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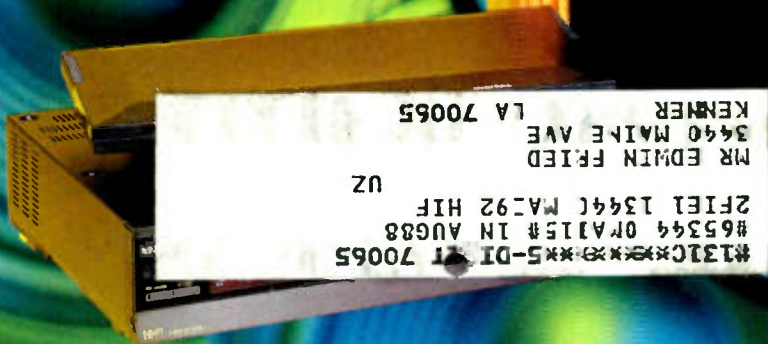
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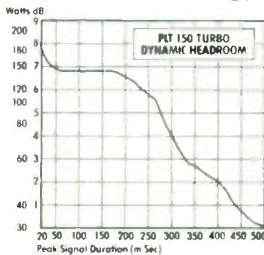


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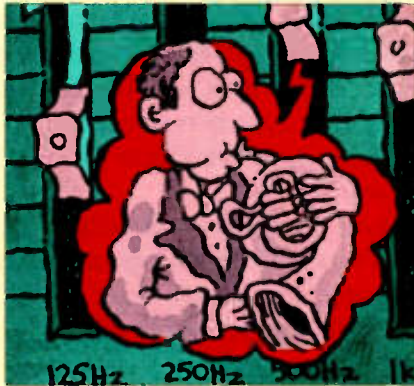
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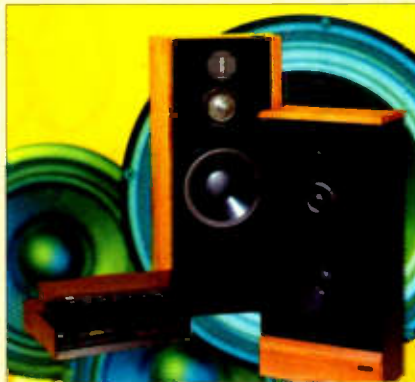
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Cover design: Joanne Goodfellow  
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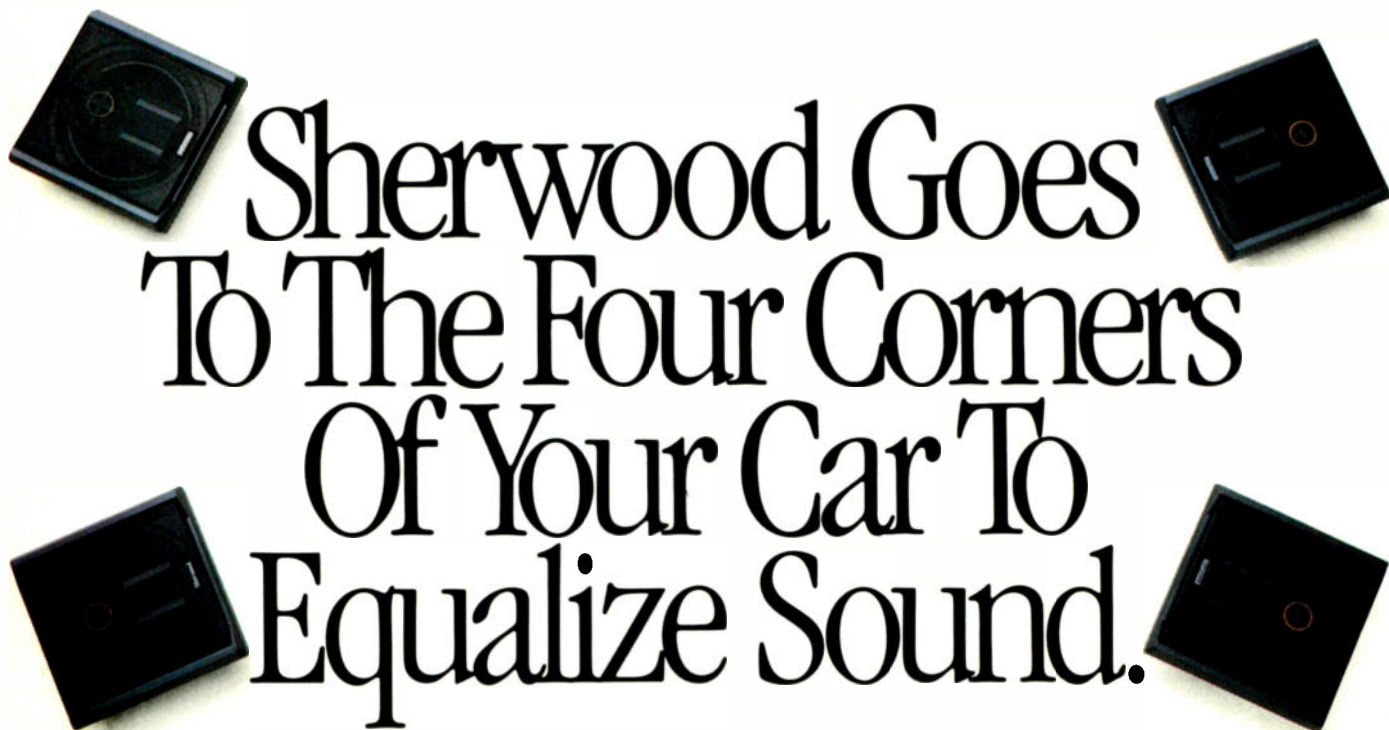
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## The Rational Audiophile

By Michael Riggs

I had the pleasure this spring of spending a few days in the Seattle area, where I visited Carver Corporation.

Bob Carver is undoubtedly among the most important figures in the American audio industry. The company that he started in the late '70s, after his departure from Phase Linear (which he also founded), is now easily the largest domestic manufacturer of audio electronics.

The key to Carver's repeated success is his ability to develop innovative products. Carver Corporation's breakthrough product was a 9-pound, 6-inch cube that could put out 200 watts per side. The price was about a dollar a watt. The desire to deliver that kind of value has always been at the core of Carver's design philosophy.

Given his evident success, I was a little surprised (though not completely) to hear Carver express concern about the future of "the rational audiophile," which is what he considers both himself and his most likely customer. The rational audiophile is a person who wants the best possible combination of sound, features, and reliability at a reasonable price. It also is someone who does not believe in magic.

Yet one of Carver's recent marketing successes has been a series of what the company calls "t mods." These are amplifiers whose basic designs have been modified slightly to make them sound exactly like certain high-priced, esoteric power amplifiers. To some people, it comes as a shock that a relatively low-price transistor amplifier can be made to achieve sonic parity with, say, an exotic tube amplifier.

In fact, the alterations are small—minor adjustments to the output impedance, for example, which can affect frequency response into some loads. And the changes in sound quality, insofar as they exist at all, are commensurate. But Bob has demonstrated his ability to make his amplifiers sound exactly like anyone else's (regardless of size, price, circuit, or mystique) to people who spend their lives and careers chasing such elusive subtleties.

The result apparently has been increased amplifier sales on the one hand and consternation and breast-beating among the faithful on the other. I think what bothers Carver, and what I know bothers me, is the desire in some quarters to believe that designing sonically accurate electronics requires something more ethereal than good engineering.

Yet the overwhelming evidence is that we have known for some time how to build amplifiers that make no audible imprint on the signals passing through them. Given an understanding of the demands placed on amplifiers by music and loudspeakers, an awareness of what the ear is and isn't sensitive to, and good engineering, it is possible to make superb audio amplifiers that can sell for reasonable prices. Carver and others have been doing just that for years.

But what happens when people start to believe that this is not enough—that a 10-pound, \$500 amplifier can't sound as good as a 50-pound, \$3,000 model with gold-plated input jacks and fancy capacitors? It is easy to argue that it doesn't matter so long as you have the money to support your prejudices. I think the damage goes deeper than the wallet, however. Beliefs of this kind, unsupported by evidence, tend to pull down the level of discourse and to distract people from issues that have genuine merit. And because they lack solid intellectual underpinnings, their widespread adoption makes it harder for consumers to arrive at sensible, informed buying decisions. You can see this effect most readily in the selling of Compact Disc players, whose new technical features often benefit the ad copy far more than the user.

This is not to say that no one should ever buy an expensive amplifier of unusual design and aerospace-grade construction. There is more to owning a high-quality audio system than sound, just as there is more to owning a good car than seating capacity. Just understand what you're getting for your money. ■

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**FEUERMANN TREASURES ON TAPE**

I would be grateful if you could help me find out how I can acquire a copy of the Emmanuel Feuermann recordings (In Sync 4162/63) mentioned in R. D. Darrell's article "Through the Hourglass" [February].

**Jan Crafoord**  
Tullinge, Sweden

*In Sync cassettes are available from a number of retailers in the United States, but since you are writing from overseas, we suggest you contact In Sync directly at 2211 Broadway, New York, N.Y. 10024.—Ed.*

**BEATLE-LETTER MANIA**

It seems clear from your August letters about the Beatles on Compact Disc that there's still a bit of confusion about what the "original" Beatle recordings were. For instance, reader Ken Cyr (who is not alone) errs in his assumption that the stereo mixes we've been hearing all these years are "what some joker did with the tracks after importing them to the U.S." Not so. It's true that "some joker" added a bit of echo to the British tapes, but otherwise, the stereo mixes issued in the United States are identical to those issued in England on LP several months earlier.

The tracks issued in England as singles and thrown onto American LPs are another matter, and although those are actually not at issue here (since they're not on the CDs), it seems they may be at the root of some of the confusion about what is and isn't an "original mix." In many (but not all) cases, the British singles were sent to the United States in mono only, and in preparing them for stereo LP, Capitol reprocessed them to simulate stereo, giving one channel a tinny, treble sound and making the other sound more bassy. Before the release of the Beatle CDs, and the subsequent argument about their mono sound, this sort of rechanneling is what was traditionally meant by "fake stereo." And when John Lennon complained of the early American discs being released in "pseudo-stereo," as reader Carl Glover mentions, his comments were taken to refer to the reprocessed versions of singles like "I Want to Hold Your Hand" and "She's a Woman" rather than the album tracks' stereo mix of instruments vs. vocals. Strictly speaking, the latter may be described as "bad stereo," but given that there are separate and distinct signals on the two channels, there's nothing "fake" about it. And remember that *Please Please Me* and *With the Beatles*, as well as all other early Beatle albums, were simulta-

neously issued in both mono and stereo versions on both sides of the Atlantic.

Beatle producer George Martin obviously prefers the mono versions of *Please Please Me* and *With the Beatles*, and that's all very well. However, he has never disowned the stereo mixes of *A Hard Day's Night* and *Beatles for Sale* (although EMI, in its publicity material, makes it seem as though he has, by quoting his comments about the first two CDs as if they applied to all four). Rather, as he told me in an interview published in *The New York Times* on March 8, he would have liked to have cleaned up the stereo mixes of those two albums, just as he later (and so brilliantly) did with *Help!* and *Rubber Soul*. But EMI did not consult him until the 11th hour. Clearly, in EMI's view, marketing plans took precedence over doing the job right.

**Allan Kozinn**  
New York, N.Y.

*Popular Music Editor Ken Richardson replies: Mr. Kozinn is correct in stating that the stereo mixes of Beatle album tracks originated in England and not in the U.S. As published, Mr. Cyr's letter seems to imply otherwise; sorry for any confusion. Also, I have no reason to doubt Mr. Kozinn's claim that John Lennon was referring to British singles placed on American LPs and not to original album tracks when he disparaged the "pseudo-stereo" mixes of early Beatle songs. Thanks for the clarification.*

*However, even an authority like Mr. Kozinn can get tangled up in the forest of Beatle information and forget what he wrote—or possibly revise what someone said—on an earlier occasion. In Mr. Kozinn's interview with George Martin in The New York Times—and I have it right in front of me—Martin did not simply say "he would have liked to have cleaned up the stereo mixes" of A Hard Day's Night and Beatles for Sale for CD release. Rather, he said the following (my emphasis added): "I told EMI that the first two CDs should go out in mono, and that if they had to issue the others in stereo, the mixes should be cleaned up and re-equalized for CD." I also quote an interview with Martin included in EMI's publicity material, which though admittedly misleading in some areas, is clear in the following (again, my emphasis added): "I think there might be a case for issuing the last two of the first four CDs in stereo at some time." In other words, Martin was not insisting on stereo CDs of A Hard Day's Night and Beatles for Sale from the word "go," as Mr. Kozinn implies, not only in his letter but also in his Beatle*

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CD exposés for Billboard and the Tower Records magazine Pulse! And by the way, saying that someone in the U.S. "added a bit of echo" to the British tapes is a lot different than saying that the tapes were "lavishly immersed in artificial echo," which is how Mr. Kozinn put it in the Times (and which is the more accurate description).

Allan may have said things that George didn't say and that he himself didn't say that I didn't like, but at least in our fondness for bantering about the Beatles, we are all together. So without further ado, turn to this month's BACKBEAT for reviews of the next batch of Beatle CDs.

After several months of the mono vs. stereo controversy surrounding the release of the first four Beatle CDs, I find it extremely strange to hear no outrage over the blatant tampering with the master tapes of *Please Please Me*.

It is well documented that John Lennon made an error singing the final verse of the album's title cut: Immediately after he and Paul McCartney sing, "Last night I said these words to my girl," Paul continues with the proper follow-up line, but John begins a line from another verse. By the middle of the lyric, they are back together. This mistake can clearly be heard on any LP pressing, American or British.

When I cued up my CD of *Please Please Me* to that spot, I found that a corrected version has been spliced in. Perhaps someone at EMI, in his or her infinite wisdom, thought the mistake would be too apparent on CD and "cleaned it up."

If these recordings were released on mono CDs for the sake of "historical accuracy," then who has the right to tamper with the tapes in such a drastic way? Has this been noticed by anyone else? Does anyone know why this was done?

By the way, thank you for a great magazine!

David S. Thomas  
Fishkill, N.Y.

Popular Music Editor Ken Richardson replies: Yes, the mistake is clear, but it can be heard only on any stereo LP pressing, which is what you must have. The mistake was discovered and corrected with a tape splice for the original mono mix, from which the CD was mastered. Therefore, the CD is indeed accurate.

But wait! In researching this reply, I discovered that my mono LP copy of Capitol's *The Early Beatles* inexplicably includes the supposedly stereo-only flubbed version of "Please Please Me." Does anyone know why this was done?

Letters should be addressed to The Editor, HIGH FIDELITY, 825 7th Ave., New York, N.Y. 10019. All letters are subject to editing for brevity and clarity.



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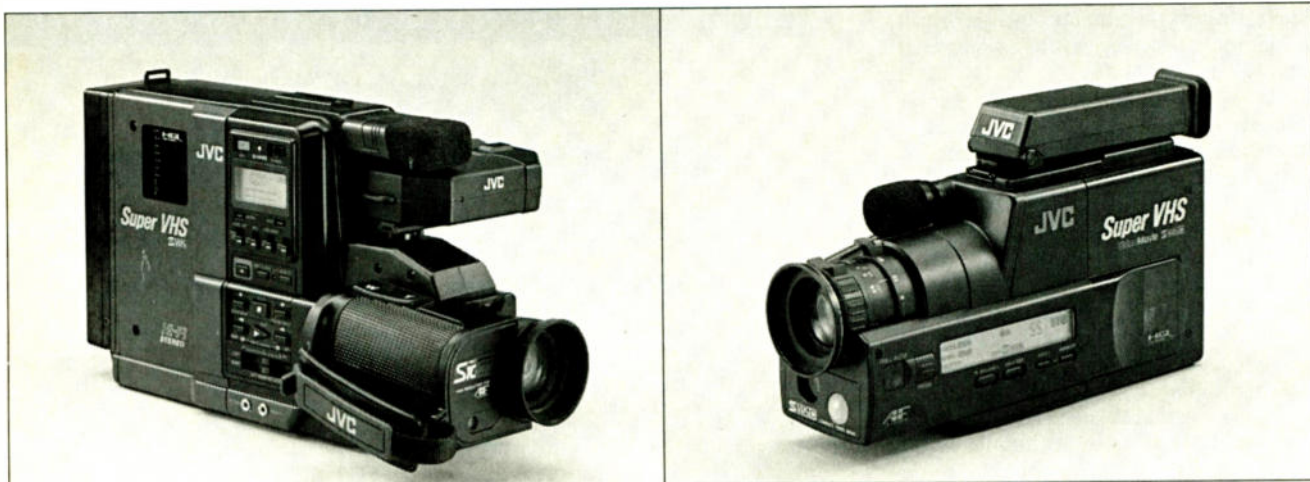
## Autumn and Super VHS

Autumn is the season of change, and you'll notice some of that change on retailers' shelves. Next to the \$199 VCR with HQ, wireless remote control, and cable-compatible tuner, you'll find Super VHS VCRs (with all the trimmings) priced at more than \$1,000. That's a tough sell, especially for salespeople who are probably more accustomed to making a quick, but low-profit, sale of a basic VCR. Furthermore, the desirability of an S-VHS VCR will hinge on the availability of high-quality

tapes, thereby maintaining a degree of compatibility with existing tapes and machines. In fact, the only incompatibility between S-VHS and regular VHS is that tapes made in the S-VHS mode will not play on a regular VHS machine. In keeping with the latest camcorder trend, the GF-S1000HU has three high-speed shutter options ( $\frac{1}{250}$ -,  $\frac{1}{500}$ -, and  $\frac{1}{1000}$ -second) to improve clarity in slow-motion and still-frame playback of recorded action scenes. For instance, a golf swing or a tennis stroke played back in slow motion will

teary) should serve equally well as a home playback deck.

The GR-S55U, the compact S-VHS-C model, has many of the features of its larger relative, including high shutter speeds, 400-line S-VHS playback resolution, and regular VHS recording and playback compatibility. Missing is Hi-Fi audio (recording is on the normal linear mono track only), the flying erase head, and the S-video input. What you gain is a more than 50-percent reduction in weight, down to about 3.1 pounds including battery and



Closer to picture-perfect: The JVC GF-S1000HU S-VHS Hi-Fi camcorder (left) and its S-VHS-C companion, the non-Hi-Fi GR-S55U.

ty prerecorded S-VHS movies, the number of which will grow slowly as rental stores face the prospect of stocking two versions of tapes.

The market success of camcorders may actually pave the way for S-VHS, since the improved performance of an S-VHS camcorder can be immediately and fully appreciated. Imagine home movies with better resolution than the best available from broadcast TV!

JVC, which developed the system and introduced the world's first Super VHS VCR (the HR-S7000U, tested in October), has made the superb resolution of the new format available in two new camcorders. The top model is the GF-S1000HU, which uses full-size S-VHS tapes and records in Hi-Fi stereo through a built-in stereo microphone. The camera's resolution is said to be 450 lines (although playback resolution is 400), aided no doubt by a newly developed  $\frac{2}{3}$ -inch CCD pickup with a total of 380,000 pixels (360,000 effective, according to JVC). As with the company's HR-S7000U home deck, the camcorder can both record and play regular VHS

show little or no blurring, as would normally be the case with such rapid movement. However, the fast shutter speeds require more lighting than the normal  $\frac{1}{60}$ -second setting.

Although other features are typical of high-end camcorders, one stands out: a flying erase head that prevents the glitches that usually occur when you stop and restart the tape during editing. In addition to its S-video output (for the cleanest signal transfer to a similarly equipped monitor or another S-VHS deck), the GF-S1000HU has an S-video input. Remember that the improved performance of S-VHS is due in part to keeping the luminance (brightness) and chrominance (color) portions of the video signal separated all the way from the tape to the picture tube—hence the special four-pin S-video connections. However, it takes a critical eye to notice much difference from the picture obtained using the conventional pin-jack inputs and outputs, which are also provided. With its Hi-Fi capabilities and full array of transport controls, the rather heavy GF-S1000HU (more than 7 pounds with tape and bat-

tape. As with existing VHS-C camcorders, the GR-S55U records for a maximum of 20 minutes in the SP mode and 60 minutes in EP using an ST-C20 cassette.

Both new models should be available in November. Prices were unavailable at this writing, but expect to pay about 25 percent more than you would for comparably equipped regular VHS and VHS-C camcorders. For more information, contact JVC Company of America, 41 Slater Dr., Elmwood Park, N.J. 07407.

## See the Light

Many camcorders will work inside a dimly lit room, but below a certain level of light, the image becomes grainy, the depth of field is lessened, and color balance suffers. One way around this problem is the Sima Camlight-2, a quartz-halogen lamp that can attach to the camcorder's shoe or stand alone as a side or back light. Two versions are offered, one powered by AC (\$80), the other by either AC or 12-volt DC (\$100). Sima says the vented housing keeps the Camlight-2 cooler longer than

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A flip-down cover in DBX's CX-1 preamplifier reveals an extensive array of features, including surround-sound processing with Dolby Pro Logic.

any other light in its class. It weighs approximately 7 ounces and measures 3½ inches long.

The Camlight-2 should be of particular benefit for indoor shooting with one of the new generation of camcorders with high-speed shutters (like the JVC models above). As with photographic cameras, faster shutter operation requires greater illumination. For additional information, contact Sima Products Corp., 4001 West Devon Ave., Chicago, Ill. 60646.

### DBX Rounds Out

As we mentioned briefly in September's new-product preview, DBX has unveiled a line of basic audio components to complement its Compact Disc players and its growing assortment of Soundfield loud-

speakers (not to mention its professional signal-processing gear).

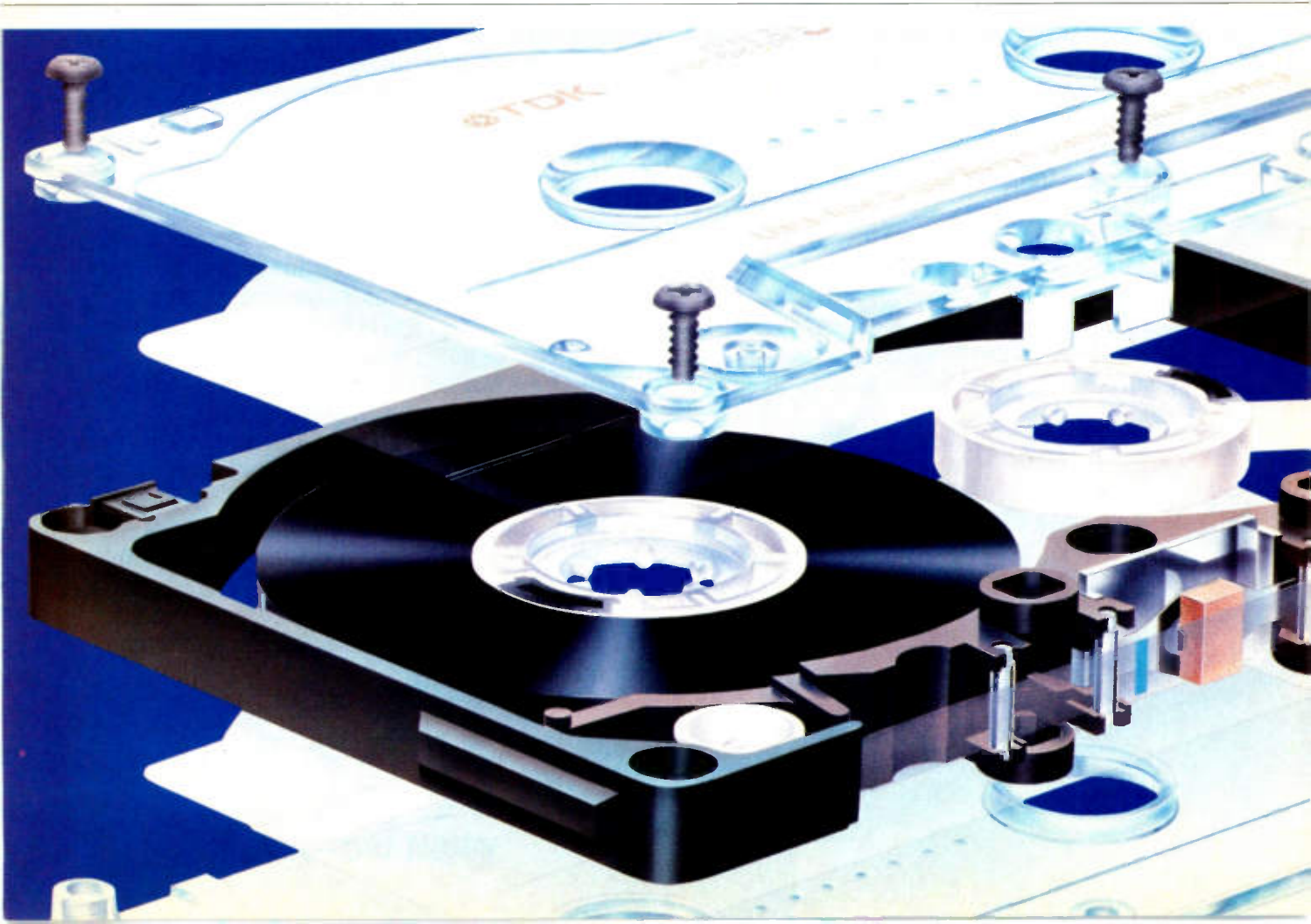
The CX-1 preamplifier (\$1,500) is the most dramatic entry, with an extensive array of audio and video switching (for a total of nine components) and a built-in surround-sound processor featuring Dolby Surround with the new Pro Logic treatment for enhanced channel separation. Three other surround effects are intended for various types of music.

You can control the levels of the back and center channels separately, after which the overall level of these and the front channels can be simultaneously adjusted by the master volume control. A soundstage control can gradually blend the front stereo channels into mono, or, when turned the opposite direction, add L-R and R-L difference signals to the

channels to widen the apparent width of the soundstage. Instead of using a PCM encoding scheme for the delayed back-channel signals, DBX uses its own delta-modulation technique, which is said to produce less noise.

Speaking of noise, DBX points out that switching of all sources is done mechanically (through gold-plated contacts) to prevent any noise that might be introduced by solid-state or microprocessor switches. Also, the balance and tone controls are removed from the circuit path when set at their center detent positions. Each of the CX-1's sections—line, headphone, video, delay, and phono (MM or MC cartridge)—draws energy from its own regulated power supply.

The CX-1's stablemate, the BX-1 power amplifier (\$2,500), can operate as a conventional stereo amp rated at 400 watts (26 dBW) per channel or in a three- or four-channel configuration. In the latter mode, it delivers 100 watts (20 dBW) per channel; in the former, a bridged third channel delivers 400 watts (23 dBW). These are 8-ohm continuous-power ratings, but the BX-1 is designed to deliver increasing amounts of continuous power even into a 1-ohm load, which makes it a good match for speakers—even some "8-ohm" models—whose impedances drop steeply at certain frequencies. The BX-1's





A new angle: The Zenith VRD-530 VCR fits in a Zenith TV set and in other tight spots.

1-ohm stereo rating is 1,400 watts (31.5 dBW) per channel; beyond that, an additional 1.5 dB of headroom is available for peaks, bringing the maximum (dynamic) power at 1-ohm to more than 2,000 watts! The unit can be rack-mounted and has handles front and rear.

Completing the trio is the TX-1 AM/FM tuner (\$600), distinguished by Schotz noise reduction (NR)—a circuit that blends the high frequencies of the FM stereo channels to reduce noise while preserving as much stereo separation as possible. The NR responds dynamically, oper-

ating only when a certain level of noise is detected; it can also be defeated altogether. The AM section conforms to the new broadcast standard and provides response beyond 5 kHz (compared to a typical top end of 3 kHz) from stations that have already made the change.

For more information, contact DBX, 71 Chapel St., Newton, Mass. 02195.

### Top Zeniths

Here are a few highlights from Zenith's new line of Digital System 3 TV sets and VHS VCRs.

All of the TV sets incorporate a digital comb filter and circuitry that continuously monitors and adjusts the picture for optimum performance. There are no picture-in-picture (PIP) effects and the like, although the sets can receive World System Teletext, a news and information service that Zenith says is available to more than 40 percent of U.S. homes. An adapter is provided for connecting the separate luminance and chrominance video output from the new S-VHS VCRs (such as Zenith's \$1,300 VRD-700, also recently introduced). The tuners can receive MTS (stereo TV) broadcasts. On-screen displays indicate volume, balance, bass, and treble settings.

One of the 13 new 27-inch sets—the

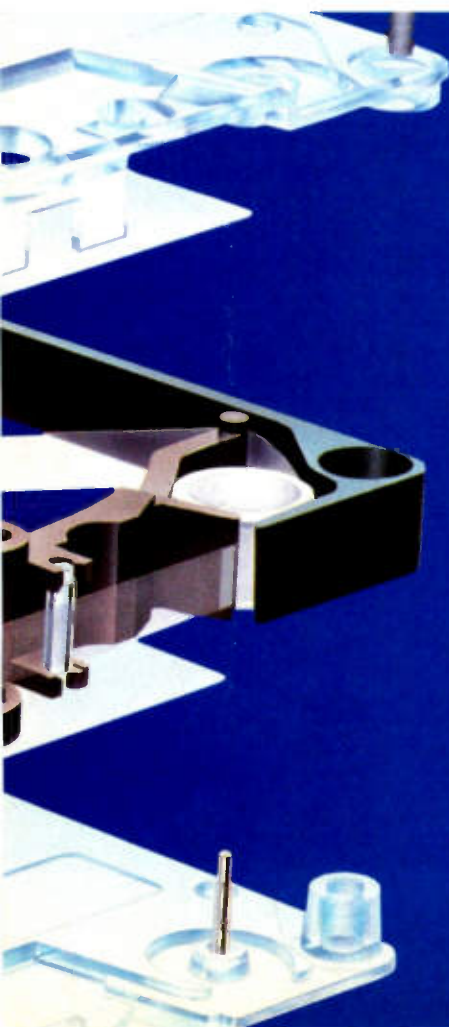
\$1,495 ZB-2745H—is a console with the special Bose-designed sound system (see "Currents," December 1986, for a description of the Bose system). Two other 27-inch consoles offer storage space and a VCR shelf, while another has a compartment that can house one of two new "vertical" VCRs (more on these in a moment). But the big news, literally, is Zenith's first direct-view 35-inch set. The model SD-3535H is said to take up no more space than many 27-inch consoles and should sell for less than \$2,800.

The vertical VCRs, both regular VHS, are about six inches wide and a foot tall. They fit neatly into the left side of the company's new SD-2753H 27-inch console (\$1,295), but they'll also fit in other places

*(Continued on page 104)*



A new size: Zenith's 35-inch direct-view set



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CERTAIN THINGS IN LIFE SIMPLY CANNOT BE COMPROMISED.

**NEC**



## Light-Headed: Optical Links

By David Ranada

Everybody knows that digital audio is the wave of the future. The *waves* of the future, however, are light waves (photons, to you quantum-mechanical diehards). Optoelectronics will become increasingly important as digital-audio and even digital-video systems become more complex, thus emphasizing the need for high-quality, low-interference interconnections. The optoelectronic system most familiar to readers of this magazine is the laser pickup in every CD player. Using a laser diode (only one, even in three-beam players), an array of light-sensitive phototransistors, and an optically optimized disc, the CD system also demonstrates the power of applied light waves. Unfortunately, looking beyond this level of development in home-entertainment optical links shows that there is confusion, not light, at the end of the tunnel.

The most uncomplicated use of an optical data link occurs in CD players from Sony, Nakamichi, Onkyo, Yamaha, and others. In order to reduce noise, optically coupled arrangements of LEDs and phototransistors or photodiodes serve to isolate one part of the circuit from another. In Onkyo's models, for example, the optocouplers are used to keep the digital-processing and analog-output circuitry electronically separate and are located at the last possible location: between the digital-filter and digital-to-analog converter sections.

While the use of optical isolation in such an application smacks of technological overkill (like using Superglue when a paper clip would do), I see no harm in it. Although manufacturers of these players like to attribute reductions in output noise level and other measurable effects to the optical coupling, I have yet to *hear* any effect that is definitely attributable to the system. But the use of optoelectronics is promoted by such audio components, and public awareness will grow when and if the other significant audio application—component interconnection—becomes more important.

Several companies (such as Kenwood, Luxman, Denon, and Technics) have introduced CD players with optical digital-signal output connectors; some are also producing components with optical inputs. These components are meant to be linked by optical fibers—thin "wires" ideally made of specially treated glass. Optical fibers use total internal reflection to achieve very high efficiency in light transmission. Every time a light wave approaches the outside of a fiber, the fiber's two-layer construction either bends or reflects the beam further down the fiber. With a proper match between transmitter (a solid-state laser in telephone systems) and fiber, signals can be transmitted for *miles* with negligible degradation.

This too may seem like overdoing it. Simple wire cables can and do interconnect home-audio components perfectly well, and only slightly more complex coaxial ca-

bles can carry the wide-bandwidth digital signals emerging from many CD players' digital outputs. What the optical connections on these CD players presage is the day when audio systems are primarily digital, a day when some of the unique characteristics of optical transmission will come into their own.

I hope that era will not be long in coming, though at this stage it looks like it may never arrive. Why not? Because, with the exception of those components produced by the same company, *none* of these optical input/output devices can be connected to each other. Even the connectors are incompatible. Even worse, there is no home optical-interconnection standard, nor do I know of any in the works, here or abroad.

Even without a fiber-optic digital-audio interconnection standard, it is still amazing that no manufacturer has come up with *the* obvious digital-audio fiber-optic application: "wiring" a home for sound with a digital encoder at the main system, separate digital-to-analog converters at each "tap," and fiber optics linking them all together. Used as the interconnection medium, optical fibers would offer the following important advantages:

- Multiple channel capability with one cable.
- A cable that is lighter and smaller than shielded wires.
- Freedom from picking up electrical noises and from generating radio or TV interference.
- Extremely long cable runs with no loss of audio quality.
- Electrical isolation of one component from another so as to reduce grounding and hum problems.
- The exploitation of optical fibers in multiroom, multicomponent, multibrand remote-control systems, if a home "fiber-optic" standard is promulgated.

I, for one, just can't wait, if only to see what the fringe high-end accessory manufacturers try to do with fiber-optic cables. Unlike a high-end linear-crystal oxygen-free (LCOF) copper speaker cable, a high-end glass-fiber cable can not be "linear crystal," since all glass is noncrystalline almost by definition (molecularly, glass is a liquid in suspended animation). Neither can the cable be "oxygen free," because glass, according to its chemical formula, has two atoms of oxygen for every atom of silicon. The glass portion of the cable can't be thicker than normal, since the light-transmitting properties would suffer greatly. The insulation portion of the cable doesn't have to be thick, only lightproof and reasonably strong. A high-end fiber cable couldn't possibly sound better, because its optical properties are just barely related to the reconverted digital-audio quality (if the connection works at all, it will probably be working perfectly). However, there's one thing you can be sure of when it comes to high-end fiber-optic cable: It *will* be expensive! ■



## The Great Equalizers

By Christopher J. Esse

**M**ost people would agree that the performance of a car stereo system, by nature, pales in comparison with that of a decent home system. However, that notion is starting to fade, thanks in part to the development of CD players for the car. The prospect of digital sound on the road has spurred improvements in amplifiers (greater dynamic headroom) and speakers (better dynamic range) and has obligated manufacturers to make better tape decks to play high-quality dubs of CDs. The result is not only a greater appreciation for the quality of sound that can be obtained in a car, but greater expectations as well.

But a major problem remains, and it's not one that can be solved by an amplifier with 6 dB of headroom or a CD player with extended ruler-flat response. It's the car—specifically, the inside. The acoustic characteristics of a car's interior—defined by its cramped dimensions and surfaces that are highly reflective (glass) and highly absorptive (upholstery, carpeting, and passengers)—conspire with constraints on speaker location to create a sonic hellhole.

The cure for frequency-response irregularities and the accompanying instability of the stereo image is a combination of equalization and judicious speaker location. A look at a typical frequency-response curve for a car system will show that attempting corrections using a conventional equalizer might worsen the situation. Fortunately, a crucial element in the response equation—the position of the listener—varies little in a car. In 1982, engineers at Bose went to work on car systems for GM, studying the acoustics of particular models to develop custom equalization circuits that counteract measured response anomalies. We've reported on these systems in the past ("Currents," May) and more recently on a similar Bose system designed for the top version of the Acura Legend Coupe ("Currents," August). Since Bose's pioneering efforts, JBL and Infinity, two other leading American loudspeaker manufacturers, have joined with Ford and Chrysler, respectively, to develop systems with a similar goal (see also "Currents," May).

Evidently, a welcome trend has begun. As reported in last month's autosound roundup, Blaupunkt is bringing custom equalization to the after-market with an amplifier that uses plug-in EQ modules programmed for a wide variety of car models. And ADS has an EQ system specifically designed for the Porsche 911, with versions for other cars to follow. But the automakers share an advantage when it comes to fully realizing the benefits of system equalization: Their systems are designed from the ground up, eliminating troublesome variables such as speaker type and location.

