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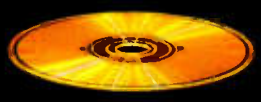

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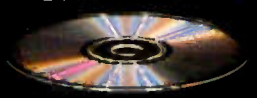

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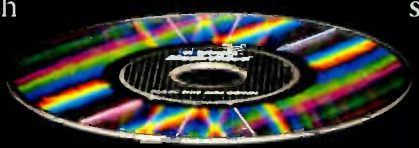

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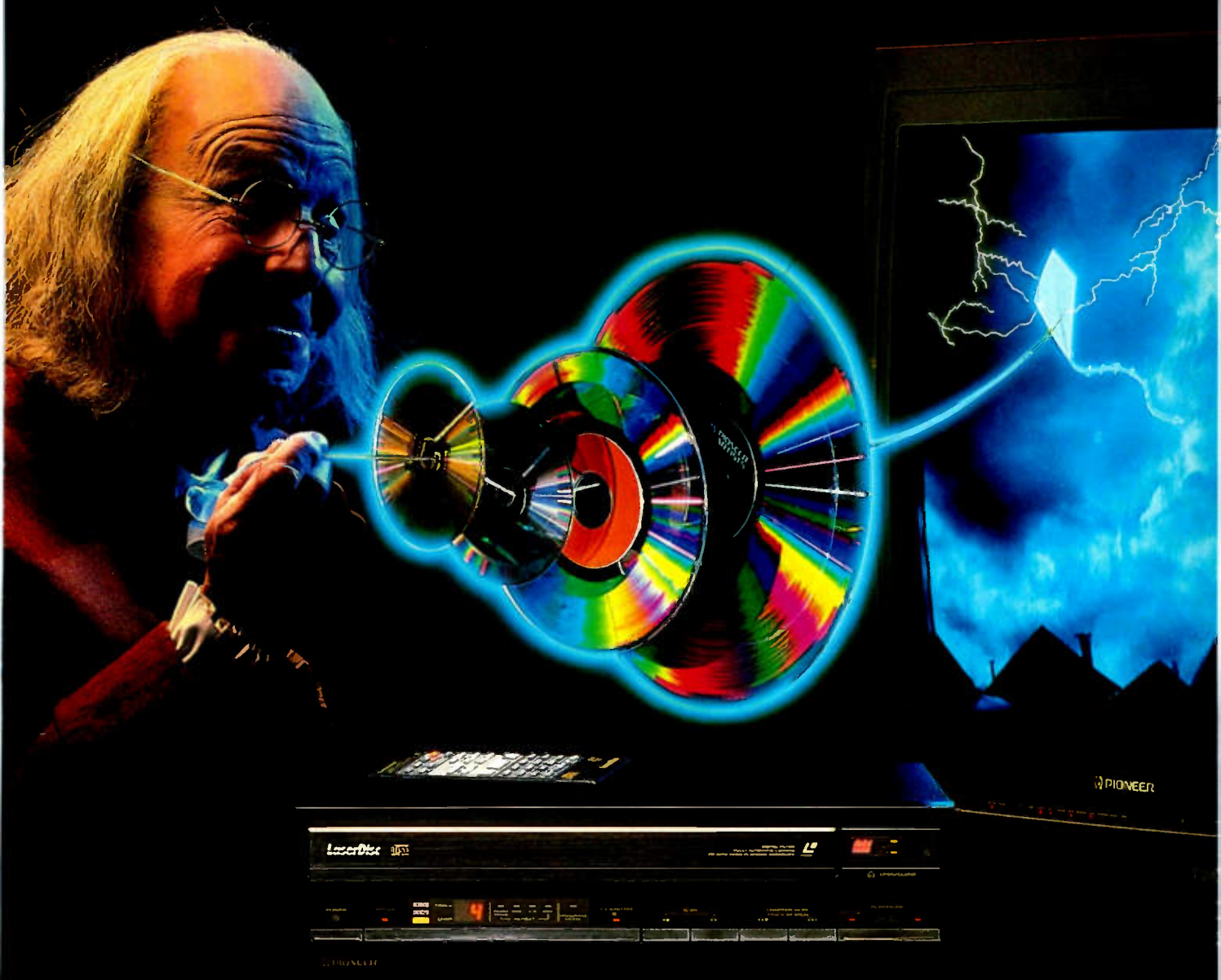

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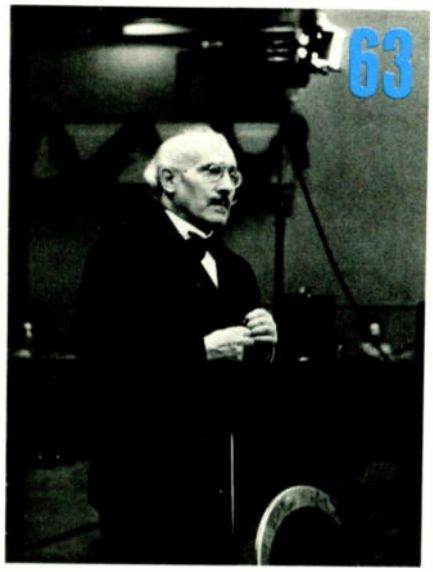
VOL. 37 NO. 8 AUGUST 1987



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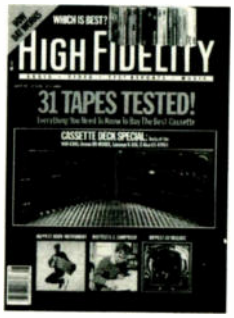

COVER DESIGN:
ROBERT V. DELEVANTE, JR., AND MICHAEL O. DELEVANTE

COVER PHOTOS:
CASSETTES AND EQUIPMENT: NICHOLAS BASILION BELOW, LEFT TO RIGHT. RICHARD MICHAEL PRUITT, S. SCHWARTZENBERG/COURTESY NONESUCH; HERB GREEN/COURTESY RCA.

ON THE COVER:
EQUIPMENT, CLOCKWISE FROM UPPER RIGHT: NAD 6300, LUXMAN K-106, AKAI GX-R70EX, AND DENON DR-M14HX. ALL AUDIO CASSETTE DECKS. BELOW, LEFT TO RIGHT: CARL FINCH OF BRAVE COMBO; JOHN ADAMS, JEFFERSON AIRPLANE

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BY MICHAEL RIGGS

THE MAGIC OF TAPE

AN INTEREST IN AUDIO USUALLY SPAWNS A STRONG DESIRE for a tape deck. I fought this impulse as long as I could before succumbing, in the mid-1970s, to the lure of a Pioneer open-reel model, because I wanted better performance than I could get from the cassette decks of the day. When I finally switched to cassette a couple of years ago, transferring everything I'd accumulated on 7-inch reels was a major undertaking. The process took weeks and left me with more than a hundred cassettes.

The toughest part was figuring out how to break up the long pieces I had taped at 3¾ ips (to get around the 48-minute limit imposed by 7½-ips recording) and how to recouple some of the short pieces to make the most efficient use of the cassettes. It was a project by turns frustrating—as when I found that there was no good place to break a long recording or that I'd goofed up a dub—and absorbing. And I enjoyed listening to music I hadn't heard in a long time.

I also reflected on what it is about tape that is so appealing. Ever since cassettes achieved their current dominance, the reason usually given has been that we love tape for its convenience and portability, an argument bolstered by the popularity of personal portable players, boom boxes, and car decks. But this seems to apply mainly to the cassette itself, not to tape in general. I think the underlying reason we like tape so much has to do with control. Tape sets you free from the constraints imposed by the way music—and television programming, for that matter—is sold. You can combine works by various artists issued on different labels, for example, or you can watch a movie at 10 p.m. on Saturday instead of 3 a.m. on Tuesday, with breaks in the action anytime you want. It's a very addictive benefit. No surprise, then, that we're outraged when record companies and movie studios try to reassert their control through legislation (as in the Copy Code bills now before Congress) or the courts (as in the Disney vs. Sony Betamax case of a few years ago).

In fact, what really got tape going way back when was the freedom it gave to the record companies and broadcasters. Radio stations could broadcast prerecorded programs without having to resort to clumsy disc transcriptions. Tape also gave record producers editing capabilities, simplifying the task of putting together a recording of a long, complex work and opening up a whole new world of creative possibilities. Many of the effects achieved on modern pop recordings, in particular, would be virtually impossible without the use of sophisticated editing techniques. So for the pros, too, tape is much more than just a convenience. ■

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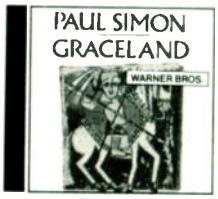

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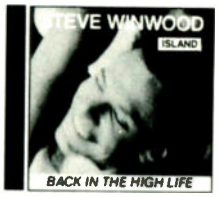

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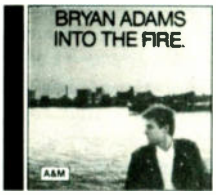

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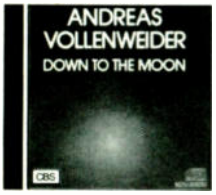

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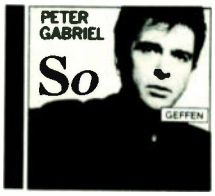

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349324. South Pacific. K. Te Kanawa, J. Carreras, etc. *(Digital—CBS)*

347153. Cyndi Lauper—True Colors. (Portrait)

347039. Billy Idol—Whiplash Smile. (Chrysalis)

349985. Johnny Mathis/Henry Mancini—The Hollywood Musicals (Columbia)

348979. Tina Turner—Break Every Rule (Capitol)

350736. Rolling Stones—Rewind. (Rolling Stones Records)

345785. Top Gun—Soundtrack. (Columbia)

348110. Buddy Holly—From The Original Master Tapes. *(Digitally Remastered—MCA)*

334391. Whitney Houston. (Arista)

326629. Bruce Springsteen—Born In The U.S.A. (Columbia)

342097. Barbra Streisand—The Broadway Album. (Columbia)

219477. Simon & Garfunkel's Greatest Hits. (Columbia)

287003. Eagles—Their Greatest Hits 1971-1975. (Asylum)

336222. Dire Straits—Brothers In Arms. (Warner Bros.)

341073. Steely Dan—A Decade of Steely Dan. (MCA)

353771. Bolling/Rampal: Suite No. 2 for Flute & Jazz Piano Trio. (Digital—CBS)

353516. George Howard—A Nice Place To Be. (MCA)

346312. Billy Joel—The Bridge. (Digital—Columbia)

355156. Vladimir Horowitz Plays Favorite Chopin. (Digitally Remastered—CBS Masterworks)

353607. Lou Gramm—Ready Or Not. (Atlantic)

308049. Creedence Clearwater Revival Featuring John Fogerty/Chronicle. 20 greatest hits. (Fantasy)

343582. Van Holen—5150. (Warner Bros.)

319996-399998. Motown's 25 #1 Hits From 25 Years. (Motown)

352229. Carly Simon—Coming Around Again. (Arista)

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L E T T E R S

DSP-1 NOISE: FINAL WORDS

I FIND IT UNFATHOMABLE THAT YOU CONTINUE to deny the very obvious level of hiss generated by the Yamaha DSP-1 in its "Hall" modes. Your suggestion that the ambience speakers might be turned up too loud seemed plausible at first but did not, in my experience, prove correct. The noise is immediately apparent in some modes and not in others. Although the unit is very impressive, the hiss is a serious flaw. My dealer readily admits its presence and says it has been a topic of discussion with his Yamaha rep, who also acknowledges the problem.

Rather than continuing to refer to your original test report [September 1986] and assuming that because this flaw is not mentioned it does not exist, why not reevaluate the unit to investigate the cause of this annoying hiss? Better yet, why don't you solicit a response from Yamaha? Considering the rather poor quality of the owner's manual, hiss isn't the only subject on which the company owes some explanation.

Timothy Linn
Austin, Texas

When we first received a letter complaining of noise from the DSP-1, we went back and checked our samples. Neither generated audible noise in any mode under normal operating conditions. But read on.—Ed.

AFTER READING THE VARIOUS LETTERS IN your magazine regarding Yamaha's DSP-1 surround processor, I decided to write. I hope I can provide some insight into the problem.

First, I sincerely believe that your reviews are not biased toward advertisers, and you are correct when you say that most of today's equipment is quite good. What you test, however, may not always be typical of what consumers buy. I suspect that when a new model is introduced, the manufacturer provides you with review samples before (or just as) it becomes available to the general public. Considering the lead times involved in preparing a magazine, this seems the only way to assure timely reviews of new equipment. The units you test might be part of the initial production lot or even a preproduction pilot run. More about this later.

Based on your review, I decided to audition a DSP-1. (No one should make buying decisions solely on the basis of magazine reviews; a review can at best indicate what equipment deserves consideration.) My audition convinced me to buy one. Because the dealer was out of stock, he lent me his demo unit until his stock—and my new unit—arrived. The demo unit had a slight amount of background noise, but nothing I would call objectionable. Before I got my new unit, I read the first letter you published about the noise [February], and I wondered why anyone would write about such a small matter. When I got my new unit, I also got the answer: It had a much higher noise level than the demo unit. I took it back to the dealer and traded it for the demo unit. The older unit is a bit shopworn, but it works, it is quiet, and I am happy.

I suppose my demo unit was made during the production start-up for the DSP-1. It carries a manufacturing date of May 1986. I know from experience that during a start-up period, many electronic products get extra attention from their design teams. This is usually the time when problems are first observed and corrected. It may be that some of the problems with the DSP-1 surfaced only in later production. It may also be that some of the internal adjustments needed to reduce the noise level are difficult to set properly on an assembly line—the effects of the adjustments may not be measurable with routine test equipment. In any case, I believe that early production DSP-1s are clearly quieter than more recent ones.

I resent your editorial replies regarding the volume settings for the DSP-1's ambience channels. True, a reader may not know the correct way to set the levels, but you should not assume so. Your attitude seems patronizing, suggesting that your readers are ignorant or stupid. Electronic equipment sometimes fails or does not perform as it should. The number of responses you published indicates receipt of many letters on the subject. The quantity of mail should have raised doubts about the equipment.

Anyway, I would be very interested in Yamaha's comments.

Charles M. Strack
Palatine, Ill.

Thank you for taking the time to write in such detail. We talked to Yamaha representatives at the Summer Consumer Electronics Show (on which we will report next month), and they said the DSP-1 has a noise-nulling adjustment for the ambience channels that may in some cases be set improperly. Anyone who is experiencing serious noise problems with a DSP-1 should get in touch with Yamaha's customer-service department (Yamaha Electronics Corp., 6660 Orangethorpe Ave., Buena Park, Calif. 90620).

We've actually published about 75 percent of the letters we've received about the DSP-1, but as you infer, the volume of mail on this subject has been unusually high. When we first took the matter up with Yamaha (early on), they said they knew of no problem. Clearly, the situation has changed. As for our replies to previous letters, we can only say that if we came off as patronizing, it was unintentional. Relatively few people have had much experience with surround processors, and level-setting errors are common, particularly in the absence of good instructions. Given the information available at the time, this seemed the most likely cause of the described problem.

