrid (tube/FET) preamp offers superb, very neutral sound and excellent control facilities, but is cosmetically a bit blab. A new version is out (untested) which is said to offer an even cleaner and more open phono stage, and can be equipped with a high gain section for moving coil cartridges at the user's option.

Esprit TA-E900
Not widely distributed, this preamp gives an idea of what the larger Japanese companies can accomplish in a no-holds-barred unit. The TA-E900 combines high-frequency smoothness with superb preservation of detail, excellent bottom end, and solid construction. Cost is very high at $3,200.

Robertson EK-1 (See Cartridges)

(B) Denon PRA-2000†
This preamplifier is still available in Japan, but is no longer sold in the U.S. That means that, unfortunately, few people here will have a chance to enjoy its clean, liquid sound, and the excellent imaging that results (we think) from the PRA-2000's astounding separation measurements: over 70 dB. One of the nicest units we've come across.

Conrad Johnson Premiere 2†
We never officially reviewed this product as it was replaced by the PV-5 (for a bit less money) and the Premiere 3 (for quite a bit more) soon after we received our sample. There are quite a few still out there; even some at dealers, and the right price will make it an excellent buy. Though somewhat colored sonically (somewhat undefined bass and a little bright), the overall sound quality is excellent; the music sounds astonishingly live and 3-dimensional.

Excellent units (group A or B) but not yet reviewed:

Audio Research SP10
Conrad Johnson Premiere 3
Levinson ML6

(C) Precision Fidelity C8
Tubes at relatively low cost ($599). Simple layout, simple controls, good sound. Preserves the 3-dimensionality for which tubes are known with very few tradeoffs. The sound is slightly bright and the low end ill-defined on full-range systems, so the C8 should be used with associated equipment that complements its characteristics.

PS Audio Model IVK
In its most recent incarnation the PS Audio preamp costs more than it used to (now $650) and sounds much better. The low end is superb, the high end very extended, the imaging specific. It still lacks the lusciousness of tubes, but is tonally very neutral. Good switching facilities, an MC gain stage, and adjustable cartridge loading come with it.

(D) Dynaco PAS-3X†
Owners of this old classic should not immediately throw it out; if you come across one at a garage sale, snap it up. Removal of capacitors, upgrading of the rectifier and power supply, and replacing resistors can turn the old PAS-3X into a respectable preamp. In the Van Alstine-modified version ($160), it can rival some of the better modern units.

Conrad-Johnson PV-3
At $500 in kit form, this is the least expensive preamp we can recommend. The switching facilities are limited, the volume control doesn't maintain channel balance; and it's somewhat colored (warm bass, rolled off high end), but the sound is attractive. Excellent for use with Compact Discs.

Audible Illusions Modulus I
This little wonder, at $450, offers quite good tube sound. Our review isn't out yet, but the Modulus I does a great job for little money.

BRB Model 10†
BRB unfortunately went out of business before we could publish our review of their excellent little preamp. It should be possible to pick up a sample at low cost. Be sure and listen before you buy; our first sample had excessively high distortion which was readily audible.

MOVING COIL SETUP DEVICES
(A) Counterpoint SA-2
Simply the best stepup device we've heard; also the most expensive at $900. Superb preservation of detail, low distortion, lovely midrange. Quite a bit of tube noise, however, and our original unit had somewhat loose bass. We're told that the latest version corrects that problem; the midrange and high end were so good that we were willing to overlook the bass problems—bass freaks won't be able to
Klyne SK2b
A close rival to the Counterpoint, the basic difference here seems to be solid-state versus tube. The latest Klyne has superb bass, very deep and tight, excellent high frequency extension, and excellent imaging. It still lacks the 3-dimensionality of tubes, but only slightly. Comes with easily adjustable high-frequency rolloff and cartridge loading, a tremendous boon for those with several MC cartridges. Given the quality of construction and the excellent sound, it’s a bargain at $650.

(B) Esoteric Audio Research “The Head”
This is the best transformer we’ve listened to. Besides having traditional transformer virtues (no noise, great smoothness), the Head has excellent high frequency extension and very good bass—not as good as the Klyne but markedly better than the Counterpoint in that respect. Some people won’t have anything but a transformer as a stepup device; this is the best one.