The method for determining the necessary compensation for gross peaks and dips in frequency response is ba-

sically as follows: Set up microphones inside the car, feed them broadband noise signals (usually pink noise), and find the offending deviations in the resulting data. However, the manner in which this process is undertaken and the criteria followed along the way vary among the three automakers' systems.

In the GM cars, Bose engineers use a dummy (hey, Mr. Goodwrench—got a minute?) with an acoustically accurate head and a microphone in each of its ears. The general location of the speakers is determined early in the design process; later, these positions may be slightly adjusted to optimize stereo imaging. Certain car models won't get the Bose treatment because of unacceptable speaker locations; in most cases, however, GM makes provisions for Bose's suggested placements. The specific makeup of the noise signal fed to the speakers during testing is shrouded in secrecy. Thousands of measurements are made at different seating positions in front and back (had enough yet, Goodwrench?), with the fader set at center and at both extremes. The mike measurements are gathered up and run through Bose's computer mill. The frequency-response and reverberation characteristics of the car environment are then analyzed and a suitable equalization scheme worked out. All of the steps in the process are interactive, and Bose tells me it has computerized a good number of them. Naturally, actual listening tests are conducted along the way.

Flat frequency response is *not* the goal. First, the masking of road, wind, and engine noise must be addressed. This is worked into the EQ circuits based on an average measured noise level. Second, there is a Bose loudness-compensation circuit in the head unit that, like other such circuits, provides bass boost that tails off as the volume is increased. Third, the system is optimized for front-seat listeners: Response in the back will be adjusted to the extent that the sound in the front is not adversely affected (some of this can be done through speaker placement alone). Beyond these considerations, Bose builds in other, unspecified, deviations from flat response. I asked, but they have this thing about keeping secrets.

Unlike an equalizer with fixed controls, the Bose circuits can have nearly any combination of center frequency, level, and "Q," depending on what's needed. (Q, or bandwidth, represents the degree to which frequencies below and above the center frequency are affected when the level is changed.) To preserve lateral stereo imaging, the EQ setting in left/right pairs is the same.

Bose puts a great deal of emphasis on stereo imaging. The measurements collected at the mikes are subjected to interaural cross-correlation analysis, which shows how sounds differ in amplitude and in arrival time at each ear. This relationship is depicted in a three-dimensional graph

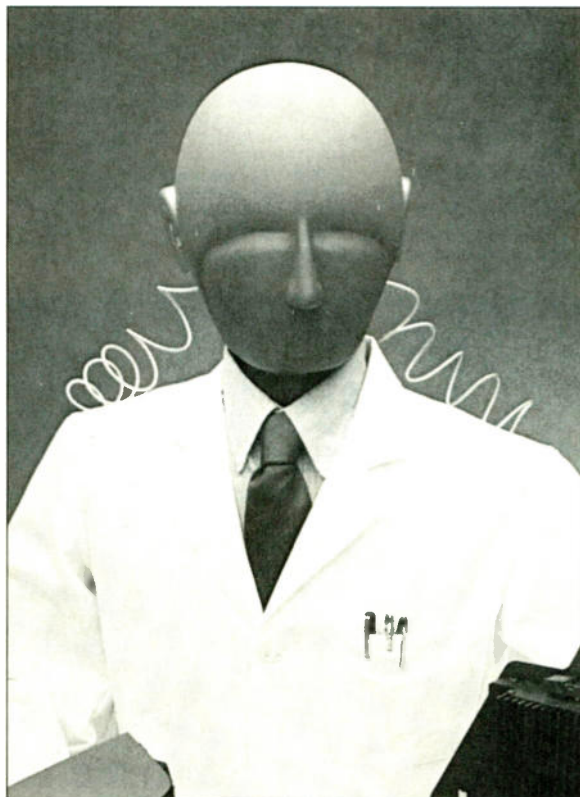




that guides Bose in determining the best speaker placement (within given physical constraints) for realistic spatial reproduction. As for the absence of a left/right balance control on the Delco head units, a Bose spokesman explained that "electronically, there is no hope for getting a balanced image." In addition, the fader affects only the frequencies above 200 Hz, enabling you to shift the image forward or back while maintaining the overall volume.

It may not be "Job 1," but the audio division at Ford is responsible for equalizing the Ford/JBL systems (although JBL actually did this for the first Lincoln Continental model). Measurements for the driver's seat are made through six microphones suspended in the area where the driver's ears would be. Called the "99th percentile ear ellipse" by Ford, this space is derived from data taken by the car designers to determine the most likely position for a driver's eyes (to aid dashboard layout and line-of-sight studies). Other measurements are taken from the passenger seat and the back seat, although the system is optimized for front-seat listeners, as is the case with Bose.

Ford can test the effects of various EQ settings for each measurement position. The test signal is pink noise.



*All dressed up with one place to go: Bose's well-attired dummy (shown) has a microphone in each of its ears that listens to test signals in the car. The resulting frequency-response and time-delay data are used in developing the equalization scheme and in determining the best location for the speakers. Ford makes its measurements using six microphones grouped in various seating positions throughout the car, and Infinity uses four. All three systems are listened to by real ears before the designs are finalized. The primary goal is to compensate for the troublesome peaks and dips in frequency response encountered in the harsh acoustic environment of a car.*

After all the data are gathered, EQ for the front and back speakers is computed (left/right pairs get the same EQ). Three bands of control are used, with virtually any combination of center frequency, level, and Q possible. Again, compensation for road noise and the like is part of the EQ treatment. JBL, which contributes the amplifier and speakers, also provides a loudness-compensation circuit with a Q chosen specifically for each car model.

Insofar as flexibility in speaker placement is limited, stereo imaging is not a key design criterion. However, severe imaging problems due to peaks at certain middle and high frequencies can be quelled by the EQ. In the 1988 Lincoln Continental and other models to come, however, the audio people are having their say in speaker location.

Infinity does the EQ work for the Chrysler models and supplies all the speakers and the amplifiers for the bass/midrange drivers; the tweeters are powered by the amp in the Chrysler head unit. (Since Infinity makes audio products and not cars, it has so far managed to avoid being acquired or bought into by Chrysler, which has recently been on an international buying binge.) In this system, three sets of measurements go into the formula: one for the driver's seat, one for the passenger's seat, and an average for the back-seat area. Four microphones are used—one each facing forward, back, left, and right—and the group is rotated after each series of measurements in order to cover all directions. Pink noise is the test signal. The data result in a "map" of the spectrum of sound distributed throughout the car over time.

The bass/midrange drivers get different EQ front and back but the same for left/right pairs (except in one model, according to Infinity). The frequencies going to the tweeters are not EQ'ed, although the overall level is set. Infinity president Arnie Nudell says that the response of the Polycell dome tweeter is flat to 15 kHz; he likes the way it sounds and hence would rather not stick additional electronics in front of it.

Once again, because of road noise, loudness compensation, and so on, an overall flat response is not the goal. In fact, Infinity says simply that it's trying to make the sound as natural and uniform as possible throughout the listening area (primarily the front seats), based on both systematic testing and a considerable amount of listening. The company also concedes that its systems don't play as loud as its competitors', explaining that it puts more money into the design of its speakers. The systems I've heard seemed to play plenty loud, though.

As with Ford, not much nail-biting was done over stereo imaging. But again, EQ can take care of any serious problems in the midrange, and the dash-mounted tweeters in most of the models are said to distribute the highs evenly. I'm told that imaging in future models will receive a healthy dose of attention.

Now that you know how the Big Three car manufacturers and their partners do it, how do the systems *sound*? Great, compared to anything previously offered as a factory-installed system. And because the systems are customized for each car model in terms of performance and installation, they offer a significant challenge to the aftermarket. To me, the real question is not whether you want to buy the system, but whether you want to own the car that comes with it. If you do, and can afford the option, I'd say go for it. ■



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## Answers To Readers' Questions

By Larry Klein

### Midrange Distortion

*Recently, I had my ear close to the midrange driver of my floor-standing speaker system. Much to my surprise, the driver sounded very hollow and nasal. The other channel's speaker was no better. In addition, both tweeters seemed to put out very little sound, even on loud program material. Yet everything seems okay from my normal listening position. Is something wrong with my speakers—or my ears?*

**David Milhan**  
Covington, La.

Probably neither. When you put your ears close to the midrange driver, you heard lots of sound centered around 1 kHz or so and little or no high-treble or lower-bass frequencies. If you were to listen from a normal distance and strongly boost the 1-kHz range using an equalizer, the overall sound quality would be similarly nasal. In short, if you hear only part of the audio frequency range or hear it strongly boosted in level, music will often sound unnatural or colored in some way. Your tweeters sounded weak simply because the treble energy in normal program material is usually at a lower level than that of the bass or midrange.

There's a lesson to be learned from all this. The majority of the differences you hear among speaker systems are *not* caused (or cured) by esoteric factors in their design or construction. Old-fashioned frequency-response characteristics are responsible for most coloration and imaging problems. When a designer is able to *truly* control the frequency response of a speaker system (which also includes dispersion), the mysteries about most sonic problems vanish. In the past, the big problem in controlling overall speaker-system response has been the lack of adequately revealing test procedures. Recently, though, I've seen some significant progress taking place in this field.

### Premature Component Wear

*I'm worried that I might be wearing out my new receiver through excessive use. I play it about four hours a day at a reasonably loud volume while listening to LPs, CDs, and tapes. Since I don't anticipate having the money to pay for a replacement in the near future, I need to make this one last as long as possible, even if it means cutting back on its use or playing it less loudly. What do you suggest?*

**Peter Stewart**  
Norwalk, Conn.

The receiver, because it has so few moving parts, is one of the components in a system *least* likely to wear out through use. In any case, the conditions of component use are more important than the amount of it. Heat significantly affects the longevity of electronic devices, though it is much less of

a problem with modern solid-state equipment than it was with tubes. If your receiver is *very* hot to the touch during normal operation, it either is being driven very hard into low-impedance speaker loads, lacks adequate ventilation, or has misadjusted output-stage transistor bias. If you think there may be an overheating problem, check the operating temperatures of similar units in the store where you bought yours or write the manufacturer. Very few home electronics components become too hot to touch when operating normally.

With the exception of your speakers, you should expect some of the mechanical components in your system to slowly wear out from normal use. Record and CD players and tape decks will all ultimately need servicing. My only suggestion for slowing down the normal progression to the repair shop or junk pile is to scrupulously follow any cleaning and maintenance procedures and schedules recommended in the instruction manuals.

### FM Interference

*The audio signal of an FM station located about three miles away is playing through my receiver, independent of the tuner or volume-control setting. The interference is present even with the antenna disconnected. The FCC, the repair shops, and the FM station have been of no help. Any suggestions?*

**Pete Momcolovich**  
Seattle, Wash.

Since your volume control has no effect on the unwanted FM station, its signal must be entering your system *after* the high-level input circuits. I suspect that your speaker leads are serving as FM antennas, possibly tuned by their lengths to the intruding station's frequency. The unwanted FM signal is transferred from the speaker leads to your receiver's feedback loop, which returns it to an earlier amplifying stage. From there, it is detected, amplified, and fed to your speakers as an audio signal. You can test my theory by disconnecting all speaker leads *from the amplifier* and listening through headphones. If the intruding station is no longer present, the speakers leads are the pickup.

If that is the case, there are several things you can do. Try shortening your speaker leads or reorienting them so as to avoid having them run perpendicular to the direction of the station, lengthening or looping the leads to achieve this if necessary. You can also try adding small-value ceramic capacitors—say, 0.005 microfarads—across both the amplifier's left and right speaker terminals as radio-frequency bypass filters. Finally, check with your receiver's manufacturer. They may be able to suggest fixes, including returning your unit for anti-interference modifications.

*We regret that the volume of mail is too great for us to answer all questions.*

## ONE STEP IN THE MAKING OF A KEF

'Most speaker companies buy their drivers from somebody else. Either they don't know how to make their own, or they just can't be bothered. Here at KEF, we've been building our own drive units for over 25 years.

'We're very fussy about our ingredients — bextrene, neoprene, nomex, cast aluminium and such. And

I better do a good job in putting everything together. Because the lads in the laboratory test every single driver.

'They test for mechanical tolerances. They test for frequency response. Then they test the completed systems. There surely must be easier ways to make speakers. But not better.'



*The Speaker Engineers*



MODEL 360

**'We make a better speaker starting at the very beginning.'**

— Jean Britt, KEF DRIVE UNIT CONSTRUCTOR





## No-Splice Editing

By Robert Long

**M**ost home recordists never touch a roll of splicing tape except to make repairs when catastrophe strikes. Audio cassette tapes are so tiny and fragile that the skills of a brain surgeon are needed for successful splicing. Spliced videotapes are likely to flop the picture in retaliation; digital audio tape can respond with nasty noise bursts. So in today's popular audio and video formats, editing is a question of selective copying.

For example, owners of camcorders or other "home movie" video equipment copy (often between formats) to assemble their shots into a coherent sequence for the edification or amusement of others. It used to be that unused film footage was wasted. With videotape, you can record over your mistakes after you've salvaged the good bits. That's one of the beauties of the medium.

Part of the assembly process is the substitution of background music for the unwanted random noise and chatter you're likely to have picked up as the soundtrack during a shoot. When you tumble out of the bus on the rim of the Grand Canyon and start shooting, the camcorder's mike is unlikely to pick up anything more inspiring than wind noise. But using a VCR with an audio-only dub facility, you can replace the live sound with Ferde Grofé's appropriately cinematic *Grand Canyon Suite*.

Of course, you can overdub the sound only on the edge (linear) soundtrack. With either VHS Hi-Fi or Beta Hi-Fi, the sound is recorded right along with the picture, so you can't re-record the Hi-Fi audio without also erasing the picture. On many decks, the edge track is monaural, limiting sonic imaging possibilities as well as fidelity. If it's truly background music you're after, however, the audio quality isn't as important as the mood and pacing of the music.

Some decks enable you to play the Hi-Fi sound and the edge track (or tracks) simultaneously. This lets you mix the live dialogue on the Hi-Fi tracks with the music on the edge track, though you may have to fade the dialogue track in and out every time you play the final tape (or make another copy) in order to suppress the unwanted sections. The alternative is a relatively elaborate setup with two simultaneous dubbing sources. There are specialized components to help you achieve special effects—from audio and video fades to fancy wipes to micro-processor-generated titling—but many are quite expensive. And it's sometimes more fun to see how much you can accomplish with the least elaborate means, relying on ingenuity and imagination more than technology.

That's why I find editing *audio* cassettes so satisfying. All you need is a really quick-acting pause control and lots of patience. A fast pause isn't as easy to find as it was when all transport controls were mechanical. Back then, the pause simply braked the hub drives as it disengaged the capstan idler. Only budget decks, often with excessive

flutter, still work that way. In most models, electronically driven head-block motors, cams, or solenoids do the job.

To find out how your deck behaves, try recording some sustained music and stopping and restarting the tape in midphrase using the pause control. There may be gaps or clicks in the sound wherever you stopped. There also may be a slight puff of off-speed sound if the braking or start-up isn't fast enough. Just in case any clicks are masked by the music, repeat the test with no input signal.

As a final test of the recording-pause function, copy some music that contains a very distinctive cue, like a sudden loud note. When you reach the cue, hit PAUSE, leaving the deck in recording standby. Then back up the source music and, when it again reaches the cue, recommence recording. The audibility of the join should tell you something about your deck's timing—and your own.

With the right equipment and technique, you can "splice" music more convincingly with a pause than you can with a razor blade and splicing tape. For example, many piano concertos recorded on 78s end a disc side with a piano passage (with, say, strings in the background) that culminates in a chord on the beat. On the next side, the full orchestra plays the same chord and continues into the following passage. That chord is therefore at the end of one side and the beginning of the next.

Which version of the chord do you dub? That on the first side has just piano and strings: no winds, brass, or percussion. The next side has everything except the piano. Yet the piano must be heard there to round out its phrase. A splice at this point is tricky and hard to hide, but in many cases, an efficient pause will hide it undetectably. After recording the entire first side, cue up the tape to the piano transient in the final chord. That is, press PAUSE the very instant you hear the piano chord. Then switch to the recording-pause mode and rehearse releasing the pause just as the full orchestra chord on the second side is starting.

This is the tricky part. If you count disc revolutions from some index point—a loud click is helpful—you can pick up the cue very precisely. If you do it perfectly, the orchestra will come in right on top of the piano and immediately after its initial transient, erasing the first half-second or so of the piano chord's highs (the time it takes tape to move from the erase head to the recording head) and obliterating the chord altogether after that. When you listen to the playback, the clearly audible onset transient of the piano should convince your ears that the piano is still playing behind the tutti.

Editing techniques that will be practical with home DAT will have to wait until the format has established itself. In the meantime, don't overlook what your deck *will* do just because it can't manage the sort of editing I've just outlined. Come on—live a little! ■

## ONE STEP IN THE MAKING OF A KEF

Anyone can build a good prototype. The real challenge is assuring the quality of everyday production. That's why KEF have the most stringent production test programme in the industry.

'We test each individual Reference Series driver for amplitude response with respect to frequency. The computer collates the tested drivers and crossovers into left and

right pairs that match to better than  $\pm 0.5\text{dB}$ . This accounts for KEF's spot-on stereo imaging. Then we test the completed pairs for frequency and phase response against the original prototype.

'We keep all this data by serial number on permanent file. If a driver should ever need replacement, we can supply an exact duplicate.

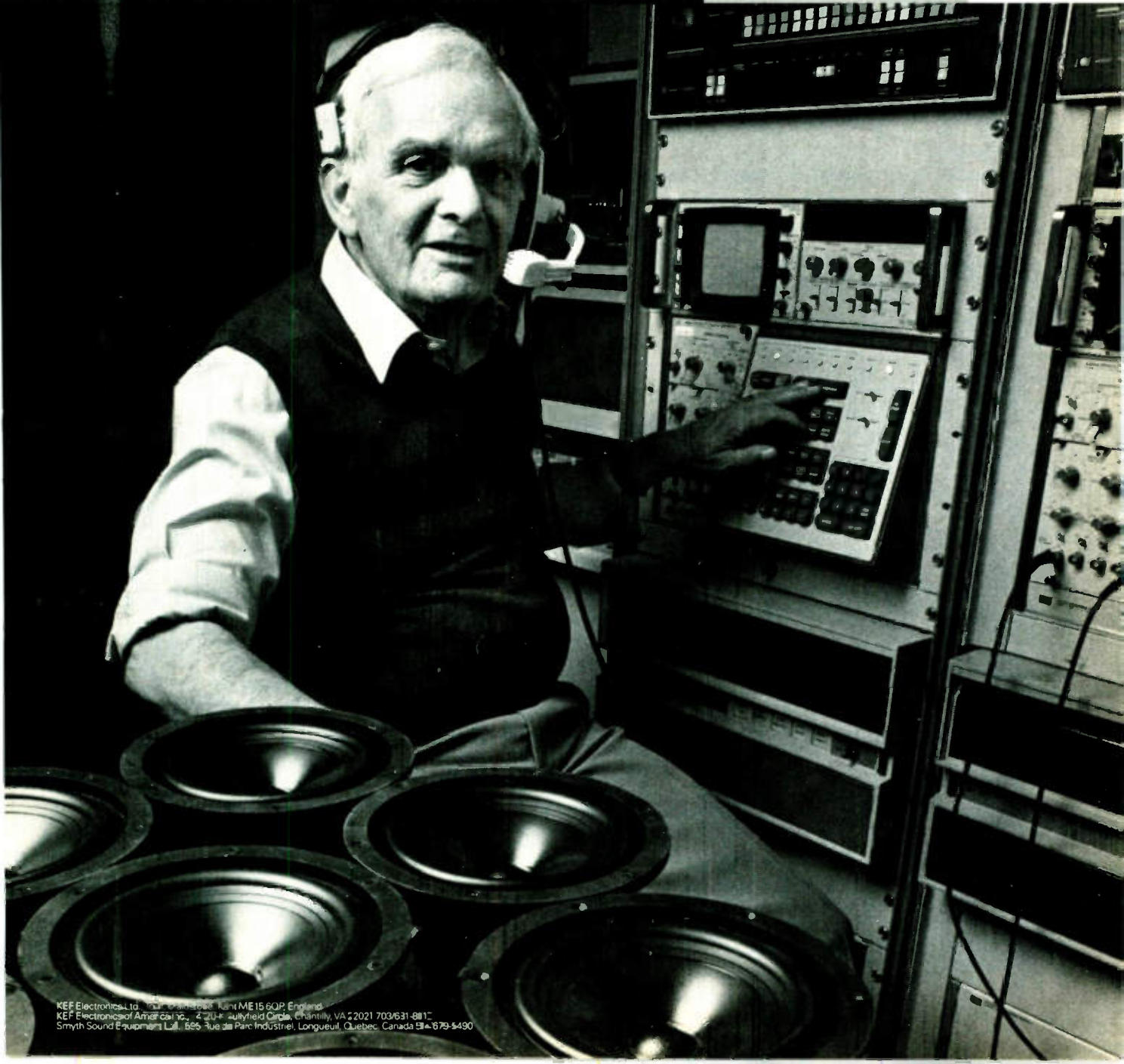


REFERENCE MODEL 107

**KEF**  
The Speaker  
Engineers

**'Our testing may seem fanatical, but it's the only way to guarantee performance.'**

—Frank Merricks, KEF PRODUCTION ENGINEER



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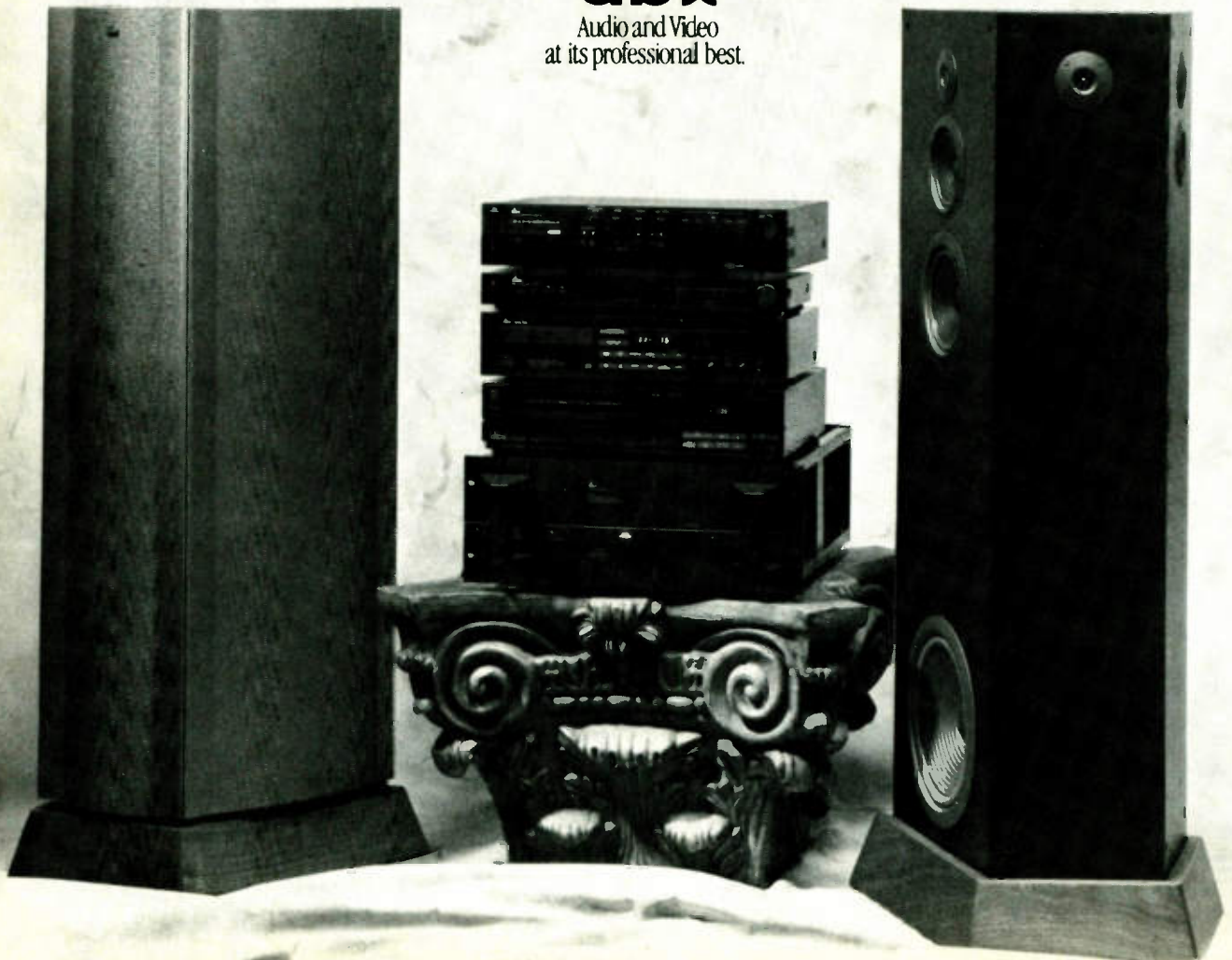
And a CD player that's so good, *Stereo Review's* Julian Hirsch wrote: "Even without its special circuits [proprietary sonic enhancements], the dbx DX5 would rank as one of the best available."

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Report preparation supervised by Michael Riggs, David Ranada, Christopher J. Esse, Robert Long, and Edward J. Foster. Laboratory data (unless otherwise indicated) is supplied by Diversified Science Laboratories.

**T**he JBL 830 loudspeaker stands near the top of the company's JBL line: just below the four-way floor-standing 940 and just above the other three-way floor model, the 630. Also included in the series—launched to commemorate the company's 40th year in business with models using the latest technology to achieve exceptional value—are two compact models.

The 830's relatively broad, shallow tower shape is complemented by a wooden "foot" to increase stability, particularly on plush carpeting. Like all speakers in the line, it is covered with rosewood vinyl—even on the back, since the 830 is conceived of as a free-standing design. A lightweight, rigid plastic frame supports the removable stretch grille. Lead connections are via color-coded spring clips in a shallow recess on the back panel.

The speaker is a true three-way system in that it has three drivers, each covering a different range of frequencies. These bands are not altogether exclusive, however; one of the two woofers works up into the midrange as well. The "woofers" are vented through a ducted port at the back of the enclosure. Just above and slightly to the left of these two axially mounted drivers is the tweeter.

The purpose of the overlapping-pass-band crossover design is to increase efficiency and power handling in the frequency range where music demands the greatest acoustic output. In that range, the two drivers essentially work in parallel, with a combined rated impedance of 4 ohms (though Diversified Science Laboratories measured averages of 8.1 ohms in the music band and 7 ohms full-range).

The impedance drops to a little less than 4 ohms near 20 Hz, below the vent-resonance peak; it also falls to that point at about 40 Hz (between the vent and woofer resonances) and at 150 Hz (at the minimum above bass resonance that is the conventional rating point). From there, impedance rises steadily (as the crossover cuts out the bass-only woofer) to a maximum of 15.1 ohms at the bottom of the tweeter range, near 3 kHz. It is this fairly broad hump that keeps the average impedance near 8 ohms in DSL's measurements. If your amplifier is fussy about its load, you probably should observe JBL's 4-ohm rating and

choose your hookup scheme accordingly; parallel pairs could indeed draw high currents in the midbass.

The bass-only woofer (the lower of the two) operates up to 180 Hz, although DSL's near-field measurement indicates that rolloff above this frequency is fairly gentle. The upper woofer cuts off much more rapidly, but not until about 2.5

kHz, greatly extending the frequency range it must handle. Construction of the two drivers is identical, however: 7-inch cones treated with a high-polymer layer to improve stiffness and internal damping.

The tweeter is a 1-inch titanium-laminate dome fitted with a "contact lens"—

## Test Reports

### JBL 830 Loudspeaker



PHOTOGRAPH BY KENNETH SCHROEDER

**Dimensions:** 16¾ by 39½ inches (front), 9½ inches deep (except base: 13¼ inches deep).

**Price:** \$590 per pair.

**Warranty:** "Full," five years parts and labor, except two years on enclosure.

**Manufacturer:** JBL, Inc., P.O. Box 2200, Northridge, Calif. 91329.

**U.S. Distributor:** Harman America, 240 Crossways Park West, Woodbury, N.Y. 11797.

# How a 77-year-old became the first name in digital audio.

Denon's been involved in every phase of music reproduction since the days of wind-up record players. So after seven decades of breakthroughs in studio recording, disc pressing, home high fidelity and professional equipment, we were uniquely prepared to take the next step. A tape



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recorder so fundamentally different, it would obsolete every previously accepted notion of how good recorded sound could be.

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production, the legendary Denon DN-023R. We quickly put our digital innovation to use, producing digital processors, digital editors, digital mixers, and the world's first digitally-recorded LPs.

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Ken Pohlmann,  
Digital Audio, on the DCD-3300

the same engineers who design Denon pro machines design



as “a winner on every count,” “the player I recommend most highly,” “superlatives have to be used,” and “in several respects, the best I’ve ever heard.”

Reactions which simply demonstrate one point. It's a lot



THE NEW DCD-1500II. ITS SUPER LINEAR CONVERTER COMES STRAIGHT OUT OF DENON STUDIO RECORDERS.

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***“A look into the interior of this player reveals that Denon engineers were not taking any shortcuts whatsoever.”***

Germany's Hi-Fi Vision,  
on the DCD-1500

easier to make audio sound like music when you really know what music sounds like.

# DENON

DESIGN INTEGRITY

an acoustic lens molded to fit over the diaphragm, just beyond the point of its maximum excursion. The High Spatial Identification Dividing Network crossover uses precision parts, such as polypropylene capacitors and inductors wound to prevent saturation.

DSL tested the 830 in two positions: 39 inches and 6 inches out from the wall. (Placing it flush against the wall would obstruct the port.) The frequency-response plots were very similar at high frequencies for the two positions, as you might expect. Keeping the speakers farther out in the room produced smoother midrange response but less deep bass, and this position (which, in any event, is more consonant with the overall design) was the one used for our published curves and the remaining measurements.

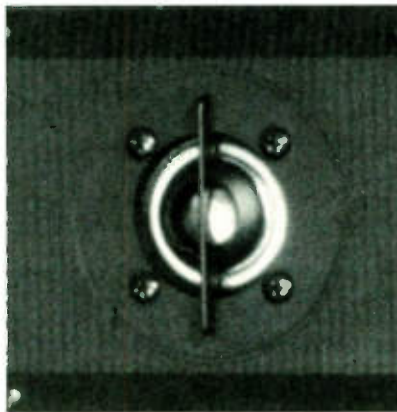
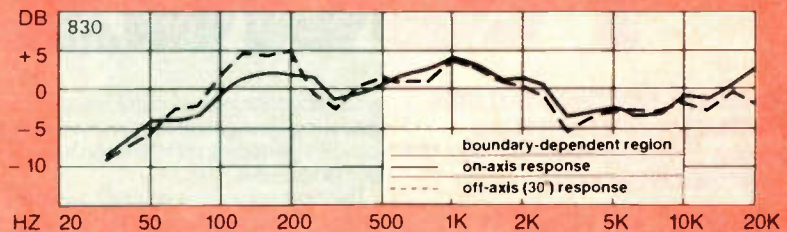
Measured this way, on-axis response stays within +4, -4 1/4 dB of the average in the music range, all the way from the 50-Hz band to that centered on 20 kHz. This includes a dip in the 300-Hz region, presumably attributable to interference from a floor reflection. Since the height of the drivers above the floor is determined (and therefore can be controlled) by the designer in a floor-standing model, we're not surprised that this dip is considerably milder than usual. Another dip is visible at the bottom of the tweeter range, followed by a gentle rise at higher frequencies.

Off-axis response follows the on-axis curve closely throughout the midrange and treble, with very little evidence of beaming (which manifests itself as divergence between the curves) at the top. In the range between 100 and 200 Hz, however, the off-axis output shows a marked increase over the on-axis. With the speaker placed nearer the wall, the measurements emphasize the peak near 1 kHz and add several dB in the deep bass—particularly on-axis and in the bass just below 100 Hz.

Distortion is remarkably low. At the lowest sound pressure level used in these

tests (85 dB SPL), total harmonic distortion (THD) is less than 2 percent in every measurement—even in the deep bass—and less than 1/2 percent at all test frequencies above 100 Hz. Naturally, distortion does creep up with the level, but even at the highest (100 dB SPL), most measurements still show less than 1 percent THD, and the average above 100

Room Response Characteristics



Sensitivity (at 1 meter; 2.8-volt pink noise)

95 dB SPL

Average Impedance (250 Hz to 6 kHz)

8.1 ohms

*The JBL 830's titanium-laminate dome tweeter is fitted with an acoustic lens to improve response and dispersion.*

Hz still is less than 1/2 percent. In our 300-Hz pulse power-handling test, the 830 negotiated calculated peak levels of more than 120 dB SPL, with no evidence of strain.

Subjectively, too, the speaker plays loud passages without struggle, though admittedly without the utter clarity and effortlessness of some much more expensive models. Tonal balance is essentially neutral. Even with the speakers placed out into the listening room, however, we judged the bass slightly heavy on some music. Nonetheless, many listeners will doubtless prefer the greater heft afforded by placement near the wall. The overall impression is one of forwardness. The stereo imaging strikes us as good side-to-side, somewhat less so front-to-back.

It's hard to remember that the 830's price is so moderate. The elegance of its appearance—and its sonic performance—seems to demand that it be compared with pricier competitors. Good value is one thrust of the JBL Series, and JBL has succeeded admirably with the 830. ■▶

#### REPORT POLICY

Equipment reports are based on laboratory measurements and controlled listening tests. Unless otherwise noted, test data are provided by Diversified Science Laboratories. The choice of equipment to be tested rests with the editors of High Fidelity. Samples normally are supplied on loan from the manufacturer. Manufacturers are not permitted to read reports in advance of publication, and no report or portion thereof may be reproduced for any purpose or in any form without written permission of the publisher. All reports should be construed as applying to the specific samples tested. High Fidelity and Diversified Science Laboratories assume no responsibility for product performance or quality.

# Reality Realized.

## SONIC HOLOGRAPHY TRANSFORMS EXCITING NEW PROGRAM SOURCES AS WELL AS FAMILIAR OLD ONES INTO TRULY LIFELIKE MUSIC EXPERIENCES.

Watch a movie on a 13" black and white TV. Now see it in 70 millimeter Technicolor with Surround Sound.

Listen to your favorite musicians on a portable radio. Now sit three rows back from the stage at a live concert.

The difference is dimension: Width, depth, breadth and detail that turn flat sensory input into breathtaking reality. They're the missing ingredients of live musical performance that Sonic Holography restores to records, compact discs and even hi-fi movie soundtracks.

The most experienced and knowledgeable experts in the audio industry have concurred. Julian Hirsch wrote in *Stereo Review*, "The effect strains credibility - had I not experienced it, I probably would not believe it."

*High Fidelity* magazine noted that "...it seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers." According to another reviewer, "It brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

All this with your existing speakers and music collection.

**HOW SONIC HOLOGRAPHY WORKS.** Unfortunately, conventional stereo cannot isolate the output of left and right speakers and send their output only to your left and right ears. Left and right versions of a sound occurrence also cross in the middle of your listening room, confusing your ears with additional extra sound arrivals a split second apart. Stereo imaging and separation suffer because both speakers are heard by both ears, confusing your spatial perception.

The Sonic Hologram Generator in the Carver 4000t Preamp, C-1 Preamp and Carver Receiver 2000 solve this muddling of sound arrivals

by creating a third set of sound arrivals. These special impulses cancel the objectionable second sound arrival, leaving only the original sound from each loudspeaker.

The result is a vast sound field extending not only wider than your speakers, but higher than your speakers as well. Sounds will occasionally even seem to come from behind you! It is as if a dense fog has lifted and you suddenly find yourself in the midst of the musical experience. Or, as the Senior Editor of a major electronics magazine put it, "When the lights were turned out, we could almost have sworn we were in the presence of a live orchestra."

**IMAGINE THE POSSIBILITIES.** Thanks to VHS and Beta Hi-Fi stereo soundtracks (found even on rental tapes), and the increasing number of stereo TV broadcasts, Sonic Holography can put you inside the video experience, too.

It's a breathtaking experience. Without the need for additional rear speakers, extra amplifiers or decoders, the visual experience is psychoacoustically expanded by lifelike sound that envelops you, transforming stereo from monochromatic flatness into vibrant three-dimensional reality. Instead of being at arm's length from the action, you are immersed in it.

Then there are the familiar audio sources which Carver innovation has further improved upon, each of which gains character and heightened impact through Sonic Holography.

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Thanks to the Carver Asymmetrical Charge-Coupled FM Detector, FM stereo broadcasts can be received hiss- and interference-free, ready to take on an astonishing presence and dimension through Sonic Holography.

Even AM stereo can actually become a three-dimensional phenomenon with Sonic Holography and the new Carver TX-11a AM/FM tuner which delivers AM stereo broadcasts with the same dynamics and fidelity as FM.

**ENHANCE YOUR SPATIAL AWARENESS WITH CARVER COMPONENTS.** When considering the purchase of a new preamplifier or receiver, remember how much more you get from the Carver 4000t, C-1 and Receiver 2000. Or add Sonic Holography to your existing system with the C-9 add-on unit.