We try to avoid getting prototypes or preproduction samples for review, because their performance may differ (usually for the worse) from that of production models. It is true, however, that we usually get early production units, and when something is really hot, we sometimes take late preproduction samples if the manufacturer swears production units will be the same. It is not clear to us at this point whether the DSP-1's occasional noise problems are specific to recent production or are randomly distributed.—Ed.

WORDS OF LOVE FOR BEATLE COVERAGE

THANK YOU FOR THE COMPREHENSIVE reviews of the first four Beatle CDs ["One, Two, Three, Four!," June]. The analysis is detailed and perceptive, providing technical information without missing the *fun* (which was the Beatles' secret ingredient).

We agree completely with all of the comments—except Jeff Nesin's lament over not having the sloppy stereo version of *A Hard Day's Night* on Compact Disc. The CD mix is alive and transparent; the so-called stereo LP never approaches the clarity of George Martin's mono sound. And listening in sequence shows the rapid maturity of the Beatles—as composers and performers—in just a few short months. We do agree with Mr. Nesin on one point, however: Some recent liner notes, preferably by Martin, should have been added (as a supplement to the original drivel).

The videocassette review of *A Hard Day's Night* and *Help!* is nice, but how can you review the two films without mentioning director Richard Lester? The pace, the mood, the *art* of those films are his; if only he'd directed *Magical Mystery Tour* as well!

Lee and Dee McBeath
Bartlett, Ill.

THANKS A MILLION, KEN RICHARDSON, FOR finally clearing the air on the great Beatles mono vs. stereo debate in your overview of the group's first four CDs. I, too, have closely compared the stereo LP and mono CD versions and have reached conclusions similar to yours. The CDs *are* superior in almost every way and accurately reflect the artistic intentions of George Martin and the Beatles. I would classify the stereo LP versions as ludicrous in many instances and as a crass, commercial perversion of the original music. This is probably what John Lennon meant when he referred to the "pseudo-stereo" mixes of the early songs.

Anyway, your article is the most informed and perceptive discussion of the issue I have seen. It is by itself worth the price of a year's subscription.

Carl Glover
Johnson City, Tenn. ▶

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LETTERS

THIS IS AN APPEAL TO YOU REQUESTING THAT you not print any more letters complaining about the mono Beatle CDs ["Letters," June]. The best thing that a CD gives the consumer is a near flawless reproduction of what is heard in the recording studio. That includes all the subliminal sounds never before heard at home. To complain that the Beatles' first CDs are in mono, or that they don't contain some of the American singles, is completely missing the point. The CDs have been released in the sequence and the sound originally created by George Martin and the Beatles themselves. What some joker did with the tracks after importing them to the U.S. is not and should not be considered "original."

When buying a CD, I want to hear not only great sound but great music. As an audiophile, I like perfection in sound, but as a musician, I don't lose sight of the fact that music is human and therefore not perfect. Not that I consider mono CDs to be imperfect. Rather, these four CDs sound the way they sounded to Martin and the Fab Four in the studio 20 years ago.

Ken Cyr
South Bend, Ind.

I DON'T WANT TO SPOIL THE PARTY, BUT . . .

IN EVERY REVIEW, DECISIONS MUST BE MADE about which points are important and which are of fleeting interest. David Browne's videocassette review of *A Hard Day's Night* and *Help!* [June] made a glaring omission: While he states that the films have been "digitally remastered and transferred to videocassette in Beta or VHS Hi-Fi," nowhere does he state that these tapes are in *stereo*. The omission is puzzling, since a great deal of energy is expended in the same pages discussing the mono vs. stereo controversy over *A Hard Day's Night* and other Beatle recordings on CD. The great care we took in making a master that fans would appreciate when listening as well as viewing deserves mention.

Jaffer Ali
MPI Home Video
Oak Forest, Ill.

A REQUEST FOR REJUDGING "MAJESTIES"

I MUST TAKE THE STRONGEST POSSIBLE exception to non-initiate Mark Moses's putdown of *Their Satanic Majesties Request* in your coverage of the Rolling Stones on CD ["The Software Parade," April]. Truth is, if you are under, say, thirty-seven years of age, you *do not* and *cannot* truly appreciate the fact that this music was made by very high musicians for very high listeners.

As I am sure you are aware, Mr. Moses, music is more than just mechanics, greater than the sum of its parts. *Majesties* not only evokes its time but also manages to capture that freewheeling spirit in a way that *Sgt. Pepper's Lonely Hearts Club Band* never could. Son, I can understand your frustration at having missed a genuine high tide of collective humanity, but for those of us who caught and rode that wave, it was a uniquely magical moment that makes the '80s seem dreary, lifeless, and insufferably dull. So it is not *Majesties* that has diminished in stature over the years, but the times themselves, which are but a hollow echo of that golden era.

You are certainly entitled to your opinion, Mr. Moses, but in this case, it should include a disclaimer of any *real* knowledge of the era and its music. Unless you have personally peaked to "She's a Rainbow" or "2000 Light Years from Home," you're simply making an '80s technocratic pronouncement upon music that is its very antithesis.

John Nagy
Madeira Beach, Fla.

Mark Moses replies: The irony about pop records is that they physically outlast the moment they were meant to encapsulate. Next to albums that have survived the most holy era in pop history (like Love's Forever Changes *and the Byrds'* The Notorious Byrd Brothers*), the hallucinogenic aura of* Majesties *comes off like the indulgence of privileged pop stars, one of whom might have made it a more interesting record if he weren't on his way to doping himself into the grave. Hell, I'm sure you can truly appreciate* Led Zeppelin IV *only if you're vomiting beer and ludes out of the back window of a car—big deal.*

COPY CODE AND THE LAW

CONGRESSIONAL REFUSAL TO PASS COPY CODE legislation won't solve the problem. The record companies will simply encode the material anyway and reintroduce the bills. What is needed is a federal court ruling, upheld by the Supreme Court, on the legality of personal-use copying. Personal-use copying of video and computer software has already been ruled lawful. If the courts rule in favor of personal-use copying of music, the record companies will be stuck with vast supplies of unwanted product. It would seem that obtaining such a ruling would be the logical first step. And it would be in the interests of the record companies to refrain from encoding until then.

If encoding is undertaken, the record companies should be required to label the packaging and the discs themselves to indicate this.

Robert Rowton
Albuquerque, N.M.

Personal-use copying does not enjoy Constitutional protection and may therefore be outlawed by an act of Congress. In the courts, such issues normally are decided on the basis of copyright law at the time the case is heard.—Ed.

A NICE DILEMMA WE HAD HERE

I HAVE ALWAYS APPRECIATED PAUL KRESH'S record reviews, and his summary of D'Oyly Carte reissues [June] was everything one could expect. However, the fact that the records in question have been released by Arabesque prompts me to relate the following personal experience.

In January, I purchased a CD of Delius's *The Magic Fountain* and *Margot la rouge* (Arabesque Z 6546). Upon opening it, I discovered that the set contained neither notes nor libretto, just a postcard to request them from Caedmon. I mailed the card immediately and in due course received a copy of the current Caedmon catalog. Assuming the company had misunderstood, I sent a letter to them again asking for the libretto; they mailed me another catalog. I wrote again at the end of February and to date have received no further word from Caedmon.

In the past, I have been very satisfied with Caedmon's quality and service. However, since their attitude toward the consumer has evidently taken a turn for the worse, I feel obliged to share the above in the hope of sparing other HIGH FIDELITY readers the trouble I have had with them.

Gary E. Hammond
Hacienda Heights, Calif.

We have contacted Arabesque and informed them of the difficulties you had. They have assured us that this is not a normal occurrence, and that you will be receiving a set of notes and a libretto on the double.
—Ed.

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.

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

B&W Loudspeakers (UK Sales) Limited Marlborough Road Lancing West Sussex BN15 8TR Telephone (0903) 750750

EDITED BY CHRISTOPHER J. ESSE

A Digital Alternative

PSST . . . CAN YOU KEEP A FIVE-YEAR-OLD secret? Actually, for a bit longer than that, digital-audio recording has been available to consumers by using a PCM adapter in conjunction with any VCR. This method has largely been ignored, or at least overlooked, by the public, partly because of its cost (at least $600 for a typical PCM adapter) and partly because of its rather inconvenient two-piece configuration. In the professional field, however, PCM/video setups are commonly used for on-location recording of live performances, which can be transmitted, live or delayed, as a video signal via satellite and decoded for radio broadcast. It is ironic that at a time when digital-audio recording (i.e., DAT) is being viewed as a new menace by the anti-home-recording lobby, Toshiba should quietly offer the same in a VCR with a convenient built-in PCM adapter.

The DX-900 is first and foremost a video recorder, with such amenities as four video heads, VHS Hi-Fi, an MTS/SAP cable-compatible tuner, and HQ picture-enhancement circuitry (Toshiba calls it "HQ PRO," and the literature implies that all four HQ techniques are employed). It also uses digital picture-storage techniques that provide a variety of still-frame effects from tape or broadcast TV signals. The first is Multi-Still, which displays consecutive still frames in four quadrants occupying the full screen. The frames are spaced at one of three chosen time intervals (0.06, 0.12, or 0.25 seconds). The second effect is Multi-Series, which displays a continuous cycle of stills, also at one of three time intervals, in a clockwise or counterclockwise (tape only) rotation. The last is Multi-Memo, which fills the screen with any four individually selected still frames, even those from four different TV channels. Although the three quadrant effects display one-quarter-size pictures, a full-size still from tape or TV is also possible.

Forward and reverse "digital" slow motion for tapes is said to be noiseless and without flicker. Similar performance is claimed for the double-speed-play and fast-scanning modes. An indexing system allows any number of spots on a tape to be invisibly marked during recording and scanned to, sequentially, during playback. Unfortunately, this feature does not apply to PCM recordings.

On-screen programming of the DX-900's four-event/14-day timer is done using a fiber-optic pen, connected to the unit by wire. You touch the pen against the screen to select the programming parameters for the timer. While on-screen displays can greatly simplify the often complicated task of setting the timer, this unusual method may mark the point of diminishing returns. Fortunately, programming buttons can be used as an alternative to the pen.

In the PCM mode, the DX-900 takes signals fed to its audio inputs or through its front-panel stereo mike inputs, converts them to a 14-bit digital data stream, and records that information on the video track of a videocassette. Sound quality is, at least in theory, not diminished by recording at the EP speed, and a T-160 tape could hold as much as eight hours of music. Performance specifications approach those of the Compact Disc (which uses a 16-bit encoding system) and surpass those for VHS Hi-Fi recording.

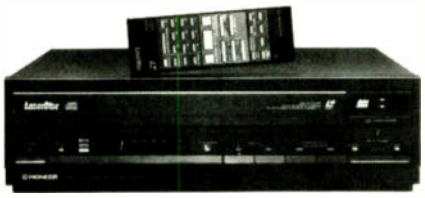
The anticopy legislation now making the rounds in Congress also covers PCM recording devices, so the ultimate fate of the DX-900 is in question. At $1,300, it will probably be cheaper than a DAT machine, besides being a very fancy VCR. For more information, contact Toshiba America, 82 Totowa Rd., Wayne, N.J. 07470.

TOSHIBA'S DX-900 VCR ALSO RECORDS PCM DIGITAL AUDIO.

FIRST CD-V COMBO PLAYER

THE CONCEPT OF CD-V ("V" FOR VIDEO) IS NOT really new: Last fall, Pioneer introduced 12-inch Laserdisc audio-video "albums" (about $17) that combine a full CD program with four or so music videos from the same artist. If you trim about seven inches from one of those, cut the price and the program material by roughly half, and color it gold . . . *voilà*, it's a CD-V!

It seems appropriate that the company most responsible for keeping the Laserdisc format alive should also be the first to supply a new player that can handle the CD-size CD-Vs. The Pioneer CLD-1010 plays 8- and 12-inch Laserdiscs (including those with digital soundtracks), regular CDs, and the new CD-Vs, which contain about 20 minutes of audio and a five-minute music video. Except for that last capability, it's basically the



PIONEER'S CLD-1010 PLAYS LASERDISCS, CDs, AND THE NEW CD-Vs.

same as Pioneer's CLD-909 combination player, which we reviewed very favorably in January.

The CLD-1010 can tell which of the four types of discs has been loaded, so you don't have to master the proliferating disc nomenclature. As many as ten selections from any disc can be programmed for play in any order, and repeat play is possible for a single track or chapter, a programmed sequence, a specified segment, or the entire disc. Laserdisc programs can be selected directly by chapter, frame, or time, and there are the usual effects such as fast scanning, still-frame and still-step, and variable-speed slow motion (on CAV Laserdiscs).

The remote can control everything except power and includes an on/off selector for Laserdiscs with CX-encoded analog soundtracks. Keep in mind that the CLD-1010 is just as much a movie machine as it is a music machine; with any luck, the promotion of CD-V (who says you can't reinvent the wheel?) will lead to more and cheaper Laserdisc movies (and maybe the birth of a Laserdisc rental market?). For more information, contact Pioneer Electronics, 2265 E. 220th St., Long Beach, Calif. 90801.

JAPANESE CONNECTIONS

IN A GM CAR SUCH AS THE BUICK SKYLARK, THE optional Delco/Bose sound system is a major attraction ("Currents," May). While driving the new Acura Legend Coupe, however, I needed constant reminding to get down to the task at hand, which was to evaluate its Acura/Bose system: The car itself is so strikingly good that any sound system, no matter how special, seems like just so much dash space. In this case, however, it is space well used.

Acura—Honda's premium badge—introduced the Legend Coupe this spring in two trim levels, Base and L. A new version, the LS, gets the Bose treatment, which, like that for GM, is designed to match the acoustic properties of the car's interior space to achieve a balanced frequency response at any volume level and to provide a stable stereo image for all listeners.

The system consists of an Alpine-made head unit and four full-range Bose speakers, each powered by a self-contained amplifier/equalizer module with a compression circuit that is said to prevent clipping distortion while maximizing dynamic range. To ensure flat frequency response, equalization is set differently for the front and back speakers according to the acoustic properties of the car. The front speakers are 4½-inch drivers in a ported enclosure at the forward base of each door. The back speakers are 6-by-9s mounted on the rear deck. Proper stereo imaging is maintained through speaker position and directivity: The near speaker is off-axis to the listener, the far speaker on-axis, and the distance between the listener and each speaker has been minimized. The head unit therefore does not provide a left/right balance control, but only a fader control for front-to-rear level adjustment.

The Acura/Bose system sounds better than any of the Delco/Bose systems I've heard. This may be a consequence of the Acura itself. The built-in loudness-compensation circuit in the head unit provides a very rich (perhaps too bassy) sound at low listening levels, but backs off appropriately as the volume is increased. There is a lot of punch in this system, and I was unable to overload the amplifiers even at extreme listening levels. The stereo image was about the same in any seat, although there were times when a balance control would have been appreciated. Backseat passengers are treated to about the same volume as those in the front with the fader in the center position, which makes for comfortable listening with a full passenger load.