(C) Audio Interface
AMPLIFIERS
(A)
Electron Kinetics Eagle 7A
The best solid-state amp we’ve ever heard, and our current reference amp. Terrifically punchy, the Eagle will dim your room lights on dynamic program material unless you have very efficient speakers. Doesn’t work well with the electrostatics we have on hand, but brings out the best from dynamic loudspeakers. This amplifier has enough output current to weld with, so be careful.

Conrad-Johnson Premier 1
This very high-powered (200 watts/channel) tube amplifier is good enough to turn Acoustat 2+2s into a nearly state-of-the-art speaker system. It also works very well with other electrostatics, and dynamic systems with extended high frequency response and well-damped woofers. The amplifier most likely to make any speaker sound wonderful.

Paoli S.O.B.
The little-known Paolisl (they come as two mono units) have the most stunningly natural high frequency reproduction we’ve come across. In other respects they don’t quite come up to the much more powerful Premier 1, although they cost virtually as much; just the same, we yearn to have that high frequency naturalness back in the house again. They’re extremely well built and come with a money-back guarantee.

(B)
Threshold S500 Stasis
Another very high-powered solid-state amplifier and just a tad less satisfying than the Eagle “a.” Excellent low frequencies and midrange, but just a bit dry at the high end. Worked better with the Acoustats than anything except the C-J Premier 1.
A second version of the amplifier (the S500/II) has greater output current and is said to be an overall improvement, but we haven’t heard it yet.

Electrocompaniet Ampliviere I
A low-power (50 watts per channel) but high current solid-state amplifier that has great purity at high frequencies, very neutral tonal balance, and will play surprisingly loud. Unlike most amps, this one works well on almost any loudspeaker, excluding very inefficient ones.

(C) Esoteric Audio Research 509
In certain circumstances this 100-watt tube amp will make a system literally come to life. It possesses unusual capabilities at rendering 3-dimensional images and can make music very lifelike. For a tube amp it has superb low end, though still not quite as good as the best solid-state amps. Did the best job at making the Quad ESL-63s sound real, and worked quite poorly with the Watkins WE-1.

(D) Audio Interface
Sound Developments D-235
Sonic Developments D-235
NAD 3020
The 3020 is an integrated amp that makes tradeoffs in parts cost which affect the sound relatively little. It is sweet with superb resolution of inner detail. Be careful of the output rating, though; 30 watts just isn’t much on most of the systems popular these days.

Berning EA-230
If you have an efficient system that likes tubes, the Berning has the best sound available for $900. Very sweet with superb resolution of inner detail. Be careful of the output rating, though; 30 watts just isn’t much on most of the systems popular these days.

Hafler DH-220
Lots of power and tonally neutral, this latest version of the Hafler is an excellent amp for those on a low budget. The kit version is easy to put together and makes the amplifier very cost-effective. Compared to the amplifiers in group C, the Hafler is less clean and liquid-sounding at the high end.

Sonic Developments D-235
The least expensive high quality amplifier we know of, this dual 35-watter has surprising punch, smooth and open highs, neutral but slightly flat (constricted depth) midrange, and a taut but lean low end.
Jensen's Stereo FET 120
If you already own a Dyna Stereo 120, Jensen Stereo’s rebuild of it will give you a remarkably powerful-sounding amplifier with excellent inner detail and visceral low end. No other expenditure of $230 will get you anywhere near as close to good sound.

**Speaker Systems**

(A)

The WAMM System
This $12,000 system does everything very well (delicacy, balance, authority, pinpoint imaging), but in two respects it’s unequalled. No other system we’ve heard does as well as telling you what the other components in your system are doing; and none other gives you the feeling of weight and authority of a live symphony without overdoing it. At the price, though, it’s hard to believe anyone wouldn’t prefer to go to the symphony 2500 times.