Each can transcend the limits of your listening (and viewing) experiences by adding the breathtaking, spine-tingling excitement that comes from being transported directly into the midst of audio-video reality.

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# CARVER

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**A**long with Magnum and MTX, American Acoustics is one of three loudspeaker companies that comprise the Mitek Group. Of the three, it is the home-audio specialist, as shown by its full line of component-grade products. (We tested the D-8500 in the June 1986 issue.) The PSW-200 is a powered subwoofer designed to combine channels and supplement the deep-bass underpinning of speakers that are satisfactory in all but that frequency range.

The solid wood cabinet is supported on four legs that hold it 3½ inches above a horizontal bottom plate, which is itself supported by four rubber feet. With the enclosure inverted or on its side, you can see the mounting baffle—with the driver, port, connections, and controls—on the underside of the enclosure proper.

with pin plugs on both ends to run from this output to the low-level inputs on the PSW-200. If not, you can run the cable with bared wires on one end between the PSW-200's high-level inputs and an extra pair of speaker connections on your amp or receiver. (For instance, feed your prime speaker pair from the A connections and the subwoofer from B.) The unused input pair should be covered with the supplied dummy plugs.

Either way, it's important that the connections you use respond to the system's volume control. Otherwise, every time you adjust the volume of the prime speakers, you'll also have to readjust the gain of the PSW-200's amp to match. The gain control balances the subwoofer to the prime speakers but need not (and should not) be touched once a satisfactory balance is achieved.

## American Acoustics PSW-200 Powered Subwoofer



The 15-inch cone woofer's 2-inch voice coil is driven by an amplifier rated at 300 watts (14.8 dBW) maximum into the 2-ohm load presented by the driver. The amp is mounted within the port's duct, where the moving air helps cool the output transistors. The lower plate serves to deflect the acoustic energy outward (between the legs) on all four sides.

At one end of the baffle are the AC cord and power switch, a phase-inversion switch, low- and high-level input pairs, an amplifier gain control, and two "parametric" controls for shaping the subwoofer passband to the needs of the prime speakers. American Acoustics supplies two 20-foot stereo interconnect cables; the one you use depends on your system. If you have a volume-controlled preamp output, you can use the cable

That process also involves the parametric controls. One, marked **FREQUENCY**, is intended to focus the action on a range (centered between 30 and 100 Hz) that will best complement your prime speakers. The other control, marked **BOOST**, is rated to deliver as much as 12 dB of additional level adjustment at the frequency chosen with the first control. All this sounds quite rational, but in practice, the controls interact with each other and with the low-pass crossover filter (which is designed to attenuate everything above 70 Hz), preventing the clear-cut application implied by the owner's manual. In both bench and listening tests, we found setting the controls a strictly trial-and-error affair, with the ear being the only useful arbiter.

This makes for a lot of traffic across

**Dimensions:** 22½ by 18½ inches (top), 19½ inches high.

**Price:** \$700.

**Warranty:** "Limited," one year parts and labor.

**Manufacturer:** American Acoustics Loudspeakers, The Mitek Group, 1 Mitek Plaza, Winslow, Ill. 61089.

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RESEARCH

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the listening area as well as a lot of groping for hidden controls during the process. You also have to learn to rotate the adjustments "backward" because they face downward on the baffle. This is no serious problem, however, and once the job is done, you need only reach down for the on/off switch from then on. Our first impulse was to plug the AC cord into a switched outlet on our preamp, obviating the manual switching at the subwoofer, but American Acoustics indicates that it should be plugged directly into a wall outlet.

As a reminder that the unit is on, there's a small red LED on the enclosure's top surface. When you've finished the tuning procedure, you can install the supplied smoked-glass top, through which the lit pilot remains visible. Altogether, we thought the subwoofer quite handsome and, with the glass top, an excellent end table particularly suitable for modern decors. We were also impressed by the solidity and evident durability of the PSW-200's construction.

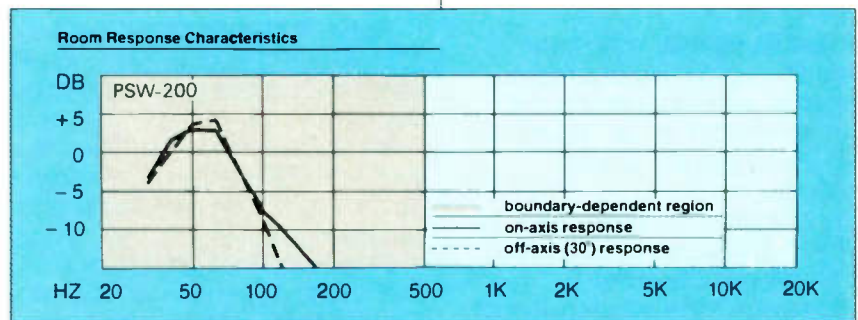
We tried the PSW-200 with a number of prime speaker pairs, and it was able to contribute something to each one. Our graph shows frequency response as measured by Diversified Science Laboratories with the speaker four inches from the wall, the frequency control at minimum (30 Hz), and the boost at maximum (+12 dB—a nominal figure at some frequency settings, but the actual difference between maximum and minimum boost at the 30-Hz position). Other settings of the frequency control had more effect on sensitivity (which is easily counteracted with the gain control) than on the bandpass characteristic, though some differences are discernible in the many curves made by the lab.

In early listening tests, we noted that some sounds were readily localized at the subwoofer itself—even with the unit placed between and in the same plane as the satellites with which it was set up. Flipping the phase switch did help reduce the audibility—that's why it's there. In some systems, you may end up with your prime speakers out of phase with the subwoofer (because your power amp is phase-inverting, for example). You could cure the problem by reversing speaker leads, but the switch eases comparisons, helping you decide which way sounds best.

Even so, we found it desirable to keep the prime speakers reasonably near the subwoofer's plane, vertically as well as horizontally, for the best possible sonic integration and imaging. Otherwise, we were sometimes aware that the funda-

mentals of a sound—say, a piano chord—were coming from the subwoofer. In some cases, this perception actually was due to too high a gain setting. In others, excessive overlap between the subwoofer's frequency range and that of the prime speakers produced a few over-emphasized notes. We didn't find the subwoofer's frequency control effective in addressing the latter problem, though overall level mismatches always were easily corrected with the gain control.

Distortion was quite low, although it can be responsibly assessed only in the very limited range at the center of the passband, because of the steep rolloffs above and below. But in that range, the figures all remained below 1 percent, even at the maximum test sound pressure level (100 dB SPL). Sensitivity is more than adequate for any reasonable



Sensitivity (at 1 meter; 2.8-volt pink noise)

see text

*Low- and high-level inputs, response-shaping and level controls, and phase and power switches are clustered on the bottom of the PSW-200's enclosure, out of sight.*

need; with the gain all the way up, only 4.3 millivolts (0.0043 volt) were required to produce an acoustic output of 90 dB SPL at 1 meter.

How well the PSW-200 will mate with your speakers depends in part on them. A really chintzy pair whose bass doesn't hold up well down to 100 Hz or so will leave you with a hole in the overall response that the limited frequency range and flexibility of the subwoofer can do nothing to fill. But the PSW-200 can and does add extra acoustic energy in the octave or so where most speakers good enough to deserve a subwoofer are rolling off rapidly. ■▶

# REDEFINITION.

## THE CARVER RECEIVER

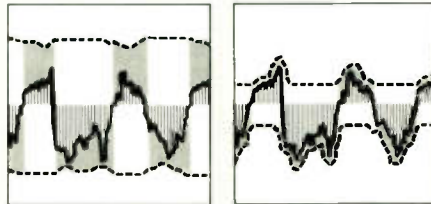
Redefines your expectations of receiver performance with the power you need for Digital Audio Discs plus virtually noise-free stereo FM reception. A receiver with astonishing performance incorporating two highly significant technological breakthroughs: Bob Carver's Magnetic Field Power Amplifier and his Asymmetrical Charge Coupled FM Detector.

**ESSENTIAL POWER:** Your system needs an abundance of power to reproduce, without distortion, the dynamic range of music on Digital Audio Discs and fine analog recordings.

The Magnetic Field Amplifier in the CARVER Receiver gives you **150 watts per channel (continuous sine-wave output)** of pure, clean power with superbly defined, high fidelity reproduction.

The Magnetic Field Amplifier produces large amounts of power (absolutely necessary for the accurate reproduction of music at realistic listening levels) without the need for heavy heat sinks, massive transformers, and enormous power capacitors required by conventional amplifier design.

Unlike conventional amplifiers which produce a constant, high voltage level at all times, irrespective of the demands of the ever-changing audio signal (Even when there is no audio signal in the circuit at all!), the Magnetic Field Amplifier's power supply is signal responsive. Highly efficient, it produces *exactly and only* the power needed to carry the signal with complete accuracy and fidelity.



Solid line: audio output signal. Broken line: power supply voltage. Shaded area: wasted power. Vertical lines: power to speakers.

The **150 watts-per-channel (continuous sine-wave output)** CARVER Receiver is about the same size and weight of conventional receivers having merely 30 watts per channel!

**NOISE-FREE RECEPTION:** The AM-FM CARVER Receiver gives you FM stereo performance unmatched by that of any other receiver.

As it is transmitted from the station, the stereo FM signal is extremely vulnerable to distortion, noise, hiss and multipath interference.

However, when you engage CARVER's Asymmetrical Charge Coupled FM Detector circuit, the stereo signal arrives at your ears virtually noise-free. You hear fully sepa-



Reflected multi-path signals cause audible distortion.

Asymmetrical Charge Coupled FM Detector gives your ears a true sonic image.

rated stereo with space, depth and ambience!

The Asymmetrical Charge Coupled FM Detector was first introduced in CARVER's TX-11 Stereo Tuner, receiving unparalleled critical acclaim:

*"A major advance... its noise reduction for stereo reception ranged from appreciable to tremendous. It makes the majority of stereo signals sound virtually as quiet as mono signals, yet it does not dilute the stereo effect."*

Julian D. Hirsch, STEREO REVIEW

*"Separation was still there; only the background noise had been diminished, and with it, much of the sibilance and hissy edginess so characteristic of multipath interference."*

Leonard Feldman, AUDIO

*"What distinguishes the TX-11 is its ability to pull clean, noise-free sound out of weak or multipath ridden signals that would have you lunging for the mono switch on any other tuner we know of."*

HIGH FIDELITY

*"The Carver Receiver is, without question, one of the finest products of its kind I have ever tested and used."*

Leonard Feldman, AUDIO

The CARVER Receiver has been designed for fidelity, accuracy and musicality. You will want to visit your CARVER dealer for a personal audition of this remarkable instrument.

**SPECIFICATIONS: 150 watts per channel RMS into 8 ohms, 20 Hz to 20 kHz with no more than 0.05% total harmonic distortion.**



# CARVER

PO Box 1237, Lynnwood, WA 98046

POWERFUL

MUSICAL

ACCURATE

Distributed in Canada by: evolution technology



**E**ven before it is hooked up, Advent's Maestro makes quite an impression. It is a very handsome realization of a time-proven genre: the medium-size, three-way floor-standing loudspeaker. The black stretch grille and the cabinet's black-vinyl-covered sides and back are gracefully set off by the unit's solid oil-finished pecan top and "foot."

If you pull off the grille cloth—which is on a removable, curved-edge plastic frame—you'll find the front panel covered with acoustically absorbent foam. This is said to reduce sound-wave diffraction across the baffle surface and to improve imaging. The flush-mounted, vertically arrayed drivers include a 1-inch polyamide soft-dome tweeter with ferrofluid cooling, a 2-inch mica-filled polypropylene dome midrange driver with a separate subenclosure (and liquid cooling), and a 10-inch long-excursion acoustic-suspension woofer. Crossover frequencies are 900 Hz and 4.5 kHz. Hookup is via back-panel push connectors that are large enough to also accept banana plugs. Next to the connectors is a fuse holder containing a 1.5-ampere fuse.

Our first audible impression of the Maestro was one of slight bass heaviness. Mind you, the deep bass (evaluated with pipe-organ music) was satisfying, and the Maestro has neither an obtrusive boominess nor a disco-optimized artificial punch. But when the speaker was placed within a few inches of the wall behind it, male vocals and the lower instruments of a string orchestra had a slight but distinct upper-bass emphasis. Even when the unit was pulled out into the room about a yard, much of this effect remained, whereas the very lowest frequencies became slightly less prominent. (Advent's placement recommendations are fairly general, suggesting the speaker be as close as possible to one of the walls forming the nearest corner and two to three times that far from the other.)

At higher frequencies, the sound was a bit forward without ever being excessively bright. Indeed, we felt that the very top of the audio spectrum could stand a little lift. The overall response didn't seem to favor any particular type of music, a sign of a judiciously chosen frequency balance. The Maestro could play very loud without sounding harsh or strained and without losing clarity in complex passages. Lateral imaging was about average—neither razor-sharp nor blurred. But the impression of depth was very good and was maintained even with the speakers against the back wall, a position that tends to flatten out the image

with most speakers.

Diversified Science Laboratories' test data backs up most of our listening impressions. We attribute the heaviness to the slight prominence centered at 200 Hz (seen in the on-axis response curve) combined with the broad dip centered at 500 Hz (visible in both on- and off-axis curves). The slight forwardness probably comes from the small rise between 1 kHz and 2 kHz in conjunction with the peak at 10 kHz. The rolloff in the off-axis response above 10 kHz is evidence of tweeter beaming. Though it is by no

## Advent Maestro Loudspeaker



means severe, the beaming, combined with the tweeter's location (substantially below ear level for most seated listeners), could account for the impression of slightly rolled-off extreme highs.

Keep in mind that most of the sonic effects we describe are subtle and that we are talking about a speaker with an excellent overall on-axis response that deviates only  $\pm 2\frac{1}{2}$  dB from 50 Hz to 20 kHz. The measured off-axis response was nearly as flat, though the variations from flatness somewhat altered the positions and shapes of the curves. All the data point to a frequency balance as good as our listening tests indicated. ►

**Dimensions:** 33¼ by 16 inches (front), 9¼ inches deep.

**Price:** \$699 per pair.

**Warranty:** "Limited," five years parts and labor.

**Manufacturer:** Advent, 4138 North United Parkway, Schiller Park, Ill. 60178.



**SDA 2B**  
\$699.95 ea.

**SDA 1C**  
\$799.95 ea.

*Digital Disc Ready*

**Matthew Polk and his extraordinary new Signature Edition SDA 1C and SDA 2B.**

# "Matthew Polk Has a Passion for Perfection!"

## Experience the Awesome Sonic Superiority of His New Signature Edition SDA 1C and SDA 2B.

The genius of Matthew Polk has now brought the designer styling, advanced technology and superb sonic performance of his award winning SDA Signature Reference Systems into the new Signature Edition SDA 1C and SDA 2B.

**"They truly represent a breakthrough."**

*Rolling Stone Magazine*

Polk's critically acclaimed, 5 time AudioVideo Grand Prix Award winning SDA technology is the most important fundamental advance in loudspeaker technology since stereo itself. Listeners are amazed when they hear the huge, lifelike, three-dimensional sonic image produced by Polk's SDA speakers. The nation's top audio experts agree that Polk SDA loudspeakers always sound better than conventional loudspeakers. Stereo Review said, "Spectacular... the result is always better than would be achieved by conventional speakers." High Fidelity said, "Astounding... We have yet to hear any stereo program that doesn't benefit." The new SDA 1C and SDA 2B utilize new circuitry which allows the drivers to more effectively utilize amplifier power at very low frequencies. This results in deeper, more powerful bass response, greater dynamic range and higher efficiency. In addition, the new circuitry makes these new speakers an extremely easy load for amplifiers and receivers to drive. Lastly, the imaging, soundstage and depth are more precise and dramatically realistic than ever.

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Stereo Review confirmed the unqualified sonic superiority of Matthew Polk's revolutionary SDA Technology when they wrote, "These speakers *always* sounded different from conventional speakers — and in our view better — as a result of their SDA design.

Without exaggeration, the design principals embodied in the SDAs make them the world's first true stereo speakers. The basic concept of speaker design was never modified to take into account the fundamental difference between a mono and stereo signal. The fundamental and

basic concept of mono is that you have one signal (and speaker) meant to be heard by both ears at once. However, the fundamental and basic concept of stereo is that a much more lifelike three-dimensional sound is achieved by having 2 different signals, each played back through a separate speaker and each meant to be heard by only one ear apiece (L or R). So quite simply, a mono loudspeaker is designed to be heard by two ears at once while true stereo loudspeakers should each be heard by only one ear apiece (like headphones). The revolutionary Polk SDAs are the first TRUE STEREO speakers engineered to accomplish this and fully realize the astonishingly lifelike three-dimensional imaging capabilities of the stereophonic sound medium.

**"A stunning achievement"**

*Australian HIFI*

Polk SDA Technology solves one of the greatest problems in stereo reproduction. When each ear hears both speakers and signals, as occurs when you use conventional (Mono) speakers to listen in stereo, full stereo separation is lost. The undesirable signal reaching each ear from the "wrong" speaker is a form of acoustic distortion called interaural crosstalk, which confuses your hearing.

**"Literally a New Dimension in the Sound"**

*Stereo Review Magazine*

The Polk SDA systems eliminate interaural crosstalk distortion and maintain full, True Stereo separation, by incorporating two completely separate sets of drivers (stereo and dimensional) into each speaker cabinet. The stereo drivers radiate the normal stereo signal, while the dimensional drivers radiate a difference signal that acoustically and effectively cancels the interaural crosstalk distortion and thereby restores the stereo separation, imaging and detail lost when you listen to normal "mono" speakers. The dramatic sonic benefits are immediately audible and remarkable.

**"Mindboggling, astounding, flabbergasting"**

*High Fidelity Magazine*

Words alone cannot fully describe how much more lifelike SDA TRUE STEREO reproduction is. Reviewers, critical listeners and novices alike are overwhelmed by the magnitude of the sonic improvement achieved by Polk's TRUE STEREO technology. You will hear a huge sound stage which extends not only beyond the speakers, but beyond the walls of your listening room itself. The lifelike ambience revealed by the SDAs makes it sound as though you have been transported to the acoustic environment of the original sonic event. Every instrument, vocalist and sound becomes tangible, distinct, alive and firmly placed in its own natural spatial position. You will hear instruments, ambience and subtle musical nuances (normally masked by conventional speakers), revealed for your enjoyment by the SDAs. This benefit is accurately described by Julian Hirsch in Stereo Review, "...the sense of discovery experienced when playing an old favorite stereo record and hearing, quite literally, a new dimension in the sound is a most attractive bonus..." Records, CDs, tapes, video and FM all benefit equally as dramatically.

**"You owe it to yourself to audition them."**

*High Fidelity Magazine*

SDAs allow you to experience the spine tingling excitement, majesty and pleasure of live music in your home. You must hear the remarkable sonic benefits of SDA technology for yourself. You too will agree with Stereo Review's dramatic conclusion: "the result is always better than would be achieved by conventional speakers...it does indeed add a new dimension to reproduced sound."

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WE'LL CHANGE YOUR IDEAS

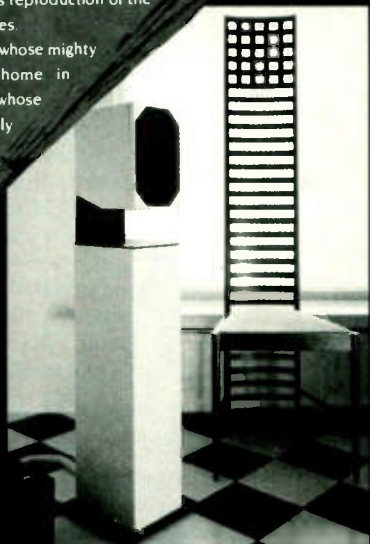
# B&W CONCEPT 90 B&W

## B&W REVISES AN EQUATION. THE RESULT IS UNBELIEVABLE.

B&W have taken the Matrix quantum leap a stage beyond. They challenged the view that only a sizeable and intrusive enclosure could possibly produce a sound of true monitor quality. That equation between size and sound quality is now rewritten by B&W in their Concept 90 series CMI/CM2 loudspeakers. Giving an incredible response to the wide dynamic range of today's compact discs.

At one end a rich and satisfying bass output. At the other, fastidious reproduction of the most delicate passages.

Here is a loudspeaker whose mighty performance is at home in limited roomscales... whose appearance is perfectly attuned to design-conscious living.



## THE MATRIX REVOLUTION. SETTING SOUND FREE.



## CMI. AN INCREDIBLE SOUND SYSTEM.

By moulding the CMI enclosure and Matrix in one piece and using a new glass-fibre reinforced polyester material, B&W have drastically reduced cabinet thickness - normally 15mm - to just 5mm. The result: a gain of 46% internal volume and a bass output which completely belies the CMI's diminutive size.

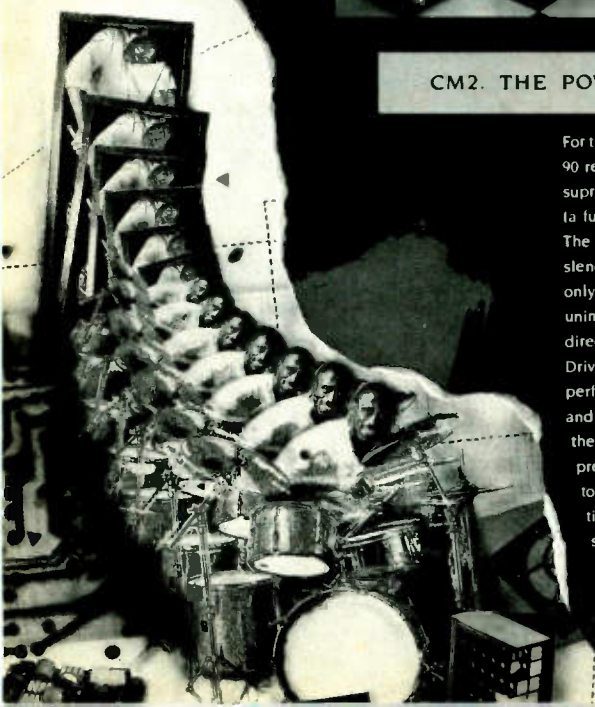
Bass/midrange performance has been refined by the introduction of a new version of the woven Kevlar cone (used in B&W's celebrated 801 monitor). System sensitivity of 85dB. Maximum sound pressure level of 105dB (in 2,000 cu.ft). The perfect expression of the Concept 90 philosophy.

## CM2. THE POWER. THE GLORY.

For the resolute perfectionist, Concept 90 reserves a further dimension. The supreme power and bass extension (a full 1/2 octaves more) of the CM2. The CMI element crosses to the slender sub-bass module of CM2 at only 150Hz, leaving performance unimpaired and giving a fully omnidirectional pattern of sound radiation. Drivers are reflex loaded and deliver perfect optimisation of output and bass extension. In CM2 the maximum sound pressure level is raised to 107dB with superlative accuracy and stereo imagery.

*The* **MATRIX** *Revolution*

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Buffalo, New York 14240  
(416) 297-0595



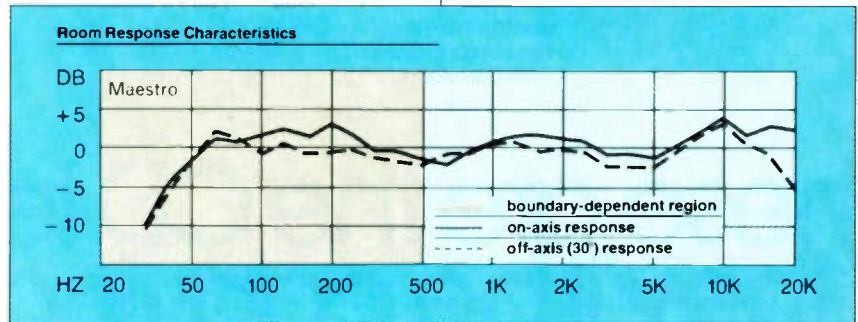
The lack of harshness at high listening levels can be at least partially attributed to low distortion. At a loud 95-dB sound pressure level (SPL), distortion is usually less than 1 percent for all frequencies above 63 Hz. At a very loud 100 dB SPL, distortion is still better than that of many similar speakers—2 percent or less for frequencies above 63 Hz.

Although our listening tests were conducted at moderate levels, it is comforting to find out from the lab data that the speaker can absorb the full output of the test amplifier (67.5 volts peak, equivalent to 570 watts, or 27.6 dBW, into 8 ohms) for a calculated peak SPL of almost 118 dB. Sensitivity is about average for a speaker of the Maestro's size and type.

The impedance curve is fairly well controlled, with its deviations from flatness determined by the crossover and resonance frequencies. It dips to lows of 5 and 4.7 ohms at 20 Hz and 120 Hz, respectively. The highest impedance is 19.6 ohms at the 52-Hz bass resonance.

Advent's 6-ohm nominal and 4-ohm minimum impedance ratings for the Maestro are thus entirely justified.

The Maestro's elegantly restrained



Sensitivity (at 1 meter; 2.8-volt pink noise)

90 1/2 dB SPL

Average Impedance (250 Hz to 6 kHz)

10 ohms

appearance is carried through to the sound quality, which is at all times a fair representation of the program material. Its departures from neutral performance are slight and may, in fact, benefit the sound of many recordings. It is a good performer at a reasonable cost and worth an audition. ■

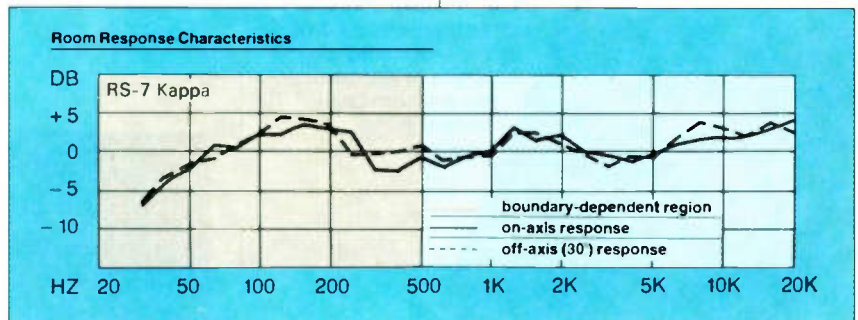
Among the most interesting of Infinity's recent introductions is the Kappa series of loudspeakers (based on a set of newly developed drivers) in its Reference Standard line. The top two models, the RS-8 Kappa and RS-9 Kappa, are four- and five-way speakers, respectively, and use a special 5-inch graphite-reinforced polypropylene dome driver to cover the critical range from 80 to 500 Hz, where many musical fundamentals lie. At the bottom of the series is the RS-6 Kappa, a bookshelf speaker of more conventional three-way design. In between is the subject of this review, the three-way, floor-standing RS-7 Kappa.

Like the two larger models, the RS-7 Kappa uses a 12-inch acoustic suspension woofer with a cast frame and an injection-molded cone of polypropylene and graphite fiber, which is said to yield an excellent stiffness-to-mass ratio. Its 3-inch Polydome midrange driver and EMIT (electromagnetic induction tweeter) high-frequency unit are common to all the speakers in the new series. Although earlier Infinity speakers have used midrange and treble drivers similar to these, the company says these versions deliver significantly better performance. The new EMIT is particularly interesting. Infinity says the diaphragm is now 50 percent lighter than before, extending response to 44 kHz. The principal improvement in the midrange driver is a

new polypropylene formulation that is said to combine low mass with excellent damping. Crossovers are at 600 Hz and 4.5 kHz.

The drivers are arrayed vertically up the middle of the front baffle. To minimize diffraction, Infinity mounts the midrange driver and tweeter flush with the baffle and rounds the corners of the distinctive oak-veneer cabinet. In addition, the dark-brown cloth grille attaches to the enclosure with short pegs to prevent interfering reflections from the

## Infinity RS-7 Kappa Loudspeaker



Sensitivity (at 1 meter; 2.8-volt pink noise)

89 dB SPL

Average Impedance (250 Hz to 6 kHz)

5.7 ohms

Approximate Tweeter Control Range (re "flat")

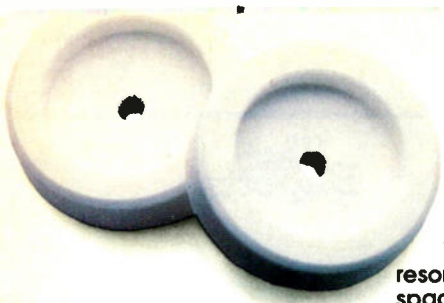
+5, -3 dB at 20 kHz

Approximate Midrange Control Range (re "flat")

+1, -3 dB, 1 to 4 kHz

frame. Adjustable feet on the cabinet's pedestal base enable you to tilt the speaker back slightly, which the company says may improve performance in some installations.

Amplifier connections are made to color-coded multiway binding posts set into the back panel near the bottom of the cabinet. Next to the binding posts are

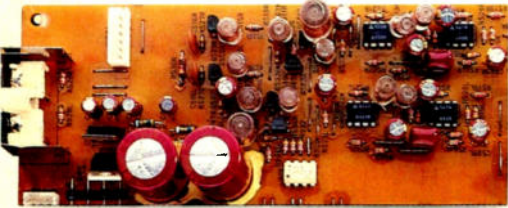


These anti-resonant chassis spacers are made with Kyocera's proprietary Fine Ceramics.

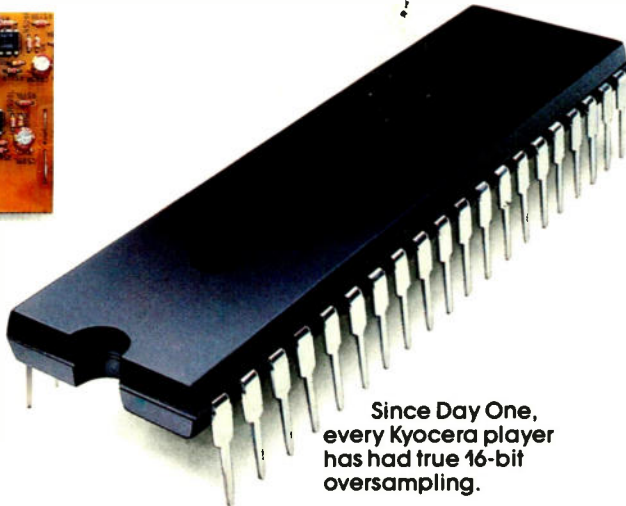


Fine Ceramics laser guide shafts hold their tolerances five times longer than other materials.

# These are the CD features they'll be copying next.



3rd-order analog filters cause less phase shift than the 7th- and 9th-order designs that others use.



Since Day One, every Kyocera player has had true 16-bit oversampling.



The front fascia of all our players is brushed aluminum, not plastic.



While our supplied remote controls are great, this optional full system remote control lets you operate a complete Kyocera system from anywhere in the house!



Our real wood side panels help damp resonance. They also look good.

In May of 1983, Kyocera introduced a CD player with true 16-bit digital filters. Today, the competition's calling this circuit "the latest thing." Years ago we had four-times oversampling. This year every high-end player worth mentioning has a similar design. In September, 1984 Kyocera raised some eyebrows with the world's first Fine Ceramics anti-resonant CD chassis. Now the stores are full of flimsy imitations.

How did all these innovations happen to come from Kyocera, and not some household name? Perhaps because Kyocera's knowledge of digital circuitry comes from years of building computers for some of the best-known names in electronics. Perhaps because Kyocera is a world leader in Fine Ceramics, the technology used to house circuitry in aerospace and other advanced applications. Or perhaps because some top-rated CD players from other brands were actually made by Kyocera.

Now Kyocera has four world-beating Compact Disc Players, ranging in suggested retail price from \$350 to the \$800 model DA-710CX shown here. Each boasts technology so advanced, it's a preview of what the competition will be selling in 1989. After all, history does repeat itself.



Built right from the ground up.



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

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However, the recent introduction of compact discs with wide dynamics and high-accuracy loudspeakers with low impedance

ratings has created a need for receivers with "real" output power.

With the tremendous dynamic power of the new Luxman receivers, our reputation for "Ultimate Fidelity" is likely to change to "Ultimate Power."

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# LUXMAN

## Test Reports

two rotary controls for midrange and tweeter level. Diversified Science Laboratories' measurements show these controls to be unusually well behaved. The tweeter control slopes response upward or downward starting at about 7 kHz; the midrange control introduces a small rise between approximately 900 Hz and 2.5 kHz or a dip between approximately 700 Hz and 3 kHz. The range available is large enough to be useful but not so great as to encourage gross distortion of the speaker's balance.

For the rest of its measurements, DSL set the controls to their "flat" positions and placed the speakers several feet from the walls, according to Infinity's recommendation. The resulting curves are exceptionally smooth and flat. Room-corrected  $\frac{1}{3}$ -octave response is

Bass response holds up to about 60 Hz, with a gentle rolloff below.

Distortion is unusually low in the deep bass but a little higher than average through the rest of the range. At the lab's lowest test level (85 dB SPL), total harmonic distortion averages about  $\frac{1}{4}$  percent from 100 Hz up, but with peaks of as much as  $2\frac{1}{4}$  percent. Distortion rises with level: At the highest test level (100 dB SPL), it is greater than 1 percent over almost the entire test range (63 Hz to 10 kHz), with spikes of 4 to 6 percent at some frequencies. However, we did not hear any distortion when playing music, even at high volumes. In our 300-Hz pulse power-handling test, the RS-7 Kappa accepted the full output of the lab's amplifier (68 volts peak, equivalent to 27.6 dBW, or 578 watts, into 8 ohms) without distress, delivering a calculated peak sound pressure level of almost 117 dB. We would say that the speaker has more than adequate dynamic range for reproducing music at home.

Sensitivity is about average for modern speakers, but impedance is low. The minimum of 3 ohms occurs at 1.8 kHz with the midrange control turned all the way up. With the controls set to their flat positions, the curve ranges from a low of 3.4 ohms at 90 Hz to a high of 10 ohms at bass resonance (42 Hz). Over most of the audio band, the impedance is between 4 and 7 ohms. The RS-7 Kappa could be a difficult load for some amplifiers, and we concur with Infinity's recommendation that you drive it with an amp capable of delivering plenty of current. We would advise against running a pair of RS-7 Kappas in parallel with another set of speakers.

For our listening tests, we once again followed Infinity's recommendation, placing the speakers well out into the room. The results were altogether gratifying. Balance is very good, with a slight tendency toward richness in the midbass (probably attributable to the small response rise in that region). We tried various settings of the driver level controls but found that we preferred the sound with the controls set close to the positions marked flat. Stereo imaging is precise and stable, with a good sense of depth, and cymbals and plucked strings are reproduced with the requisite snap and definition. At the same time, the RS-7 Kappa renders strings and voices with great smoothness, free of the harshness that often mars otherwise good speakers.

This is a very enjoyable speaker. If the other members of the Kappa Series are as good as this one, they all should enjoy great success. ■



**Dimensions:** 17 by 37 $\frac{1}{4}$  inches (front), 11 $\frac{3}{4}$  inches deep plus clearance for connections.

**Price:** \$1,318 per pair.

**Warranty:** "Limited," five years parts and labor.

**Manufacturer:** Infinity Systems, Inc., 9409 Owensmouth Ave., Chatsworth, Calif. 91311.

within  $\pm 3$  dB on-axis from the 50-Hz band to the 16-kHz band and within  $\pm 4$  dB from the 40-Hz band to the 20-kHz band. Off-axis response is similarly impressive, though not quite as smooth. Particularly noteworthy is the absence of high-frequency beaming, as evidenced by the close tracking of the two curves in the extreme treble. The small dip in the octave between 250 and 500 Hz probably is the result of interference from a floor reflection. The other main features of the curves are a smaller dip between 500 Hz and 1 kHz, another between 2.5 and 6 kHz, a gentle lift above 12 kHz, and a small bump between 100 and 200 Hz.

## Jamo Compact 90 Loudspeaker

**T**he 90 is the next-to-the-top model in the aptly named Compact Series from Jamo, a Danish company whose speakers are becoming increasingly prominent in the U.S. market. The two smaller models in the series, the 50 and 70, are both two-way designs. The 90 and the 120, which tops the series, are three-way models—astonishing for a speaker small enough to fit comfortably on a generously proportioned bookshelf, as the 90 does.

This is a bass-reflex system, with a ducted port at the back (meaning, among other things, that it requires some clearance for “breathing room” at the back). The port is fitted with a compliant seal that evidently is intended to act as a passive radiator by increasing the duct’s acoustic impedance. Also on the back are color-coded spring-clip connectors for amplifier leads.

Each of the three drivers on the front panel is surrounded by a mounting plate that is beveled to minimize diffraction and to add eye appeal, since they aren’t hidden behind a conventional grille. However, the 3¼-inch midrange driver and 8-inch woofer do have wire-mesh grilles directly over their cone diaphragms to protect them from damage. The tweeter is mounted at the throat of a round horn whose depth similarly protects the 1-inch soft-dome diaphragm. Nominal crossover frequencies are 1.2 kHz (woofer to midrange) and 4 kHz (midrange to tweeter), though Diversified Science Laboratories’ near-field measurements suggest considerable overlap at both points.