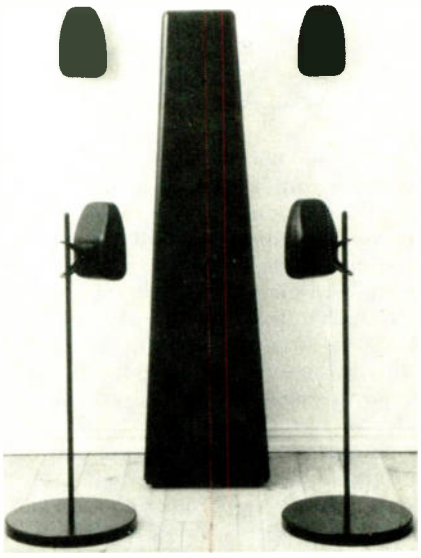
The stock system in the Base and L versions of the Coupe is pretty good as factory systems go; it uses the same Alpine-made head unit, with a balance control. In a direct comparison, the added clarity and punch of the Bose system was readily noticeable. The only difference between the L and LS is the latter's Bose system, which comes as a package with a driver's-side air bag. Price for the LS has not yet been set; the L lists for $25,718 with a five-speed box.

If you're in the market for a world-class, fuel-injected V6/24-valve luxury sports coupe and can't afford a BMW 635CSi, check out the Acura Legend Coupe—and bring along a favorite tape, too. *C.J.E.*

SOUND UNSEEN

AMBRIA IS A MODULAR SPEAKER SYSTEM MADE by MDS of Sweden and imported by Parasound Products, which designs and markets audio components under its own brand name. There are two Ambria systems, the S-1000 and the S-2000, each using a slender, obelisk-shaped bass unit that crosses over at 120 Hz to two or four satellites, respectively. Each 2½-pound satellite, about the size of a large hand, contains a 3-inch midrange driver crossing over to a ½-inch tweeter at 3.5 kHz. The die-cast enclosure is made of a nonresonant synthetic resin.

The 34-inch-high bass unit for the S-1000 contains four vertically aligned 5-inch drivers that conspire to act as a much larger woofer but, according to Parasound, are better controlled on transients. With the drivers facing a wall, response is said to extend as low as 35 Hz. The bass unit for the S-2000 is slightly larger (with a claimed low-end limit of 28 Hz) and contains six drivers and a balance control that can adjust relative output between two satellite pairs. Both bass cabinets are finished in either white or black lacquer and can serve as pedestals for plants or



AMBRIA S-2000 MODULAR SPEAKER SYSTEM

objets d'art. Low bass signals are difficult (ideally, impossible) to localize, so the units can be placed just about anywhere in the listening room.

Parasound says the S-1000 and the S-2000 bass units are designed to operate with, respectively, three or five pairs of satellites connected in parallel while "maintaining a safe and uniform load to the amplifier." The satellites can go just about anywhere using the optional wall- or ceiling-mounts ($25 or $35 per pair, fixed or adjustable) or pole-stand adapters (same prices). The latter affix to the optional pole stands ($85 for two), which raise the satellites to a height of between 26 and 53 inches. The satellites can also be painted to match the surrounding decor. Price for the S-1000 system is $900; for the S-2000, $1,750. Additional satellite pairs sell for $335. For more information, contact Parasound Products, 945 Front St., San Francisco, Calif. 94111.

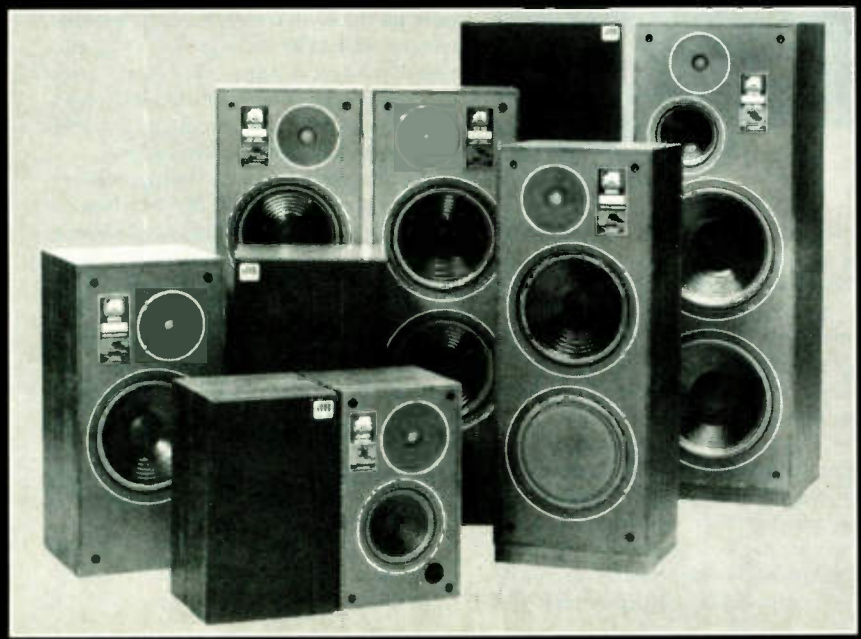
TWELVE FOR THE TRUNK

TECHNICS JOINS SONY AND ALPINE TO BECOME the third company to offer a trunk-mounted CD changer for the car. The CX-DP10 con-

dB PLUS

MEANS SO MUCH MORE

dB PLUS EFFICIENCY	*Up to 120 dB in a typical sound room (dB Plus 1212 full power.)*
dB PLUS POWER	*Up to 400 watts RMS (see specification sheets dB Plus 1212).*
dB PLUS DYNAMICS	*Astounding speed and dynamic range, virtually no ringing.*
dB PLUS BASS	*Deep, tight, powerful, clean, bass response 23 Hz (dB Plus 1212).*
dB PLUS TWEETERS	*Unique, fast, smooth, musically very accurate, dB Plus Polyfoam™ Tweeter.*
dB PLUS OPENNESS	*Wide dispersion for easy listening to a large sound stage.*
dB PLUS ACCURACY	*Smooth, clean, low distortion, low resonance, high definition.*
dB PLUS QUALITY	*Designs so pure that we curve and compare each one to the original.*
dB PLUS WARRANTY	*We're so confident, it's ten years. See warranty cards.*
dB PLUS CHALLENGE	*We challenge any speaker brand, any price range, to a sound comparison.*



dB PLUS 135 Torbay Road, Markham, Ontario, Canada L3R 1G7 1-416-475-0050

dB PLUS

sists of a changer unit that holds a 12-disc magazine, a half-DIN-size in-dash preamplifier/display unit, and a wireless remote control. The disc and track selections are entered in the remote, and you can do this at home as you load the magazine. As many as 55 programming steps can be memorized by the battery-operated remote in five groups, which might be organized by artist or type of music. The first group holds as many as 35 disc/track selections (for long trips), while the remaining four groups hold five each. One group at a time is "downloaded" into the control unit by pressing the appropriate button on the remote, giving the user the flexibility to choose among the five separate programmed sequences. Any group can be reprogrammed in the remote without disturbing the others.

The CX-DP10, which comes with one 12-disc magazine, is scheduled to be available sometime this fall. Price is $1,000. An optional half-DIN AM/FM tuner ($250) can be mounted with the control unit. For more information, contact Technics, One Panasonic Way, Secaucus, N.J. 07094.

PROTON MONITORS

NO, THEY'RE NOT TELEVISIONS, THEY'RE loudspeakers. Designed by acoustic engineer Ken Kantor (who wrote, innocently, about "sleazy" speaker selling practices in our June issue), the Proton AL-300 monitor loudspeaker is a floor-standing model claiming balanced frequency response and sharply focused stereo imaging.

The 1-inch polyester soft-dome tweeter and 3-inch treated-cone midrange driver are closely arrayed on a rearward-sloping baffle, helping to eliminate interference at the crossover frequencies and limiting the floor reflections that can compromise imaging. In addition, acoustically absorptive felt surrounds the two drivers to reduce cabinet diffraction effects.

The 12-inch acoustic-suspension woofer is located near the floor to take advantage of boundary reinforcement, producing a claimed −3-dB point of 36 Hz. The crossover frequencies have been chosen so that each of the three drivers can operate in a range where its power-handling capacity is high, thus limiting distortion and enabling the system to accept instantaneous peaks of as much as 1,200 watts (30.8 dBW).

In keeping with the way the AL-300s were developed, each model is tested by instrument and by ear prior to shipment. A pair retails for $899. For more information, contact Proton, 737 W. Artesia Blvd., Compton, Calif. 90220.

ALPINE TRAVELS

ALPINE HAS A TRUCKLOAD OF NEW AUTOSOUND products. The 5902 Compact Disc player ($600), the company's fourth and least expensive CD model, is similar to the top-of-the-line 7902 (reviewed in July) minus the AM/FM tuner.

Other highlights of the new line include the 7274 autoreverse cassette/radio ($600, pictured), distinguished by an unusual control scheme consisting of just four buttons. A trio of "function" buttons, each with its own status display, chooses among the various tape control and tuner options. The fourth button is actually a rotary control for volume, balance, fade, bass, and treble; each push on the knob selects the next function, and the main LCD panel provides a graphic representation of the setting. The idea is that fewer control buttons will make operation easier, although one might possibly spend more time looking than groping!

Finally, there is the 3337 electronic seven-band graphic equalizer ($370), which can store as many as four curves in addition to the four factory presets. All controls and a spectrum analyzer are contained in a pocket-size remote connected to the base unit via a detachable seven-foot cord. The remote can be mounted in a variety of places using the supplied Velcro tape or a hook and hanger, while the base unit can be tucked away out of sight. Connections to the 3337's base unit are made via DIN or pin-jack inputs, enabling it to work with any head unit having preamp outputs.

For more information, contact Alpine Electronics, 19145 Gramercy Pl., Torrance, Calif. 90509. ■

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Once again, AR reshapes the future of high fidelity.

No longer do you need to live with components that look more at home in a power station than in your home. No longer need you sacrifice sound quality for some semblance of sound design.

AR, the company that revolutionized loudspeakers with the Acoustic Suspension design, now changes the face of stereo components forever. By combining world-class industrial and electronic design, AR has produced the first audio components as pleasing to the eye as they are to the ear.

The front fascias are gracefully angled, so controls fall readily to hand. Behind a hinged panel, infrequently-used controls are ready when you need them, out of sight when you don't.

AR has reexamined the factors that really matter to sound quality. That's why AR amplifiers produce high current output for outstanding dynamic headroom. Four-times oversampling gives the AR Compact Disc player absolute phase linearity. And AR's unified remote control adds a final touch of elegance.

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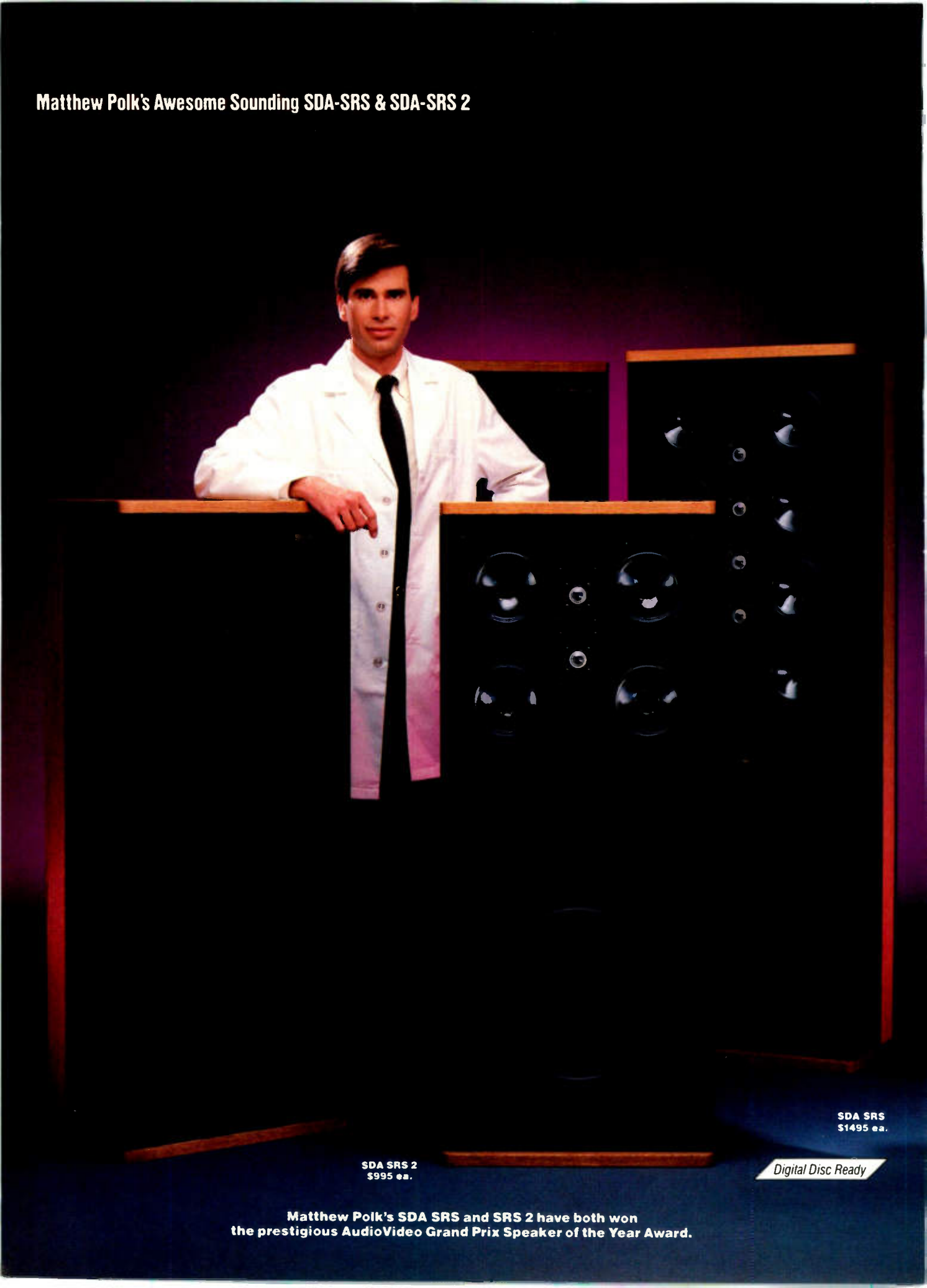
Matthew Polk's Awesome Sounding SDA-SRS & SDA-SRS 2



SDA SRS
$1495 ea.

SDA SRS 2
$995 ea.

Digital Disc Ready

Matthew Polk's SDA SRS and SRS 2 have both won the prestigious AudioVideo Grand Prix Speaker of the Year Award.