(B)

Watkins WE-1
After nearly a year of living with it, the WE-1 remains the most listenable speaker we’ve heard. We originally criticized it for a somewhat ill-defined state amps. This instrument has surprising low end, with pinpoint imaging and a seductive coherence. The imaging is as good as we’ve heard. If you’re thinking of spending $1800 for a speaker, run don’t walk to your nearest Thiel dealer. A warning: the CS3s are clearly forgiving. Preamps with a little brightness, an amplifier with inadequate drive at low frequencies, cartridges with a rising high end are all out of the question. Uses a bass-boost equalizer (supplied).

(C)

Thiel 04a
This relatively low-priced ($650) floor-standing speaker from Thiel is very listenable and represents good tradeoffs. The 04a has surprising low end, extended and seductive highs, and good imaging.

Spica TC-50
Used with a subwoofer, the Spica is good enough to be included in group B. The coherence and imaging of the mid- to upper-midrange rival the Quads and would be considered excellent in a speaker of any price; at $420 they’re a steal. The high frequencies roll off above 14 kHz and the low end is designed to be very controlled down to the lower limit of about 55 Hz. This makes it perfect for matching to a subwoofer, but it sounds a little lean as a stand-alone; still an excellent speaker.

Dayton Wright LCM-1
The LCM-1s do unusually well at the low end for a bookshelf speaker, have extended high frequencies, and are quite good in between. Moreover, they convey musical dynamics better than any of the relatively low-priced competition (the cost $500). An excellent, well-balanced speaker; quite critical of room placement.

(D)

Morel MLP-202
Surprising low end from such a small cabinet, the Morels are listenable and basically well-executed if not remarkable. Highs are extended and smooth. Should be placed significantly lower than listening height for a natural frequency balance, otherwise they sound much too laid back.

Bill Reed 6-02
One of Stereophile’s best discoveries, the original 6-02 offered respectable, full-range sound out of a bookshelf speaker at only $295 (in kit form). Good balance, very alive sounding, respectable low end.

Fried Q/2
A small speaker which reproduces musical dynamics remarkably well. Well-balanced generally, but with a degree of brightness which must be matched to complementary components. Quite good low end.

**Signal Processors**

(A)

Packburn 523 and 103 disc-noise-reduction devices
Quite expensive, and frankly intended for professional (archival) use, these are the best such devices made. Either model can remove virtually every trace of surface noise—ticks, pops, and hiss—from shellac or vinyl discs with a minimum of signal degradation.

Benchmark Acoustics ambience restoration system
A perfect example of the marketplace failure of a superior product, this was the best surround-sound (ambience) extractor we ever tested. Well worth buying if you can find one, anywhere.

(B)

KLH TNS-7000 transient-noise suppressor
An amazing device for its modest price, the TNS-7000 can eradicate about 90% of the surface-noise
ticks and pops from discs without affecting the sound. It does not attenuate high frequencies. A boon to the person who owns many valuable discs with much accumulated surface noise.

**KLH 1201A dynamic hiss filter**

This is quite effective at removing hiss from tapes and discs, but optimum settings involve a compromise between acceptable quieting and acceptable loss of high frequency content.

**dbx 3BX dynamic-range expander**

Mainly for the classical listener, the 3BX restores much of the original dynamic range to compressed recordings with minimal side effects. Its major disadvantage is the likelihood of overuse; expansion must be conservatively applied to most discs to avoid “pumping” and exaggeration of dynamics.

**dbx 224 tape/disc noise-reduction device**


**RGR Signature One expander**

**Recording Equipment**

**dbx 157**

Ideal two-pass noise reduction system for serious open-reel tape recordists. With twice as much noise reduction action (20 dB) than Dolby B, it does not require Dolby’s level setting for accurate tracking. Not recommended for cassette recording.

**Sony PCM-F1 digital audio processor**

Our PCM-F1 makes copies of records and tapes that are virtually identical to the original. Reports from some quarters of difficulty with live microphone feeds have not been confirmed in our use, nor have problems with dropouts occurred. Professional recordists report some (but not huge) differences between their F1 tapes and the same performance on 30-ips masters made on highly modified $50,000 analog machines. The first and only 99.7%-perfect home recording system, and priced below $2000.