The 90’s room-corrected ½-octave response, when mounted on an 18-inch speaker stand and with its back six inches out from the wall, is shown in our graph. On-axis, the response stays within about ±4 dB from the 80-Hz band to that centered on 16 kHz, except for a marked trough (to -5½ dB) between 300 and 400 Hz. However, this depression is at least partially attributable to interference from floor reflection. Divergence of the two response traces suggests

minor beaming at the top of the mid-range driver’s response and still less at the top of the tweeter range. The curves are reasonably flat and well extended for so small a speaker.

The absence of very deep bass presumably reflects a trade-off that contributes to the 90’s astonishingly high sensitivity, although its bass-reflex design undoubtedly contributes as well. Also unusual for a system that must fit everything into so small a cabinet is the evi-



*The tweeter (right) is at the apex of a short horn.*

dent care taken to achieve a smooth impedance curve to aid power transfer. Though there are the usual bumps and dips of a three-way vented design, no peak is greater than 12.7 ohms and no trough less than 5.5 ohms. Jamo’s rating (4 to 8 ohms) is conservative; the 90 can be paralleled with other loudspeakers with, if anything, less worry than average about drawing excessive current from the driving amplifier. ▶

**Dimensions:** 9 by 14½ inches (front), 8½ inches deep plus clearance for driver trim.

**Price:** \$280 per pair.

**Warranty:** “Limited,” one year parts and labor.

**Manufacturer:** Jamo, Denmark.

**U.S. Distributor:** Jamo Hi-Fi USA, 425 Huehl Rd., Bldg. 3a, Northbrook, Ill. 60062.

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Distortion typically runs higher in small systems than in large ones, and the 90 is true to form. At the lowest test sound pressure level (85 dB SPL), total harmonic distortion averages about 1/2 percent above 100 Hz (the rolloff at lower frequencies prevents valid assessment by conventional techniques). At the maximum test level (100 dB SPL), the average has crept above 1 percent, with spikes to 2 percent or more, but this still is moderate for a speaker of this size and price. The speaker can be driven even harder without gross sonic anomalies: In our 300-Hz pulse test, it successfully negotiated peaks calculated at more than 120 dB SPL.

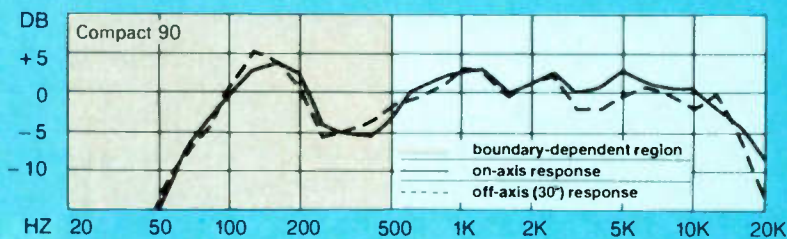
As with most other small speakers, clarity suffers when you try to push the 90 too hard. Blurring or thickening of climaxes isn't excessive for this category of speaker, but if you want to avoid these effects altogether, you probably should be looking for a larger system. Nor is the sound entirely uncolored: Partly because there's so little very deep bass, some music is reproduced with a rather shallow,

bright quality—again, very much as you might expect in a speaker of this type. If this is of particular concern, combining the 90s with a separate subwoofer might supply what you're looking for.

We'd expect readers most often to choose Compact 90s for a second system. In a relatively small room, they

won't have to be driven hard to achieve satisfactory listening levels. And those levels can be obtained with a lower-cost, low-power amplifier that takes advantage of the 90's high sensitivity. ■

Room Response Characteristics



Sensitivity (at 1 meter; 2.8-volt pink noise) 95 3/4 dB SPL  
Average Impedance (250 Hz to 6 kHz) 8.2 ohms

Since the beginnings of high fidelity (and before the beginnings of HIGH FIDELITY), there have been two approaches to loudspeaker design: conventional and radical. Much has been achieved simply by chipping away at tried-and-true formulas, honing them to achieve an ever more satisfying sound. Then there are the radical departures, which have frequently led to important developments. But not all radicalism is productive. It is easy to see the maverick idea as misguided until, with hindsight, we discover its value and accept it. Therefore, we must be wary of making hasty judgments when confronted with a speaker as radical as Tennessee Sound's Symphony 1.

Its basic concept—and the subject of patents in several countries by TSC president Lloyd B. Smith—is that the sound generated near the outer edge of a cone driver is much less subject to distortion than that created near the center; thus, the propagation of sound from that part of the cone should be favored in a loudspeaker system. The crux of the patent, and of the Symphony 1, is a system of reflector vanes that direct the "cream" of the acoustic output toward the listening area. The remainder of the sound is either absorbed by the structure or allowed to slip through it and become part of the indirect ambient room sound.

Both drivers in the Symphony 1 fire

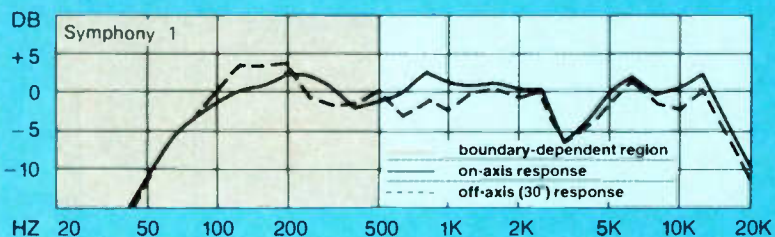
out the back of the enclosure. Each driver is flanked by a pair of curved vanes that collect the sound radiating from the cone's edge and redirect it around the enclosure and out into the listening area. A damper plug, mounted in a bracket between each pair of vanes, has a felt surface that absorbs the undesirable acoustic energy from around the dust cap of

each driver. Aside from this plug, the space between the vanes' inner edges is open, allowing free propagation of acoustic energy.

The Symphony 1 is a small two-way system. The lower portion of its enclosure houses a 5-inch woofer, the upper portion a 1 1/2-inch tweeter. Both sections are sealed; what look like grilles on the front are, in fact, patches of a carpeting material that may (as TSC claims) help control diffraction but otherwise aren't

## TSC Symphony 1 Loudspeaker

Room Response Characteristics



Sensitivity (at 1 meter; 2.8-volt pink noise) 88 1/2 dB SPL  
Average Impedance (250 Hz to 6 kHz) 14.2 ohms

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part of the propagation scheme. Diversified Science Laboratories' near-field response measurements suggest that the crossover is at about 1 kHz.

If you want to embellish the system, TSC also offers the Symphony 2 subwoofer, designed along the same lines and built of the same solid cherry (and with the same three lacquer finishes—clear, black, and white). It is rated to extend the bass an extra octave, from 60 Hz to 30 Hz. The Symphony 2 has been tailored specifically to complement the Symphony 1, but the latter is designed for use with or without the subwoofer. Rated impedance of the Symphony 1 is 8.5 ohms or greater across the audio band; the combination is rated at 6 ohms or greater.

The solid cherry is very handsome and the assembly excellent—particularly considering the trapezoidal shape and rounded edges designed to lead wave fronts around the enclosure and into the listening area. The vanes, too, are nicely finished, and there are heavy rubber feet on the cabinet bottom. Electrical connections are made to heavy-duty color-coded multiway binding posts near the bottom of the back panel. Internal wiring is all done with Straight Wire Music Ribbon cable. In light of this evident care for materials and craftsmanship, we were surprised by the rather gritty feel of the lacquer finish, but TSC says this is deliberate and intended to help control diffraction.

The owner's manual points out that the distance between the Symphony 1s and the wall behind them can have a profound effect on the sound. In fact, when you consider how much of the sound escapes between the vanes and travels directly toward the wall, it's clear that some positions could pose problems of reflective interference with the main sound, particularly if the speaker is near the wall. TSC's literature shows the Symphony 1 mounted three different ways: on a Symphony 2, on a floor stand, and on a wall bracket, each implying a different spacing from the wall.

The only placement directions given in the manual instruct you to have the tweeters close to ear level, keep the speakers well away from the side walls, and start with them 18 to 24 inches from the backup wall—and keep experimenting, if necessary. The lab chose the two positions that most nearly match those for which its measurement room is calibrated: on an 18-inch stand 6 inches from the wall (with the results shown in our graph) and on the same stand 39 inches from the wall. The response

curves obtained with the speaker in these two positions are markedly similar in some ways, strikingly different in others.

High treble is very similar, with a peak at about 12 kHz and a steep rolloff above that. In neither case is there strong evidence of beaming—nor should there be, on the basis of TSC's design goal and our listening tests. The trough at around 3 kHz is equally apparent in both sets of curves. Below this dip, response is rougher with the speaker out in the room, and the peaks and dips seldom oc-



cur at the same frequencies. For instance, both curves show a peak in the 800-Hz band, but it is much less obvious in the graph for the position nearest the wall. The broad dip at around 400 Hz in that graph (presumably attributable to interference from floor reflection) is much sharper and centered somewhat lower in frequency in the other data. And there's about an octave less of useful bass without the reinforcing effect of a nearby wall.

So for stand-alone use of the speaker, the data suggest placement near the wall. The Symphony 2 subwoofer presumably will supply the bass you would lose in moving the speaker out into the room. Depending on just where you put it in the room, however, you may find the response rather rough and colored, as we did in our listening tests. On the other hand, freestanding placement supplies a pleasant sense of space, since the reflec-

**Dimensions:** 13 by 15 inches (back, including projections), 11½ inches deep.

**Price:** \$750 per pair; optional Symphony 2 subwoofer, \$1,200 per pair; optional floor stands, \$120 per pair; optional wall brackets, \$65 per pair.

**Warranty:** "Full," five years parts and labor.

**Manufacturer:** Tennessee Sound Co., P.O. Box 1252, Bristol, Tenn. 37621.

## Test Reports

tions of the sounds that escape through the vanes are perceived as spatial information.

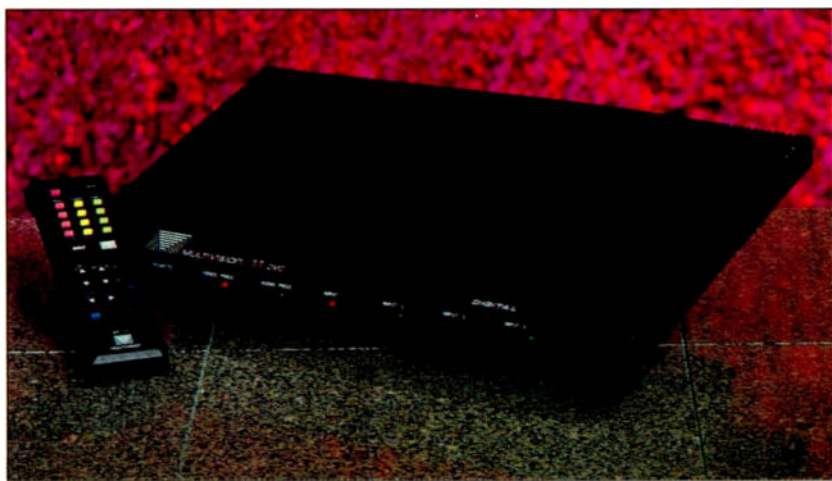
Except for the 3-kHz dip on-axis, response in the nearer-the-wall position lies between  $+2\frac{1}{2}$ ,  $-2$  dB from the 100-Hz band to that centered on 12.5 kHz. That's quite good for a satellite designed for use with a subwoofer when you want to add the low bass. Off-axis, the spread is somewhat greater: about  $+3\frac{3}{4}$ ,  $-3$  dB over the same range. Given the design goal, distortion measurements aren't as superb as we'd hoped, but they're certainly better than average for a speaker of this size. Outside of the deep bass (where the response rolloff always makes distortion measurements unreliable), the lowest test sound pressure level (85 dB) yielded an average of about  $\frac{1}{2}$  percent harmonic distortion, while the highest (100 dB SPL) generated a little more than 1 percent.

Impedance measures slightly lower than TSC's specification, though the 8-ohm rating certainly is appropriate. Minimum impedance is 6.3 ohms near the top of the passband, and there are

several other dips to near 7 ohms. The highest peak is 25.6 ohms at bass resonance (just below 100 Hz). Another, near 1 kHz, measures 20.1 ohms, while yet another, occurring in the tweeter range and apparently related to the dip at around 3 kHz, measures 16.4 ohms.

It's difficult to decide which properties of the Symphony 1 relate to its fundamental concept and which to its particular approach. Any structure in the sound path can pose sticky problems concerning diffraction, resonance, and even horn loading. The vanes are very well damped (the wooden stiffeners on our test samples don't appear in earlier photographs), minimizing resonances within the vanes themselves, but the acoustic behavior of the space between the cabinet and the vanes is another matter. Since we test ends rather than means, analysis of such matters is beyond the scope of this report, though the test results do raise questions. Pending further answers, we view the Symphony 1 as an interesting speaker whose performance has yet to bear out every aspect of its operating principles. ■

## Multivision 1.1 Digital Video Controller



**Dimensions:** 17 by 3 inches (front), 10 inches deep plus clearance for connections.

**AC Convenience Outlets:** One switched (300 watts max.).

**Price:** \$329.

**Warranty:** "Limited," 90 days parts and labor.

**Manufacturer:** Multivision Products, Inc., 1751 Fox Dr., San Jose, Calif. 95131.

**A**s your video system grows, you may feel the need for an audio-video switcher to obviate expeditions into the jungle of cables behind your components. You'd do well to con-

inset picture, freeze it, swap it with the main picture, sequentially view all four inputs, and even control the inset's color and tint, all from your easy chair. In fact, you *must* use the 1.1's remote, since there are no controls on the unit itself.

Why would you want to do all of this? For one thing, you can view one channel on the main screen while recording from another channel fed to the inset picture, enabling you to edit out commercials as you go. A video camera connected to one of the inputs can be used as an electronic babysitter or for surveillance, displaying its picture on the inset or, for a closer look, on the main screen. The inset's freeze-frame capability can itself be useful for catching a phone number that's flashed briefly on the main screen. And PIP gives you the option of watching two channels at once. If you choose to do so, however, be aware that the 1.1 has no self-contained tuner—you'd have to supply two of them.

consider the Multivision 1.1 Digital Video Controller, an affordable four-in/one-out switching system with PIP (picture-in-picture) capability, which enables the simultaneous viewing of any two video sources from a set of four composite video and stereo-audio inputs. It enables you to change the size and location of the

Finding two tuners is not as difficult as it may seem, for most monitor/receivers and VCRs have audio-video feeds from TV-tuner sections. By connecting the feed from each into two of the 1.1's four inputs and using the unit's audio-video output to in turn feed the monitor, you're in business. Since the 1.1 has no built-in RF modulator, it must be used with sets that have composite-video



inputs (i.e., monitors). If you want to use it with a conventional TV, you'll need to supply an external RF modulator.

The 1.1's remote source switching is remarkably flexible. The handset affords independent control of the audio and of the main-screen and inset displays. The device also enables you to feed an FM tuner into one of the inputs and a TV tuner into a second. By choosing the main-screen display from the TV tuner and the audio from the FM-fed input, you're set for simulcast reception. A group of three color-coded LEDs for each input informs you of the choice you've made.

When you first turn the Multivision 1.1 on, the inset display is in the lower-right corner of the screen. You can reposition it with rocker switches on the remote or move it clockwise or counterclockwise to one of four preset positions with the POSITION rocker. Pressing the button marked with the Multivision logo removes the inset. The size of the inset can be increased by factors of 3, 4, 6, or 8 by repeatedly pressing this button while pressing SHIFT.

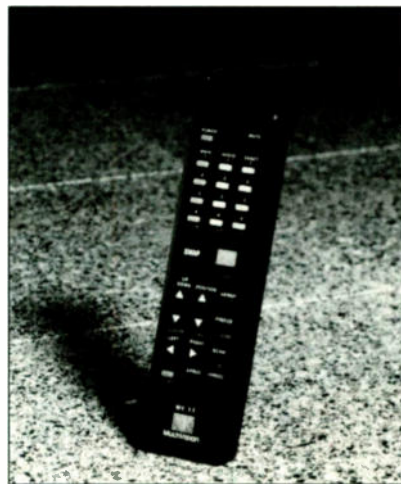
Main-screen, inset, and audio sources are chosen via three ranks of four buttons (labeled 1-4) on the remote. The three bottommost buttons (marked "4") serve dual purposes. Shifting the MAIN-4 button locks the audio to the main-screen picture source, which is the setting for normal operation. Shifting INSET-4 links the audio to the inset picture. The four inputs can be viewed sequentially on the inset picture when you press SCAN. The scan sequence stops with the second press of this button, and the scan rate can be changed from 1.5 to 3 to 6 to 12 seconds—and back to 1.5 seconds—by consecutive presses of a shifted SCAN button. SHIFT AUDIO-4 deletes the current MAIN source number from the automatic scan sequence so that you can skip over unused inputs.

To capture a picture in the Multivision's digital memory, press FREEZE. To unfreeze, press FREEZE again or SWAP. Changing the inset size or inset source, or switching off the inset altogether, also unfreezes the display. Shifting the FREEZE button calls up the strobe mode, which updates the frame at the same rate as set for scanning. The swap button, as its name implies, exchanges the main-screen and inset displays; and if the audio has been linked to the video, it switches that also. You can switch only the audio by pressing ASWAP. The APROC and VPROC independently switch into the signal path any audio or video signal processors connected to the rear-

panel processor jacks. The mute button totally kills the sound. Shifting the UP/DOWN rocker changes the color intensity of the inset picture; shifting POSITION changes its tint.

All this isn't as complicated as it sounds, thanks to the excellent owner's manual. Besides, shifting MUTE provides a convenient means of returning to the factory settings, in case you get things totally flummoxed. Anyway, we're sure you'll find the 1.1 as easy to connect and use as Diversified Science Laboratories did in testing it.

The results of those tests (measuring from Input 1 to the audio-video output) are, in a word, perfect, indicating no degradation of the video signal at all. Audio



*All of the Multivision 1.1's controls are on its remarkably versatile infrared remote handset.*

performance is equally exemplary. Frequency response is flat across the audio band and well beyond it. Noise is astoundingly low. Input impedance is sufficiently high and output impedance sufficiently low to ensure problem-free hookup. Distortion is below our reporting limit at a 0.5-volt output and less than 0.023 percent across the entire audio band at a 2-volt output. Even though this level approaches the device's maximum output (2.45 volts), distortion is composed entirely of the relatively benign second-order harmonics.

It's up to you to decide whether you'll find the Multivision 1.1 Digital Video Controller useful in your system. We quickly became very enamored of it. As a straight audio-video switcher (with remote-controlled audio and video processing loops), it's perfection incarnate. The PIP features are very handy for surveillance and freeze frame displays, to say nothing of monitoring the recording of a second channel to strip out commercials. And if you're a football fan on New Year's Day . . . ■

All measurements were made from Input 1 with the factory settings and the insert mode off

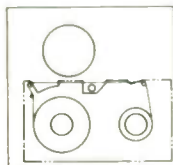
|  |                                  |
|--|----------------------------------|
|  | 2.45 volts                       |
| <b>Maximum Audio Output (at 1 kHz)</b>                             |                                  |
| <b>Audio Gain</b>  | 0.0 dB                           |
| <b>Audio S/N Ratio (re 0.5 volt; A-weighted)</b>                   | 103 dB                           |
| <b>Harmonic Distortion (THD; 20 Hz to 20 kHz) at 2-volt output</b> | ≤ 0.023%                         |
| <b>Frequency Response</b>  |                                  |
|  | +0, -1/4 dB, < 10 Hz to 17.1 kHz |
|  | +0, -3 dB, < 10 Hz to > 300 kHz  |
| <b>Audio Input Impedance</b>                                       | 34k ohms                         |
| <b>Audio Output Impedance</b>                                      | 220 ohms                         |
| <b>Video Frequency Response</b>                                    |                                  |
| 500 kHz to 4.2MHz  | flat                             |
| <b>Luminance Level</b>   | standard                         |
| <b>Gray-Scale Nonlinearity (worst case)</b>                        |                                  |
|  | none                             |
| <b>Chroma Differential Gain</b>                                    | none                             |
| <b>Chroma Differential Phase</b>                                   | none                             |
| <b>Chroma Level</b>  | standard                         |
| <b>Chroma Phase Error</b>  | none                             |

# Why it took a to build a better

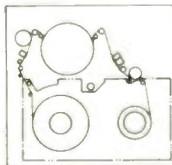


## AKAI'S QUICK START THE MOST SIGNIFICANT ADVANCEMENT IN TAPE HANDLING SINCE THE VHS CASSETTE.

Today's VHS cassettes may give you eight hours of programs. But today's VHS decks make locating those programs a real bore. That's because conventional decks must slowly thread the tape around the head drum every time you go from Fast Forward or Rewind into Play. And slowly pull the tape back into the cassette whenever you return to Fast Forward or Rewind.



Unloading for conventional VCR



Full-loading for Quick Start

Of course, most VCRs have visible scan. But can you imagine scanning through a two-hour movie? Pass the aspirin.

Akai's exclusive Quick Start system gives you fast, fast, fast relief. For the first time, the VHS tape remains fully threaded—even during Fast Forward and Rewind. So switching between

functions is more than *five times faster* than conventional VHS decks.

There's more. To make locating programs even easier, Akai searches and scans recorded segments automatically. Best of all, this revolution in tape handling is found not just on our top model—but on every new Akai VCR.

Sound great? Seem simple? Wonder why no one ever did it before?

## WHY IT TOOK AKAI TO PERFECT VHS TAPE HANDLING.

Simply stated, Akai has been building tape recorders for over 35 years. And what is a VCR if not a tape recorder? People may forget that it



Akai has over  
35 years of experience building  
tape recorders of all kinds.

# hi-fi company er VCR.



VS-M930U-B

was Akai that built the first home video tape recorder in 1965 and the first lightweight helical-scan portable video tape recorder in 1969. Compared to Akai, even the biggest names in video recording seem like "Johnnies-come-lately."

To invent Quick Start, Akai invented a completely new tape transport with better tape tension control, more precise guide poles and specially conductive fine ceramic tape guides. The entire transport is under the intelligent control of a micro-processor that only years of tape deck experience could develop. The Akai Quick Start Transport. Sure it's simple... when you know how.

## AT AKAI, SOPHISTICATION MEANS SIMPLICITY.

Akai, a leader in on-screen programming, now takes ease-of-operation one step further. On our new decks, most programming functions require no more than one touch. Nothing *could* be simpler.

Or more sophisticated. Take Akai's new top-of-the-line VS-M930U-B. It offers digital special effects with memory; VHS Hi-Fi stereo; four heads; HQ circuitry with CCD noise reduction; editing; universal wireless remote control with LCD readout; on-screen programming and naturally, Akai's Quick Start system with Index and Address Search, as well as Intro Scan. Not just bells and whistles, but features any serious recordist would deem essential.

Akai. Original thinking from a true original.



Universal Wireless Remote is programmable independently of the VCR. You can "download" programmed information.

# AKAI

Where audio and video are one.

Your loudspeakers may well have some of the most advanced drive units and crossovers in the whole world.

Even so, something is still standing between all the natural sound they produce and your ears.



The loudspeaker cabinet walls.

When the drive units vibrate, they will make the cabinets vibrate as well. Stopping the complete sound spectrum that comes from the drive units from ever reaching you.

This effect is known as colouration. And it's the reason you're always conscious that you are listening to music produced by two loudspeakers rather than a truly live concert performance.

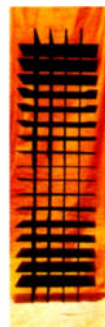


## INSIDE EVERY BOX IS THE NATURAL SOUND STRUGGLING TO GET OUT

Colouration is a great barrier to pure sound reproduction. Loudspeaker manufacturers all over the world have been searching for a way to break through it.

Now B&W have finally done it. With an invention that's the most exciting and important breakthrough in loudspeaker technology that even they have made in the last 20 years.

It's the Matrix series of new digital monitors. The first ever loudspeakers to totally eliminate the colouration from the loudspeaker cabinet.



The bass has depth and body and no resonant boom.

The mid- and high-frequencies have a new sparkle and definition.

And, for the first time ever, the natural decay of reverberation is heard exactly as it's heard in a live performance.

The familiar, but greatly unloved hangover effect is dead. Long live the Matrix.

This revolution was achieved with an idea so very simple that B&W practically invented the Matrix by accident.

They discovered that all that

is required to virtually eliminate unwanted sound radiation from the cabinet is a honeycomb-like structure of unique design inside it.

They also discovered that this so improved the performance of the cabinet that they also had to improve the quality of all the drive units.

Consequently, as well as the drivers with homopolymer cones manufactured under licence from CBS Inc., Matrix also features a newly designed ferrofluid tweeter.

The new Matrix series itself features three digital monitors.

Matrix 1, 2 and 3.

Each has a different size, maximum acoustical output and bass extension. All have the same enhanced stereo imagery, improved transient response, low distortion and total freedom from colouration.

The Matrix series takes its place in the B&W range, succeeding loudspeakers that in their time have made history.

You just cannot miss them at your B&W stockist.

They are truly the only loudspeakers that are seen but definitely not heard.



## LISTEN & YOU'LL SEE

# VIDEO and the DIGITAL REVOLUTION

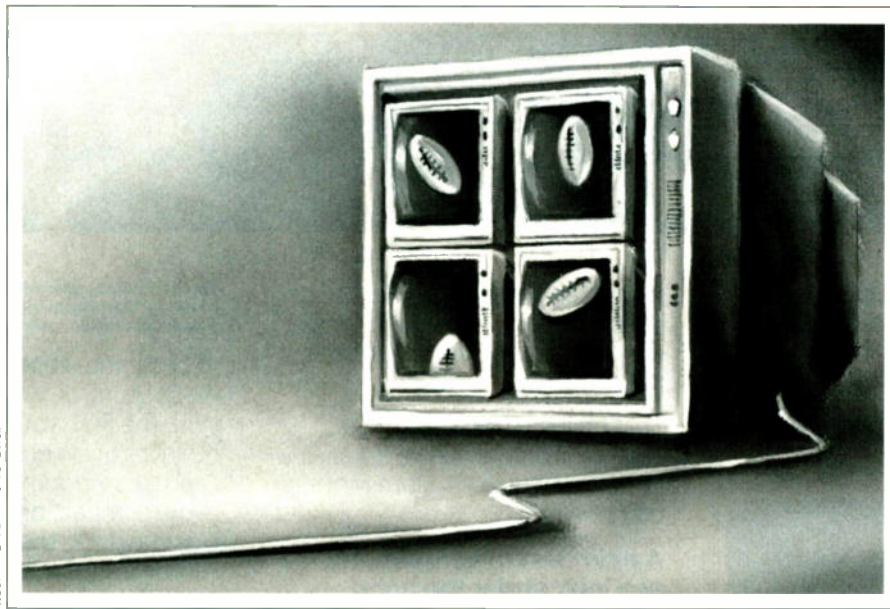


ILLUSTRATION BY KAREN STORPER

In recent years, "digital" has replaced "revolutionary" as the most-used (some would say overused) word in the audio manufacturer's lexicon. While few would dispute that the digital Compact Disc has had an enormous impact on home audio and that digital audio tape (DAT) may have a similar effect (should the system ever gain entry to the U.S.), we've also been treated to a great deal of digital silliness. Just about every audio product imaginable has been proclaimed "digital ready," whereas the only thing digital about some of them is that you use your fingers to operate the controls.

Now that digital technology is being applied to video, we can expect similarly misleading claims. This is not just confined to the promises being made; some digital-video products or features themselves seem a little silly. Some, but not all: A few applications of digital video do offer meaningful benefits. As with digital-audio products, you will ultimately have to sort things out for yourself. To help you, here is a rundown of the various digital-video features now on the market.

At present, digital technology as applied to video differs greatly in concept

from its use in audio. The CD and DAT are both intended as near-perfect data storage/retrieval systems for sound information; what comes out, at least in theory, is virtually identical to what goes in. But with digital-processing TVs and VCRs, the output can be very different from the input. Whereas CD players are supposed to faithfully reproduce the recorded program content, digital-video products have two other main purposes: *improving* the picture quality (by reducing noise and jitter, for example) and generating special effects. The effects now available to the home videophile include the ability to display several images on the screen simultaneously and to apply "artistic" effects.

Many of digital video's operating principles, however, are similar to those of digital audio. Both systems obtain their digital signals via analog-to-digital (A/D) converter integrated circuits (ICs) and feed out processed signals through digital-to-analog (D/A) converters. The sampling frequency for video is much higher than for audio—typically two to four times the color subcarrier frequency of 3.58 MHz. Depending on the product and application, a six- or eight-bit word length

is used, rather than 14 or 16 bits. The resulting maximum video signal-to-noise (S/N) ratios of 36 and 48 dB, respectively, are adequate for most digital-video applications. Video data are stored only temporarily in electronic random-access memory (RAM), not in a permanent medium like disc or tape (though totally digital VCRs are under development). To produce a desired effect, a mathematical operation is performed on the data in memory. The transformed signal is then converted back to analog form; in the case of video, this usually is a composite-video signal.

Let's look at what some of those transformations can accomplish.

Arguably, the most significant digital-TV feature—to judge more by the amount of research and development applied to it than by the number of currently available products using it (precisely one, as of this writing)—is the "noninterlaced" or "progressive-scan" display. To understand what one of these does, you'll need a little background on how a screen works.

With conventional televisions and monitors, pictures are created by a beam of electrons scanned over the inside of the

(Continued on page 54)

By Gordon Brockhouse

# There are two tests for of a system.

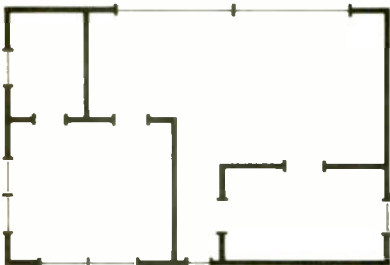


As you know, a/d/s/ began life as a speaker company. But it was only a matter of time before our interest in accurate musical reproduction led us to think seriously about the electronic portion of a sound system.



As you can plainly see, the R4's displays are extremely legible and easy-to-read from anywhere within a wide viewing angle. The unit provides you with full information about its operating status, so you know what you're doing and not flying blind.

What we wondered was whether we could improve upon that which was available at the time. The results appeared first in this country in 1983.



The R4 gives you true multi-room capabilities, while the RC1 provides the means to control the system no matter what room you're in.

Lean, spare and understated, the Atelier Series was an articulation of our belief that high-grade electronic components needn't look like laboratory instruments. Nor

require an engineering degree to coax into operation. Nor surrender to the indignities of planned obsolescence.

That philosophy today finds its expression in the Atelier R4 and its perfectly matched family of components.

**A new class of component, as a look under the hood will attest.**

At first glance, the R4 may appear to be a receiver. And it's true that the unit functionally incorporates the classic elements of that category of product. But beyond the impressive amplifier, pre-amplifier and tuner sections, the R4 bears about as much resemblance to a receiver as a BMW 735 does to a motor scooter. A look inside will illustrate the point.

We draw your attention first to what you'd least expect to find in a high fidelity product—a computer. Specifically, a microprocessor designed by a/d/s/ to provide a level of functionality never available before. For example, you can program the R4 to automatically turn on any combination of sources within your Atelier system for listening and recording, whether you're at home or off on an extended vacation.

When you are at home, you'll appreciate the fact that the R4 can give you access to any source from any room in your house—

The R4. Its slim, spare design gives little hint of the technological sophistication and sonic power that reside inside.

all by remote control. And when we say control, we mean control. With the RC1, you can control the nuances of every remote-ready Atelier component in your system—the compact disk player, the cassette deck, the tuner, even Atelier components which have yet to leave the drawingboards at a/d/s/.

If you're a computer buff, you'll be pleased to know you have the option of controlling Atelier functions by connecting your pc to the RS-232 port in the R4.



With the RC1 remote control unit, you can control every important function of every remote-ready Atelier component. You can do it standing up, sitting down or lying on your back. It issues more than 200 different commands.

# the electronic heart Music and time.

Pertinent to the subject of control is the large scale integrated chip that's embedded within the R4's control circuit. This chip makes it possible for you to control volume, bass and treble settings in precise, digital increments—channel to channel, and with none of the variation in levels that are typical of "twirl-knob" systems.

**The sonic purity is uncommon because the design is uncommon.**

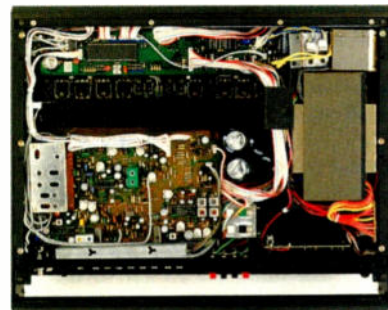
The R4's preamp signal paths are unusually noise free. That's because all circuits have been painstakingly protected from stray radiation by ample amounts of shielding—one of just many steps we've taken to preserve the extremely low distortion of the amplification stages.



As audio purists, we also feel compelled to tell you that the R4's microprocessor exists entirely outside the path of the audio signal. In other words, it keeps to itself, which is as it should be.

The FM portion of the R4 is as impressive as everything else about the unit. Finetuning is done in small, digital increments, which results in superb signal acquisition—the best possible, in fact—and eliminates distortion and "fuzzy" reception. Working down the signal chain, we come to the IF amps. Their bandwidth has been carefully designed to yield exceptional selectivity. Finally, stereo decoding is, in a word, impeccable. The result: optimum stereo separation.

As for the prodigious amount of power the R4 produces for its size, that was accomplished thanks to our use of a proprietary rail-switching technology that automatically and instantaneously increases power for high-energy music transients—well beyond its rated 75 watts per channel.



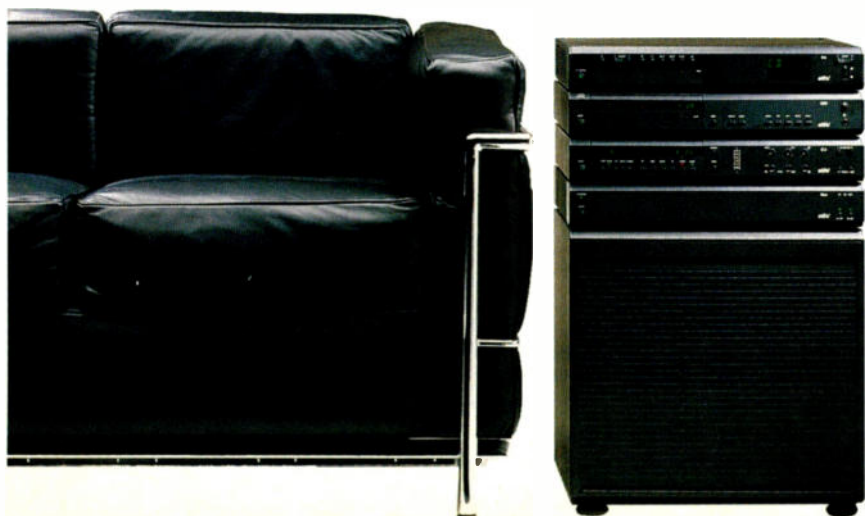
A glimpse inside reveals how carefully thought-out the R4 is. No space is wasted. Electronic circuitry, heat sinks, transformers, etc., are all contained within a box that stands only 2 $\frac{3}{4}$ " high.

When you need more power, we have more amplifier. Our PA4 amp provides 150 watts per channel, and nearly double that amount when bridged. Whether you use one or two PA4's in tandem with the R4, operation remains completely automatic. Moreover, you don't surrender any of your remote control capabilities—a fact that nicely differentiates Atelier from its competitors.

One final point deserves to be repeated. When we entered the electronics arena in 1983, our stated goal was to produce superb audio equipment that never became outdated. The R4 is the product of that vision, and it won't.

For more information about any a/d/s/ products, phone a/d/s/, toll-free, at 1-800-345-8112. (In PA, call 1-800-662-2444.)

The Atelier system of electronic components. From top to bottom, the R4, the CD4 compact disk player, the C4 cassette deck and the PA4 power amp. That's even an Atelier storage module they're sitting on.



a/d/s/

screen. The screen is coated with phosphors that glow when bombarded by the electrons. The brightness of the spot that's traced by the beam is controlled by a signal applied to the electron guns, which in turn derives from the video signal. Current applied to a wire coil (the "yoke") around the neck of the picture tube magnetically deflects the beam across the face of the screen, sweeping from left to right in approximately 52 microseconds. A picture is composed of a series of nearly horizontal scan lines that start at the top left of the screen and work their way down, always from left to right (see Fig. 1).

In the NTSC system for TV transmission and reception (the standard in North America), video images come in movie-like "frames" composed of 525 scan lines, with each frame scanned in  $\frac{1}{30}$  second. Of the 525 scan lines, 483 are active (meaning they contain image information); the other 42 are used for picture synchronization and non-image data, such as closed captions and Teletext.

A moving picture displayed at the 30-Hz frame rate will appear to flicker. To prevent this, the beam creates a picture in two alternating, interlaced "fields" of 242 (actually  $241\frac{1}{2}$ ) lines each, instead of entirely scanning the screen every  $\frac{1}{30}$  second. In one  $\frac{1}{60}$ -second period, the odd-numbered lines are scanned, and in the next  $\frac{1}{60}$  second, the even-numbered lines are traced between them. A similar multiplication scheme is applied to eliminate flicker in motion pictures. They are filmed at a 24-Hz frame rate but are projected at 48 frames per second by means of a slotted shutter that flashes each frame on the screen twice.