"The Genius of Matthew Polk Has Created Two Awesome Sounding Grand Prix Award Winning SDA SRSs"

"Spectacular...it is quite an experience"

Stereo Review Magazine

Now the genius of Matthew Polk brings you the awesome sonic performance of the SDA-SRS in a smaller, more moderately priced, but no less extraordinary loudspeaker, the SDA-SRS 2.

Matthew Polk's own dream speakers can now be yours!

Matthew Polk's ultimate dream loudspeaker, the SDA-SRS, won the prestigious Audio Video Grand Prix Speaker of the Year award last year. Stereo Review said "Spectacular...it is quite an experience" and also stated that the SRS was probably the most impressive new speaker at the 1985 Consumer Electronics Show. Thousands of man hours and hundreds of thousands of dollars were spent to produce this ultimate loudspeaker for discerning listeners who seek the absolute state-of-the-art in musical and sonic reproduction.

Matthew Polk has, during the last year, continued to push his creative genius to the limit in order to develop a smaller, more moderately priced Signature Edition SDA incorporating virtually all of the innovations and design features of the SRS without significantly compromising its awesome sonic performance. The extraordinary new SRS 2 is the spectacularly successful result. Music lovers who are privileged to own a pair of either model will share Matthew Polk's pride every time they sit down and enjoy the unparalleled experience of listening to their favorite music through these extraordinary loudspeakers, or when they demonstrate them to their admiring friends.

"Exceptional performance no matter how you look at it"

Stereo Review

Listening to any Polk True Stereo SDA* is a remarkable experience. Listening to either of the Signature Edition SDAs is an awesome revelation. Their extraordinarily lifelike three-dimensional imaging surrounds the listener in 360° panorama of sonic splendor. The awe inspiring bass performance and dynamic range will astound you. Their high definition clarity allows you to hear every detail of the original musical performance; while their exceptionally smooth, natural, low distortion reproduction encourages you to totally indulge and immerse yourself in your favorite recordings for hours on end.

Julian Hirsch of Stereo Review summed it up well in his rave review of the SDA-SRS: "The composite frequency response was exceptional ...The SDA system works...The effect can be quite spectacular...We heard the sound to our sides, a full 90° away from the speakers...As good as the SDA feature is, we were even more impressed by the overall quality of the Polk SDA-SRS....The sound is superbly balanced and totally effortless...Exceptional low bass. We have never measured a low bass distortion level as low as that of the SDA-SRS...It is quite an experience! Furthermore, it is not necessary to play the music loud to enjoy the tactile qualities of deep bass...Exceptional performance no matter how you look at it."

The awe-inspiring sonic performance of the SDA-SRS 2 is remarkably similar to that of the SRS. Words alone can not express the experience of listening to these ultimate loudspeaker systems. You simply must hear them for yourself!

"Literally a new dimension in sound"

Stereo Review

Both the SDA-SRS and the SDA-SRS 2 are high efficiency systems of awesome dynamic range and bass capabilities. They both incorporate Polk's patented SDA True Stereo technology which reproduces music with a precise, life-like three dimensional soundstage which is unequalled and gives you, as Julian Hirsch of Stereo Review said, "literally a new dimension in sound". Each beautifully styled and finished SRS 2 cabinet contains 4 Polk 6½" trilaminate polymer drivers, a planar 15" sub-bass radiator, 2 Polk 1" silver-coil polyamide dome tweeters and a complex, sophisticated isophase crossover system. It is rated to handle 750 watts. The SRS utilizes 8-6½" drivers, a 15" sub-bass radiator, 4 Polk tweeters and an even more complex crossover. It is rated to handle 1000 watts.

Both the SDA-SRS and SRS 2 incorporate: 1.) time compensated, phase-coherent multiple driver vertical line-source topology for greater clarity, increased coherency, lower distortion, higher power handling, increased dynamic range and more accurate imaging. 2.) a monocoque cabinet with elaborate bracing and MDF baffle for lower cabinet read-out and lower coloration. 3.) progressive variation of the high frequency high-pass circuitry for point-source operation and wide vertical dispersion. 4.) the use of small active drivers in a full complement sub-bass drive configuration coupled to a large 15" sub-bass radiator for extraordinarily tight, quick and three-dimensional mid and upper bass detail combined with low and sub-bass capabilities which are exceptional. The speakers are beautifully finished in oiled oak and walnut.

"Literally a new dimension in the sound"

Stereo Review Magazine

Other superb sounding Polk speakers from $85. ea.

No matter what your budget is, there is a superb sounding Polk speaker perfect for you. Polk's incredible sounding/affordably priced Monitor Series loudspeakers start as low as $85 ea. The breathtaking sonic benefits of Polk's revolutionary True Stereo SDA technology are available in all Polk's SDA loudspeakers which begin as low as $395. each.

"Our advice is not to buy speakers until you've heard the Polks"

Musician Magazine

The experts agree: Polk speakers sound better! Hear them for yourself. Use the reader service card for more information and visit your nearest Polk dealer today. Your ears will thank you.

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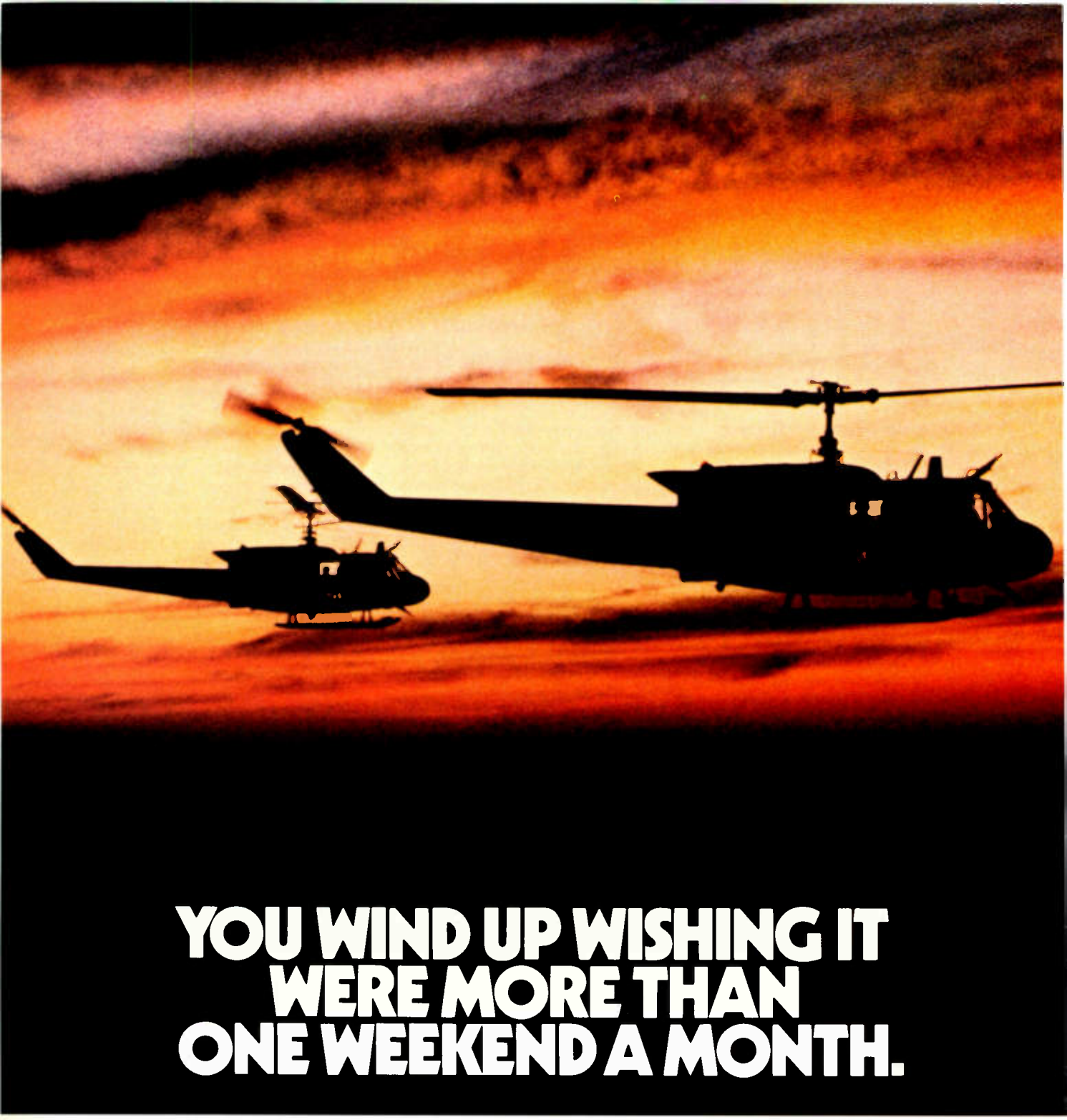
*U.S. Patent No. 4,489, 432 and 4,497, 064. Other patents pending.

Where to buy Polk Speakers? For your nearest dealer, see page 14.



YOU WIND UP WISHING IT WERE MORE THAN ONE WEEKEND A MONTH.

You might find yourself in a chopper, cruising the treetops at 90 miles per hour.

Or doing something more down to earth, like repairing an electronic circuit.

What you won't find yourself doing is getting bored. Because this isn't ordinary part-time work. It's the Army Reserve.

You'll get valuable skill training. Then one weekend a month, and two weeks each summer, you'll put that training to good use, while receiving good pay and benefits.

But maybe most importantly, you'll come away with a feeling deep down that you were challenged and came through. And that doesn't disappear when Monday rolls around.

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C R O S S T A L K

BY LARRY KLEIN

ROM MUSIC

COULD AN INTEGRATED CIRCUIT OR SOME TYPE OF plug-in module be designed to store music in solid-state form? It seems to me that the next great advance would be a music storage medium that did not require moving parts for reproduction.

Fred Harris

Memphis, Tenn.

I agree that solid-state storage of complex program material would be a significant advance. And we have the beginnings of such a development today in the numerous "read-only memory" (ROM) chips making music in a number of inexpensive consumer products. For example, my three-year-old son has a music-teaching toy that plays a variety of built-in tunes. There are also several electronic doorbells with the opening phrases of perhaps 20 songs in their repertoires, and auto supply stores sell electronic horns with an equally large switch-selected assortment of tunes. Last Christmas, I saw (and heard) an electronic tree ornament that delivered a constant stream of tinkling seasonal melodies after the insertion of a 9-volt battery.

But if you are asking about getting a fully orchestrated Beethoven symphony on a chip, I'm afraid that it is not "just around the corner." An enormous amount of memory is required to hold the digital codes that would fully describe a complex 45-minute musical work. The best a ROM chip can do today is about 1 megabit, which translates, using a sampling rate of 44.1 kHz and 16 bits of encoder resolution, into only about 0.7 seconds of stereo music. For a 45-minute composition, about 3,857 megobits would be required, a capability not likely to be available in a single solid-state module in the near future. In fact, even at the most optimistic rate of semiconductor progress (a doubling of chip capacity every year), such a capacity would not be reached for at least ten years.

FCC, PART 15

EVERY FM RECEIVER AND TUNER SEEMS TO HAVE A LABEL stating that the product "Conforms to FCC Regulations, Part 15." What exactly is being referred to?

Norman Jamison

Arlington, Va.

The regulation deals with a diversity of products—including radios, computers, TV sets, and stereo receivers—and establishes limits on the amount of radio frequency (RF) energy they are permitted to radiate. This prevents (or should prevent) your home computer from causing interference with your TV picture or FM reception and prevents portable equipment from interfering with aircraft navigation and communication systems.

FM tuners emit spurious radiation because virtually all of them use the superheterodyne circuit configuration. Briefly, a "superhet" circuit has a local (internal) oscillator that interacts with the incoming radio frequency to produce an intermediate frequency of 10.7 MHz. Because any oscillator operating at radio frequencies (and 10.7 MHz is in the shortwave band) is likely to radiate a signal unless preventive steps are taken, the FCC established maximum external radiation limits to prevent interference with other equipment.

In order to market a receiver or tuner in the United States, a manufacturer must provide measurements to the FCC demonstrating that its product does not exceed the legal RF radiation limit. These measurements, by the way, are taken at a receiver's antenna terminals and at its AC line cord, since stray signals can also leak through the power line.

CARBON FIBER

AS A TENNIS BUFF, I'M USED TO SEEING "CARBON FIBER" and "graphite" featured in advertisements for high-price rackets. Now carbon fiber seems to be appearing in audio products, such as tonearms and speaker cones. What exactly is this stuff, and what does it do for audio performance?

Paul Douglas

St. Paul, Minn.

There are those who consider audio a "high-price racket," too, which is a connection between tennis and audio beyond their use of carbon fibers. There are several types of carbon fiber, but the one used in both tennis rackets and tonearms consists of separate, very fine strands of pure crystalline carbon in an epoxy resin binder. The epoxy provides the bulk, the fibers the strength. This fiber/resin "composite" has several properties that make it very attractive to product designers. Among other things, it is very rigid while being lightweight, as well as being inherently well damped.

When carbon fiber is used in tonearms, either it is applied to the metal shank of the arm as a sort of coating to strengthen it and to improve damping or it is used as an ingredient in the molded-epoxy tubular shank itself. Carbon fiber is also used for phono-cartridge head shells. In making speaker cones, carbon fiber is added to the slurry (a liquid mixture of wood pulp, water, and "secret ingredients") from which cones are molded. As part of the cone material, the fibers help stiffen the cone and damp out internal resonance and vibration transmission.

SYSTEM IMBALANCE

AFTER A LONG STRUGGLE TO DISCOVER THE REASON FOR having to operate the balance control on my preamplifier at the 3-o'clock position, I traced the difficulty to my speakers. What would account for the fact that a readjustment of the midrange control on one of my speakers cured the problem?

John Wilkens

Dallas, Texas

The frequencies that contribute to the perception of loudness are mostly in the midrange. Hence, any control that boosts or cuts the middle frequencies in a speaker system will also greatly influence its apparent loudness. You can confirm this by noting the small effect on the overall loudness of music produced by the highest and lowest bands of a ten-band graphic equalizer.

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

Consolidate Yo

How the world's most powerful receiver can provide the benefits of audiophile separates in a single, remote control component.

Never before has so much clean power, pure sound and unique technology been available at the touch of a remote control button.

The Carver Receiver 2000, at your service. In a single, exquisitely-styled component, we've engineered three of the most significant contributions ever made to audio technology.

A 200 watt RMS per channel Magnetic Field Power Amplifier.

A Sonic Hologram Generator for a three-dimensional sound experience.

An Asymmetrical Charge-Coupled FM Stereo Detector in the tuner section for the cleanest, most noise-free reception possible... plus AM STEREO.

Plus a low-noise high definition preamplifier and surround sound processor so you can create a true home theater experience.

Everything necessary for music enjoyment. Settle back in your chair and pick up the compact Receiver 2000 wireless remote control.