**Cassette Tape Recorders**

**(A)**

**Tandberg 3014**

Superb midrange headroom, good transport, accessible and useful controls. Better at $1400 than their previous $2200 model, the 3004. Not the most extended high end, but overall the best sound from a cassette deck.

**Nakamichi ZX-9**

Excellent controls and adjustments, very extended high frequencies, sophisticated tape transport. Gives up a little in sound quality to the Tandberg, but otherwise excellent.

**(B)**

**Tandberg 3004+**

Designed in 1978, the 3004+ was the predecessor.

---

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to the 3014 mentioned above, and shares the rugged transport and excellent midrange headroom. It lacked Dolby C and had a somewhat more rolled-off high end but is still very serviceable on the used market.

Revox B-710
A superb performer with its own tapes—neutral, liquid-sounding. Bias and azimuth not easily adjustable—tapes made on other machines are unlikely to sound right at the high end. Extremely rugged transport mechanism.

(B) B&O 9000
An $1800 tape deck hardly belongs in group C, but the B&O is an excellent machine, especially for the person who just wants to hook it up and use it without a lot of fiddling around. Very sophisticated transport controls, and sound that is slightly less good than the other tape decks mentioned.

HEADPHONES

(B) Signet TK-53
Clean, smooth, slightly laid-back, good bass.

AUDIO INTERCONNECTS

(A) Monster Cable Interlink Reference
Excellent focus, clarity, purity, and resolution. Don’t work ideally in all systems.

Reported to be class A by AHG, but not yet reviewed:

Petersen
Livewire
Straightwire

(B) Apature
Slightly soft at the high end, otherwise neutral.

JG Acoustics
Virtually identical to Apature, significantly more expensive.

Cotter or Verion
A little hard in the treble, slightly pinched in the upper midrange; otherwise very good.

(D) FMI audio interconnects
Lush, liquid, somewhat tube-like in sonic character.

Audio Technica
Slightly electronic-sounding, a little hard in the upper midrange. An excellent buy at $7.95, but for $16 you can get the Apatures.

RECORD-CARE PRODUCTS

(A) LAST record-preservation treatment
This actually works. It significantly improves the sound of even new records and is claimed to make them last longer, though we haven’t used it long enough to verify the claim.

(B) Nitty-Gritty III and Pro record cleaner
Instead of a vacuuming tonearm (as with the Monks), the NG models use vacuum slots. The cleaning is efficient but they’re noisy and harder to use than the Monks: exposing your records to a slot prompts some anxiety not present with the Monks. The Pro model cleans both sides at once and may belong in group A, but has not been tested.

VPI HW-16 record cleaner
Operates in the same fashion as the Nitty Gritty, but with more powerful motors, more noise, and to our knowledge no provision for catching the effluent. Early models had problems with the surface of the slot, but no troubles recently. The new slots are retrofittable to the old machines. Same cautions as with Keith Monks and Nitty Gritty.

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

Decca or Statibrush record brush
Properly used (held at an obtuse angle to the approaching grooves and smoothly slid off the record), these are the most effective disc dust removers available. They work on low torque turntables. Better than DiscWasher for everyday use.

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"THE BEST PREAMP IN THE WORLD" WHO SHOULD YOU BELIEVE?
Read how HP rates the nine top tube and solid state preamps in the April Issue of The Absolute Sound. The test includes in ascending order of cost, the Sid Smith modification of the Marantz Model 7, the Perreaux SM-2, the Nova Electroacoustics CPA-100, the Electrocompaniet Pre-1, the Spectral DMC-10/Gamma, the Conrad-Johnson Premier Three, the Audio Research SP-10, the Dennesen IC-80, and the Levinson ML-6a. Also in the April issue:
The current estate of Laserdisc technology; the revolutionary Berning amp and the startling Celestion SL-600’s; the Souther Arm and how to get the best from it.
The Music includes an interview with Rough Trade’s Carol Pope (HP conducting); the best of the Mercury Living Presence discs; the lastest from Sheffield and Reference Recordings; the Lyritas, heir to the Mercury tradition.

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