There is usually enough motion in a TV image that we are not aware of the defects of the interlacing process. However, when large, bright slow-moving or stationary objects with well-defined edges are displayed, jitter is readily apparent. This can most easily be seen with computer-generated graphics and lettering used in sports and news broadcasts; look for a flickering on the horizontal borders.

Noninterlaced televisions attempt to eliminate this problem by scanning all 483 active lines 60 times a second. To do this, each scan line of the incoming video information is digitized and the data stored in memory. There are several ways of treating this data. The simplest involves reading it from memory twice as quickly as it is written and scanning each line twice by use of doubled horizontal beam-deflection frequency (see Fig. 2). That's the principle behind the only digital noninterlaced TV set sold in North America—the Toshiba

CZ-2697. In one  $\frac{1}{60}$  second, the CZ-2697 scans the odd-numbered lines twice, once each in their normal positions and again in the positions the even-numbered lines normally occupy. The process is reversed in the next  $\frac{1}{60}$  second with the even lines being additionally scanned in the odd-line positions. The visual results, according to Toshiba, are less jitter, improved apparent resolution, and greater color density.

Another approach may produce even better results. As before, two lines are sampled and stored in memory and read from memory twice as fast as they are written. However, instead of simply scanning each line twice, this system synthesizes or interpolates the in-between lines by averaging information from the two surrounding lines in the same field. During the  $\frac{1}{60}$  second that an odd-numbered



Fig. 1. A TV picture is made up of a series of nearly horizontal scan lines traced from top to bottom.

field is being scanned, the system synthesizes even-numbered lines by averaging adjacent odd-numbered lines. Line 2 is thus an average of lines 1 and 3; line 4, an average of lines 3 and 5. During the next  $\frac{1}{60}$  second, line 3 is an average of lines 2 and 4, and so on. Thus, an entirely new frame of information is sent to the picture tube every  $\frac{1}{60}$  second (see Fig. 3). Compared to the line-repetition method, flicker is said to be reduced still further with interpolation, especially on objects with well-defined diagonal boundaries. Apparent vertical resolution is also further improved, although more memory and special signal processing have to be used in the interpolation process to avoid smearing in scenes with motion. TV sets using this interpolation technique are not yet available in North America, but Sony is selling them in Japan.

#### AGAINST THE GRAIN

The other major application of digital technology toward improved picture quality is noise reduction (NR). Although many techniques for video noise reduction

are under development, NEC is the first to bring a system to market: Its DX-1000 and DX-2000 VHS VCRs have digital NR systems that operate on tape playback (the DX-2000 was tested in our April issue). They reduce noise essentially by combining alternate fields, which doubles the image signal strength but increases random noise only by a factor of 1.414. The principle is similar to the noise reduction features of VHS HQ, except only adjacent lines are summed in that technique. And while HQ's analog NR systems improve video signal-to-noise ratio by 2 to 3 dB, NEC claims its digital system improves the S/N ratio by 6 to 9 dB. The visual results seem to back up this claim, at least with some images: Very grainy or snowy source material is significantly improved, but pictures suffering from regular interference (such as ghosts) are less affected.

The "brute force" field-summing nature of NEC's systems makes them susceptible to blurring on material with rapid movement—some images persist on the screen longer than they should. However, the DX-1000 and 2000 have rotary controls that affect the degree of noise reduction (that is, the portion of the signal from the previous field that is added to the current one). A three-position switch performs the same function on the newer DX-5000, which also benefits from a more sophisticated NR system. With judicious use of the NR and sharpness controls, you can obtain an optimum trade-off between noise, resolution, and blurring. If you're interested in this kind of product, check the quality of its signal-processing functions using material with lots of motion. Try the aerial scenes from *Top Gun*.

Frame-comparison NR systems promise to be more effective than the direct approach now used by NEC. With this method, the current and previous frames would be compared. Except in material with rapid movement, most of the difference would be due to noise. The frame-difference signal would then be subtracted from the current frame, resulting in a picture almost completely free of noise. This approach would require far more memory than current methods and would also generate undesirable by-products in scenes depicting rapid movement. Motion-detection systems would reduce the NR effect during scene changes or scenes with rapid motion. Because the eye is less sensitive to noise in rapidly moving scenes, effective noise reduction remains, but side effects would be reduced.

Digital noise reduction can also be used to eliminate ghosts (the TV equivalents of  
*(Continued on page 59)*



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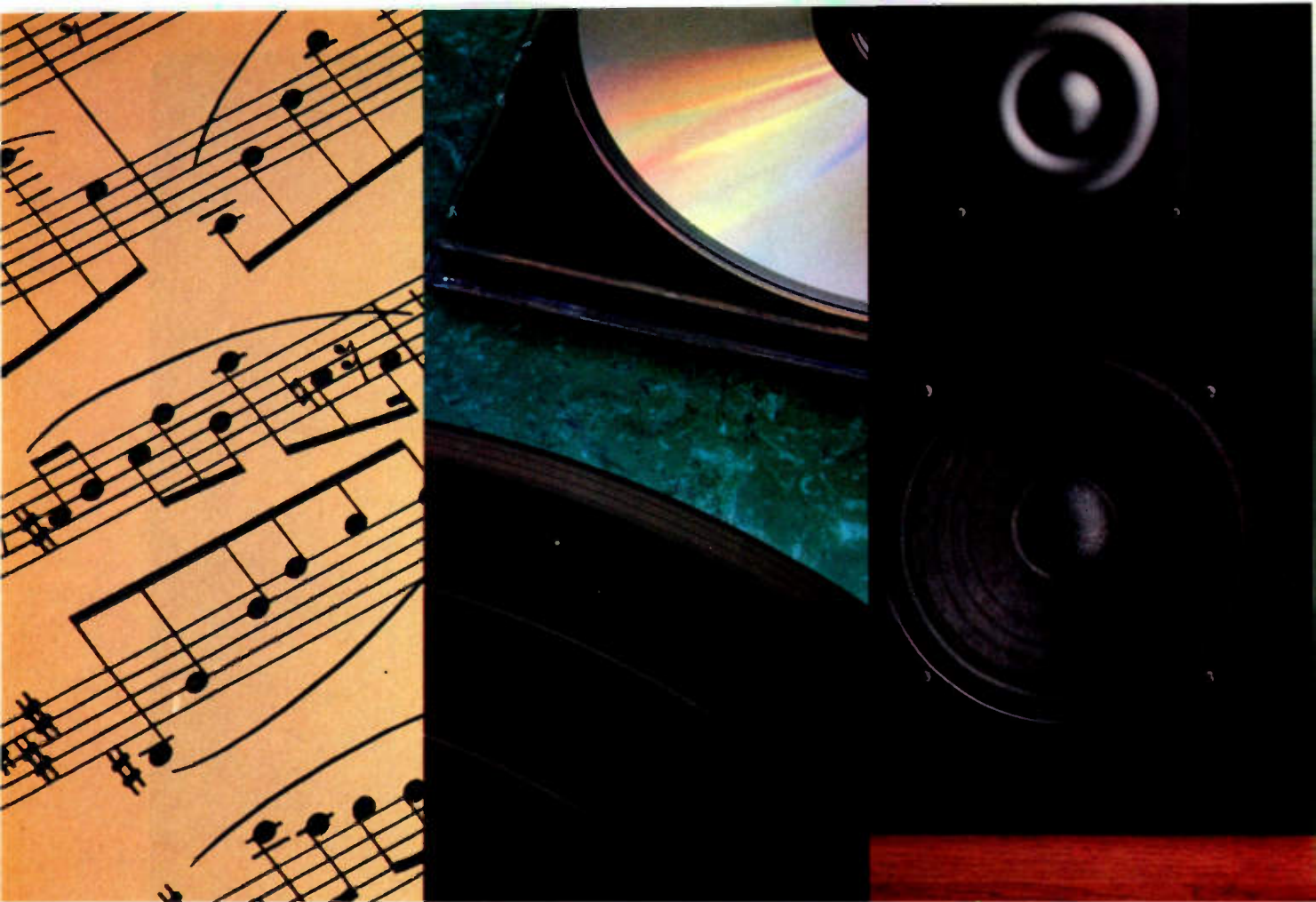
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FM-radio multipath) once their on-screen location and amplitude are determined. Proposed ghostbusting systems have auto-correlation programs that search the digitized signal for repetitions of patterns. A pattern repeated at a lower amplitude is likely to be a ghost. The signal corresponding to that pattern is subtracted from the incoming signal, thus removing the ghost. Such a system can achieve a highly visible gain of 10 dB or so in video S/N.

### GHOSTBUSTERS

The same function can be performed with an analog auto-correlator and long delay lines; that kind of equipment has been used by cable-TV operators for some time. But ghosts can be detected and corrected more accurately with digital systems because they can apply correction to a very precise point on a scanning line. With analog systems, phase and amplitude shifts in the delay line can lead to the creation of "negative ghosts" as the ghost image is subtracted from the wrong location in the picture.

The last major digital picture-improvement scheme under development concerns the reduction of interference between the color and brightness portions of a TV signal. The basic problem stems from the chrominance (color) information of an NTSC video signal occupying the same frequency range as the fine luminance (black-and-white) picture detail. Problems occur when luminance information in the chroma frequency region is interpreted as color and vice versa. An image containing sudden successions of black-white shifts—say, a tweed jacket—can trigger the chroma detector, causing a problem known as "cross-color" that manifests itself as a colored moiré pattern in the affected area. Sudden changes in the color content of adjacent lines may be interpreted as brightness changes, causing "dot crawl," a moving pattern of fine dots at the color boundary.

Analog comb filters have been used to separate chrominance and luminance

since the mid-'70s, allowing fine luminance detail within the chroma passband to be displayed. Sets without comb filters usually have a simple low-pass filter that cuts off at about 3 MHz to prevent interference between chrominance and luminance, but this limits horizontal resolution to about 250 lines, far less than the theoretical NTSC maximum of about 330 lines. The same interference-reducing function can be performed digitally, possibly in conjunction with other processing.

### MANIPULATING THE PICTURE

In addition to the picture improvement, digital circuitry can manipulate the picture. Indeed, this aspect of digital video receives greater emphasis than picture enhancement in most advertisements and product brochures. Many of these features are pure gimmickry—buy them if you like them—but a few do offer genuine benefits: *Digital adjustment of conventional picture characteristics.* Often, picture controls (brightness, contrast, hue, tint, etc.) on conventional TV sets do more than they're supposed to. Adjusting the contrast may also affect brightness, for example. Some digital-chassis TV sets apply nonlinear correction algorithms to the digitized video signal so that only the picture characteristic the viewer wishes to adjust is affected.

*Picture-in-picture (PIP).* As the name implies, this feature enables viewers to watch two or more pictures on one screen. The main picture occupies the full screen, while a subpicture from another source forms a small inset image about  $\frac{1}{12}$  the size of the main picture in a corner of the screen. A viewer might use this feature to monitor a sports event while watching a videocassette, swapping displays to catch instant replays. During commercials, viewers could relegate the main program to a subpicture while scanning the other channels on the main display.

Most products with PIP enable the user to choose the quadrant in which the subpicture is displayed and to instantly

switch between main picture and subpicture. Some permit you to change the size of the subpicture. Multivision's adapters, which work with any TV set, can size the subpicture according to the viewer's wishes and place it in any part of the screen (see the test report on the Multivision 1.1, p. 46).

The technical specifics for PIP vary from model to model, but the basic principles are the same: After the information for the subpicture is digitized, it must be resized to fit into the small area allotted for it. On Hitachi and RCA digital VCRs, the circuitry digitizes and stores a 450-line portion of a frame. It then deletes selected scan lines, so that the subpicture can be created using 128 scan lines. To make the subpicture only one third of the screen's width, it is read from memory three times as quickly as it was written. This allows each line to be scanned in 17 microseconds, rather than the 52 microseconds it normally takes to scan one horizontal line.

For PIP to be most useful, two video sources have to be available. A few digital TV sets on the market have two tuners, as does the Multivision 3.1 adapter, but most have only one, preventing the simultaneous viewing of two broadcasts. However, don't overlook the tuner in your VCR as a source of a second broadcast signal. Digital VCRs with PIP enable viewers to watch a tape and broadcast source at the same time, perhaps viewing a TV program in the main picture while scanning the tape in the subpicture. Most PIP-equipped TV sets and VCRs enable a source connected to a video input (such as a video camera) to form either an inset or a main picture.

*VCR special effects.* Storage of a frame or field in digital memory is very helpful in eliminating noise bars and other visual distractions when using a VCR's special playback modes. Even two-head models with digital processing offer visually perfect still frames, double-speed playback, and slow motion. Scanning that's free of tearing and noise bars is also possible, as is

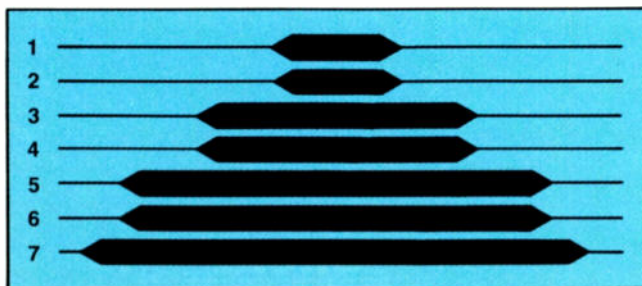


Fig. 2. A frame can be displayed in  $\frac{1}{60}$  second by scanning each line in its fields twice: lines of the odd field are repeated in the even-numbered locations.

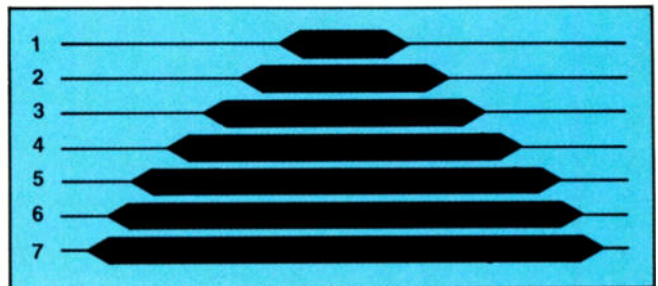


Fig. 3. In an interpolating display, pairs of odd-numbered lines are averaged to synthesize the in-between even-numbered lines, and vice versa.

comprehensible audio during double-speed playback. Still frames from broadcasts can be produced from the tuner of appropriately equipped VCRs. And with some models, a still picture can be displayed while the tape and sound continue to play; the same applies to off-air stills. Some units allow a succession of still images to be "strobed" on the screen.

The basic processing for digital VCRs depends more on the storage of the picture in memory than on mathematical operations. For example: In slow-motion playback, after a field has been digitized and stored in memory, the memory contents are read several times to send the same field to the screen repeatedly. Flickering and jitter, seen in conventional slow-motion playback, are thereby eliminated. To eliminate noise bars during scanning, the outputs of the two VCR heads are simultaneously digitized and stored. Information from the two heads is joined to form a single, coherent picture.

#### GIMMICKS?

Aside from giving the opportunity for spectacular in-store demonstrations, other digital-video features have rather dubious benefits. Some digital VCRs allow a succession of still images to be displayed in each of four screen quadrants; others will even show nine images at one time. Each still frame, either off-air or off-tape, can be

updated at a time interval set by the user. A few units enable slow-motion images, either forward or reverse, to be shown over different portions of the screen. Whatever the multiple-screen effect, selected horizontal scan lines are removed and digital-video data is read from memory at double (for four screen areas) or triple (for nine screen areas) the writing speed.

The special "artistic" effects available on some digital VCRs and TV sets seem almost unlimited and—to some of us—almost useless. By averaging digitized picture information from adjacent areas, mosaic effects are created. Mottled images and photolike "solarization" can be created through other mathematical manipulations. It's a fairly simple matter to "paint" a digitized picture—that is, overlay a color onto the screen—or to dissolve the picture from the center. Not too long ago, these effects were available only on professional video-processing gear costing tens of thousands of dollars. But who needs them at home?

That's a question that can be justifiably asked about any of the features described here. There's no doubt in my mind that a lot of TV sets and VCRs will be sold just because they're "digital." Yet all of these features do have a place, somewhere. Painting, solarization, and mosaic effects may soon lose their luster for the typical viewer, but advanced videographers may

find them useful (in small quantities, I hope) in sprucing up their creations. Similarly, strobing and multiple-image effects might have limited appeal, although strobed stills or quadrant-by-quadrant slow motion should be useful for analyzing a golf swing or a tennis stroke. Non-interlace displays, video noise reduction, and digital color controls are all more universal in appeal, though not as flashy to demonstrate.

Digital video will really come into its own with the introduction of two new media: *true* digital VCRs that record video signals as binary digits (which should be available within five years) and Extended or High-Definition TV systems (starting in the mid-'90s). EDTV or HDTV signals will be transmitted and recorded in analog form, but compression schemes using digital technology will squeeze the information into as narrow a frequency spectrum as possible. Digital decoders in TV receivers will restore the image almost to its original state, and resolution will be several times that of current systems. Proposed systems will also transmit audio in the digital format. Meanwhile, you should take a hard look at which digital features you need—and don't need. ■

*Gordon Brockhouse was formerly an editor of Canadian audio and computer industry trade publications.*

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**A**lthough graphic equalizers are probably the most popular accessory components, they are also the only ones that require, for most effective use, some knowledge about sound and the frequencies of music. Unfortunately, most equalizer instruction manuals choose to ignore the implicit challenge and are seldom even clear about which knobs (or sliders) achieve which audible effects. In the questions and answers below, I've focused on the areas that most instruction manuals neglect, including this very basic question:

**Q:** *Why would anyone want an equalizer in the first place, aside from the pleasure of owning a component with all those controls? In other words, what does an equalizer do?*

**A:** Think of an equalizer as a very sophisticated and flexible tone control. Conventional bass and treble controls are able to boost and cut the relative strengths of frequencies only at the low and high ends of the audio range, but an equalizer can individually adjust *bands* of frequencies within the range. Each slider on a typical ten-band equalizer controls an octave-wide range of frequencies and is usually identified by the center frequency of the controlled band.

**Q:** *What is an octave?*

**A:** An octave is the span covered by a 1:2 ratio of frequencies. Likewise, a half octave is a frequency ratio of  $1:\sqrt{2}$  (1 to the square root of 2), and one third of an octave covers a frequency range of  $1:\sqrt[3]{2}$  (1 to the cube root of 2). For example, the band from 220 Hz to 440 Hz is an octave; specifically, it is the range from the A below middle C to the A above middle C. On a keyboard instrument, a span between eight consecutive white notes is an octave. The human hearing system covers a range of approximately ten octaves from about

20 Hz to 20 kHz (i.e., 20–40, 40–80, 80–160, 160–320, 320–640, 640–1,280, 1,280–2,560, 2,560–5,120, 5,120–10,240, and 10,240–20,480 Hz).

**Q:** *What is the advantage of a ten-band equalizer over a five-band model?*

**A:** In addition to providing individual control of each octave in the audio band, a ten-band unit usually has separate sets of right- and left-channel controls. Although a five-bander is less expensive, smaller, and simpler to use, it is also less precise, since each knob adjusts a two-octave band of frequencies. Also, most five-banders control both channels with a single set of sliders, which can be an inconvenience. But maintaining the quality of a stereo image requires identical equalization changes to both channels, which is simpler to do with "ganged" controls, regardless of the number of bands.

For critical adjustment of recording-studio and concert-hall acoustics, professionals sometimes use  $\frac{1}{3}$ -octave equalizers. These have 30 sliders per channel and,

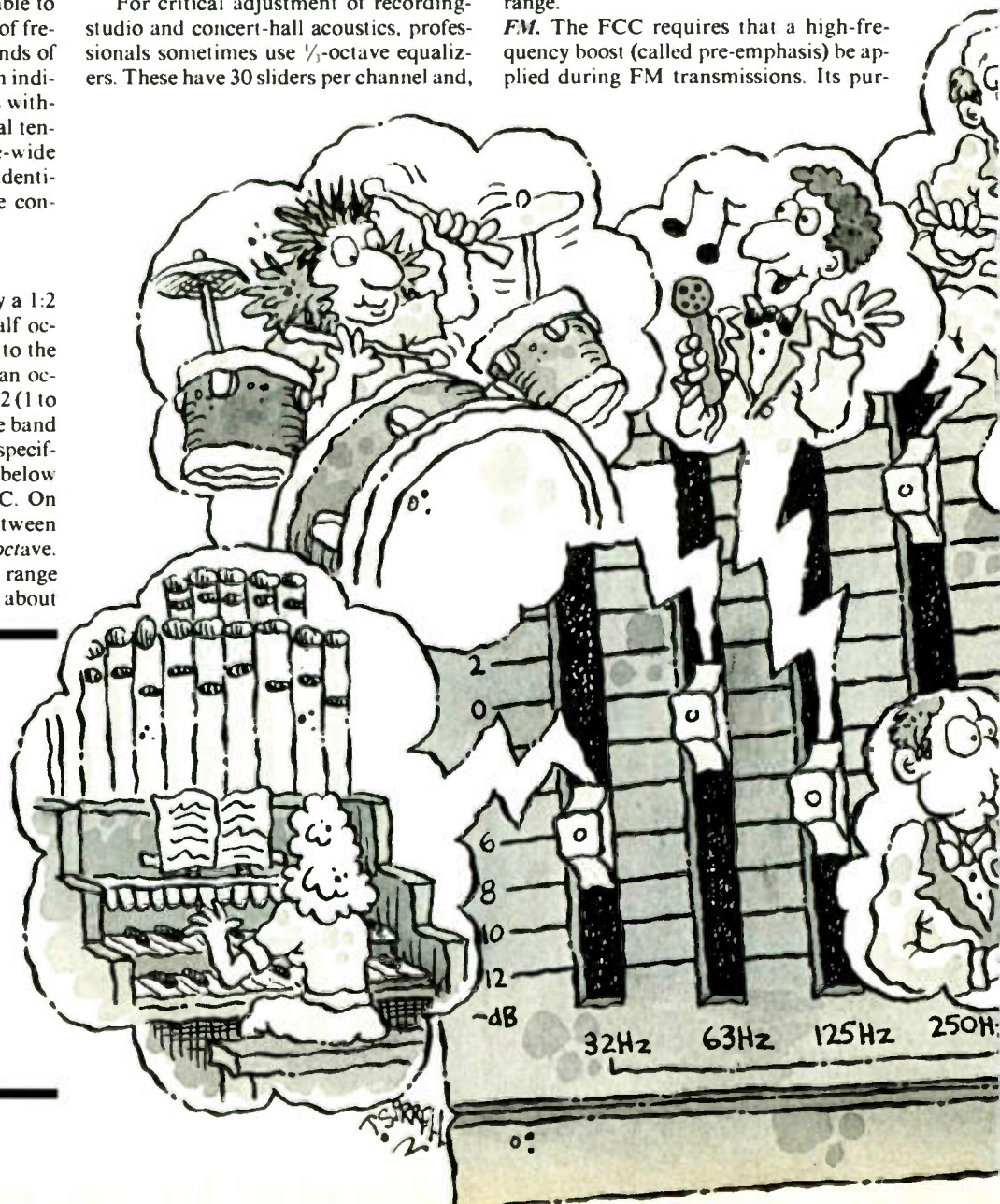
when adjusted using signal generators and other instruments, can compensate for many acoustic problems. Most home-listening situations do not need this degree of control, which usually comes at a very stiff price.

**Q:** *What are some practical examples of how an equalizer can improve the sound of a system?*

**A:** Even if you were blessed with a perfect audio system—whatever that might be—the tapes, discs, and FM signals you play through it are likely to be flawed in a variety of ways. Here's how an equalizer can help improve the sound of your program sources—and, if needed, that of your loudspeakers and the acoustics of your listening room. The control frequencies mentioned are typical of those found on ten-band equalizers, running from 32 Hz at the bottom to 16 kHz at the top of the range.

**FM.** The FCC requires that a high-frequency boost (called pre-emphasis) be applied during FM transmissions. Its pur-

Almost Everything  
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Wanted to Know  
About Equalizers  
That the Instruction  
Manuals Never  
Told You





# The Joys of Equalization

by LARRY KLEIN

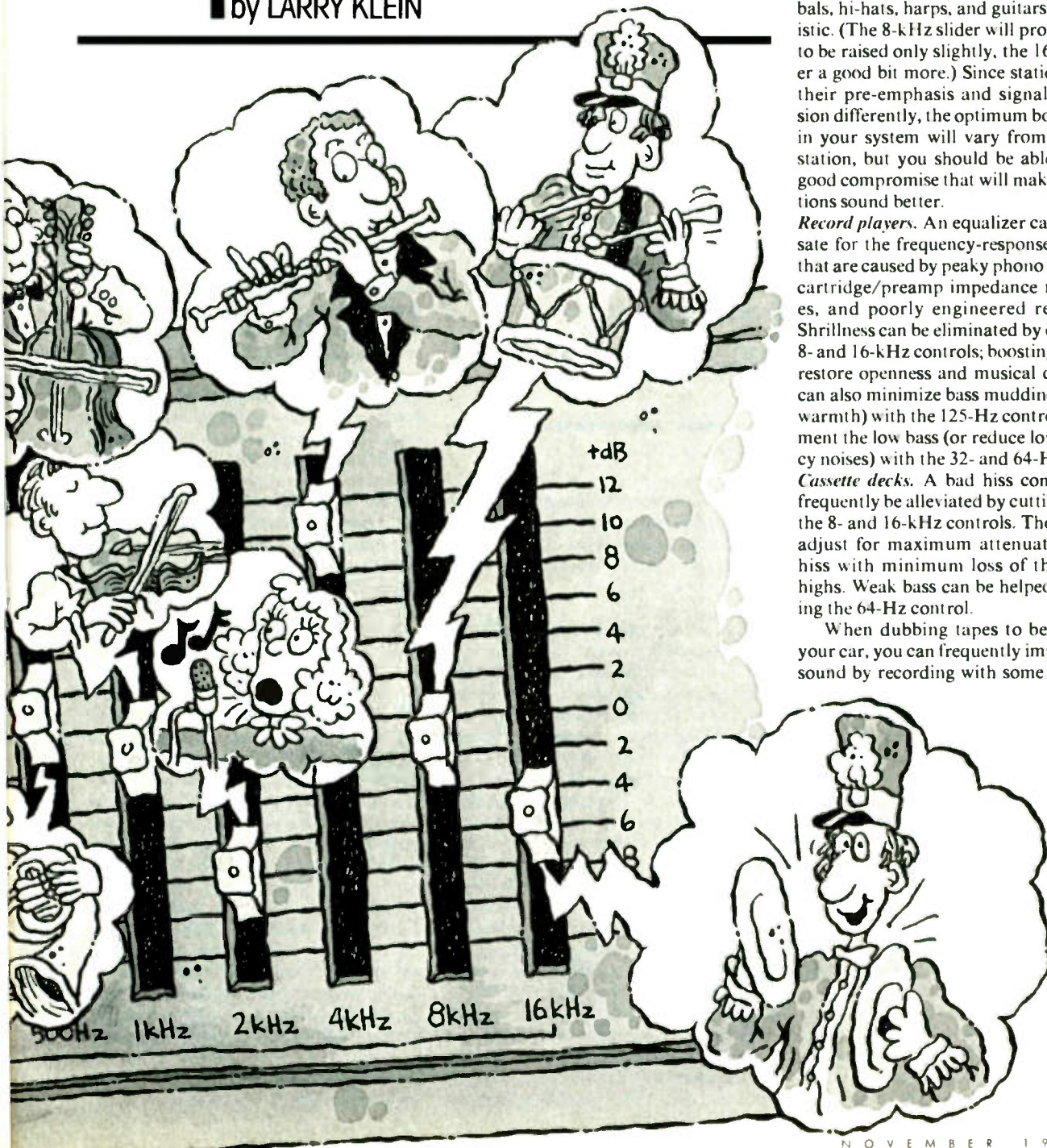
pose is to minimize hiss during FM reception by means of a complementary high-frequency de-emphasis circuit built into all FM tuners. Unfortunately, the added pre-emphasis makes it difficult to broadcast high audio frequencies at their natural strength without overloading the broadcast transmitter. Most stations—even classical ones—are forced to cut back somewhat on the high-frequency content of their records, tapes, or Compact Discs for broadcast.

A more natural treble level can be restored by boosting the 8- and 16-kHz controls until the sounds of high strings, cymbals, hi-hats, harps, and guitars seem realistic. (The 8-kHz slider will probably need to be raised only slightly, the 16-kHz slider a good bit more.) Since stations handle their pre-emphasis and signal compression differently, the optimum boost setting in your system will vary from station to station, but you should be able to find a good compromise that will make most stations sound better.

**Record players.** An equalizer can compensate for the frequency-response problems that are caused by peaky phono cartridges, cartridge/preamp impedance mismatches, and poorly engineered recordings. Shrillness can be eliminated by cutting the 8- and 16-kHz controls; boosting them can restore openness and musical detail. You can also minimize bass muddiness (or add warmth) with the 125-Hz control and augment the low bass (or reduce low-frequency noises) with the 32- and 64-Hz sliders.

**Cassette decks.** A bad hiss condition can frequently be alleviated by cutting back on the 8- and 16-kHz controls. The trick is to adjust for maximum attenuation of the hiss with minimum loss of the musical highs. Weak bass can be helped by boosting the 64-Hz control.

When dubbing tapes to be played in your car, you can frequently improve their sound by recording with some bass boost



## The Joys of Equalization

at 125 and 64 Hz and some treble boost at 8 kHz and above, although trial and error will be necessary to determine what sounds best in your car. These adjustments can also help in making tapes destined for alfresco Walkman playback.

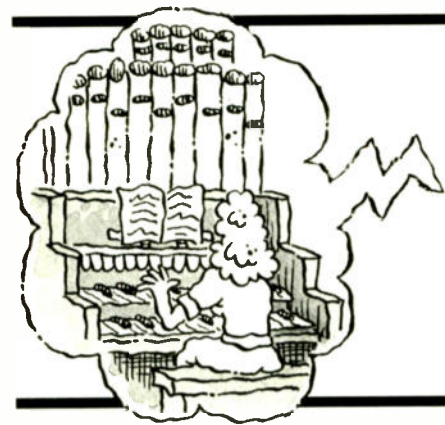
Some cassette decks have difficulty dubbing warped records because the very high-level signals at very low frequencies produced by the warps overload the tape or the machine's electronics. If there is "blocking" (signal cutoff) or distortion on playback of certain dubs, try rerecording them through an equalizer with its 32-Hz control set for full cut.

**CD players.** It's no secret that many CD recordings have been poorly engineered

switching your amplifier to mono and adjusting the equalization of the problem channel until both speakers sound relatively alike when you use the balance control to go from one speaker to the other. Equivalent responses from both speakers will help maintain good stereo imaging.

- To add more punch to a disco beat, try some boost at 64 Hz.
- To add more body and warmth, boost the 125- and 250-Hz areas.
- If male voices sound boomy, try a slight cut at 125 Hz.
- If voices sound nasal, cut back the controls at 2 and 4 kHz.
- If brushed cymbals and chimes lack shimmer and "air," try a boost at 16 kHz

Most sounds include  
A number of fundamental  
Frequencies and their  
Harmonics, together  
Spanning several octaves.



and sound shrill or harsh. A slight cut applied by the 8- and 16-kHz controls can often be of significant help. A slight boost at 4 kHz can also help restore part of the sense of hall ambience sometimes lacking in CDs.

**Loudspeakers.** Speaker systems typically suffer from various frequency-response problems, and an equalizer can help in many cases. Here are a few examples:

- If low-bass frequencies are lacking, try a moderate boost at 32 Hz.
- "Standing waves" in a room produce listening areas with an unpleasant, heavy-sounding bass reinforcement or bass-shy cancellation, typically in the range of 40 to 70 Hz. If there are standing waves in your chosen listening area, you can reduce their effect with one or more of the bottom three equalizer controls. Note, however, that the bass heard elsewhere in the room will probably not be corrected simultaneously.
- Many older loudspeaker systems are weak in the highest treble registers. Try boosting the 8- and 16-kHz controls.
- If one speaker of a stereo pair is installed in a corner or near sound-absorbing drapes or soft furniture, its bass or treble output may need adjustment to bring it in line with the other. You can do this by

and—to a lesser degree—at 8 kHz.

- For a more natural-sounding balance when listening at background-music levels, boost the frequencies at 125 Hz and below. This is the principle behind the "loudness" control.

**Q:** Can you describe the audible effect of each of the slider controls?

**A:** This is tricky, because, as you can see from the preceding answer, many of the terms used to describe sonic effects are necessarily imprecise. In addition, the sonic effect of any particular frequency slider is dependent on the overall response of the system and on the frequencies of the program material passing through it. For example, if you raise or lower the 32- or 64-Hz controls while listening to a solo flute recording, you will hear little or no effect on the sounds of the flute, since they occur at middle and high frequencies. However, you *would* affect the strength of any extraneous low-frequency noises (like rumble from a turntable or the sound of air conditioners inside or traffic outside the studio).

Boosting or cutting a band will affect the strength or tonal quality of sounds that are predominantly in that range. Keep in mind that each slider controls an octave-

wide band of frequencies centered on its labeled frequency, not just the labeled frequency itself. Adjacent octaves are also affected to some degree, depending on the design of the equalizer and the amount of boost or cut applied. Also remember that very few sounds, musical or otherwise, involve only a single frequency; most sounds include a number of fundamental frequencies and their harmonics, which together can span several octaves (see the instrument frequency-range chart on page 65). Nonetheless, here's an octave-by-octave breakdown of control effects:

**32 Hz (low bass).** Until the advent of audiophile recordings and CDs, sounds in this range rarely occurred on records because they were difficult to record and reproduce. When boosted, this control can help restore the gut-thumping bass heard from kick drums and double basses, and the bodyshaking resonances of low pipe-organ notes and bass-drum rolls. However, it won't do much for FM broadcasts, because stations often roll off their signals below 50 Hz. When set for cut, the control reduces any infrasonic and very low-frequency noises that may be present.

**64 Hz (bass).** This octave contains most of the frequencies that provide the punch in rock music. Many speakers fail to deliver the goods at these frequencies, and some boost can help restore the missing bass energy. Too much boost may overdrive your woofers if they can't handle the extra cone excursion the boost produces.

**125 Hz (upper bass).** This range is overly prominent in many speaker systems, sometimes in an attempt to cover up poor performance in the two lower octaves. But the result is usually a boomy sound and bottom-heavy male voices. A slight cut may help restore naturalness. If, on the other hand, a system's sound lacks richness or warmth, a slight boost in this octave will help.

**250 Hz (lower midrange).** Also responsible for warmth and richness. Low strings are greatly affected by this control.

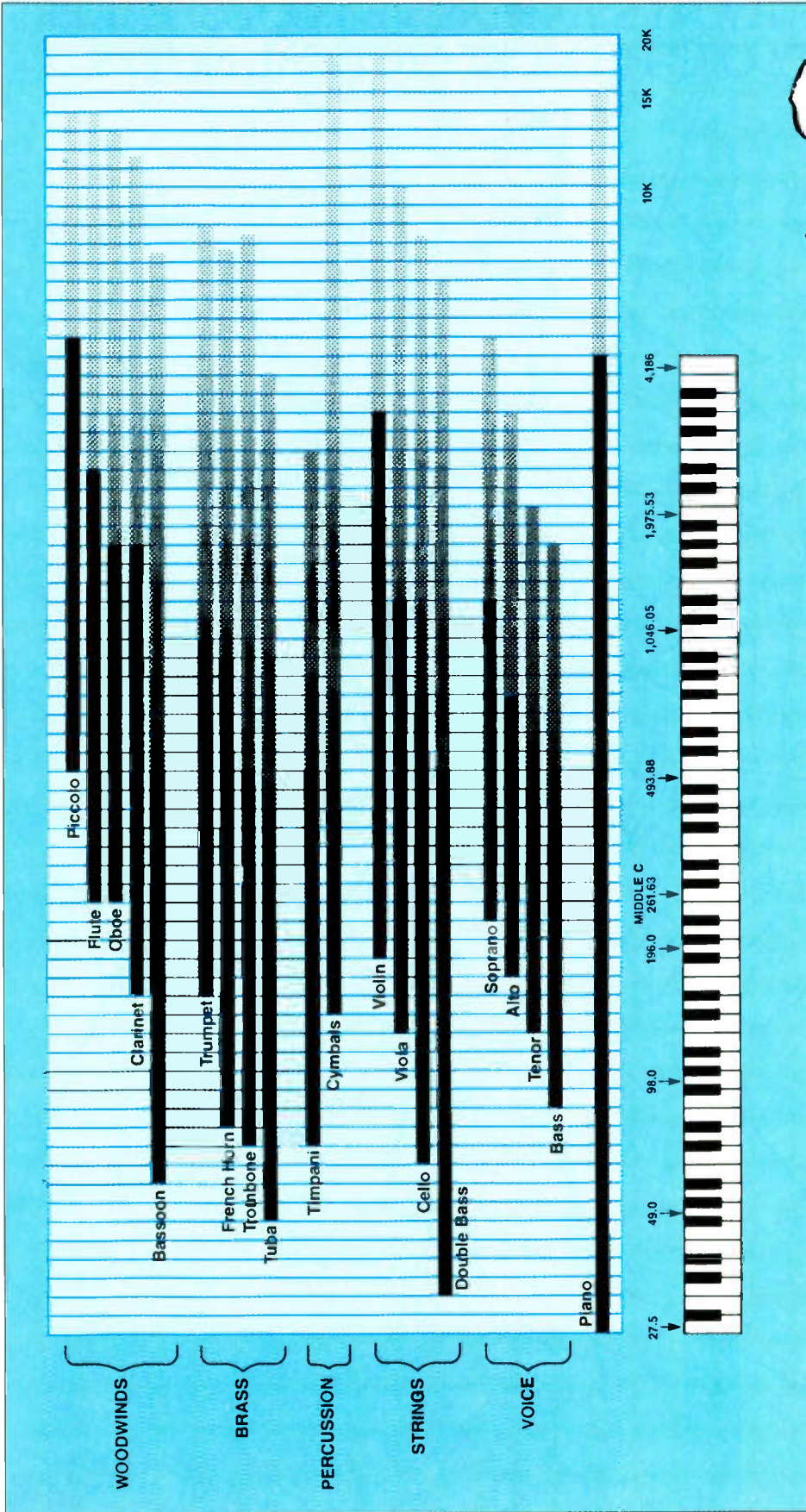
**500 Hz (midrange).** Many musical instruments, as well as the male voice, produce most of their energy in this range. For that reason, this control can emphasize or de-emphasize tenor sax and most other woodwinds, snare drum, piano, male voices, and the richness of massed strings.