Touch the POWER button. Two hundred watts RMS per channel spring to life. More than any other receiver offered today. The kind of power needed to deliver Compact Discs' incredible dynamic range with the impact and clarity it deserves.

But you're in the mood for a record. Touch one of the four source buttons to select PHONO. As the record comes to life, you realize that it would be a superb candidate for Sonic Holography. Another touch of the

ur Power Base.

remote control and you're suddenly in the midst of the performers, a part of the musical experience.

Suddenly, the phone rings. You reduce the volume easily without leaving your chair and take the call. Later on, you select a favorite FM station from the twelve presets while you catch up on your reading. The sound is hiss-free, even when the station is far away. A great oldie comes on and you use the Receiver 2000's remote to turn it up and rattle the windows for a moment the way you always wished you could when that song first came out.

In the evening, it's movie time. The Receiver 2000 becomes your gateway to high impact surround sound that rivals any Dolby-equipped theater. Starships cruise through your living room. Aliens prowl behind the couch. Laser battles erupt over your coffee table.

All controlled from the comfort of your chair.

A wealth of useful features. From the silky feel of the large, easy-to-use knobs, to the switched and unswitched power sockets on the Receiver 2000's back, you'll find that no detail has been overlooked. Even if it didn't have three of Bob Carver's major innovations tucked inside it, the Receiver 2000 would be one of the finest receivers you could own.

It has inputs for phono, Compact Disc player and even video sound sources. It allows 2-1 and 1-2 dubbing through dual tape deck inputs and outputs, and selection of two sets of speakers or a combination.

Precision, defeatable tone controls are provided for bass, treble *and* midrange, as well as a preset "loudness" equalization curve for acoustic compensation during low level listening.

The bright digital readout and signal strength LEDs are only a hint of the high quality quartz synthesized FM section and AM stereo circuitry within. Choose from six FM and six AM station presets, tune manually or use the Receiver 2000's automatic station search feature.

Ample Power for Digital. Even before Compact Disc players, clipping distortion caused by lack of amplifier power has been the critical listener's enemy. Speakers create music by generating magnetic fields inside their voice coils. A drum beat sounds on a record; energy flows to your speakers; the speakers push the air. In the case of low bass notes, this means having enough power to resonate the entire cubic volume of your listening room thirty times per second!

The sad fact is, few receivers have the technical capabilities to provide the amount of power needed to complete instantaneous music transient waveforms.

Before Bob Carver invented the Magnetic Field Power Amplifier, the only way to get enough power to completely eliminate clipping distortion was to give up owning a receiver and buy a traditional power amplifier and put up with its bulk, heat and expense. The Carver Receiver 2000 uses a better way. An affordable method of delivering the power speakers need without thermal waste, bulk and distortion. Our Magnetic Field Power Amplifier design is elegant, effective and fully described in the 32-page brochure we'll be glad to send you.

The finest receiver FM section. The Carver FM Stereo Receiver 2000 employs Asymmetrical Charge-Coupled Detector technology which makes FM sound as good as other stereo sound sources. Free of background hiss, click and pops, picket fencing and other multipath interference annoyances which disturb FM enjoyment.

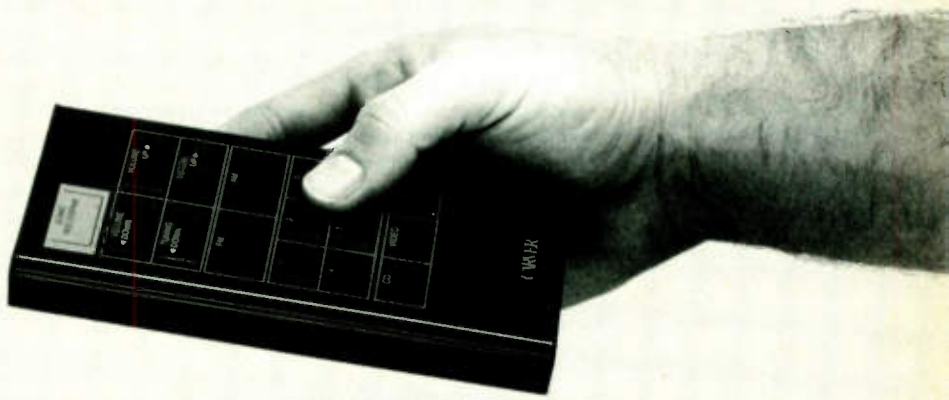
Or, in the words of Audio Magazine's Len Feldman, *"The significance of it's design can only be fully appreciated by tuning the weakest, most unacceptable stereo signal you can find, then pushing those two magic buttons. Separation is still there; only the background noise has been diminished, and with it, much of the sibilance and hissy edginess so characteristic of multipath interference."*

True realism with Sonic Holography. In a live setting, sound approaches from all sides, not just head on the way it does from stereo speakers. Sonic Holography uncovers critical timing and phase information that exists in your and CD's records, but has been inaudible with normal stereo components. Through the Carver 2000, this information emerges in three-dimensional space around you, pinpointing the precise location of instruments and vocals.

You don't need a trained ear to notice the difference. Suddenly the listening field extends wider, higher and deeper than your speakers, literally immersing you in the performance.

The best of everything in one compact component. There has never been a more complete method of enjoying music than the Carver Receiver 2000. Occupying just over two square feet of shelf space, it gives you the power, the tuning ability and the miracle of Sonic Holography that can bring any music or video source to vibrant life. Audition it at your Carver dealer. And then shift the balance of power to your stereo system soon.

Power: 200 watts RMS per channel into 8 ohms. 20-20kHz with no more than 0.15% THD.



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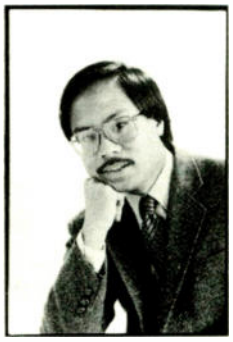

B Y

D A V I D

R A N A D A

Seeing the Future

One of the paths along which television is evolving is that of "high definition." This is generally taken to mean a TV system having approximately 1,100 horizontal scan lines (compared to 525 in today's NTSC system) and a movielike wide-screen picture. International debate continues over precisely which proposed HDTV system should be made the worldwide standard, mainly because of the desire for a system compatible in some fashion with present-day television sets. Other problems confronting progress in HDTV arise from the very wide bandwidth of the signals all the systems produce. These signals require much more radio-spectrum "space" when broadcast than normal TV signals and are difficult to record. However, at last June's International Conference on Consumer Electronics (a series of meetings and lectures for engineers) in Chicago, one system for recording HDTV was described that is based on familiar VCR technology.

The authors of the paper (from Mitsubishi and Kobe University of the Mercantile Marine) describe a system capable of recording the 1,125-line HDTV system now under intense development in Japan. They cite two possible methods of cramming an HDTV signal onto a ½-inch helical-scan videotape: multichannel recording (in which signal is divided up and recorded on several channels in order to reduce the bandwidth required for each one) and multisegment recording (in which the picture itself is divided into segments, each recorded on its own track). The bandwidth of an HDTV signal is so wide that both techniques are employed by the Mitsubishi designers. By a clever method of digitally processed time-compression and multiplexing, the HDTV signal is first divided up into two channels, each containing essentially one field of video information. Each field is then divided into thirds horizontally, and each resulting segment is recorded on its own track by the spinning video heads.

Since the head drum spins at 5,400 rpm and contains four heads, it is clear that the system is not simply a slightly modified home VHS deck, whose head drum spins at only 1,800 rpm and can hold as few as two heads. Other differences include the tape (metal-powder instead of cobalt-modified ferric) and the tape speed (100 millimeters per second instead of 33.35 millimeters per second for standard-speed VHS). The results are encouraging, with the cited luminance bandwidth of 20 MHz and chroma bandwidth of 5 MHz both being adequate for HDTV use. However, the signal-to-noise ratios given (40 dB for luminance, 44 dB for color) are not quite up to snuff yet (the luminance noise figure is inferior to that of ED Beta).

But it is startling that HDTV can be recorded at all on ½-inch videotape. Just give the system a couple of years of refinement and a chance to have its innards incorporated into large-scale integrated circuits, and it might turn HDTV into a viable home playback-only medium. I, for one, have always thought HDTV could succeed despite incompatibility with present-day TVs and without a workable broadcasting system. There are enough budding moviemakers out there to profitably and creatively fill the screens of a VCR-based HDTV rental-tape playback system. And, as the Compact Disc has proven, there are times when true technical progress can be made only by a clean break with the past—by abandoning compatibility with inferior systems.

Less pie-in-the-sky is the digital VCR, which must be the final step in the development of home NTSC video recording. I'm *not* referring here to those digital tricks like picture-in-picture and perfect freeze frame available on some new VHS units. What interests me is yet another evolutionary path for television: the coming (within six years, I'd say) of home VCRs that record video and audio digitally, as a digital audio tape (DAT) system records audio. These machines will (or should, if they don't run into a Copy Code controversy like that now engulfing DAT) be able to make very high-quality recordings and, more important, multiple-generation copies will be *exact* copies (clones) of the originals.

In past years at the ICCE, this field has received more attention than at last June's convention. After an initial burst of enthusiasm, research results have all but disappeared from the published conference proceedings. This does not, however, indicate a loss of interest by the companies involved. On the contrary, it indicates that development has progressed far enough that proprietary results and techniques are being developed. It also seems to indicate, unfortunately, that unless the companies get together soon and create a unified development standard, as was done for DAT, there might be a format war over digital VCRs equal in virulence to that between VHS and Beta.

One exception to the silence on digital VCRs was a paper presented by representatives of Matsushita (Panasonic and Technics, in this country). Using a modified VHS transport and a metal-evaporated videocassette, they built a digital VCR capable of *12* hours of recording time. This is a significant achievement because a digital-video signal, like one for HDTV, normally requires a very wide bandwidth for recording or transmission and would tend to decrease recording time on a VCR. The Matsushita engineers have come up with a way of reducing the bit rate of the digitally encoded video signal from 115 megabits per second down to only 32 megabits per second, while still retaining high picture quality. (For you techie types, the bit rate has been reduced by means of sub-Nyquist sampling, Hadamard transformation, and vector quantization.) At 180 million bits per square inch, the density of digital data on the resulting tape is higher than that for DAT. And in what is the most unfortunate—but hilarious—mistranslation from Japanese I've seen recently, the paper claims that the system is "virtually free of picture quality." ■

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C&C
Computers and Communications

BY ROBERT LONG

WHICH SILENCE IS GOLDENER, PART 1

THE QUESTIONS KEEP COMING: WHICH IS THE BEST tape noise reduction system, and why doesn't everybody use it? Some of the answers are pretty obvious. Budget home equipment, at least those models at the very bottom of the barrel, may not include *any* noise reduction because of the prohibitive cost of the additional parts. Dolby B is now near-standard in component decks, but it doesn't offer the dynamic range of Dolby C or DBX. Dolby C can be added relatively easily to a design that includes Dolby B, but DBX can't—and yet DBX offers the most dynamic range of all the common options.

There also are differences in the way each behaves in practice, which I'll discuss in my next column. First, though, we have to focus on the philosophy behind each system, which has a profound influence on the way it behaves. DBX and Dolby both take a "double ended" approach—that is, they involve compression of the signal before it's recorded and reciprocal expansion of it on playback. It is the expansion that restores the signal and effectively reduces the noise picked up in the recording process. But in another important respect, the two systems embody opposite views of how noise reduction should operate.

DBX begins with the premise that the simpler the system, the better. That is, every elaboration—every treatment used to cure a perceived ill—represents one more potential ailment. Thus DBX seeks to prevent rather than cure ills. Its noise reduction is therefore conceptually simple, offering a single compansion (*com*pression-ex*pansion*) ratio that affects all audio frequencies and operates at all levels within the available dynamic range.

DBX is a 2:1:2 system—2:1 compression encoding and 1:2 expansion decoding—which means that the encoded signal recorded on the tape has half the dynamic range of both the input and the decoded output. In theory, DBX noise reduction can double the dynamic range of any medium to which it is applied, up to the maximum dynamic range of the DBX circuits themselves. That would mean a stretching of the 50 or more dB typically available on home cassette recordings to 100 dB. A figure of 80 or even 90 dB might be more realistic in practice, depending on the way the recording levels are set. But that's still more than ample for home music listening and is enough to rival the dynamic range of the Compact Disc.

The Dolby approach posits that a broad brush can't get into the corners. Its two home systems address only the areas where it considers noise reduction mandatory, at a chosen level of circuit complexity, and take care to confine the action to the target areas. The original, professional Dolby A circuit breaks the audio range into four frequency bands: One circuit compands the bass, a second the midrange, a third the lower and upper treble, and a fourth (whose effect is cumulative with the third) the upper treble alone. The idea is to keep an event in one band from influencing what's happening in another. With Dolby A, a loud bass sound alters neither signal nor noise in the treble ranges. If it were to do so, the result upon decoding might be audible dynamic irregularities in the treble ("breathing" and "pumping").

Dolby B is much simpler (and less costly) than Dolby A because it attacks only one frequency band, concentrating on the upper treble and having its greatest effect around 6 kHz, where the human ear is most sensitive to tape noise (called "hiss" in this frequency range). In this critical 6-kHz area, where the Dolby B circuit suppresses noise by 10 dB, the dynamic range available on Dolby B cassettes typically runs to around 60 dB—enough to qualify as high fidelity, but not much more than that. (A good LP, by contrast, has a dynamic range of about 70 dB.)

The portion of the dynamic range in which Dolby B actually operates is limited in much the same way (and for the same reasons) as its frequency range. There is no encoding compression above Dolby reference level (a magnetic flux level of 200 nanowebers per meter in cassette tapes), which is only a few dB below midrange overload in most cassette tapes. Below this reference level, compression is applied progressively—and unevenly, according to the frequency—down to about 40 dB below the reference level.

The purpose of the upper limit is to minimize the possibility of compressed peaks being further compressed by tape saturation and thus failing to achieve fully reciprocal expansion on playback. That is, the tape saturation is still there, but because it's beyond the Dolby B operating range, the effects of midrange overload don't throw off the decoder. Limiting the compression below −40 dB reduces the possibility of noise pumping that might arise upon playback with signals that are near the tape's residual noise level.

Dolby C carries the processing one step further by adding a second stage. While Dolby B primarily affects the band above 1 kHz and reduces noise by a maximum of 10 dB, Dolby C operates down to the midrange as well and reduces noise by as much as 20 dB in the 6-kHz range. In addition, during recording, Dolby C actually rolls off the very highest frequencies (above about 15 kHz) to avoid boosting them to levels where they could induce tape saturation and therefore distortion. In playback, the ultrahighs are boosted. In effect, this improves high-frequency headroom and enables you to record at somewhat higher levels those signals containing high-level high frequencies (such as those from a CD). This further helps the signal override the noise. Dolby C increases the dynamic range of the cassette medium to 70 dB or so, which is enough for good home reproduction of music, particularly if recording levels are well chosen and playback levels are kept within what I would call sane bounds.

Next month I'll discuss the implications of these approaches. ■

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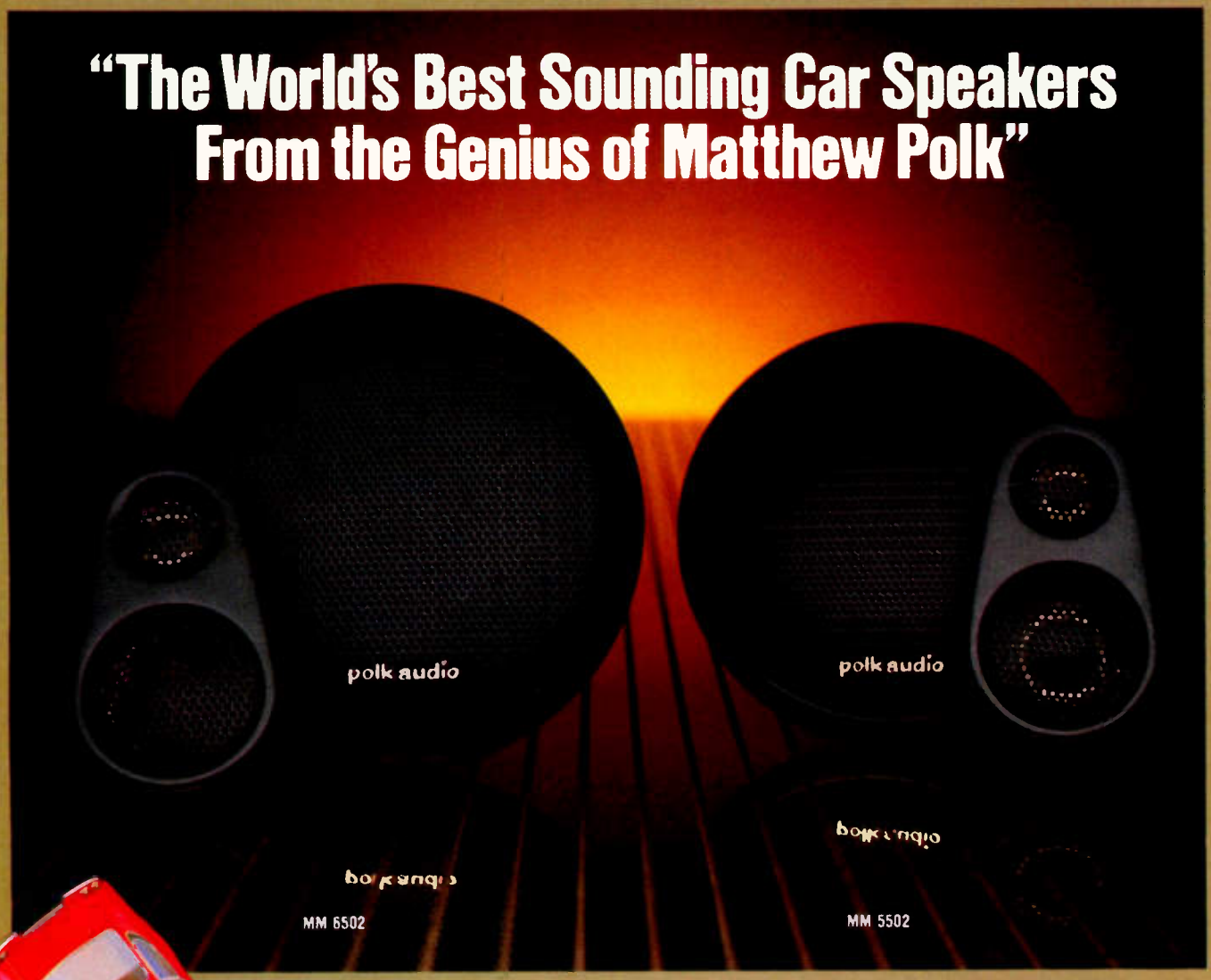

Two of Polk's newest polymer technology two piece, three way systems: The 6-1/2" 6502 (125. ea.) and the 5-1/4" 5502 (99.95 ea.)

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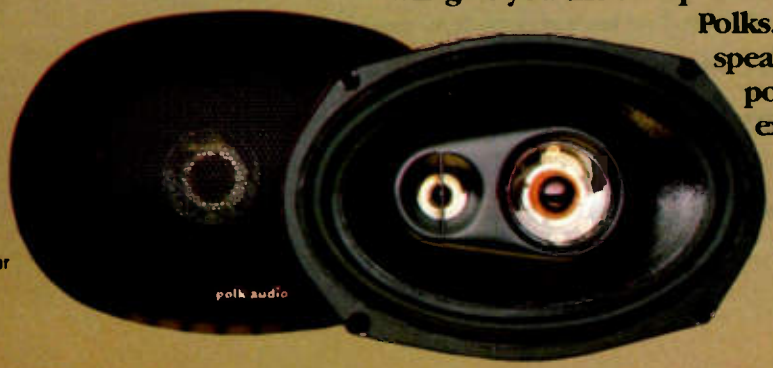
This year industry professionals voted Matthew Polk's MM X (MM 10 6-1/2" two way system — 99.95 ea.) Speaker of the Year in the prestigious Audio Video International Auto Sound Grand Prix. Now the Grand Prix winning MM X is joined by a new generation of high power, three-way polymer technology Mobile Monitors. They are engineered in Matthew Polk's uncompromising tradition of superior sound quality and unequalled value. We are "The Speaker Specialists". No other loudspeakers will give you the unequalled musical pleasure of a pair of Polks. In car speakers, as in home speakers, if you want the best possible sound, listen to the experts and buy Polk Audio.



Polk's state-of-the-art 3 way 6" × 9 6902 (99.95 ea.) also incorporates ploymer technology for superior sound.

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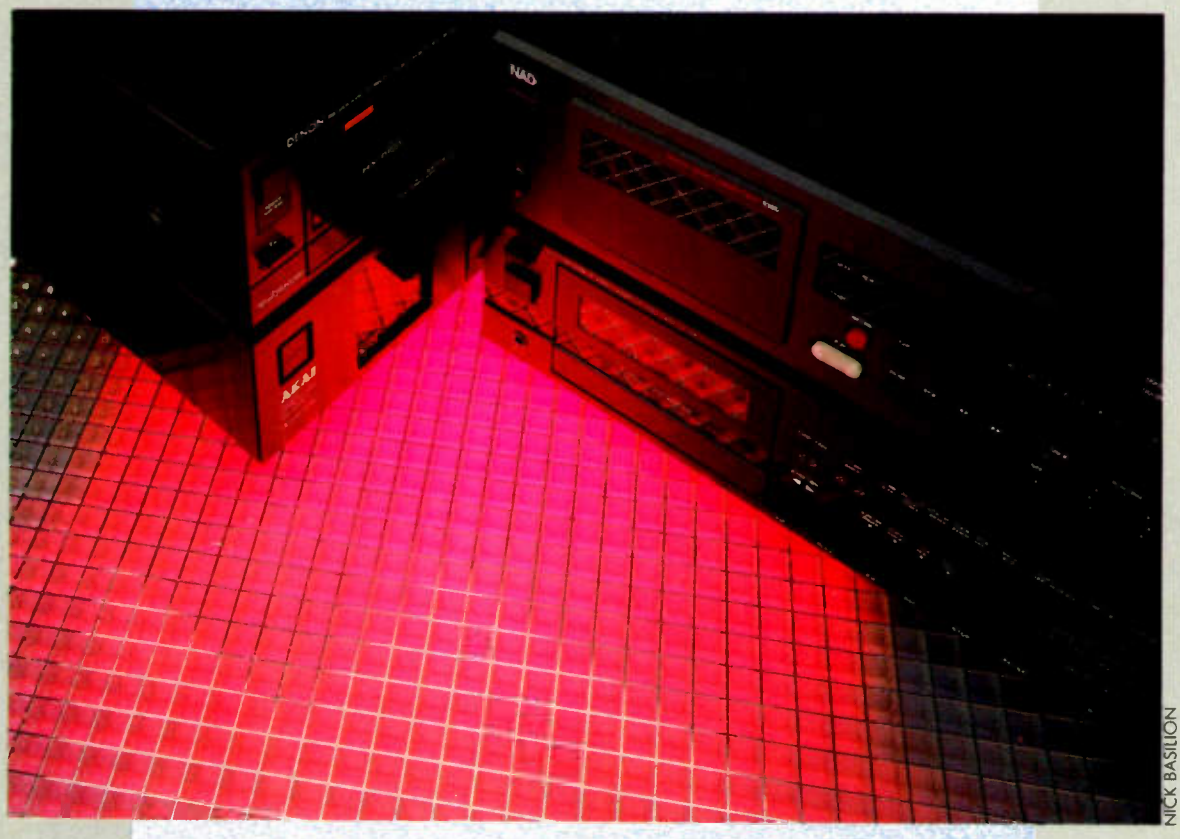
REPORT PREPARATION SUPERVISED BY MICHAEL RIGGS, DAVID RANADA, CHRISTOPHER J. ESSE, ROBERT LONG, AND EDWARD J. FOSTER. LABORATORY DATA (UNLESS OTHERWISE INDICATED) IS SUPPLIED BY DIVERSIFIED SCIENCE LABORATORIES.

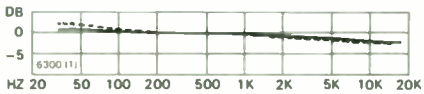


NICK BASILION

A cassette deck is only as good as the tape used in it, and vice versa. So you could view our main feature, which reports on 31 high-quality cassettes, and the four equipment tests that follow as complements. NAD's 6300 is the first (and so far only) deck to combine Dolby HX Pro headroom extension with Tandberg's Dyneq circuit—with interesting results. Also reviewed are a medium-price recorder from Denon, the DR-M14HX, and premium autoreversing models from Akai and Luxman (the GX-R70EX and K-106, respectively). ▶

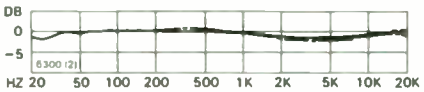
NAD 6300 Cassette Deck

PLAYBACK RESPONSE (BASF test tape; –20 dB DIN)



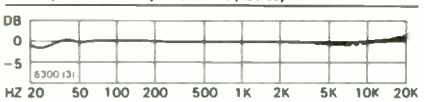
Left channel	+ 0, –2 1/4 dB, 315 Hz to 18 kHz
Right channel	+ 0, –2 1/2 dB, 315 Hz to 18 kHz

RECORD/PLAY RESPONSE, TYPE 2 TAPE (–20 dB)



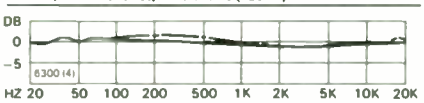
Left channel (no NR)	+ 0 dB, –2 dB, 20 Hz to 20 kHz
Right channel:	
no NR	+ 1/4, –1 1/2 dB, 20 Hz to 20 kHz
Dolby B	+ 1/4, –1 3/4 dB, 20 Hz to 20 kHz
Dolby C	+ 3/4, –2 1/2 dB, 20 Hz to 20 kHz

RECORD/PLAY RESPONSE, TYPE 4 TAPE (–20 dB)



Left channel (no NR)	+ 1, –1 1/2 dB, 20 Hz to 20 kHz
Right channel:	
no NR	+ 3/4, –1 dB, 20 Hz to 20 kHz
Dolby B	+ 1 1/2, –1 dB, 20 Hz to 20 kHz
Dolby C	+ 1/2, –1 dB, 20 Hz to 20 kHz

RECORD/PLAY RESPONSE, TYPE 1 TAPE (–20 dB)



Left channel (no NR)	± 3/4, 20 Hz to 20 kHz
Right channel:	
no NR	+ 3/4, –1 1/4 dB, 20 Hz to 20 kHz
Dolby B	+ 1, –1 1/4 dB, 20 Hz to 20 kHz
Dolby C	+ 1 1/2, –1 1/4 dB, 20 Hz to 20 kHz

DIMENSIONS: 17 1/4 BY 4 1/2 INCHES (FRONT), 10 INCHES DEEP PLUS CLEARANCE FOR CONTROLS AND CONNECTIONS. AC CONVENIENCE OUTLET: ONE UNSWITCHED (5 AMPS, OR ABOUT 550 WATTS, MAX.). PRICE: $798. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: MADE IN JAPAN FOR NAD (USA), 575 UNIVERSITY AVE., NORWOOD, MASS. 02062.

WITH THE 6300, NAD HAS ONCE AGAIN proven itself exceptionally inventive in combining unique features, excellent performance, and ultrafunctional styling into a cassette deck of unusual value. This last point may be difficult to discern, however, since the 6300 stands alone in its field; any price/performance comparisons can be no more than partially valid. Most other brands look upon simplicity and sophistication as opposites. NAD's top models, like this one, offer both and turn the amalgam into an unmistakable hallmark.

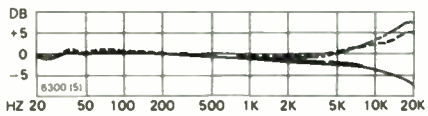
Among its sophisticated elements, the deck's approach to high-frequency headroom stands out, both because NAD makes much of it and because the 6300 is truly unique: It is the only deck to combine the B&O-developed Dolby HX Pro headroom extension system with Tandberg's Dyneq system. NAD is, in fact, the only user of Dyneq besides Tandberg. Both systems seek to forestall self-erasure overload of high-level high frequencies by dynamically manipulating recording parameters that are usually fixed. HX Pro reduces recording bias when the Dolby circuitry senses treble energy in the signal great enough to cause tape saturation if full bias were maintained; Dyneq reduces high-frequency boost in the recording EQ under similar circumstances. To what extent the 6300 simply mates two complementary approaches and to what extent it is a marriage forged by clever NAD engineering, we can't be sure. But on the basis of Diversified Science Laboratories' evidence, it does work.

Less easily documented—but possibly even more successful at its job—is the (also unique) car-stereo compressor function. This feature enables you to make cassettes that will have an optimally restricted dynamic range for automotive playback from originals whose dynamic range is engineered for home playback. The approach, which compresses the middle portion of the dynamic range but leaves the extreme peaks and valleys intact, is unlike that of any other compressor we've ever reviewed.

Then there are the bias-trim feature, which can be used to adjust high-frequency behavior in recording to compensate for the differences between tapes, and the so-called play-trim feature, which equalizes the same range in playback to compensate for either poor biasing when the tape was recorded or poor azimuth match between a different recording deck and the 6300. We've reviewed these useful features before (in the NAD 6155, August 1986), but play-trim remains very rare.