**1 kHz (upper midrange).** This octave and the two above it cover the range of the ear's greatest sensitivity. A boost or cut in this octave will both change the music's apparent loudness and make certain instruments or vocalists appear to approach or recede.

**2 kHz (lower treble).** An area of high aural sensitivity. Female voices, strings, wood-

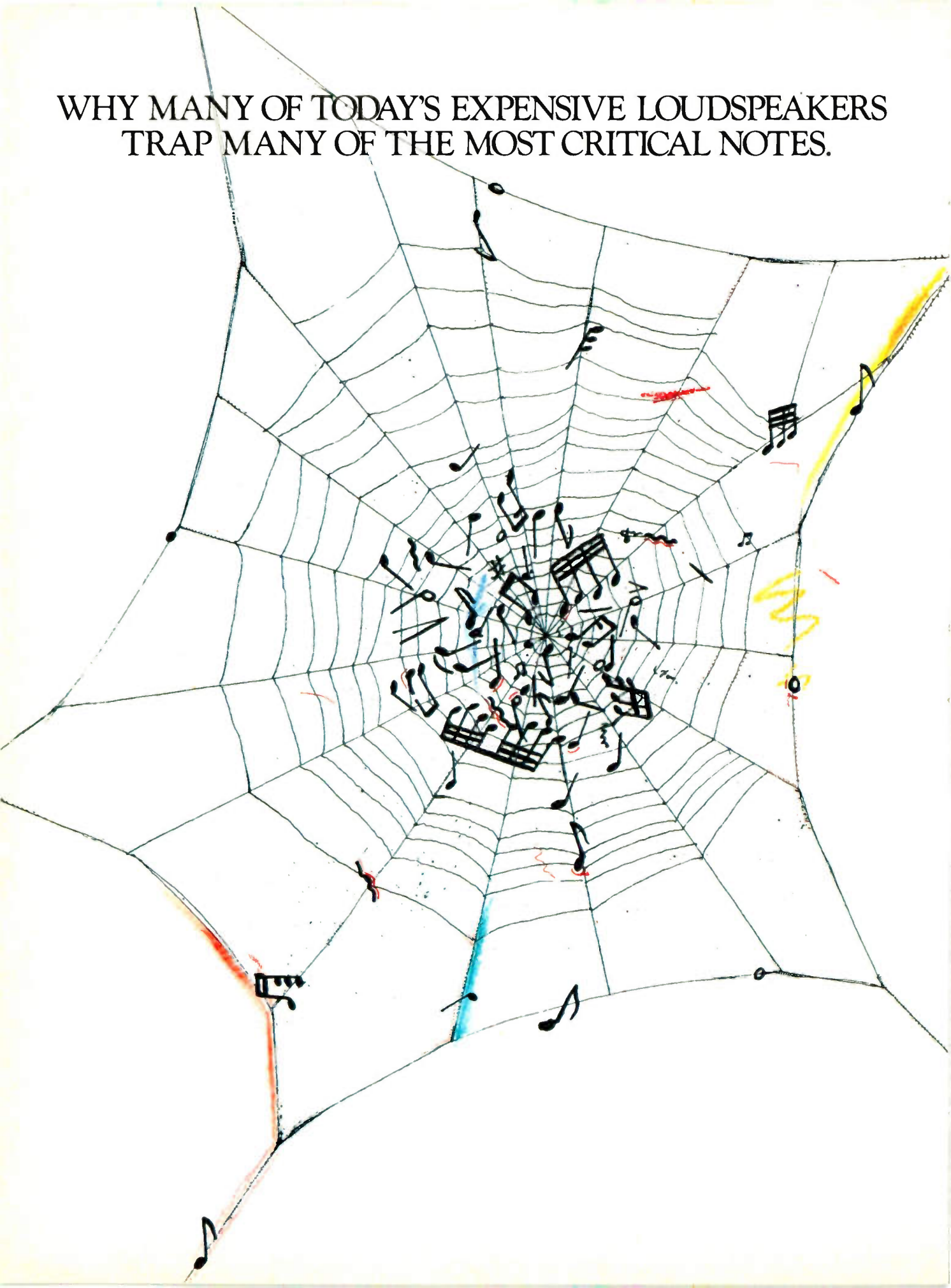


# Frequency Range of Musical Instruments



ALICE TOPP

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Carbon Fibers in Woofer Cone

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LOUDSPEAKERS FOR  
THE WELL-TRAINED EAR

## The Joys of Equalization

winds, and acoustic guitars are strong in this octave. Excessive nasality in a singing voice can be reduced by using this and the 4-kHz control.

**4 kHz (mid treble).** The three highest treble octaves are responsible for much of the life, air, and presence in reproduced sound. These are also the octaves in which problems in room acoustics, phono cartridges, and speakers can become significant. Image and depth are sometimes affected by the 4-kHz control because much of the recorded reverberation (which the ear interprets as depth) occurs in this area. Crispness can be added or excessive hollowness diminished with this control.

**8 kHz (high treble).** This range is sometimes confused with the extreme treble. Speakers with too much energy in this range have a harsh, overly forward quality that is frequently mistaken for good high-frequency response. A listening room with inadequate damping (because it lacks carpeting, soft furniture, drapes, etc.) can often be made to sound smoother and less irritating by cutting back in this frequency range. Harsh-sounding CDs may also benefit from a cut in this band, as can any excessively sibilant vocalists or steely strings.

**16 kHz (extreme treble).** This band contains comparatively little musical energy and is also the range in which human hearing begins to give out. If you don't hear much effect from this control, those are the likely reasons. When set for full boost, this control can add a sense of openness and detail to the sound. It is also helpful (in the cut position and in conjunction with the 8-kHz control) in reducing certain types of hiss or distortion.

**Q: Is it easy to make corrections by ear?**

**A:** Some trial and error is necessary in setting up any audio system. Keep in mind that moderation is the best policy when using equalization. If too much boost or cut seems to be required for satisfactory performance, it may mean that you need speakers with better response or need to adjust your room's acoustics or the placement of the speakers.

To prevent complete response disarray, do not move more than one slider at a time when starting to make adjustments. If the control you choose doesn't create the desired effect, *move it back* and try another. Get as close as you can by moving only one control, then zero in on the goal using either or both of the neighboring controls.

**Q: How much good can an equalizer do when most of the problems I object to are colorations in the sound?**

**A:** Colorations are not mysterious; they can almost always be traced to measurable irregularities in frequency response. The ear interprets such irregularities, depending on the frequencies involved, as nasality, glassiness, harshness, boominess, and so forth. Of all components, equalizers are the ones best equipped to tame coloration. (Speaker system resonances, which equalizers really can't do anything about, are also responsible for some undesirable audible effects; however, these are usually much less bothersome.)



**Q: Is it possible to overload an audio system if an equalizer is used improperly?**

**A:** Yes. Although a 3-dB boost has only a slight audible effect, it requires twice the output power from an amplifier (measured in watts) at the boosted frequencies. A 6-dB boost requires four times the power, and a 15-dB boost requires more than 30 times the output power for signals in the particular band of frequencies that are boosted. Operation of an equalizer with *full* treble or bass boost at loud listening levels can overdrive your speakers and exceed your amplifier's power rating. When an amplifier runs out of power, it "clips" the audio signal and can generate potentially damaging spurious signals; when a speaker is overdriven, it can be thermally or mechanically damaged. In short, avoid large boosts at high volumes.

**Q: Some equalizers feature built-in real-time or spectrum analyzers. What purpose do they serve?**

**A:** A real-time analyzer uses a bar-graph display to show the relative strength of the signal in each octave controlled by the equalizer. Each vertical bar usually corresponds to a slider control, and the display typically can be switched to respond to signals in the right channel, the left channel, or both combined. Although the analyzer

will roughly indicate the relative amounts of musical energy in each octave band, it will *not* give you a reliable picture of the frequency balance of the sound produced by your system. Knowing this requires that the equalizer/analyzer have a microphone (which some do).

**Q: How accurately can I equalize my room acoustics, assuming I have the required equipment?**

**A:** The problem is the "required equipment." Conventional room-measurement techniques—even those using pink-noise test signals and  $\frac{1}{3}$ -octave real-time analysis—lack the required resolution: They gloss over the fine sonic details the ear finds so important. This is not to say that aberrations in the low- or high-frequency range won't be picked up, but those problems can be detected with program material—and corrected by ear—without electronic assistance.

Some recent research indicates that  $\frac{1}{10}$ -octave resolution or better is required to measure *all* the audible midrange peaks and dips. If so, any pink-noise room-equalization system—automatic or otherwise—must have that resolution if the applied corrections are going to be audibly relevant over the full audio bandwidth.

There is a solution to the problem short of rushing out to buy a computerized  $\frac{1}{10}$ -octave equalization system. Learn to use the built-in high-resolution spectrum-analysis system residing between your own ears. The pink-noise test signals and the microphone-fed real-time analyzers can serve as a good starting point to make basic adjustments. But, particularly in the middle frequencies, don't consider the readings sacrosanct. Make your final adjustments by ear. If you are critical enough, the results will be far better than those achieved by depending solely on instrument-based analysis. This is because "playing by ear" takes into account both the speaker's first-arrival sound *and* the various coloration-causing room reflections. Adjustments using only pink noise and a microphone end up correcting just the speakers' long-term room response, usually with a detrimental effect on the speakers' first-arrival sound.

Aside from its use in speaker/room matching, an equalizer can do wonders for the sound of an audio (or audio-video) system by correcting defects in the source material. Although it certainly can't make a silk purse out of a sow's ear, a properly used equalizer can make improvements that will surprise and delight even the most critical listener, in addition to providing an excellent education on the audible frequency range. ■

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**Edited by Ted Libbey  
and Ken Richardson**

## Northern Lights

**F**inland is a nation of trees, lakes, and relatively few people. Its population of 4.5 million is less than that of Austria or Switzerland and only about half that of New York City. Yet the Finns have made an impressive commitment to music and the fine arts. In doing so, they have had to rely mainly on themselves, since their geography and language set them apart from Western Europe—even from the rest of Scandinavia. In their effort to be culturally self-sufficient, they have had to develop their own artists and institutions and establish their own repertory. One might think of that as a handicap, but the Finns have taken advantage of it.

Everywhere in Finland is evidence of the vitality of Finnish musical life. During the week I was there this summer for HIGH FIDELITY's International Record Critics Awards, I saw many encouraging signs, starting with the hole in the ground adjacent to Finlandia Hall that in two years' time will be the \$100 million home of the Finnish National Opera. I visited the newly built cultural center in Järvenpää, which boasts a state-of-the-art record library and an acoustically and architecturally magnificent recital hall; saw the underground museum at Retretti, where the art on display attains a curious sort of harmony with the natural beauty of its lakeside surroundings; and spent three days in the town of Kuhmo in the northeastern forests, which every summer hosts a chamber music festival to rival the world's best.

And, of course, I attended the festival at Savonlinna, where the repertory always includes a work by a contemporary Finnish composer. While I was not especially taken with the music of the dramatic situations in Aulis Sallinen's *The King Goes Forth to France*, I thought the singing was excellent, and I had to admire the sophisticated theatricality of the production. Living composers rarely get this kind of treatment.

But that's one reason Finnish composers continue to write operas. Sallinen has a new work on the way based on the saga of Kullervo from the Finnish national epic, the *Kalevala* (the same tale on which Sibelius based his early *Kullervo* Symphony). Einojuhani Rautavaara is at work on a new opera about Galileo. His recently premiered opera *Thomas* has already been recorded, and it's a good bet that the new one will make it onto record, too.

For the Finns, music has been a means of proclaiming a national identity and bridging the chasm of cultural isolation. It remains a cornerstone of Finnish education and is acknowledged as one of the goals of Finland's domestic policy. For anyone on the outside looking in, this commitment to music seems a shining example of getting your priorities right.

*Ted Libbey*

## Once and Future Hero

**L**et's say you're a present-day civil-rights activist, one who believes unequivocally in the equality of all men and women, who feels that this best of all societies is sadly lagging in its efforts to turn that sentiment into a reality and who also feels that the efforts of an individual can really make a difference. Okay, now say after having initially chosen journalism as the vehicle for your idealism, you're embarking on a second career in another area where you feel the phrase "social justice" can be translated into action: a career in the recording industry. I think, once the laughter has died down, that even your best friends (*especially* your best friends) will tell you that you are, if not dangerously deluded, at least making a big mistake.

This is what struck me most when I read the many tributes to famous record producer (and before that, journalist/critic) John Hammond after his death in July at the age of seventy-six. It wasn't just his gift as a talent scout that impressed me—though he "discovered" (he disparaged the word in a nod to the romantic notion that great talent will inevitably flourish) Billie Holiday, Count Basie, Charlie Christian, George Benson, Bob Dylan, Aretha Franklin, and Bruce Springsteen, among others. Nor was it merely the unusual span of his career—from Billie to Bruce, the eulogists noted. No, it was the simple fact that there was once a time when an idealist could enter the record biz and not only act out his most humane impulses but also have spectacularly successful results. Such a person might find some fulfillment working for a small independent label today, but otherwise, forget it: Change is currently a threat to the main function of the major recording companies, which is to duplicate past success. And yet, change has a way of coming back into style.

Hammond's career flourished, in terms of the number of significant artists being signed and then having an impact on popular culture, during those periods when history and his beliefs were most in sync: roughly, the '30s and the '60s. And just as the '60s were Hammond's last great decade, there are many who believe it was, up to this point, America's (of course, there are also many who believe no such thing). For those of us who look back at that decade not just for nostalgia but for inspiration, and who would rebuke those grinchers who dismiss something like special coverage of the Beatles' CDs as yuppie yearnings for youth rather than the appreciation and explication of the best of our common progressive heritage, Hammond is someone who can give one hope—for now, as an anachronism, and soon, perhaps, as a hero for the '90s.

*Richard C. Walls*

# 20<sup>th</sup> Annual International Record Critics Awards

BY THEODORE W. LIBBEY, JR.

The Finns are killing us with kindness," I wrote to a friend at the end of July, too exhausted to attempt a more elegant summation of the week I had just spent with the jury of the International Record Critics Awards (IRCA). "Their tactics remind me of the way they handled the Red Army during World War II. They are said to have hidden in the trees until the Soviet tanks went by, then dropped down on top of them, yanked open the hatches, and hurled grenades in the crews' faces. It was all very upsetting, and very fatal, to the Russians.

"With us, they've been almost as ruthless. They've done it with food, drink, and deprivation of sleep. They've made us eat salmon, crayfish, fresh strawberries, and smoked reindeer meat; they've toasted us with champagne and aquavit; and just when we were ready to drop, they've taken us out on midnight cruises of the lakes and offered us yet more to eat and drink. By one or two in the morning, we couldn't tell whether the red-orange glow on the horizon was that of dusk . . . or dawn."

It was, of course, both. In Finland in the middle of July, the sun doesn't really set, it bounces. The Finns don't seem to mind this, for they get enough darkness during the winter to acquire the same wild craving for sunlight that Californians have for snow. When summer comes, they just don't go to sleep. But after a week of 20-hour days—with four hours of sleep a "night" thrown in as a concession to my faltering circadian rhythms—I was beginning to wonder if I'd make it through the next day—or was it night? I was having trouble signing my name and almost fell asleep during one of my own speeches ("That long

pause you made was so poetic," one lady told me afterward). People from southerly latitudes—New York, for example—are not made of the same stuff as the Finns.

Well, spending a week in Finland was a difficult job, but somebody had to do it. The jury's task was to select the best classical recordings of 1987. And in truth, that part of the job was difficult, especially when it came to the Serge and Olga Koussevitzky International Record Award (KIRA). The past year has been a very good one for recordings of contemporary orchestral music, and the field of KIRA nominees proved to be as strong as the jury had ever seen. By pure coincidence, works from four Finnish composers were in the running, eloquent testimony to the fine state of contemporary composition in Finland and to the excellent job the Finns are doing of getting this music on record. We were especially impressed by an evocative, tightly written piece entitled *Verblendungen* by thirty-five-year-old Kaija Saariaho, already a significant figure of her generation. Other strong entries came from distinguished Romanian composer Stefan Niculescu, a KIRA perennial, and from French composer and conductor Gilbert

Amy, whose work *Shin'ananim Sha'ananim* turned out to be as intriguing as its title (parodied by jury president Alain Fantapié as *Chine anime, chat anonyme*) suggested.

In any other year, one of these works might have won the prize. This year, though, two other pieces claimed the jury's ten votes. The world-premiere recording of Cristobal Halffter's Cello Concerto No. 2 had too much going for it—starting with the incandescent playing of soloist Mstislav Rostropovich—to be denied. And young English composer George Benjamin's remarkable setting of Wallace Stevens's *The Snowman* for soprano, piccolo trumpet, and chamber orchestra—entitled *A Mind of Winter* and, like the Halffter concerto, recorded under its composer's direction—similarly proved too strong a contender to be overlooked. After reaching a deadlock, the jury quickly voted to split the award—a \$3,000 cash prize jointly underwritten by HIGH FIDELITY and the Musicians Club of New York—between the two composers, as we have done on several occasions in the past. Much to our delight, we were able to contact both Halffter and Benjamin (who at

twenty-seven was the youngest ever to win the prize—for a work, incidentally, that he had written when he was only twenty-one) within a few hours of the decision. We were doubly delighted when both accepted our invitation to come to Helsinki to receive their awards.

The voting for the International Record Critics Awards was complicated by other factors, chief among them the need to audition several recordings that had failed to reach members of the jury before the meeting. Fortunately, our



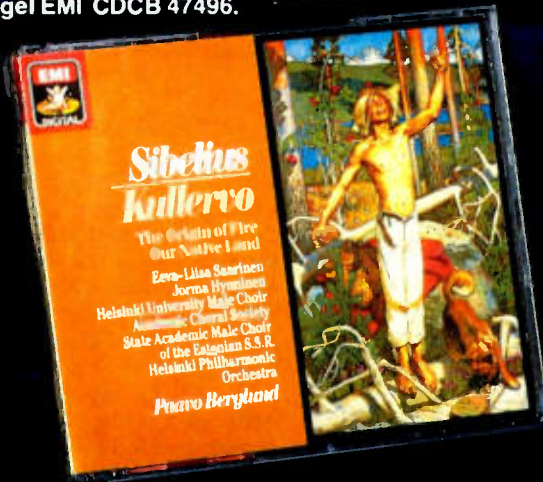
The members of the jury, from left: Theodore W. Libbey, Jr. (United States); Harry Halbreich (Belgium); Bengt Pleijel (Sweden); Pierre Michot (Switzerland); Enzo Restagno (Italy); Ingo Harden (Germany); Edward Greenfield (Great Britain); Alain Fantapié (France). Absent from photo: Alfred Hoffman (Romania) and José Luis Pérez de Arteaga (Spain).

**GLUCK: Iphigénie en Tauride.**  
 Montague, Aler, Allen, Massis;  
 Monteverdi Choir, Lyons  
 Opera Orchestra, Gardiner.  
 Philips 416 148-2.

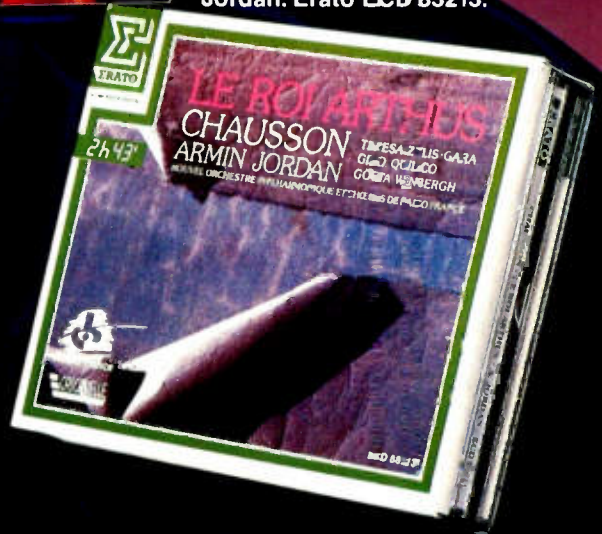


**1987 IRCA Winners**

**SIBELIUS: Kullervo; other works.**  
 Saarlainen, Hynninen; Helsinki  
 University Male Choir, Academic  
 Choral Society, State Academic  
 Male Choir of the Estonian S.S.R.,  
 Helsinki Philharmonic, Berglund.  
 Angel EMI CDCB 47496.



**CHAUSSON: Le Ro Artus.**  
 Zylis-Gara, Quilico Winbergh;  
 Choeurs de Radio France,  
 Nouvel Orchestre Philharmonique,  
 Jordan. Erato ECD 83213.



**1987 KIRA Winners**



**BENJAMIN: A Mind of Winter.**  
 Archibald, Walmsley-Clark;  
 London Sinfonietta, Benjamin.  
 Nimbus 5075.



**HALFFTER: Concerto No. 2  
 for Cello and Orchestra.**  
 Rostropovich; Orchestre  
 National de France, Halffter.  
 Erato ECD 75320.

## OTHER NOMINEES

### IRCA

#### SINGLE DISCS

**BEETHOVEN: Symphonies Nos. 2, 8.** London Classical Players, Norrington. Angel EMI CDC 47698.

**DEBUSSY: Preludes, Bk. II.** Antonioli. Claves CD 50-8607.

**MAGNARD: String Quartet, Op. 16.** Artis Quartet. Accord 149160.

**MARTIN: Missa. PIZZETTI: Messa da Requiem.** Mikaeli Chamber Choir, Eby. Proprius PROP 9965.

**MESSIAEN: Chronochromie; L'Ascension.** Bavarian RSO, Rickenbacher. Schwann VMS 2118.

**MOZART: Flute Concertos.** Costea; Oradea Chamber Orchestra, Acel. Electrecord ST-ECE 02948.

**SCHUMANN: Dichterliebe; Liederkreis.** Bär, Parsons. EMI CDC 747 397.

**SCHUMANN: Violin Sonatas Nos. 1, 2.** Kremer, Argerich. DG 419 235-2.

**SHOSTAKOVICH: Piano Quintet; Seven Romances.** Söderström, Ashkenazy, Fitzwilliam Quartet. London 411 940-2.

**SIBELIUS: Kullervo.** Gothenburg SO, Järvi. BIS CD 313.

**SIBELIUS; TCHAIKOVSKY: Violin Concertos.** Mullova; Boston Symphony,

Ozawa. Philips 416 821-2.

**STENHAMMAR: Serenade, Op. 31.** Gothenburg Symphony, Järvi. BIS CD 310.

**GERMAN BAROQUE CANTATAS.** Le-droit, Ricercar Consort. Ricercar 034008.

**KRONOS QUARTET: Works of Scul-thorpe, Sallinen, Glass, Nancarrow, and Hendrix.** Nonesuch 79111.

#### MULTIDISC SETS

**BACH: St. John Passion.** English Baroque Soloists, Gardiner. DG 419 324-2.

**HANDEL: Athalia.** Kirkby, Sutherland; Academy of Ancient Music, Hogwood. Oiseau Lyre 417 126-2.

**MAHLER: Symphony No. 8.** London Philharmonic Orchestra and Chorus, Tennstedt. Angel EMI CDCB 47625.

**MAHLER: Symphony No. 9.** Concertgebouw, Bernstein. DG 419 208-2.

**MESSIAEN: Turangalila Symphony.** Philharmonia Orchestra, Salonen. CBS 42126.

**VERDI: La Forza del Destino.** Freni, Domingo; Teatro alla Scala, Muti. Angel EMI CDC 47485.

### KIRA

**AMY: Shin'ananim Sha'ananim.** Erato 75264.

**BULLER: Theatre of Memory.** Unicorn-Kanchana 9045.

**HARBISON: Ulysses' Bow.** Nonesuch 79129.

**HEININEN: Symphony No. 3.** Fuga 3047.

**KOKKONEN: Requiem in Memoriam M.K.** Finlandia FAD 353.

**MACHOVER: Spectres Parisiens.** Bridge BCD 9002.

**MATTHEWS: Sonata No. 5 (Landscape).** Unicorn-Kanchana DKP 9053.

**NICHIFOR: Symphony No. 1.** Electrecord ST-ECE 02824.

**NICULESCU: Cantos.** Electrecord ST-CS 0197.

**OLAH: Harmonies IV (Concerto for 23 Instruments).** Electrecord ST-ECE 02941.

**RAUTAVAARA: Thomas.** Ode 704.

**SAARIAHO: Verblendungen.** BIS 307.

## Musicians Club of New York

*The Musicians Club of New York, which administers the Koussevitzky Award of the American International Music Fund and provides the cash prize of \$3,000 jointly with HIGH FIDELITY, was founded in 1911 "to bring about a better understanding and closer fellowship among musicians and lovers of fine music." Comprising professional musicians and amateurs, its goals remain: to cultivate a more lively interest in music, to aid young musicians through sponsorship of concerts and competitions, and to focus attention on the American composer and performer. Its president is Bruce L. Kubert; past presidents have included Walter Damrosch, Norman Dello Joio, and—from 1961 to 1975—Olga Koussevitzky.*

working sessions were at the Sibelius Academy, a remarkable facility with a wonderfully up-to-date Compact Disc library that saved the day. The staff, headed by rector Ellen Urho, proved enormously helpful throughout our deliberations. For the first time in recent memory, the award-winning records were all selected on the first ballot, a tribute not only to the smooth functioning of the jury under the chairmanship of Fantapié but to the excellent working conditions at the Academy.

Three records received the IRCA prize, all of them multidisc sets. I was especially happy to see one primarily Finnish effort in the winner's circle: Sibelius's *Kullervo* Symphony, gloriously recorded by EMI with the Helsinki Philharmonic, soloists Jorma Hynninen and Eeva-Liisa Saarinen, the Helsinki University Male Choir and Academic Choral Society, and the State Academic Male Choir of the Estonian S.S.R., all under the direction of Paavo Berglund. This was one of those dream releases in which all the elements of the recording had come together faultlessly. Berglund, who made the first recording of this fascinating score in 1971 (Sibelius withdrew the piece after its first public performance in 1892 and would not allow it to be performed during his lifetime), knows the music better than anyone, understands its pacing and structure, and exhibits such a remarkable feeling for its color and imagery that one is left completely convinced by his interpretation. The Helsinki Philharmonic outdoes itself for him, and the soloists and chorus turn in brilliant performances, aptly characterized and full of energy.

Energy and characterization are two of the principal strengths of John Eliot Gardiner's conducting as well. Both traits are certainly evident in his recording of Gluck's *Iphigénie en Tauride*, a splendid Philips release (produced in cooperation with the Opéra de Lyon) that stood off strong competition from Christopher Hogwood's recording of Handel's *Athalia* to receive the second of the awards. Some jurors questioned the suitability of Diana Montague for the role of Iphigénie, but there was no question whatsoever regarding the cohesion of the performance or the efficacy of Gardiner's interpretation, which breathes life into the work and reveals Gluck's mastery at every turn.

The IRCA jury has a tradition of championing important but neglected composers whose works fall on the fringe of the standard repertory. We have shown our enthusiasm for these undervalued masters, along with our concern for the enrichment of the classical catalog, by

awarding prizes in recent years to recordings of the Stenhammar quartets, Zemlinsky's opera *The Birthday of the Infanta*, and Magnard's Symphony No. 4. This year, thanks to Erato's continuing efforts to mine the rich ore of French Romanticism, we had another "find" worthy of the IRCA award: Ernest Chausson's magnificent opera *Le Roi Arthur*, a work of extraordinary imagination and sensitivity. Although heavily indebted to Wagner, it is a masterpiece nonetheless, and under the sympathetic direction of Armin Jordan, it casts a spell as potent and mysterious as the wizardry of old Merlin in its sensuous retelling of the story of Arthur, Lancelot, and Guinevere.

My own feelings were that this co-production of Erato and Radio France—featuring Teresa Zylis-Gara, Gino Quilico, and Gösta Winbergh in the lead roles, with the Chorus of Radio France and the Nouvel Orchestre Philharmonique—had been thrown together a bit hastily: Zylis-Gara and Winbergh, the Guinevere and Lancelot, seem to be sight-reading at certain crucial moments when they should be emoting, and the work of the chorus is at times rather undisciplined. Even so, the flashes of genius in Chausson's music shine through, leaving one all the more convinced that his accidental death at the age of 44 was one of music's tragedies.

When these three recordings emerged on the first ballot as the jury's preference, I couldn't help feeling that we had done our job well. As HIGH FIDELITY's classical music editor, I was participating in my fourth IRCA meeting, and I had been through enough debates to welcome this quick arrival at a consensus. While I was still the youngest member of the jury, I was no longer the newest: That distinction went this year to Enzo Restagno of Turin, Italy, music critic of the *Stampa Sera* and a delightful, knowledgeable colleague whose insightful comments made him a valuable member of our panel from the start. HIGH FIDELITY publisher and editorial director William Tynan, attending his second IRCA meeting, arrived in Finland just as the jury completed its deliberations. The first thing he heard was how smoothly the voting had gone; the second was how delightful the overnight cruise from Stockholm to Helsinki had been.

The cruise had been the idea of Swedish juror Bengt Pleijel. Disappointed that a series of unanticipated developments had prevented him from attending last year's IRCA meeting in the U.S., Pleijel had thrown himself into planning the 1987 session down to the last detail. Even before we had finished our 1986 meeting, he had

called to tell us that we had the green light for a gathering the following July in Finland. That had been wonderful news, but Pleijel didn't stop there. He decided to plan a "pre-IRCA" meeting in Stockholm, which would involve the top movers and shakers in Swedish musical life and be capped by an overnight sailing to Helsinki

aboard the Viking Line's MS *Olympia*—one of the largest ferries in the world and a seagoing hotel of the utmost comfort.

Of course, no one wanted to miss that part of the pre-meeting, and Pleijel saw to it that the rest of the Stockholm session was just as exciting. At a delightful luncheon hosted by Pleijel and his wife Odile

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in their Stockholm apartment, we had an opportunity to meet with a number of leaders in the Swedish music industry, including Henrik Karlsson (Swedish Academy of Music), Roland Sandberg (Swedish Music Information Center), Arne Brodd (Rikskonserter and Caprice Records), Anders Franzén (the Swedish Radio Company), Frank Hedman (Bluebell Records), and Jacob Boëthius (Proprius Records). There was also a special guest whose arrival thrilled the assemblage: the great Swedish soprano Elisabeth Söderström, who had made a special trip into Stockholm in order to be with us.

That evening, we attended a performance of Mozart's *La Clemenza di Tito* at the Drottningholm Theater, a beautifully preserved 18th-century opera house on the outskirts of Stockholm. Arnold Östman, the theater's music director, conducted. The next morning, Östman joined us and hosts Sandberg, Brodd, Franzén, and Karlsson for a working meeting and lunch at the Swedish Music Information Center. This proved to be a very stimulating session, and we learned a great deal about the way the Swedish musical establishment functions. After saying goodbye to our excellent hosts, we piled into taxis and headed for the dock and our appointment with *MS Olympia*.

We arrived in Helsinki the next morning refreshed and ready to work. Too bad Pleijel had forgotten to tell the Finns that this was supposed to be a *business* meeting. Almost from the moment we stepped off the *Olympia*, we fell victim to the generous wining and dining that, by week's end, was to produce a state of euphoric exhaustion in nearly all of us. Our hosts throughout were the Finnish Foreign Ministry and the charming Ritva-Liisa Elomaa, the mastermind behind what soon proved to be the most enjoyable and successful meeting in IRCA history. Elomaa, director of cultural affairs for the ministry's press and cultural center, was an old friend—I had known her when I was a critic for *The New York Times* and she was Finland's press counselor in New York. Her boss, Tom Söderman, provided the ministerial muscle to ensure that everything ran smoothly, and he was always on the lookout for a way to test our capacity for new experiences. Among the highlights were day trips to Hvitträsk and Ainola (the homes of architect Eliel Saarinen and composer Jean Sibelius, respectively), both in the wooded environs of Helsinki, and a two-day excursion to the town of Savonlinna in the heart of the idyllic Savolaks region in eastern Finland, where operas are performed nightly in the 13th-century for-

trous of Olavinlinna.

The fun began the second night in Helsinki with a boat trip from the harbor to the fortress island of Suomenlinna. We had passed Suomenlinna on our way into Helsinki aboard the *Olympia*—it guards a 60-meter entrance channel, which makes for a tricky passage if your ship has a beam of 30 meters. Standing on the ramparts, we could see why Helsinki had never been taken by sea. Not willing to let the fortress fall into disrepair, the Finns had converted its main hall into a restaurant, the Walhalla; there, surrounded by massive stone walls, we sat down with our new Finnish friends for a splendid dinner. Among the evening's guests were composer Einonjuhani Rautavaara, music publisher Roger Lindberg, and Finnish IRCA nominator Jukka Isopuro.

The next day, having completed our deliberations, we were in the best of moods for our visit to Hvitträsk. Saarinen's blending of art deco and the rough style of the Finnish countryside, his inventive use of native materials, and his remarkable fantasy had an instant appeal. Once again, the Finns had found an unexpected setting for a restaurant. Dinner at the Restaurant Hvitträsk, with its windows open to the trees, was a fitting reward for the morning's work. The evening was capped by a stroll down to the lake to watch the sunset—an absolutely magical moment.

Our excursion the next morning to Ainola—where Maire Pulkinen, director of the Ainola Museum, served as our guide—was one of the most eagerly anticipated events on our schedule. To set foot in the home of Sibelius, to breathe the air he breathed and to go out and walk among his trees, was a thrilling experience, one that provided me with some valuable insights, both into Sibelius's character and his music. A few minutes later, we had a chance to meet with one of Sibelius's most distinguished successors, composer Joonas Kokkonen.

Back in Helsinki that evening, the members of the jury were guests of honor at a buffet dinner hosted by Jaakko Iloniemi, general manager of the Union Bank of Finland. Among the other guests at the dinner were composer Aulis Sallinen and soprano Ritva Auvinen.

The next morning, the jury headed for Savonlinna. While the others had a 40-minute flight, Pleijel and I took a six-hour train ride through the heart of eastern Finland, arriving just in time to join our colleagues on an outing to the art center at Retretti. Here, at an underground concert hall that had been blasted out of solid rock, we heard Finnish baritone Tom

Krause and accompanist Martin Katz in a lieder recital capped by three absolutely gorgeous encores, including two songs by Sibelius. That evening, we were treated to dinner at the Olavinlinna fortress, followed by a performance of *Aida*. After the opera, Söderman (who was quickly becoming my favorite Finn) sprang a surprise on us: It was July 22, the crayfish season had opened the day before, and we were all going to learn why crayfish are such a delicacy.

One of the interesting things about Savonlinna is that the festival's chorus master is also a boat skipper; at 11 the next morning—or, rather, the *same* morning—he took us across the lake aboard the festival's steamer, the *Sölve*. Joining us was a special guest, musicologist Erik Tawaststjerna, author of the definitive biography of Sibelius. Lunch was at the Restaurant Rauhanlinna, once the summer home of a Russian general. From there, we were taken by bus to Kerimäki, where the world's largest wooden church is located, and then on to Savonlinna. The evening's opera was Sallinen's *The King Goes Forth to France*, a remarkably effective piece of theater that occasionally has difficulty skirting musical banality. After that, it was back onto the *Sölve* for a midnight cruise on the lake.

All that remained was to return to Helsinki and award the prizes. We were very happy to find both Halffter and Benjamin waiting for us when we got back to the Intercontinental Hotel, and to learn that Jorma Hynninen (who is also the director of the Finnish National Opera) had cut short a vacation in order to accept the award for *Kullervo*. Finland's Minister of Culture, Anna-Liisa Piihari, delivered a brief congratulatory address and presented the awards. Jury chairman Fantapié read cables from John Eliot Gardiner and Armin Jordan; Harry Halbreich said a few words about Halffter's Cello Concerto No. 2, and I a few about Benjamin's *A Mind of Winter*. Reports of the awards were carried that night on all three Finnish television networks.