Equally unusual in components of this quality and price class are the 6300's rounded-corner windows and doors, plus the deep-gray color accented with black, white, red, and green. The NAD look may strike you as more like railway-car design than high

ADJUSTMENT RANGE (–20 dB; Type 1 tape)



——— maximum bias, play trim at detent
- - - - - minimum bias, play trim detent
— — — minimum play trim, bias at detent
——— maximum play trim, bias at detent

MULTIPLEX FILTER (defeatable)

– 1/2 dB at 15 kHz, –35 1/2 dB at 19 kHz

S/N RATIO (re DIN 0 dB; R/P; A-weighted)

	Type 2 tape	Type 4 tape	Type 1 tape
no NR	58 dB	56 dB	55 dB
Dolby B	66 1/2 dB	65 dB	64 1/2 dB
Dolby C	72 1/4 dB	71 1/4 dB	69 1/2 dB

INDICATOR READINGS FOR DIN 0 DB (315 Hz)	
Type 2 tape	+1 dB (with 2.6% THD)
Type 4 tape	+1 dB (with 2.0% THD)
Type 1 tape	0 dB (with 0.73% THD)
INDICATOR READINGS FOR 3% DISTORTION (315 Hz)	
Type 2 tape	+1 dB (for +0.6 dB DIN)
Type 4 tape	+3 dB (for +1.5 dB DIN)
Type 1 tape	+3 dB (for +3.5 dB DIN)
DISTORTION (THD at –10 dB DIN; 50 Hz to 5 kHz)	
Type 2 tape	≤ 0.86%
Type 4 tape	≤ 0.59%
Type 1 tape	≤ 0.49%
ERASURE (at 100 Hz)	≥ 60 1/2 dB
CHANNEL SEPARATION (at 315 Hz)	48 3/4 dB
INDICATOR "BALLISTICS"	
Response time	2.4 msec
Decay time	≈ 200 msec
Overshoot	0 dB
SPEED ACCURACY (105 to 127 VAC)	no measurable error
FLUTTER (ANSI weighted peak; R/P)	±0.05%
SENSITIVITY (re DIN 0 dB; 315 Hz)	45 mV
INPUT OVERLOAD (at 1 kHz)	> 10 volts
INPUT IMPEDANCE	90k ohms
OUTPUT IMPEDANCE	70 ohms
OUTPUT LEVEL (from DIN 0 dB)	0.58 volt

A QUICK GUIDE TO TAPE TYPES

Our tape classifications, Types 1 through 4, are based on the International Electrotechnical Commission measurement standards.

TYPE 1 (IEC Type I) tapes are ferrics requiring "normal" bias and 120-microsecond playback equalization.

TYPE 2 (IEC Type II) tapes are intended for use with 70-microsecond playback EQ and higher recording bias. The first formulations of this sort used chromium dioxide; today they also include chrome-compatible coatings such as the ferricobalts and a few metals.

TYPE 3 (IEC Type III) tapes are dual-layered ferrichromes, implying the 70-microsecond ("chrome") playback EQ. Approaches to their biasing and recording EQ vary somewhat from one deck manufacturer to another, when they are accommodated at all. Formulations of this type are no longer being made.

TYPE 4 (IEC Type IV) tapes are the metal-particle, or "alloy," tapes, requiring the highest bias of all and retaining the 70-microsecond EQ of Type 2.

fidelity, but we find that it wears well. In particular, it replaces the shallow techno-glitter of some competing equipment with true functionalism.

Most radical in this regard is the supplied 6300RD wireless remote powered by two AA cells. It's shaped like abstract sculpture with a "foot" that angles the infrared element slightly upward when the control is resting on a tabletop. This design lets you place the heel of your hand on the control's nearest surface in order to steady it while your index finger presses one of the function buttons (recording, play, pause, stop, or either direction of fast wind). That's a limited array of functions for a remote by today's standards, but it encompasses all that most recordists would want (level-setting is best accomplished at arm's length) and avoids the confusing clutter of overinclusiveness. The control also works well if you pick it up, substituting thumb for index finger.

At the left of the transport door on the front panel are the round AC power button (green) and door latch (black). Buttons on the other side of the door control recording (red) and the car processor (black), both with pilot lamps peering out of the counter/meter window just above them. In the window itself are smaller buttons to reset the counter and to toggle its mode between "turns" and elapsed time in recording or playback. The time mode doesn't respond in fast wind but the turns counter does, and either mode can be reset to zero separately.

The transport controls also are buttons. There is no recording interlock; pressing the red recording button alone puts the deck directly into the recording-pause mode. If you change your mind and press PLAY to hear the previous recording, you will erase it unless you first press STOP to cancel the recording mode. The PAUSE is admirable: It leaves no hiatus or click of any sort, so you really can use it for undetectable midphrase editing if your hand-ear coordination is quick enough. Our only reservation is that in recording—but not playback—the pause backs the tape up slightly before switching to recording-pause standby. This may help promote silent pauses, but not ultraprecise cueing. However, the deck's overall cueing abilities are far superior to those of most others.

Farther to the right along the bottom of the front panel are the noise reduction selector (Dolby B, Dolby C, and off), the play-trim, monitor mode (source/tape), and bias tuning controls, as well as a manual tape-type selector, instead of the automatic switching that has become the rule. Our only real complaint with the deck as a whole is the monitor switch, a pushbutton that gives almost no indication as to the selected mode (in for source, out for tape), which seriously inhibits bias setting.

Manual tape-type selection may strike you as a nuisance if you use a variety of tapes and don't always check all your control settings before you begin recording. We have enough tapes kicking around in nonstandard shells that we welcome the opportunity to play (and record) them correctly without some automatic system overriding our EQ (and bias) wishes because it can't find the necessary keyways on the shell. If you're exceptionally forgetful, we'd suggest you standardize on one tape type and leave the switch set for it, although you should be able to detect a missetting if you listen carefully to your recordings as they are being made.

At the upper right is a dual-element recording-level knob. The outer ring adjusts level in both channels, while the inner knob balances them. The peak-reading metering, to the left, has 12 elements in each channel and is calibrated from –20 to +8 dB, with 2-dB steps between –7 and +5 dB and 1-dB steps between –1 and +1 dB. The only other front-panel feature is the pair of noise reduction indicators for Dolby B and C.

There is a separate multiplex filter switch, but it is on the back panel. The implication is that you can leave it off permanently unless the pilot filtering of your tuner is substandard, but the manual declines to say so unequivocally—perhaps inhibited by the Dolby licensing agreement, which mandates the filter (at least for Dolby B). Early versions of the manual state that the multiplex filter, when switched in, affects playback as well as recording. According to NAD, this is untrue: The filter is always out of the playback circuits. Otherwise, the manual is typical of NAD's efforts: exceptionally down-to-earth and communicative, with notes on some matters (such as possible multideck hookups) that you won't often find covered. One item not taken up is recommended tapes. At NAD's suggestion, Diversified Science Laboratories tested the 6300 with three Maxell formulations: XL-IIS ferricobalt as the "chrome compatible" Type 2 tape, MX as the Type 4 metal, and XL-IS as the "standard ferric" Type 1.

Speed accuracy and stability proved exceptional (no doubt thanks to the dual-capstan drive), the noise figures excellent, erasure better than average, meter calibration sensible and useful, and most of the remaining record/play data in need of no apology even compared to far pricier decks. The Type 4 response curves are extremely flat and probably could be made better still by increasing bias a bit over the detented setting. The curves for the other two tapes aren't quite as flat; both suffer from a tendency to sag in the lower treble, which isn't uncommon with dual-layer tapes. The curve for the left channel (not shown) of each of these tapes is flatter than that for the right.

As you might hope from a pairing of Dyneq and HX Pro, the high-level response curves for the metal tape hold up superbly into the ultrahighs. Little compression is visible to beyond 10 kHz in the curves made without noise reduction, and with Dolby C, response at 0 dB is nearly as flat as it is at –20 dB. The ferric tape also does unusually well in this department, though the Type 2 (which inherently has the poorest shot at

high-frequency headroom) falters somewhat. It's hard to say just how much, because of the response sag in the frequency region where rolloff begins.

The lab made no attempt to adjust the fine-bias control away from its detent, because it offers no objective calibration. In other words, you must listen to the result and judge by ear when the setting is correct. This isn't too difficult, given the 6300's separate playback head and monitor switching (and an appropriate signal, such as low-level FM interstation hiss or pink or white noise from a test-signal CD). But it *is* a subjective—and therefore essentially unreproducible—evaluation.

Inveterate recordists may be dismayed at first by the calibration of the bias control: negative numbers for *increased* bias and vice versa. As our adjustment-range curves indicate, however, the upper-treble alteration produced by the bias trim in recording is very similar to that created in playback by the comparable setting of the play-trim control. The latter *is* logically calibrated, with increasingly positive numbers for increased high-frequency boost, negative numbers for rolloff. Since increasing bias attenuates highs and decreasing it boosts them, the bias calibration matches that of the play-trim, making assimilation easier for neophytes, if not for old hands.

It's important to remember that the play-trim control equalizes the signal *before* Dolby decoding. The idea is to undo the response-disturbing effects of a poorly recorded tape (embodying a bias or azimuth mismatch) before they have a chance to cause Dolby mistracking, which could compound the difficulty. The 6300's own measured playback response is too good to need the ministrations of the play-trim; the azimuth match between the deck and the lab's BASF test tape is very good to excellent. There is a slight downward cant to the curve, but tweaking the play-trim would tilt only the top octave or two back upward. Again, there is no objective calibration, and all measurements were made with the control at its detent.

Few radio stations and hardly any TV stations seem able to limit dynamic range as naturally and as effectively as does the car-stereo processor built into the 6300, so we hope professional audio engineers will take note of its properties. Standard practice puts the compression (or limiting) at the top of the dynamic range, squashing the transients that give music its punch and resulting in high-level mush. In many broadcasts a limit is put on the louds and then, all too often, the musical dynamics are jammed up against that limit. By leaving the peaks uncompressed, the NAD design keeps all the punch in the music.

When DSL tried progressively lowering a 1-kHz tone, it discovered no level alteration down to −14 dB. As the input tone was lowered 16 dB more, recorded level did drop steadily, but by only 2½ dB. From there (−30 dB and below), output once again fell proportionately to input. As a result (and again, unlike typical broadcast processors), the silences don't tend to fill in with hiss—or, in concert recordings, with horrendously loud audience noise.

But DSL's test tells only part of the story. It doesn't address the compressor's attack and release times, which have been well chosen to avoid unnatural-sounding artifacts (pumping and the like). Some response shaping—a.k.a. loudness compensation—further hones the effect to compensate for a car's high level of low-frequency noise and the attenuation of treble by upholstery and the effects of non-ideal speaker location.

There were times when we could detect the processor at work by ear alone, and as listening progressed, we sometimes became aware that soft passages were a bit more insistent than normal. But considering the degree of compression involved, we were astonished, in home listening, how few—and how mild—were our complaints for a system not designed for that purpose. If you play a lot of cassettes—classical music, in particular—in your car or on your Walkman and are sick of missing the soft passages obscured by traffic/subway/vacuum-cleaner/lawn-mower noise, this feature may be just what you've been looking for.

In short, we are very impressed with the NAD 6300. Despite its relatively plain appearance, it's far more than a run-of-the-mill deck. Sonically, it can bear comparison to any deck on the market, and its mechanics should delight most serious recordists. Its rejection of features (other than the remote) that contribute nothing to performance per se is refreshing—and very satisfying if you're impatient with gewgaws. No $800 deck can be called a budget model, but the 6300's solid performance and unusual capabilities certainly justify NAD's continuing reputation for exceptional value. ■

T E S T R E P O R T S

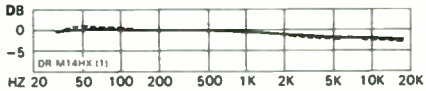
Denon DR-M14HX Cassette Deck

DIMENSIONS: 17 BY 4½ INCHES (FRONT PANEL), 11 INCHES DEEP PLUS CLEARANCE FOR CONTROLS. PRICE: $400. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: NIPPON COLUMBIA CO., LTD., JAPAN; U.S. DISTRIBUTOR: DENON AMERICA, INC., 27 LAW DR., FAIRFIELD, N.J. 07006.

DENON, OFTEN ASSOCIATED WITH LUXURY equipment toward the top of the performance scale, here turns its attention to a moderately priced deck that offers some surprisingly luxurious features. Although the two-head design of the DR-M14HX helps keep cost down by requiring only a single set of Dolby circuits, there are more convenience features than we'd expect in a deck of this sort.

For instance, the supplied RC-102 wireless remote control (which requires two AAA cells) offers "music search" in each direction in addition to the standard transport functions. Music search cues to the next, or previous, interselection blank and automatically begins playback from that point. If you just tap PAUSE-MUTE during recording, the deck will pause instantly; if you press the button firmly, it will lay down a five-second blank (to aid the search function) and revert to recording-pause (standby). For a longer blank, simply hold the button down; the deck will go into standby when you release it. Pressing the button when the deck is already in standby adds a new five-second blank. ▶

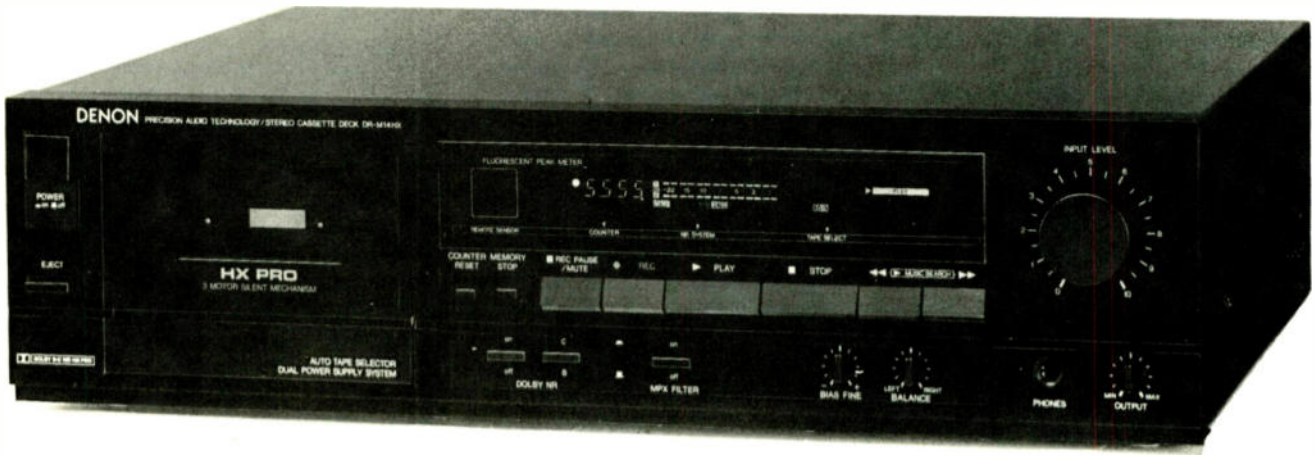
PLAYBACK RESPONSE (BASF test tape; −20 dB DIN)