A formal dinner following the awards ceremony was held at Köningstedt, a government mansion on the outskirts of Helsinki that is used as a residence for visiting dignitaries. Those attending included the ambassadors of Spain, England, Belgium, Italy, and France and consular officers from the embassies of Sweden, Germany, and the United States. Söderman, paying tribute to the IRCA jury, praised our professionalism and international spirit and called us "guests of the year." Coming from a host of his caliber, it was a high compliment indeed. ■

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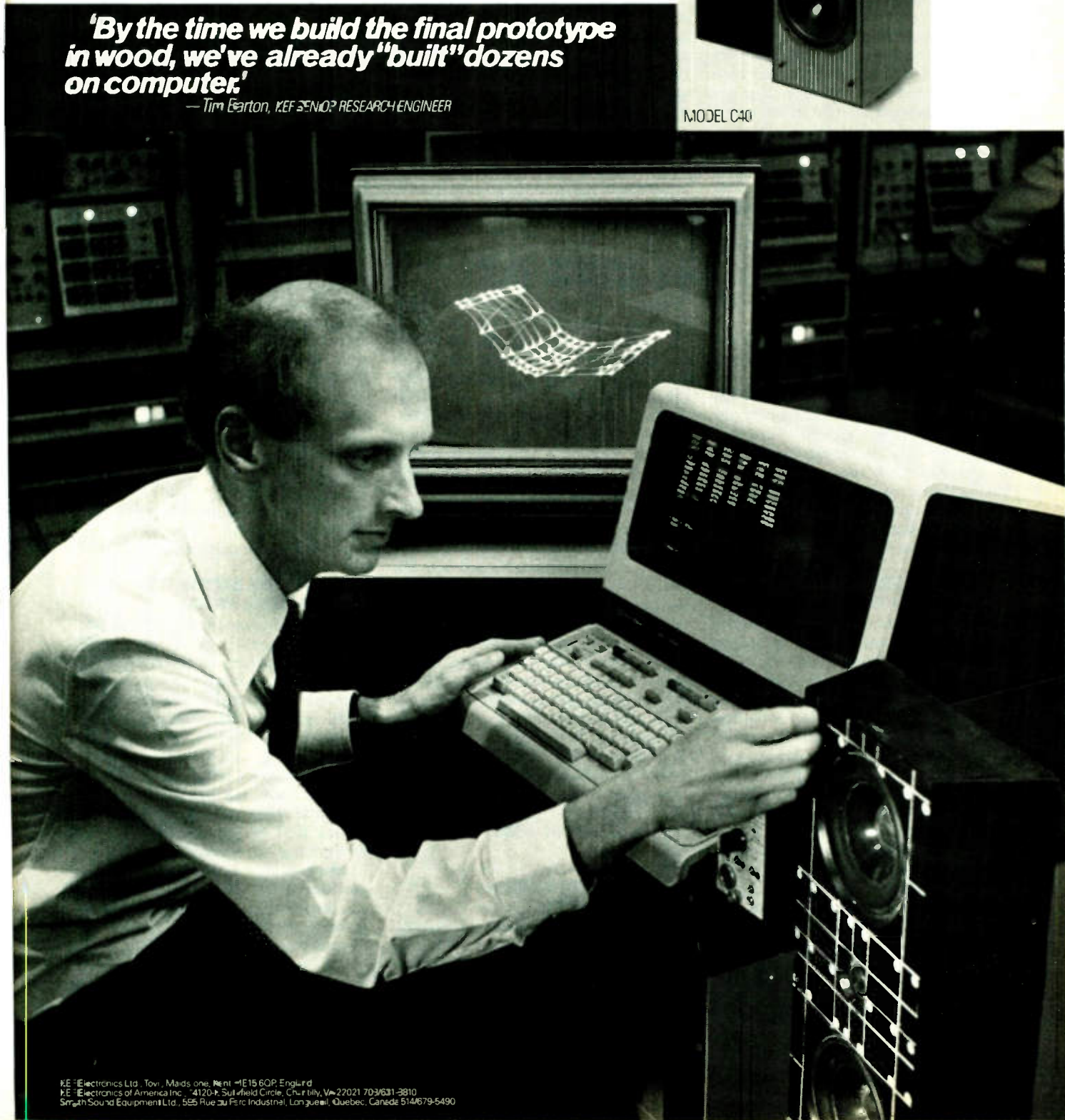
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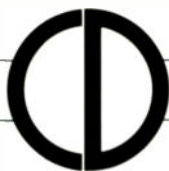
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**TCHAIKOVSKY, MENDELSSOHN  
CONCERTOS: HEIFETZ**

This latest reissue in Red Seal's Jascha Heifetz series offers the most electrifyingly dramatic performances of these masterpieces ever recorded. In the Tchaikovsky concerto, Heifetz and Fritz Reiner both collaborate and vie with one another in a performance unequalled for its drive, drama, and lack of sentimentality. It is a performance for the ages, as is the version of the Mendelssohn concerto, where Heifetz and Charles Munch convey the impression that neither of them took an interpretive or technical breath from the first note to the triumphant ending. The CD concludes with delicious accounts of Tchaikovsky's *Sérénade mélancolique* and the Waltz from the Serenade for Strings in C, Opus 48.

This fabulous reissue is certainly not recommended to those with high blood pressure or to anyone with prim or conventional tastes. For such individuals, the recent CBS reissue of the Mendelssohn and Tchaikovsky concertos, featuring Isaac Stern and Eugene Ormandy, is the one to have. Only those who think the standard classics should be exciting and provide unsuspected thrills should investigate the Heifetz. Playing time: 64:24. (RCA Red Seal 5933-2.) *T.L.D.*

**HAYDN, MOZART, SCHUBERT  
SYMPHONIES: LUBBOCK**

Haydn's Symphonies Nos. 44 (*Trauer*) and 49 (*La Passione*), Mozart's Symphony No. 40, and Schubert's Symphony No. 5 are among the crown jewels of the Classical symphonic repertory. Since there is no lack of recordings on CD of either the Mozart or the Schubert, any new entry must be a performance of some individuality. Unfortunately, the Orchestra of St. John's, Smith Square, offers undistinguished readings that possess little character. The small chamber orchestra plays idiomatically and is never unmusical, but it is plagued by persistent lapses in intonation and ensemble. The players fare far better in the two Haydn symphonies, producing interpretations of greater individuality and accuracy. Perhaps they felt less burdened by the weight of existing recordings; indeed, the only pairing of these two Haydn symphonies on CD, other than on the present disc, is the vivid, austere peri-

od-instrument effort from Ton Koopman on Erato ECD 88173.

But at whom are these midprice CDs aimed? For a few dollars more, the consumer can purchase Mozart and Schubert recordings of real distinction. And although I've heard of cost-cutting measures, I doubt whether many music lovers will be willing to part with the opening measure of Schubert's Fifth, which was inexplicably removed in the mastering process. Playing time for Haydn (MCA Classics MCAD 5846): 50:02; playing time for Mozart/Schubert (MCA Classics MCAD 5845): 57:21. *K.R.S.*

**BRUCH CONCERTO, FANTASY:  
LIN, SLATKIN, CHICAGO**

Whatever one may think of the intrinsic merits of Max Bruch's Violin Concerto No. 1 (1866) and *Scottish Fantasy* (1880), one cannot dispute that a fiery, impetuous personality is needed to perform them. Jascha Heifetz had such a personality; Cho-Liang Lin does not. It's not that his playing is imprecise; on the contrary, his flawless technique enables him to negotiate even the most virtuosic passages with athletic grace.

What Lin lacks is a certain rhapsodic, romantic fervor that would turn these technically superlative performances into a truly arresting musical experience. His tone is lean and wiry, and though he plays with considerable energy, he creates little passion. He is not assisted by the recording's balance, which allows the distant-sounding violin to be overshadowed by the orchestra. Still, it is frustrating to find this promising young violinist with so little to say musically and so little to communicate expressively. Perhaps these works mean little to him; if that is the case, his attitude seems to be shared by Leonard Slatkin, who coaxes energetic but empty readings from the Chicago Symphony Orchestra. Playing time: 53:01. (CBS Masterworks MK 42315.) *K.R.S.*

**HOROWITZ RECITALS  
AND REISSUES**

*Horowitz In Moscow*, containing works by Scarlatti, Mozart, Schumann, Chopin, Rachmaninoff, Scriabin, Liszt, and Moszkowski (Deutsche Grammophon 419 499-2; playing time: 60:52), is a much-heralded recital disc that has quickly risen to the top

of the charts. But it presents little more than the kind of pianism that was heard on the first of Vladimir Horowitz's Deutsche Grammophon recordings—playing that may occasionally echo the glories of days past but is not much more than a series of mannerisms. Throughout the recording, one is distressed by the inescapable evidence that this great artist is playing *with* the music rather than playing it directly; moreover, a comparison between Horowitz's performance of the Rachmaninoff Polka on this disc and the composer's own recorded account offers conclusive evidence of the gaps that are now to be heard in Horowitz's technique.

On the other hand, *Horowitz: The Studio Recordings, 1985* (Deutsche Grammophon 419-217-2; playing time: 64:27) reveals playing that is less mannered and more straightforward. In fact, the major work, Schumann's *Kreisleriana*, compares favorably with the pianist's earlier effort for CBS. This recital disc can honestly be recommended, particularly to Horowitz's many fans. Still more appealing is a recent CBS reissue of Horowitz encores (CBS Masterworks MK 42305; playing time: 71:55), an outstanding transfer that presents an exceedingly generous selection of pieces, in which Horowitz glows in his autumnal prime. Need one say more? *T.L.D.*

**KATHLEEN BATTLE:  
SALZBURG RECITAL**

This recording, taped at the 1984 Salzburg Festival, captures the gifted young recitalist at the top of her engaging form. Kathleen Battle's small soprano is beautifully focused and projected throughout the program, which is an attractive mixed bag of art songs (by Mozart, Mendelssohn, Strauss, and Fauré), Baroque chestnuts, and arrangements of spirituals. Particularly noteworthy is a lively performance of "Witness" that is every bit as good as the classic 1927 Victor recording by Paul Robeson and Lawrence Brown.

James Levine's piano playing is neat and orderly but rarely memorable. (One also suspects that he is at least partly responsible for such occasional lapses from musical grace as an overly speedy "Mandoline.") But what on earth could the critic who recently dismissed Battle's lovely voice as "a vocal fragment" possibly have had in mind beyond contriving such a



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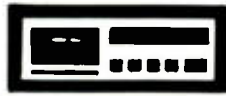
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trenchantly catty phrase? Artists like Battle should be cherished, and not dismissed with a vulgar sneer. Playing time: 51:17. (Deutsche Grammophon 415 361-2.) T.T.

 **ELGAR WORKS:  
LLOYD WEBBER, MENUHIN**

This pairing of the *Enigma Variations* and the Cello Concerto, Opus 85, is the ideal Elgar coupling, and Julian Lloyd Webber proves a noble and moving soloist in the latter work. The weak link in the chain is Yehudi Menuhin, whose uncertain conducting leads to noticeable ensemble difficulties in the second movement of the Concerto and in the tricky finale of the *Enigma Variations*. But Menuhin elicits eloquent playing from the Royal Philharmonic Orchestra elsewhere in both works, and the digital recording is warm and spacious. Each variation in the *Enigma Variations* is banded separately. Michael Kennedy's notes are short but informative. Playing time: 60:41. (Philips 416 354-2.)

T.T.

 **ELGAR, VAUGHAN WILLIAMS,  
MOZART: ORPHEUS**

Deutsche Grammophon has brought out two new releases from the conductorless Orpheus Chamber Orchestra. One features the strings of the ensemble in a program of music by Elgar and Vaughan Williams, while the other is a second installment of what appears to be an integral set of Mozart's complete serenades and divertimentos.

The Elgar/Vaughan Williams coupling consists of the former's *Introduction and Allegro*, Serenade in E minor, and *Elektra*, and the latter's *Fantasia on "Greensleeves"* and *Fantasia on a Theme by Thomas Tallis*. It is beautifully and sensitively played, though the *Introduction and Allegro* and *Fantasia on a Theme by Thomas Tallis* need the weight of a larger string group. Playing time: 48:47. (Deutsche Grammophon 419 191-2.)

The Mozart disc (with *Eine kleine Nachtmusik* and the Divertimentos in E flat, K. 252, and D, K. 131), is pure pleasure, barring a few slightly fussy-sounding phrase endings in the first movement of *Eine kleine Nachtmusik*. One almost suspects that these odd touches are thrown in solely to show how comfortable Orpheus is without a conductor. Good studioliike digital sound from Steven Paul. Playing time: 62:43. (Deutsche Grammophon 419 192-2.)

T.T.

 **FALLA WORKS:  
CINCINNATI, LÓPEZ-COBOS**

Manuel de Falla's 1919 ballet *The Three-Cornered Hat* has already fared well on Compact Disc, and Telarc's new recording of the work, featuring the Cincinnati

Symphony Orchestra under Jesús López-Cobos, is as fine as any issued so far. López-Cobos leads a pulsating, sumptuous performance—perhaps not with quite the devil-may-care excitement of Enrique Batiz's for Varèse Sarabande, but one that points up the work's balletic origins even better. Moreover, Telarc's warm, spacious recording makes for somewhat easier listening than the often larger-than-life and occasionally gimmicky Varèse Sarabande sonics. Soprano Florence Quivar sings the brief incidental solos idiomatically.

The most important thing about this disc, however, is that it contains the first CD recording (in fact, the first stereo recording) of Falla's *Homenajes*. This work has suffered from neglect, since its four sections (composed between 1903 and 1920 and dedicated to conductor E. F. Arbós and to composers Claude Debussy, Paul Dukas, and Felipe Pedrell) are wildly different in playing time, character, and orchestral texture. López-Cobos, though, ties them together quite nicely: He's especially successful in the concluding (and rambling) *Pedrelliana*, and he makes a better case for *Homenajes* than any other interpreter I've heard. A forceful rendition of the Interlude and Dance from *La Vida Breve* completes this disc, which is splendidly recorded throughout. Playing time: 60:15. (Telarc CD 80149.)

B.Z.

 **FAURÉ REQUIEM:  
ATLANTA, SHAW**

Gabriel Fauré's Requiem (1893) and its later counterpart by Maurice Duruflé (1943) have more in common than the fact that they were both written by Frenchmen. The two works share the same qualities of serenity, comfort, and conciliation (neither contains a *Dies Irae* movement), and both were originally scored for chamber forces, although the later, orchestral versions the composers wrote are far from being elaborately scored. Coupling them on a CD is most appropriate, especially since the length of the two works together would probably preclude their fitting on an LP without a serious constriction of the sonic quality. Telarc has recorded them in superb performances featuring the Atlanta Symphony Orchestra and Chorus. Robert Shaw leads spacious, affectionate renditions of both, and when power is called for (as in the climaxes of each *Sanctus*), he knows how to provide it. There is nothing to be faulted in the orchestral playing or choral singing, and the solos in the Fauré are beautifully handled by soprano Judith Blegen and bass James Morris. The recorded sound is open and clear, with the solid registration of the low organ tones being especially gratifying. Unequivocally splendid in every respect. Playing time: 74:23. (Telarc CD 80135.)

B.Z.

 **COPLAND WORKS:  
CINCINNATI POPS, KUNZEL**

This is an appealing collection of familiar and offbeat compositions by Aaron Copland. The shorter works are *John Henry: A Railroad Ballad for Orchestra*; an orchestral arrangement of "The Promise of Living" from the opera *The Tender Land*; the *Jubilee Variation*; the *Ceremonial Fanfare*; and *An Outdoor Overture*. These selections all show Copland in his best "optimistic" mood, and the performances by the Cincinnati Pops Orchestra and conductor Erich Kunzel have optimum vigor and affection. Sherrill Milnes, who is in very good voice, is on hand to sing Book I of *Old American Songs*, but the disc's greatest appeal resides in an exceptionally broad rendition of the *Lincoln Portrait*, with none other than Katharine Hepburn as narrator. To my knowledge, this is the first time a woman has recorded the work (though I've heard Marian Anderson and Eartha Kitt perform it live), and Hepburn does an outstanding job. Granted, her voice is quite tremulous these days, but somehow that helps give her recitation an emotionally charged dedication. I've never heard any speaker make Lincoln's words more inspiring. A truly outstanding collection of Americana, although Telarc could have offered us more. Playing time: 51:39. (Telarc CD 80117.)

B.Z.

 **STRAVINSKY WORKS:  
NEW YORK, BOULEZ**

The exotic 21-minute symphonic poem, *The Song of the Nightingale*, adapted from Stravinsky's opera *Le Rossignol*, is masterfully orchestrated with exquisite percussion tintinnabulation, sliding brass, and delicate exotic effects. The score is best known in Reiner's excellent Chicago Symphony version on RCA (CD 5733), but Boulez is equally persuasive, and CBS's mid-'70s analog recording, released here for the first time, hasn't a touch of the overloading that mars the RCA.

Boulez's *Firebird*—wonderfully played by the New York Philharmonic—is a majestic affair full of mystery and magic. Boulez directs the original 1910 version, as do Colin Davis, Antal Dorati, and Charles Dutoit in their recordings of the work; it is unfortunate that none of them adds the trombone glissando in the "Infernal Dance," an effect Stravinsky introduced in later versions. The Davis/Concertgebouw recording of *Firebird* on Philips remains my favorite, although it has no coupling and no indexing whatsoever. The new CBS version has 25 cues for *Firebird* and four for *The Song of the Nightingale*. Like *Nightingale*, *Firebird* was recorded in the mid-'70s and sounds better than many all-digital releases. Playing time: 64:20. (CBS MK 42396.)

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# VAN CLIBURN'S DI

## **TCHAIKOVSKY:**

**Concerto No. 1 in B flat minor, Op. 23.\***

## **RACHMANINOFF:**

**Concerto No. 2 in C minor, Op. 18.**

① Cliburn; RCA Symphony Orchestra\*, Kondrashin\*; Chicago Symphony, Reiner. John Pfeiffer and Richard Mohr, prods. RCA Red Seal 5912-2.

## **RACHMANINOFF:**

**Concerto No. 3, in D minor, Op. 30.\***

## **PROKOFIEV:**

**Concerto No. 3, in C, Op. 26.**

① Cliburn; Symphony of the Air\*, Kondrashin\*; Chicago Symphony, Hendl. John Pfeiffer and Richard Mohr, prods. RCA Red Seal 6209-2.

In Van Cliburn, this country produced one of the most phenomenally gifted pianists in history. Now, nearly three years after the announcement of its "imminent" appearance, RCA has rereleased on Compact Disc his most popular recording: that of "the" Tchaikovsky concerto, which in its LP release has been one of the greatest classical sellers in the history of the phonograph. On its heels, the label has issued a second CD containing his recordings of the Rachmaninoff Third Concerto and Prokofiev Third Concerto.

Let me confess to a certain inability to write about Van Cliburn objectively. In early 1958, on special assignment from Time-Life International, I flew to Moscow to cover the four-week inaugural International Tchaikovsky Competition. Cliburn, at the time a gangling twenty-three-year-old from Kilgore, Texas, won first prize in the piano competition and became a worldwide front-page sensation. *Time* immediately scheduled a cover story to coincide with the May 19 Carnegie Hall duplication of his triumphant Moscow orchestral concert, and I was told to get my Soviet visa extended in order to spend three additional weeks in close contact with Cliburn in Moscow, Leningrad, and Riga. I thus heard him four times in recital and four times as soloist in this Tchaikovsky concerto, and in the Rachmaninoff Third as well.

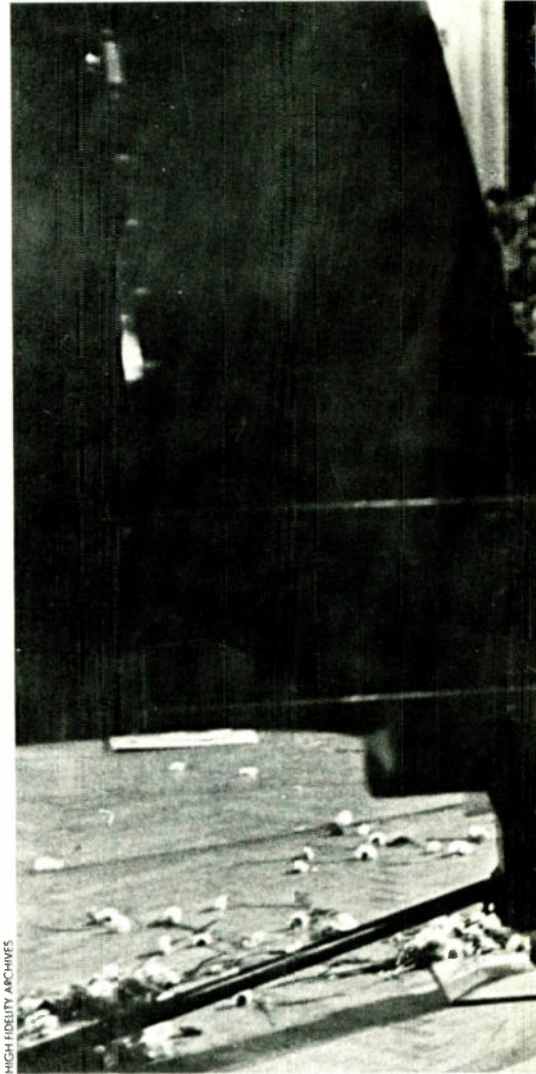
The Soviet people inundated Cliburn with an exuberant outpouring of loving, jubilant adulation such as few artists, even the greatest, ever experience. As he said in fractured Russian when Dmitri Shostakovich presented him with the competition's massive gold medal, the love he got from those wholehearted audiences inspired him. This performance of the Tchaikovsky dates from that halcyon period 29 years ago.

In conversation with me at that time,

Sviatoslav Richter called Cliburn "a genius—a word I do not use lightly about performers." Aram Khachaturian, even more carried away, found him "better than Rachmaninoff. You find a virtuoso like this only once or twice in a century." Yet another juror, the Marquis de Gontaut-Biron (director of Paris's Marguerite Long Competition), said he had "almost the technique of Horowitz during his prime, and he has everything Horowitz lacked."

As for the rich, spacious performance of the Rachmaninoff Second included on the first of these CDs, my own opinion of Cliburn's playing—here and in general—coincides exactly with what Winthrop Sargeant wrote in *The New Yorker* after that welcome-home concert in Carnegie Hall on May 19, 1958. Sargeant wrote that Cliburn "proved to be a pianist in the grand manner. In saying this, I am referring to a special, rare, and profoundly impressive kind of piano playing . . . He is a living representative of the great 19th- and early 20th-century school of virtuosity, which included such formidable artists as Sergei Rachmaninoff, Josef Lhévinne, and Josef Hofmann, and it is indeed heartening to find the traditions of this school flourishing in one so young. Mr. Cliburn has plenty of technique. His octave passages are electrifying; he can produce a tremendous volume and variety of tone, and he could, if desired, make a magnificent impression as a master of the showier side of his art. But the most arresting thing about his playing is his mastery of other things—the tasteful and assured use of rubato in the style of the distinguished virtuosos of the past, the delicacy in executing pianissimos, the sure sense of musical phraseology, the feeling for restraint as well as climax, and all the remaining elements of musical sensitivity that go to make up a superb keyboard artist."

I heard Cliburn play Rachmaninoff's Third Concerto at least half a dozen times, and I expect to go to my grave unshakably convinced that he played it better than any other pianist I ever heard do it, including its creator. RCA long ago released on LP the live version Cliburn gave at Carnegie Hall in 1958, but the sonic refurbishment achieved in the remastering for CD makes the sweep and power of the performance seem even more miraculous. Bear in mind the circumstances of the recording: Cliburn was playing what *Time* in its advance cover story called "the toughest concert of his life"—after two unremitting months of turbulence and stress that would have



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turned even the most seasoned veteran into hamburger. Here is that *live* performance, but with everything right in place, as near to total perfection as can be achieved. In addition, Cliburn plays it uncut and with the longer, more difficult of the cadenzas—more, incidentally, than one can say for Horowitz or even Rachmaninoff himself.

During that 1958 Soviet tour, in a discussion of Sergei Prokofiev's recording of his own Third Concerto, Cliburn told me with finality: "I'm sorry, but it's just not Russian." His own performance of the work, at any rate, incorporates the same expansiveness, the same grand manner, the same rapturous exaltation, that make his accounts of the Tchaikovsky and the

# STURBING LEGACY



VAN CLIBURN ELICITED LOVING ADMIRATION FROM AUDIENCES DURING HIS 1958 RUSSIAN TOUR.

Rachmaninoff concertos so imposing.

I wish these reminiscences of Van Cliburn could have had a much happier personal ending. James Joyce, from exile, reviled his native Ireland as "the old sow that eats her farrow." Cliburn left New York for Moscow unable to pay his telephone bill. The day after he won his prize, the desk in his Moscow hotel room had a towering stack of cablegrams on it, with impresarios and recording firms everywhere fighting ferociously to glom on to him. He returned to a Broadway ticker-tape parade and the same concert fee lavished upon the venerable Artur Schnabel; shortly after that, he began getting 60 percent of the box-office gross. RCA outbid Columbia by giving him what *Time*

called "one of the fattest contracts ever offered a young artist, with built-in guarantees for 'long-term security.' "

Another of the Moscow jurors, Arthur Bliss, had presciently cautioned: "If, like fine wine, he can mature slowly and somewhat secretly, he'll be a great artist. But if he's affected by the immense publicity he's gained, he'll be like many other prizewinners: He'll have a brief period of glory and be spoiled. I hope his friends will be wise enough to say, 'Now you mature.' "

As we all know, Cliburn eventually got crushed by irresistible forces that simply overwhelmed him. Shortsighted managers limited his sensational repertoire to only a few flashy works instead of patiently, lovingly nurturing and developing his phe-

nomenal gifts. Cliburn's life eventually turned out to be considerably less happy and fulfilled than the one he so richly deserved.

I treasure the score or so of Cliburn discs in my LP collection as unique and irreplaceable. Anyone with a sense of documentary musical history will snap up any that can still be found, for Van Cliburn will always occupy a unique niche in the musical pantheon not only of this country, but of the world. Separately or together, these two superlative CDs take their place immediately as hallmarks of 20th-century pianism. Playing time for Tchaikovsky First/Rachmaninoff Second: 68:43; playing time for Rachmaninoff Third/Prokofiev Third: 73:09.

Paul Moor

**BEETHOVEN:**

**Symphony No. 9 in D minor, Op. 125.**

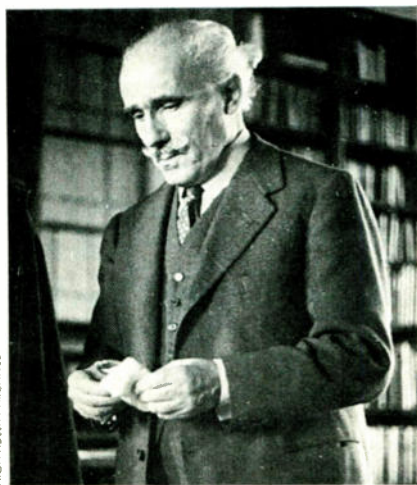
● Robert Shaw Chorale, NBC Symphony Orchestra, Toscanini. Arthur Fierro, prod. RCA Red Seal 5936-2 (A).

**BEETHOVEN:**

**Symphony No. 9 in D minor, Op. 125; Symphony No. 8 in F major, Op. 93.**

● Tallis Chamber Choir, English Chamber Orchestra, Thomas. Steven Epstein, prod. CBS M2K 39711 (2, D).

Arturo Toscanini's interpretation of the Ninth Symphony changed over the years. In 1938 (in the performance preserved by the Arturo Toscanini Recordings Association on ATRA 3007), points of emphasis were underscored by accents, ritards, or broad changes of tempo; by 1952, though, these moments were marked more lightly. The result, as heard on this new Red Seal CD, is a far more exquisite and subtle inflection of the musical line in the third movement and greater continuity in the expansive variations of the fourth movement. The second movement remains almost unchanged.



Toscanini: His views on the Ninth changed.

However, the first movement of the 1952 performance is diminished. Whatever meaning one extracts from this opening movement, it derives from the changing harmonic contexts in which the declamatory, rhetorical figures that constitute the movement's thematic material are recombined and developed. In his 1952 interpretation of this movement, Toscanini's faster-than-usual tempo and his hurrying over transitions made the musical argument harder to follow. The movement as a whole comes across with tre-

mendous dramatic force, but the deliberation and clarity with which it unfolds in the 1938 performance is gone.

With this one reservation, Toscanini's 1952 performance of the Ninth Symphony is among the most beautiful and sensitive on record. Red Seal's faithful remastering of the original tapes for this Compact Disc reissue reveals it to be even more appealing than one had thought. The LPs were sharp in pitch and sounded hectic, but these CDs reveal how lyrical Toscanini's conception was. The sound from Carnegie Hall is not as resonant as on other discs in Red Seal's Toscanini reissue series, but the clarity is breathtaking, and reequalization has resulted in a richer, darker tone than on any of the original LPs. The soloists are good, and the Robert Shaw Chorale is simply astounding. It would have been useful to have the principal sections of each movement indexed, but the exceptionally informative liner notes by Mortimer Frank are a bonus.

In contrast, the long-awaited recording of the Ninth from Michael Tilson Thomas, one of today's great conductors, is disappointing. The orchestra and the voices are well reproduced, but careless editing makes joins audible. This is noticeable as well in the recording of the Eighth Symphony, contained in the same set.

As for the performances of both symphonies, Thomas's decision to use a small orchestra is as regrettable as the earlier recordings in his Beethoven series had led one to expect. His wanting to hear how Beethoven's symphonies sounded with a chamber orchestra was reasonable enough: He rightly guessed that it would suggest solutions to problems of phrasing and balance that would be valuable when performing with large orchestras. However, there was nothing in the sound of these experimental small-orchestra performances that justified preserving them on CDs. Particularly in the larger Beethoven symphonies (Nos. 5, 7, and 9), the straining of the reduced string sections to match the winds and brass at climaxes have produced what a reviewer for *The New York Times* characterized correctly (if approvingly) as a "fibrous" sound that is ugly. (The records of the Fourth and the Sixth were less disagreeable only because the recording, at least on LP, camouflaged the players' deficiency.)

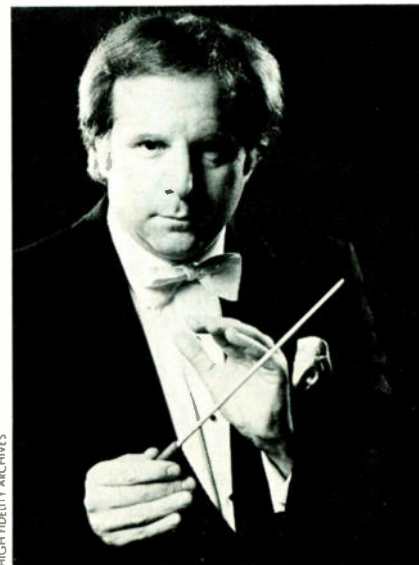
Moreover, while Thomas's interpretations of the Fourth, Fifth, and Sixth Symphonies were admirable despite the or-

chestra, those of the Eighth and Ninth—and the First and Second a year ago—are less so. They bring to mind B. H. Haggin's description of the way scholar Donald Francis Tovey played Beethoven's sonatas. In recital, Haggin said, Tovey did not apply his insightful analyses to creating a musical performance; he played like a teacher making points to educate the audience. In the same way, Thomas's energetic but cold performances call attention away from the musical progression and focus it instead on all that he has learned about balances—as in the passage at the end of the first-movement development, where the rising tremolo figures in the cellos and violas are needlessly prominent. Thomas's Eighth and Ninth symphonies are less satisfactory overall than ones where the parts are merely audible and not magnified. Playing times: 92:24. *Thomas Hathaway*

**BERNSTEIN:**

**Orchestral Music.**

● Liberman, Kittrell; Saint Louis Symphony, Slatkin. Marc Aubort and Joanna Nickrenz, prods. Angel EMI CDC 47522-2 (D).



Slatkin: doing right by Bernstein

Leonard Slatkin and the Saint Louis Symphony Orchestra continue their American music series on Angel with a Compact Disc devoted to four of Leonard Bernstein's best and most durable theater scores: *Facsimile*, *Fancy Free*, the *On the Town* dance episodes, and the overture to *Candide*. The logical comparison is with Bernstein's own recordings, and here Slat-

kin fares surprisingly well. Bernstein and the New York Philharmonic performed these scores with immense panache and an authentically jazzy, rhythmic feel. Slatkin's readings are less aggressive and not quite as breezy, but are far more polished and very nearly as satisfying in their own way. (By contrast, Bernstein's Deutsche Grammophon remakes of *Fancy Free* and the *On the Town* dance segments with the Israel Philharmonic don't even come close to the mark.)

Slatkin performs *Fancy Free* with its original prelude, a jukebox recording of the song "Big Stuff" by singer Jean Kittrell and a '40s-style piano trio, over which a nostalgic haze of simulated shellac scratch has been dubbed. The effect is clever, the singing exactly right. Richard Freed has contributed excellent liner notes, Marc Aubort and Joanna Nickrenz have done a superb job of digital production, and each movement is separately banded. The real star of this recording is Leonard Bernstein, of course, but the playing of the Saint Louis Symphony runs a close second. Leonard Slatkin must be some kind of orchestra trainer.

Terry Teachout

**CHAUSSON:  
Le Roi Arthus.**

Zylis-Gara, Quilico, Winbergh, Massis, Friedmann, Cachemaille; Choeurs de Radio France and Nouvel Orchestre Philharmonique, Jordan. Guy Chesnois, prod. Erato ECD 88213 (3). © NUM 75271 (3). MCE 75271 (3).

In the span of his brief life, Ernest Chausson planned ten operas, only two of which were completed: *Hélène*, in 1884, and *Le Roi Arthus* (King Arthur), composed to Chausson's own libretto in 1887-8. He worked harder on this score than on any other, and although he produced such masterpieces as the Symphony in B flat and the *Poème de l'Amour et de la mer* during the same period, it was to *Le Roi Arthus* that he was most deeply committed. Unfortunately, he was destined never to hear it—the opera didn't receive its premiere until 1903, four years after Chausson was killed in a freak bicycle accident.

Throughout most of his career, Chausson was deeply under the spell of Wagner, so it was natural for him to be drawn to the *Tristan*-esque tale of the romance between Lancelot and Guinevere, Arthur's queen. The story, of course, parallels that of *Tristan* and Isolde, though here the lovers continue to live and the king dies. The music of *Le Roi Arthus* is decisively Wagnerian in its sonorities and in its use of "endless melody" and leitmotif, though one could say the same of works by other French composers of the period, such as Massenet and Lalo; indeed, it is Lalo's *Le Roi d'Ys*

that *Le Roi Arthus* most resembles.

The score of *Le Roi Arthus* is, for the most part, magnificent. The thematic structure is strong; each role is beautifully characterized; the vocal writing, while difficult, is always rewarding; and the orchestration is elaborate yet transparent in the true Wagnerian sense. What keeps the opera from being hailed as an unqualified masterpiece is the libretto, which, though full of poetic imagery, leaves most of the characters strangely unrelated to one another. Moreover, the pivotal character of the archvillain Mordred comes off as shadowy at best, and the love scenes between Lancelot and Guinevere oddly lack the eroticism that Massenet was able to inject into similar episodes in his operas.

That bit of naysaying aside, *Le Roi Arthus* is an imposing score, full of the pageantry the story demands and unfolding occasionally in scenes of tremendous power, such as the Act II encounter between Arthur and the wizard Merlin—a scene to rival that between King Philip and the Grand Inquisitor in Verdi's *Don Carlos*. In addition, Chausson's handling of the chorus is superb, most notably in the opera's glowing finale, when the dying Arthur sails off into the spiritual beyond.

Erato's recording is quite splendid. Armin Jordan's conducting has all the dynamic sweep one could desire, while the orchestral and choral work is beyond reproach. Baritone Gino Quilico sings the frightfully difficult role of Arthur brilliantly, with particularly resplendent top notes. However, he sounds too youthful for the part—perhaps this is one assignment to which his father Louis would have been better suited. Soprano Teresa Zylis-Gara and tenor Gösta Winbergh are con-

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vincing and radiant-voiced as Guinevere and Lancelot; bass René Massis does as well as he can with the fragmentary role of Mordred; and bass-baritone Gilles Cache-maille makes a highly effective Merlin. The singers in the smaller parts (notably Gérard Friedmann as Lancelot's faithful retainer Lyonnell) are uniformly excellent.

Erato's recorded sound on LP is clear and well balanced, though rather flat in perspective in the manner of most French radio broadcasts. The CD edition has notably more depth of field and warmth of tone. In sum, *Le Roi Arthur* is one of the most distinguished recordings of the year.

Bill Zakariassen

**DOHNÁNYI:**

**Serenade in C Major, Op. 10;**  
**Piano Quintet in C Minor, Op. 1.**

♾ Snyder, Cleveland Quartet. Thomas Mowrey, prod. Pro Arte CDD 238 (D).

**DOHNÁNYI:**

**Violin Sonata in C Sharp Minor, Op. 21;**  
**Cello Sonata in B Flat, Op. 8.**

♾ Salaff, Katz, Snyder. Thomas Mowrey, prod. Pro Arte CDD 239 (D).

**DOHNÁNYI:**

**Piano Music.**

♾ Snyder. Thomas Mowrey, prod. Pro Arte CDD 240 (D).

DOHNÁNYI: Concert Etudes, Op. 28, Nos. 1 and 4; Rhapsody in C Major, Op. 11, No. 3; Rurallia Hungarica, Op. 32a, Nos. 2 and 6; Pastorale; Variations on a Hungarian Folk Song, Op. 29. DOHNÁNYI-DELIBES: Waltz from "Coppelia."

Ernst von Dohnányi (1877–1960) was once widely admired as both a virtuoso pianist and a composer. Brahms knew and liked his piano quintet; Sir Donald Francis Tovey devoted a respectful essay to his chamber music; and Boris Goldovsky preferred him to Schnabel as a piano teacher. But Dohnányi stayed in Hungary during World War II and acquired an undeserved reputation as a Nazi collaborator that he never managed to shake. He moved to the United States after the war and ended up teaching at Florida State University. Today, his recordings are out of print and his music forgotten, save for the popular *Variations on a Nursery Tune* and the witty *Serenade in C* for String Trio.

Pianist Barry Snyder and the Cleveland Quartet have undertaken a three-CD survey of Dohnányi's music for Pro Arte. The influence of Brahms is very strong in these surprisingly attractive works, which include the *Serenade in C*, the *C minor Piano Quintet*, a pair of sonatas for violin and cello, and a group of piano solos. But the piquant sound of Hungarian folk music is never far away, either, and the level of craftsmanship is extraordinarily high throughout. Beautifully recorded by producer Thomas Mowrey and accompanied by David Eagle's excellent program notes,

these outstanding performances restore the music of a minor but considerable talent to the catalog. Playing time for CDD 238: 47:30; playing time for CDD 239: 41:25; playing time for CDD 240: 45:27.

Terry Teachout

**DURUFLÉ:**

**Choral Music.**

♾ Murray, Allen, Trotter; Corydon Singers, English Chamber Orchestra, Best. Mark Brown, prod. Hyperion CDA 66191 (D).

**BRUCKNER:**

**Choral Music.**

♾ Corydon Singers, English Chamber Orchestra, Best. Mark Brown, prod. Hyperion CDA 66177 (D).

**BRITTEN:**

**Choral Music.**

♾ Williams, O'Donnell; Choir of Westminster Cathedral, London, Hill. Mark Brown, prod. Hyperion CDA 66220 (D).

Maurice Duruflé's *Requiem*, commissioned by Durand in 1947 and modeled closely on the Fauré *Requiem*, is usually performed either in its original version for full orchestra or in an alternate version for organ with cello obbligato. This 1961 version—scored for strings, trumpets, tympani, harp, and organ—bears the same relationship to the original orchestration as the chamber orchestra version of the Fauré *Requiem* that was restored and recorded by John Rutter (Collegium COLCD 101) bears to the more familiar version for full orchestra. The Duruflé *Requiem* is exquisite in whatever version one has the chance to hear, but this "in between" version may well be the most satisfying of all. The wonderful performance by Matthew Best's Corydon Singers, coupled with an equally sensitive performance of Duruflé's 1960 *Four Motets on Gregorian Themes*, are what Duruflé must have precisely had in mind. Baritone Thomas Allen and mezzo-soprano Ann Murray (of Graham Johnson's *Songmaker's Almanac*) are the fine soloists.

Also new from the Corydon Singers is a follow-up to their earlier collection of motets by Anton Bruckner (Hyperion CDA 66062). This recording couples the austere but beautiful *Mass in E minor* for chorus and wind instruments with an early setting of the *Libera me*, framed by two short pieces for three trombones. Hyperion's recordings of the Corydon Singers are welcome additions to the slender choral catalog on CD, and one hopes for a transfer of their Vaughan Williams *G minor Mass* as soon as possible.

Not long ago, the Westminster Cathedral Choir joined forces with the Corydon Singers on a well-received Hyperion CD of choral music by Benjamin Britten (CDA 66126). Now they can be heard in a Britten album of their own containing the popular *A Ceremony of Carols*, the *Missa Brevis*,

and four short anthems. All of these works are making their CD debut, and the performances are up to the high standards set by the Corydon Singers in their previous Britten album. Sioned Williams is the excellent harpist in *A Ceremony of Carols*, James O'Donnell the equally satisfactory organist in the *Missa Brevis*. All three of these discs feature first-rate digital sound by Mark Brown. Texts are supplied and each work is fully banded. Playing time for Duruflé: 48:11; playing time for Bruckner: 51:24; playing time for Britten: 48:50.

Terry Teachout

**GLAZUNOV:**

**"The Seasons" and Concert Waltzes**  
**Nos. 1 and 2.**

♾ Philharmonia Orchestra, Svetlanov, cond. David Mottley, prod. Angel EMI CDC 747847 (A).

**TCHAIKOVSKY:**

**The Seasons, Op. 37b.**

♾ U.S.S.R. State Symphony Orchestra, Svetlanov. Japan Victor/Melodiya VDC 1134.



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While these two lovely CD reissues should prove to be of enormous delight to any musical Slavophile, they also show how very far we are from doing justice to the work of Alexander Glazunov. *The Seasons* is occasionally considered this "happy" Russian composer's masterpiece, but that is a naive, highly misleading view. While this score and the *Violin Concerto* remain popular, Glazunov has no single masterpiece, and much more study, recording, and listening will have to be done before any sophisticated conclusions about his stature can be reached.

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(Continued on page 90)



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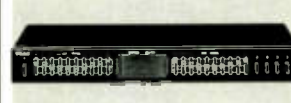


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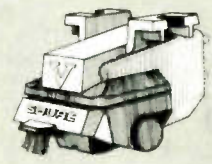


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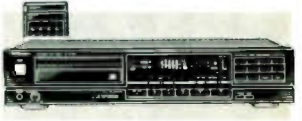
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(Continued from page 86)

Svetlanov's stunningly beautiful recording. Performances of such excellence may lead thoughtful collectors into exploring the symphonies, which remain overlooked in the concert hall and which have recently become available on CD. The Tchaikovsky disc contains Alexander Gauk's expert orchestrations of the series of piano works that were also, if somewhat inaccurately, entitled *The Seasons*. Actually, these are simple but remarkably evocative works depicting each month of the year, and each is saturated with a Slavic ethos.

Yevgeny Svetlanov (like his closest Western counterpart, Riccardo Muti) has often been thought of as a master of the lead-footed school of conductors—brutal, coarse, unfeeling, a figure in whose performances orchestral crudities abound. Judging from these CDs, that is nonsense. It would be close to impossible to better the performance on either disc.

Speaking of the neglected Slavic repertory as well as conductors of former days, such as Gauk, one wonders when someone with a taste for the less familiar will revive the Frederick Stock orchestration of Tchaikovsky's lovely A minor Trio. Playing time for Glazunov: 60:21; playing time for Tchaikovsky: 46:33. *Thomas L. Dixon*

#### GRAINGER:

##### Dished Up for Piano by the Composer.

● Coxe. Kenneth Forfia, prod. Titanic TL 155 (D).

Handel in the Strand; Walking Tune; The Merry King; Molly on the Shore; Jutish Medley; One More Day, My John; Lullaby (from "Tribute to Foster"); The Sussex Mummer's Christmas Carol; The Hunter in His Career; Knight and Shepherd's Daughter; In a Nutshell; Colonial Song; Shepherd's Hey; Irish Tune from County Derry; Country Gardens.



Grainger: a miniaturist who loathed the piano

A brilliant and idiosyncratic pianist, Percy Grainger claimed to despise the instrument that made him famous. "I have always loathed the piano," he said, "because I consider it an affront to destroy a melodiously conceived idea by trying to fit it into the limitations of two hands and a box full of hammers." Though Grainger published a great deal of piano music, the result was that most of it was "dished up" (as he liked to put it) from works originally scored for orchestra or chamber ensemble.

Enormously popular in Grainger's own day, these fetching miniatures have long since disappeared from recital programs, so Nigel Coxe's new CD of Grainger's piano music on Titanic comes as a refreshing and overdue surprise. The program ranges from *Country Gardens* and *Shepherd's Hey* to more substantial compositions like *In a Nutshell*. Coxe's brisk and unaffected playing suggests considerable familiarity with Grainger's own 78-rpm recordings. Kenneth Forfia's boxy digital sound does less than perfect justice to Coxe's tone, but brings out his humming with unwelcome clarity.

Since CD anthologies are ideally suited to the music of miniaturists like Grainger, a collection of Frederick Fennell's brilliant Grainger recordings for Mercury (or, for that matter, a CD of Grainger's celebrated Columbia electrics) would be a welcome complement to this excellent disc. But *Dished Up for Piano by the Composer* serves perfectly well on its own as an introduction to the delightful music of Percy Grainger. Playing time: 65:25.

*Terry Teachout*

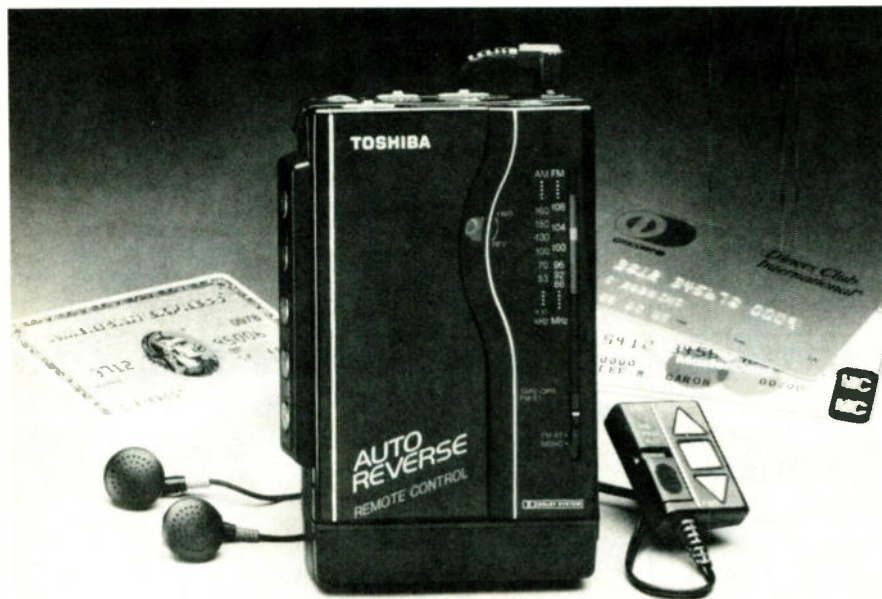
#### MOZART:

##### Requiem, K. 626; Church Sonatas, K. 278, 329, 336.

● Alliot-Lugaz, Visse, Hill, Reinhart, Baileux; Choeur regional Nord-Pas-de-Calais, La Grande Écurie & La Chambre du Roy, Malgoire. George Kadar, prod. CBS MK 42273 (D).

When Christopher Hogwood and the Academy of Ancient Music released their version of the Mozart Requiem in 1984, they provoked a storm of controversy. Hogwood, using a new edition by Richard Maunder, removed the Sanctus and Benedictus (presumably the work of Mozart's twenty-five-year-old pupil Franz Xaver Süssmayr) and considerably retouched the remaining movements. The bold, revisionist result displeased many listeners, but no one denied that it was a performance with a point of view.

A point of view is precisely what Jean-Claude Malgoire lacks. Malgoire and his historical-instrument band, La Grande Écurie & La Chambre du Roy, will not ruffle any feathers with their rendition of the Süssmayr-completed version of the Requiem, but neither will they dispel an



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# OPERA NEWS



*I'm Still Here!*

Legendary soprano Leontyne Price, listed as the first soprano of the Metropolitan Opera, returns to the stage with her ever thrilling life on the stage.

By Robert Jacobson

It's a brilliant soprano, and a vibrant Leontyne Price rarely finds an ever narrowing hallway path across a life of love and laughter of flowers. She seems double-endorsed. "And, it looks like my former!" In Price's life, nothing better than having her worth celebrated — past though she is the first to rest double. She's been making some thirty-seven years, a magnificent diva, during which she has reached heights, brights and plunged into the darkest depths. She has experienced everything there is for a performer of her kind of gift and daring, one who risks, one who is a model of consistency. A singer of strength, she is at the same time one of her greatest rewards. The "rocking from"



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# GIMMSE THE TRUTH

The mustaches of  
Pepper in 1967,  
two years after  
the semaphores  
of Help!



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A  
show tonight  
or laser beam:  
prime Beatles on  
Compact Disc



Why fill another BACKBEAT with Beatles? First, your response to our comprehensive coverage of the group's initial four Compact Discs was overwhelmingly enthusiastic. Second, our competitors have shown little interest in seriously judging these CDs, devoting as little as a column and a quarter to tossing off the first batch. Third, this is John Lennon, Paul McCartney, George Harrison, and Ringo Starr we're talking about, and their music is simply the most important pop catalog to be reissued on CD. Here, then, are Beatle albums five, six, seven, and eight—in stereo. For more on *that*, read on.

## HELP!

Our story so far, even if you've been following closely, is unreasonably complex. EMI, in its corporate perspicacity, has stirred up a mighty windfall with its "Twenty Years Ago Today" marketing strategy. Most interested parties have all ways agreed that the only rational Beatle canon begins with the British Parlophone LPs, as opposed to the arbitrarily gerrymandered American Capitol releases. And now the most-interested party, EMI, seems to concur, since a globeful of Beatle fans are older, presumably better off, and just waiting to be reminded of their primary allegiance so they can replace their worn-out Beatle product with snazzy new stuff that sounds better, is historically correct, and has fab, gear technological cachet. Which brings us to *Help!* (Parlophone CDP 46439), digitally remixed, remastered, and released on Compact Disc.

This *Help!* is the fifth Parlophone album, originally released in August 1965 along with the Beatles' second Richard Lester film. The Capitol LP was a gatefold "Original Motion Picture Soundtrack" affair, with the seven actual Beatle songs from the film interspersed with five pretty pedestrian orchestrations. Happily, on the

British version there are 14 songs, only half from the film, and no "movie music." The second seven—five original tunes wrapped in the Beatles' last two covers—were dispersed among three different Capitol releases: June '65's *Beatles VI* ("You Like Me Too Much," "Tell Me What You See," "Dizzy Miss Lizzie") and June '66's *Yesterday... and Today* ("Act Naturally," "Yesterday"), both complete fabrications patched together from singles and spare tracks, and the juggled American version of December '65's *Rubber Soul* ("It's Only Love," "I've Just Seen a Face"). So much for the rather confused provenance.

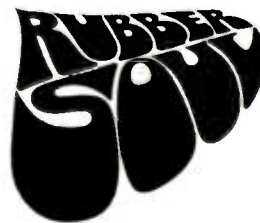
The sound of this new *Help!* is not confused at all, however. Almost a silk purse, in fact, but then it was hardly a sow's ear to start with. Originally recorded in decent, unflashy stereo (but also released in mono), this is the first Beatle album to be issued on CD in stereo. Producer George Martin himself digitally remixed these tracks from the original master tapes—"not to change anything," he says, "but to cut down on background noise, clean up the individual sounds, and bring in the image a little bit—to harden up the sound a bit." True to his studio role with the Beatles from the beginning, he has done nothing controversial, but the extra care is immediately evident. There *is* a little noise, most audible on "Yesterday," but overall the CD sound is remarkable. Direct comparison with Capitol's stereo *Help!* is a bit frightening: When I switched to the record, I had the unsettling sensation of trying to listen through two straws. Parlophone's stereo LP is somewhat cleaner, but the striking instrumental and vocal clarity of the CD leaves no real choice, even for a vinyl-loving Luddite like me.

The title track has, hallelujah!, lost that insufferable orchestra-and-sitar intro and now stands as a stunning reminder of the Beatles' wonderful vocal arrangements—the ease with which they concocted and executed complex and unique trades between the lead (in this case, John) and backing voices (Paul and George) that carry the weight and make the song special without distracting attention from the initial impact. Ditto "You're Going to Lose That Girl," where Paul and George's

background admonition "watch what you do" is seconded by John's terse "yeah" in the foreground. And John's shaky, aching falsetto. Have I said "perfect" too many times yet? And while I'm on vocal details—well-made CDs always get me into voices—John's two ballad leads are major works of emotive art: the melancholy Dylan imitation "You've Got to Hide Your Love Away" and the distilled, double-tracked heartbreak on "It's Only Love." And Paul's uncanny harmonies make the country leads—Ringo's on "Act Naturally" and his own on "I've Just Seen a Face"—seem effortlessly authentic.

But these barely scratch the surface. The Beatles' unequalled gift for multiple simplicities, for adding on or filling in without losing the focus of the track, is simply everywhere on *Help!* I have tried, yesterday and today, to temper my response to the Beatles' obvious, very nearly overwhelming achievements with a grain or two of rock 'n' roll salt, but once again I find myself surprised by their easy, unpretentious brilliance. The fundamental things do indeed apply as time goes by, and nobody, I think, applied those fundamental things more effectively than John, Paul, George, and Ringo. *Help!* on CD is an essential text.

Jeff Nesin



As usual with the pre-*Pepper* Beatle albums, when *Rubber Soul* arrived in America, three days after its December 1965 release in Britain, it was incomplete. Four of the songs on the British Parlophone original—"Drive My Car," "Nowhere Man," "What Goes On," and "If I Needed Someone"—would not officially reach this country on LP until Capitol's release, the following June, of *Yesterday... and Today*. In place of these four songs were "It's Only Love" and "I've Just Seen a Face" from the Parlophone *Help!* Obviously,



## GLIMPSE THE TRUTH

what had become the customary machinations were in effect, the goal being to cobble together an extra LP (in this case, *Yesterday... and Today*) for that vast and lucrative American Market. Only this time, in the process, a rather strange thing happened: By taking four full-sounding cuts and replacing them with two sparser ones, the American version of *Rubber Soul* seems to have a more consciously coherent design than the British original. The folkish opener "I've Just Seen a Face," in particular, sets the tone for the relatively soft and melodic U.S. edition.

That's not to say that *Rubber Soul* is the Beatles' folk-rock recording but rather an album where the sparing use and sometimes absence of electric guitar give the songs a light, uncluttered feel (the exceptions being the four cuts dropped from the American version, as well as the closer on both editions, "Run for Your Life"). The instruments that the group chose to stand in for the electric guitar are almost always less visceral and sometimes, by 1965 standards, jarringly exotic. They include piano ("You Won't See Me," "The Word"), acoustic guitar ("Girl," "I'm Looking Through You"), fuzz bass ("Think for Yourself"), sitar ("Norwegian Wood"), and tambourine ("Wait"). It is these unconventional arrangements that give *Rubber Soul* its singular aura of lean melodicism. The Beatles' creativity (and no doubt boredom) had reached a point where they were willing to introduce daring spaces into their guitar-band sound; soon their imaginations would take up the task of filling those spaces.

One would expect this new delicacy of sound to emphasize the usual distinctions between the Parlophone and Capitol versions: pristine clarity for the Brits and a more trebly, bunched-together sound for the Americans. And for the four songs

that ended up on the stereo *Yesterday... and Today*, that about describes it. (I must say I prefer the "cheaper" American sound in these four cases: more punch.) But as for the ten cuts shared by the U.K. and U.S. stereo LP versions of *Rubber Soul*, there is no discernible pattern. The British "Michelle," for example, has a muted, unsatisfying quality, while the American one has more presence—but a comparison of "In My Life" yields the exact opposite conclusion. Aside from the actual sound of *Yesterday... and Today*, the most egregious examples of tinkering on the American releases are the addition of two false starts to "I'm Looking Through You," the absence of a final guitar lick on "What Goes On," and an added echo to John's solo vocals on "The Word."

For the CD version of *Rubber Soul* (Parlophone CDP 46440), George Martin has digitally remixed the tracks from scratch, to both clean up and, in his words, "harden up" the sound. There's a bit of irony in Martin being given a second crack at his production job and then deciding to do what was routinely done to early Beatle releases when they reached America: toughen up the sound. But it is tougher and cleaner on this CD, and it has stereo that benefits from the album's relative sophistication vis-à-vis earlier Beatle records, particularly in the placement of backing vocals. My only complaint is that the *Yesterday... and Today* version of "What Goes On" is preferable to the CD's: The guitar is so bloody clever that it's best left in the back, where it doesn't detract from Ringo's wryly wistful vocal.

A final impression: Apart from the instrumentation (and the rhythmic experiments like the stop-time of "Wait"), one notes how cautiously the Beatles were expanding the possibilities of the pop/rock song. The lyrics, in particular, seem tenta-

tive. "Norwegian Wood" is a mere slip of a song, a corny joke with innuendos; the subject matter of "Nowhere Man" had been treated with more biting effect by the Kinks; "Run for Your Life" is a reworking of "You Can't Do That." Still, *Rubber Soul* is an album of great conceptual strides. The lyric content would begin to catch up the following year.

Richard C. Walls

## REVOLVER

The incipient eclecticism of December '65's *Rubber Soul* bursts forth on the following August's *Revolver* (Parlophone CDP 46441), which is why, listening to the album with the hindsight of 21 years, one discerns that this is the beginning of the end for the Beatles. Each step the group took during its middle period to free itself from the conventional pop/rock dictates served to highlight the disparity in approach between John and Paul: What in the early days was a delightful contrast that could be contained in a single song now needed separate compositions for full articulation. As the duo's questing and responsive imagination led them into the area of art, their music underwent the evolution that all art music goes through: Expressiveness is advanced at the expense of "correct" form. (Jazz mutates in this way about every 20 years.) Rather than merely plug into preexisting genre moves, the individual personalities begin to dominate the very materials of the music. Unlike any Beatle album up to this point, *Revolver* sounds less like the work of a band than of three talents determined to have their say. Or if you prefer, do their thing.

Eventually these differences would prove irreconcilable (and I bet you thought it was all Yoko's fault)—but for now, we can marvel at the variety here, at John's aggressive and sometimes cryptic discontent, at Paul's uninhibited melodicism (though years of so-so Wings and solo albums have made it hard to remember how vivid these melodies once sounded), and at George's brooding, shy, messianic cross-cultural love songs. (Though the inner politics of the band made George seem less prodigious, he, too, was ambitious, original, and of radical temperament.) The joint technical experimentation of *Sgt. Pepper's Lonely Hearts Club Band* would gloss over some of this division; *Revolver* is more like "The White Album," though with a succinctness (the three-minute time barrier hadn't been seriously challenged) that would soon disap-

Klaus Voormann's cover for *Revolver*, the 1966 album that signals the beginning of the end





pear from pop/rock until consciously reclaimed by the New Wave of the late '70s. One wishes that some of these songs were a bit longer; five of the 14 hover around the two-minute mark. Then again, self-indulgence was effectively curbed by these temporal strictures.

*Revolver* was the last Beatle album to arrive in America in truncated form: "I'm Only Sleeping," "And Your Bird Can Sing," and "Doctor Robert," all with Lennon singing lead and (one suspects) all mainly Lennon compositions, were already appropriated two months prior for Capitol's *Yesterday... and Today*. The CD's restored song order and content not only improve the album's pacing—dig how cuts seven through eleven, "She Said She Said" through "Doctor Robert," are now a miniature suite encapsulating the whole Lennon/McCartney dialectic—but also reinstate John's full contribution to this crucial album.

As for the sound quality of the stereo LPs, the Parlophone and Capitol versions were not really that different at this point. Sure, the gritty pre-metal guitar on "She Said She Said" is a tad dirtier on the American version, and that most genteel of pop songs, "For No One," benefits from the famous Parlophone clarity, but these differences are subtle and I don't think anyone would do too well on a blindfold test. The three songs that ended up on the stereo *Yesterday... and Today* are another matter, since that's the crudest-sounding of the Beatles' post-*Help!* American albums. Of course, there's a great argument to be made for crude. . . .

The CD is derived from the original Parlophone stereo mix, and there are few surprises—apart from slight percussion touches I'd never noticed on the LPs (as well as some of those damned silly hand-claps the group was still not above using) and the verification that "Got to Get You Into My Life" does indeed have a bass part. What is here is that astounding sound: the way the brass on "Got to Get You Into My Life" and the strings on "Eleanor Rigby" stab at you like guitars, the way the wonderful harmonies on "Good Day Sunshine" sound fresh again.

In fact, it's all unexpectedly fresh, even the hippie-isms: love as a positive universal force, drugs as an adjunct to philosophical inquiry (except when they're being administered by a "Doctor Robert"), and the joys of creative daydreaming. None of these sentiments comes across here as oppressively preachy or opportunistically contrived. Rather, it all sounds like music that had quite naturally arrived at the right place at the right time.

Richard C. Walls



The gatefold from *Pepper*, included in the CD booklet along with new photos and notes



As the commonly-agreed-upon apex of the Beatles' career, *Sgt. Pepper's Lonely Hearts Club Band* is revered for all the wrong reasons. With its connected songs, its theme-and-reprise structure, its fond glances toward the music hall and the chamber hall, it is always held up by arbiters of official culture as an attempt to legitimize rock—as if, say, "Ticket to Ride" weren't profound enough. *Pepper* was the logical conclusion of the musical challenges that the Beatles hurdled (and invented) from the start of their career, and its progressivism makes aesthetic sense; indeed, as a piece of pop history, it's irresistible. But as a piece of pop music now revived out of its historical context, it shows its age much more than the Beatles' earlier work. In June 1967, the album may have been the ultimate soundtrack to a generation twitching to life, but in 1987, the CD of *Sgt. Pepper* (Parlophone CDP 46442) is just the ultimate baby-boomer commodity: digital amnesia for \$15.

Although *Pepper* seems a clear assertion of the Beatles as a group (what with the veiled metaphor for themselves that the Lonely Hearts Club Band is supposed to be), the album details their fragmentation almost as powerfully as "The White Album" does. John and Paul barely collaborate except on a song for Ringo and on

the pieced-together sections of the closing epic. Most prominently, it's Paul's album, and much of it finds him in the Accelerated Trifle Mode in which he would fritter away most of his solo career. The "Sgt. Pepper" themes and "Lovely Rita" are the best of these tracks, especially the latter, with its crazed lyrics and off-kilter ending of piano and panting. "When I'm Sixty-Four" is a decent enough song once you get past its coy, genre arrangement. It could have made a stinging little rocker; after all, it dates from the band's early period. Likewise, "She's Leaving Home" is a fine composition that deserves the sympathetic interplay of the Beatles' guitars and drums, not the prissy gentrification of strings. "Getting Better" never does—except for Paul's gleaming bass-playing and the sly background vocals.

John's writing shows even more strain, probably because the throwaways that the stage-revue style of *Pepper* demanded didn't come as easily to him as to Paul. "Good Morning Good Morning," cribbed from a cornflakes ad on TV, might be the least substantial song he ever wrote, and "Being for the Benefit of Mr. Kite!," cribbed from a circus poster, isn't far behind. "Lucy in the Sky with Diamonds" is one of his most atypical triumphs: writing so purple that it's perversely fascinating.

Of course, *Pepper* is less an album of songs than of sound collages, and it's on this level that the album and especially the CD work best. Compared with my old copy of Capitol's mono LP (no, I'm not embarrassed), the CD sifts through the album's dense layers and makes the thick filtrations constantly in use on voice and keyboards starkly apparent. "Fixing a Hole" may not be much of a song—McCartney's Sartre isn't even as good as his Rudy Vallee—but the way George's guitar solo erupts from the washes of re-

verbed vocal and bass is more striking than anything the words have to say. And the CD accurately tracks the shifting background of tape-spliced organ in "Mr. Kite!" More important, it does such justice to the Beatles' group vocals that they don't get lost among the pervasive trickery. *Pepper* may never capture the vitality of performance, but for a sonic signpost of pop future-past, it breathes, rather than exuding a mechanical coldness. (The additional treat of this CD is the expanded booklet: extra photos, behind-the-scenes notes, recording information, and a key to who's on the cover.)

Aural wizardry and acid-head coyness aside, *Pepper*'s two finest moments are its most direct. The more obvious is the grandiose "A Day in the Life," its small, deadpan details mounting up like threats, with John's exasperated, ironic "oh boy" saying more than the final, pretentious chord ever could. (By the way, the CD approximates the gibberish run-out groove of the original British LP; even better, it captures the stray nuances of the orchestra's swirling noise.) The other moment is what might seem the album's slightest song, "With a Little Help from My Friends." An expression of togetherness at a time when the Beatles were already drifting apart, the song could only have been sung by Ringo, the Everyman who always epitomized the camaraderie (however illusory) that was crucial to our image of the group. The song is loose and full of life in a way that none of the other songs is; the flatness of Ringo's pitch could make you teary-eyed, as could the way he tosses back answers to the questions the others ask him. As the Beatles huddle around his imperfect voice, they would never be in such perfect harmony again. *Mark Moses*

## AN OVERVIEW

Carl Shrader of Albertson, New York, was on the money when he began last month's "Letters" department with this comment: "Surely you must have realized what a Pandora's box you opened with your discussion of the Beatles on Compact Disc." Carl was referring to "One, Two, Three, Four!," BACKBEAT's section-long coverage in June of *Please Please Me*, *With the Beatles*, *A Hard Day's Night*, and *Beatles for Sale*. More specifically, he was referring to The Great Debate: Mono vs. Stereo. All four CDs were released with mono sound, though each title originally appeared in both mono and stereo LP versions on both the British Parlophone and American Capitol labels. Our verdict:

Three of the four writers assigned to review the CDs favored the mono sound of their particular titles. Concluding our story with a look at all four CDs as a set, I also favored the mono CDs over their stereo LP counterparts.

A great hubbub ensued, however, in our "Letters" as well as in many other publications. Meanwhile, EMI, parent company to both Parlophone and Capitol and father of the Beatle CDs, assured the irate that the next four discs would indeed be in stereo. Which brings us to this issue of HIGH FIDELITY and another "Overview," wherein your faithful BACKBEAT editor, once again driven by delusions of grandeur (or at least memories of Beatlemania), endeavors to tell the overall CD story of *Help!*, *Rubber Soul*, *Revolver*, and *Sgt. Pepper's Lonely Hearts Club Band*.

Now that we have stereo Beatle CDs, we can all agree that the mono vs. stereo

was just my aberration." Yet that "aberration" is the same bad stereo that Martin despises, and had nothing to do with, on the stereo LP versions of *Please Please Me* and *With the Beatles*. According to Beatle pundit Allan Kozinn, "Martin denies a common rumor that seems a more plausible explanation—namely that EMI, eager to rush *Rubber Soul* onto the market for Christmas 1965, yanked the tapes from Martin before he finished work on them." Another controversy! And despite it all, Martin chose not to adjust the stereo when he digitally remixed *Rubber Soul* for CD: "I haven't changed it because it's kind of history." My advice is to buy *Rubber Soul* on CD but still hang on to your mono *Yesterday* . . . and *Today*.

Keep a grip on your mono *Pepper*, too: Underneath the expected dust and dirt on my 20-year-old copy of Capitol's mono LP is a surprisingly warm and bass-rich



ALL FOUR PHOTOS: HIGH FIDELITY ARCHIVES

From the promotional films for the early 1967 single "Penny Lane"/"Strawberry Fields Forever" . . .

debate is dead, right? Wrong. After listening to the four new titles, I find it very much alive on at least one and possibly two of the discs. First, mono haters, put on *Rubber Soul* and tell me what you hear. Is the primitive stereo of "Nowhere Man" and "If I Needed Someone" really what you prefer? And when I say "primitive," I mean primitive: instruments on the left, vocals on the right, and a hole in the middle so big you could sail a fleet of yellow submarines through it. The precise reproduction on CD exaggerates the division, and the resulting sound is quite harsh, with bass landlocked in the left speaker. By comparison, my mono *Yesterday* . . . and *Today* offers less trebly, more natural versions of the two songs.

Not all of *Rubber Soul* is in that simplistic stereo, though. "Drive My Car" and "Think for Yourself" have expertly balanced mixes, and the CD greatly enhances the former's bass and the latter's vocal harmonies. So why the difference on the same album? According to Beatle producer George Martin, "I was playing around, finding the best format for stereo. The Beatles had nothing to do with that: It

sound. I've tried to tell myself I'm being too subjective with this most subjective of Beatle recordings; besides, my mid-Seventies copy of Capitol's stereo LP (with the Apple label) uncovers the searing guitar licks on the title track and the marvelous snare/acoustic-guitar snaps on "Lovely Rita," among numerous other improvements, all of which gain drama on CD. But I keep enjoying the double-channel emphasis of that old mono LP: the fullness of Paul's leaping bass on "Being for the Benefit of Mr. Kite!," the depth of the Indian percussion on "Within You Without You," the mellowness of Paul's voice on "When I'm Sixty-Four." And although *Pepper* in stereo is unquestionably Martin and the Beatles' most imaginative use of that technology to that date, "Fixing a Hole" and "Lovely Rita" remain left-heavy and "Mr. Kite!" remains right-heavy. Sure, the CD version makes *Pepper* sound like it was made yesterday—but is that what we want?

What I do want are the various mono-only sounds that help connect the album's last three tracks: the extra note between chicken and guitar at the end of "Good



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trying to figure out who they are. By the time of *Revolver*, the answer is clear: The Beatles are loud electric rockers. The best thing about hearing *Revolver* today is re-discovering the sheer raggedness of the music. The dirty guitars all over the place, the lurching rhythms of "I'm Only Sleeping" and "She Said She Said," the racket of "Love You To," and especially the incredible drone of "Tomorrow Never Knows"—what a wonderful mess! Even the strings of "Eleanor Rigby" scrape, and "Yellow Submarine" sounds more like a sloppy drinking song than a Ringo kiddie tune. Thankfully, the CD revels in the clamor of this 14-song masterpiece.

And then there's that 13-song opus by the name of *Pepper*. "Best album of the last 20 years," say 17 *Rolling Stone* critics. "Top rock 'n' roll album of all time," say 81 panelists in a *Harmony Book*. No wonder Mark Moses feels a bit weary of it all. And yet when I listen to *Pepper* on CD, I hear many things anew, especially in the songs hitherto considered as also-rans. "She's Leaving Home," for instance, now sounds majestic, Paul's throaty vocal front-and-center in digital splendor. (It helps that this is the slow, stereo version;

for some reason, the song has a much faster tempo on Capitol's mono LP.) The much-maligned "Within You Without You" also comes across well, the sympathetic CD sound enabling you to concentrate on the quietly sweeping melody. (All four CDs emphasize the measured cadences of George's melodies, simplistic to others but wholesomely expressive to me in songs like "You Like Me Too Much," "If I Needed Someone," and "Think for Yourself.") As for "Good Morning Good Morning," here's a spot where the CD's definition (the jeering brass, John's buzzing voice) is preferable to the mono LP's memory-fog, and the result confirms my feeling that this fine little track has gotten far too much bad press. In fact, "Lovely Rita"/"Good Morning Good Morning" is the rock 'n' roll highpoint of *Pepper* on CD, reaching the absolute pinnacle in the latter: nasty guitar solo, noisy middle-eight, "It's time for tea and meet the wife," gui-tar *shriek!* After that, the orchestral crescendos and final chord of the still superb "A Day in the Life" seem a rather stately conclusion to the previous riot.

The 28-page CD booklet for *Pepper* is indeed a treat. (Don't trash the longbox packaging, though: Its back-cover cutouts

aren't reproduced inside.) EMI should have done the same for all other Beatle CDs instead of handing us grainy reprints of cover photos—especially in the case of *Revolver*, where the LP's great back-cover shot of the Tripped-out Four is split up and thrown onto separate pages of the CD booklet. And by the way, in light of EMI's insistence on adhering to the Parlophone catalog for CD release, it's somewhat strange to see the *Rubber Soul* disc using the American cover art (brown title logo, Capitol trademark) rather than the British (orange logo, Parlophone trademark).

Much stranger is EMI's surprise decision to break from the Parlophone catalog even further by releasing a CD version of Capitol's *Magical Mystery Tour* LP, assembled from the six tracks on Parlophone's original *Magical Mystery Tour EP* plus five tracks from various singles. So much for historical authenticity. By the time you read this, *Magical Mystery Tour* will already be available (preceded by *The Beatles* and *Yellow Submarine*), while the group's final two studio albums, *Let It Be* and *Abbey Road*, will just be hitting the CD stands. We'll wrap up our coverage with another section-long special in a future issue.

Ken Richardson

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where a regular model might not. The cassettes are loaded lengthwise and vertically. The top model (VRD-530, \$899) has stereo Hi-Fi sound, MTS reception, and four video heads. The other model is the VRD-230 (\$599), also with four heads but mono all around. If you want digital special effects to go with one of the new digital-chassis TV sets, you can opt for Zenith's first VCR of that ilk: the standard-size VRD-600 (\$1,099), a regular-VHS, four-head, stereo Hi-Fi model featuring a strobe display that freezes as many as 16 consecutive broadcast or tape images for simultaneous viewing. An instructional tape (included) will show you how to do all of this.

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