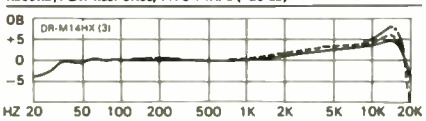
Left channel	+0, −2 1/4 dB, 315 Hz to 18 kHz
Right channel	+0, −2 1/2 dB, 315 Hz to 18 kHz

RECORD/PLAY RESPONSE, TYPE 2 TAPE (−20 dB)

Left channel (no NR)	+1 3/4, −3 dB, 25 Hz to 17 kHz
Right channel:	
no NR	+1 1/4, −3 dB, 23 Hz to 17.5 kHz
Dolby B	+1, −3 dB, 23 Hz to 15.5 kHz
Dolby C	+1 1/2, −3 dB, 23 Hz to 16.5 kHz

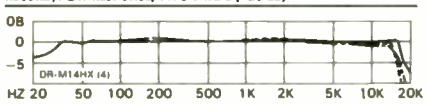


RECORD/PLAY RESPONSE, TYPE 4 TAPE (–20 dB)



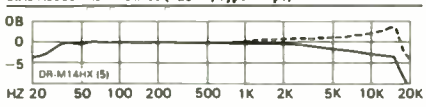
Left channel (no NR)	+ 1 1/2, –3 dB, 25 Hz to 19 kHz
Right channel:	
——— no NR	+ 4 3/4, –3 dB, 27 Hz to 19.5 kHz
- - - - - Dolby B	+ 6, –3 dB, 27 Hz to 19 kHz
— — — Dolby C	+ 8 1/4, –3 dB, 27 Hz to 19 kHz

RECORD/PLAY RESPONSE, TYPE 1 TAPE (–20 dB)



Left channel (no NR)	+ 3/4, –3 dB, 25 Hz to 17 kHz
Right channel:	
——— no NR	+ 1/2, –3 dB, 23 Hz to 17 kHz
- - - - - Dolby B	+ 3/4, –3 dB, 23 Hz to 15 kHz
— — — Dolby C	+ 3/4, –3 dB, 23 Hz to 16 kHz

BIAS ADJUSTMENT RANGE (–20 dB; Type 1 tape)



——— maximum setting
- - - - - minimum setting

MULTIPLEX FILTER (defeatable)

– 3/4 dB at 15 kHz, –39 dB at 19 kHz

S/N RATIO (re DIN 0 dB; R/P; A-weighted)

	Type 2 tape	Type 4 tape	Type 1 tape
no NR	56 dB	55 dB	52 3/4 dB
Dolby B	64 1/2 dB	63 1/2 dB	62 dB
Dolby C	70 1/4 dB	70 dB	66 3/4 dB

INDICATOR READINGS FOR DIN 0 DB (315 Hz)	
Type 2 tape	+ 1 dB (with 1.3% THD)
Type 4 tape	+ 1 dB (with 1.7% THD)
Type 1 tape	+ 1 dB (with 0.59% THD)
INDICATOR READINGS FOR 3% DISTORTION (315 Hz)	
Type 2 tape	+ 3 dB (for + 3.2 dB DIN)
Type 4 tape	+ 3 dB (for + 1.9 dB DIN)
Type 1 tape	+ 5 dB (for + 3.6 dB DIN)

DISTORTION (THD at –10 dB DIN; 50 Hz to 5 kHz)

Type 2 tape	≤ 0.64%
Type 4 tape	≤ 0.74%
Type 1 tape	≤ 0.48%

ERASURE (at 100 Hz)

Type 2 tape	57 1/4 dB
Type 4 tape	55 3/4 dB

Lefties, particularly those with small hands, may resent the way the buttons are offset to the right. Still, the only practical awkwardness we encountered using either hand was that the two buttons we used most—PLAY and STOP—are the hardest to reach with the control seated most comfortably in the hand.

The front panel has no separate music-search controls. To move to the nearest interselection blank, you must simultaneously press PLAY and one of the fast-wind buttons. There is also no pause function for ultra-quick starts and stops in playback with either the remote or front-panel controls. The recording-pause (used without the mute function) leaves a slight hiatus but no click or other extraneous noise. For editing as you dub—either to or from the DR-M14HX—these functions are at least on a par with those of most other decks. The recording button puts the deck directly into standby; there is no interlock to prevent accidental erasure if you then press PLAY without first pressing STOP.

Below the transport controls are those for noise reduction (on/off and Dolby B/C) and multiplex filter (on/off), bias tuning, and recording balance. As can be expected in this price range, there are no facilities for objective evaluation of bias tuning; the combination record/play head prevents even aural evaluation while you're recording. Thus, most testing was done with this control at its center detent. To the right are a headphone jack and an output level control, which affects the line output as well as the phones; above them is the recording-level control.

In the window to its left are the metering and turns counter, plus various function status indicators. The meter is divided into 12 elements (actually, pairs of elements) in each channel. It is calibrated from –20 to +8 dB (for a 0-dB reading 1 dB below our DIN reference of 250 nanowebers per meter). Minimum element spacing is 2 dB between –7 and +5 dB, 1 dB from –1 to +1 dB. Meter operation is generally very satisfactory, though response is marginally slow by normal standards; there is even a very slight overshoot on transients, like a super-quick mechanical (needle) display.

The counter reset is at the left of the transport controls, along with a memory-stop button that automatically halts rewind when the zero reading is reached. This was once a standard function, and it's handy for returning to the start of a flawed recording in order to redo it or for repeating a passage in playback. These days, it's usually either integrated with other automated functions or omitted altogether.

The only remaining front-panel controls are the power switch and door latch, both at the left. On the back panel, the signal-lead connections are recessed. You can dress the leads downward (particularly if you use cables with right-angle plugs) so that they require no back clearance at all. But there are ventilation slots all along the top of the panel, so presumably backing the deck flush against a wall wouldn't be a smart idea.

Denon's manual suggests tapes (some of them now obsolete) from various manufacturers, including its own brand, for use in the deck, whose basic tape-type selection is automatic (aside from the bias-trim control, of course). In its tests, Diversified Science Laboratories used three current Denon tapes: HD-7 ferricobalt as the chrome-compatible Type 2 formulation, HD-M as the Type 4 metal, and DX-3 as the Type 1 ferric.

Record/play response is extremely flat with both the Type 2 and Type 1 tapes and with the bias trim set at its detent. The bandwidth of the two is essentially identical, even with the multiplex filter off, and presumably reflects the gap size of the combination head. Other decks may give you a small fraction of an octave more at the top end with a Type 2 tape, but few will give you such flat response coupled with such superb Dolby tracking. The jolt comes with the Type 4 tape, for which our sample's factory adjustments had apparently slipped. Turning the bias control to its maximum setting reduces the high-frequency peak shown on the graph, but response at that setting still is up almost 3 dB at 14 kHz.

Judging by the minutiae of the Type 4 curves, the built-in Dolby HX Pro headroom extension may exaggerate the peak to some ▶

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TYPE I (Normal Position)

AD-X You'll get exceptional sound throughout the entire frequency range with the first normal-bias Avilyn formulation designed for wider dynamic range with superior MOL. Record on home components.

AD-S For cleaner, sharper sound AD-S delivers wider dynamic range with lower tape noise. A special rigid plastic C-Thru™ mechansim provides resonance control for clear undistorted recordings. Record on home component systems, integrated systems.

AD Hot high-end performance is the earmark of AD. Linear ferric oxide particles for smooth, natural reproduction provide for extreme sensitivity and wider dynamic range. For use with rack systems and auto decks.

D When you want premium performance at an economical price, TDK D cassettes deliver. Available in the widest assortment of lengths. Record on home tape deck systems or battery powered portables.

TYPE II (High Position)

SA-XG This is the ultimate Type II performer that meets or exceeds professional recording standards. A superior RS-II three-layer mechanism, plus TDK's exclusive dual coated Super Avilyn formulation make it the world's quietest tape, in any class. Perfect for all professional and high-end home equipment recording.

HX-S When you want extended dynamic range and digital capability, HX-S is the premier metal particle tape to use. Record on home component systems.

SA-X The world's quietest tape formulation—a dual coating of Super Avilyn—plus a unique DLM (Dual Layer Mechanism) delivers improved frequency response with virtually no noise. Record on home component systems, high-end portables.

SA Greater dynamic range and high energy sound have made SA the world's most popular high bias cassette. Record on home component systems, boom boxes and other portables.

TYPE IV (Metal Position)

MA-XG Capture the full dynamics of digitally-sourced material on MA-XG. The ultimate metal tape features TDK's new three-layer RS-II vibration dampening mechanism, which virtually eliminates vibration—delivering the purest, clearest sound. Record on high-end metal compatible decks.

MA-X Our Super Finavinx metal tape formulation and new DLM (Dual Layer Mechanism), which virtually eliminates vibration, allows MA-X to deliver a richer, wider dynamic range with clearer sound. Record on all metal compatible decks.

MA Superior sound reproduction with super-wide dynamic range are the characteristics of MA. It delivers true metal tape performance at an affordable price. Great for digitally sourced music, too. Record on all metal compatible decks.

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Century Stereo
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Audio Today
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Casa Moore Stereo
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Casa Moore Stereo
(805) 832-6311
Dexter's Camera & Hi Fi
(805) 643-2172
Northridge Audio Ctr.
(818) 993-1016
Rogersound Labs
(818) 351-5421
Rogersound Labs
(818) 882-4600
Rogersound Labs
(818) 787-6863
Sound Center
(819) 883-2811
Sound Center
(813) 991-2685
Paradyme Electronics
(916) 481-3900

COLORADO
Gramophone Shop
(303) 744-1283
Soundings
(303) 759-5505
Soundtrack
(303) 425-6700
Soundtrack
(303) 671-9399
Soundtrack
(303) 442-3600
Soundtrack
(303) 759-5401
Soundtrack
(303) 979-8900
Soundtrack
(303) 450-6677
Soundtrack
(303) 779-5003
Soundtronix
(303) 356-1588
Soundtronix
(303) 545-1097
Soundtronix
(303) 574-2900
The Sound Shop
(303) 636-1684

CONNECTICUT
Audiotronics
(203) 838-4877
Carston Stereo
(203) 744-6421
Hi Fi Stereo House
(203) 666-4740
Hi Fi Stereo House
(203) 674-9755
Take 5 Audio
(203) 777-1750
Zinno Music
(203) 755-3696

DELAWARE
Sound Studio
(302) 678-0100
Sound Studio
(302) 731-1024
Sound Studio
(302) 478-9300

FLORIDA
Absolute Sound
(305) 629-1930
Audio Advisors
(305) 586-8497
Fox Audio
(305) 287-4335
Sound Design & Eng.
(305) 562-7210
Sound Plus Wood
(305) 391-1843
Stereo By Design
(305) 232-1812
Stereo By Design
(305) 344-3700
Verns Electronics
(305) 391-3259
Audio Workshop
(813) 748-3868
Cooper For Stereo
(813) 527-6863
Maurice Stereo
(813) 876-1951
Stereo Garage
(813) 775-5900
Behren's Audio Lab
(904) 721-1860

GEORGIA
Hi Fi Buys
(404) 266-1694
Stereo City of Georgia
(404) 736-0189
Hi Fi Sales & Service
(912) 228-0093

HAWAII
Audio Shoppe
(808) 537-1931
Bose Entertainment Ctr.
(808) 533-4122
Bose Entertainment Ctr.
(808) 533-6738
Hilo Audio
(808) 935-7146

ILLINOIS
Audio Enterprises
(312) 754-6056
Audio Visions
(312) 980-4946
Columbia Audio-Video
(312) 394-4770
Columbia Audio-Video
(312) 433-6010
Media Room
(312) 966-5590
Mills Recording
(312) 332-4116
Sounds Deluxe
(312) 887-9818
Stereo Systems
(312) 934-5544
Stereo Systems
(312) 885-4144
Team Electronics
(312) 658-8600
America's Best Audio
(815) 338-0565
Columbia Audio-Video
(815) 964-4886
Stereo Systems
(815) 741-1350
The Shoppe
(815) 939-4014

INDIANA
Audio Radio Specialst.
(219) 255-6434
Classic Stereo
(219) 483-0553
Classic Stereo
(219) 483-0553
Classic Stereo
(317) 282-5264
Classic Stereo
(317) 662-9344
Ovation Audio
(317) 849-7729
Tom Doherty's Audio
(317) 848-7503
Alan Audio
(812) 332-2192
Audio Connection
(812) 232-1663
Risley Electronics
(812) 479-8787
Risley Electronics
(812) 886-9543

IOWA
Spencer Sound Syst.
(319) 354-1448
Wright's Sight & Sound
(515) 437-4814
Pfanz Electronics
(712) 252-4507

KANSAS
Audio Visions
(316) 681-1751
Hayes Audio Elect.
(316) 792-8139
Hayes Sight & Sound
(316) 662-2791
Audio Electronics
(913) 381-8585
Nelson's
(913) 267-2200

KENTUCKY
Audio Video By Design
(502) 425-3333
Risley Electronics
(502) 685-2264
Risley Electronics
(502) 821-5620
Risley Electronics
(502) 443-4444
Audio Connection
(606) 432-8132
Creation Audio
(606) 278-0335
Signt In Sound
(606) 371-4036
Sounds Around Town
(606) 528-0566
Sounds Around Town
(606) 864-6487

LOUISIANA
J's Sound Center
(318) 387-6044
Stereo & Record Cent.
(318) 861-2666
Stereo & Record Cent.
(318) 865-6223

MARYLAND
Discerning Ear
(301) 494-8990
Myer-Emco
(301) 468-2000
Sound Studio
(301) 546-3181

MASSACHUSETTS
Taylor'd Sound
(413) 499-1420
The Music Store
(413) 774-2836
Audio-Video Environ.
(617) 864-8001
Electric Gramaphone
(617) 443-3703
Encore Audio
(617) 236-4646
High Fidelity House
(617) 799-9737
Nantucket Sound
(617) 231-3161
Nantucket Sound
(617) 532-5777
Nantucket Sound
(617) 734-0700
Nantucket Sound
(617) 771-4434
Nantucket Sound
(617) 548-6622
Nantucket Sound
(617) 326-2344
Sound II
(617) 396-5454
The Music Box
(617) 235-5100
The Music Forum
(617) 343-9393
The Music Forum
(617) 632-0660
The Music Forum
(617) 534-4431
Trolley Stereo
(617) 454-7847
Audio Concepts Inc
(619) 699-8819

MICHIGAN
Stereo Center
(313) 239-9474
Videc Alternative
(313) 549-3100
Classic Stereo
(616) 957-2130
Classic Stereo
(616) 381-6049
Langlois Stores
(616) 732-2528

MINNESOTA
Team Electronics #163
(218) 739-3874
Amalgamated Audio
(507) 288-1328
Amalgamated Audio
(507) 452-1965
Midwest Satellite A & V
(507) 238-2233
Audio By Design
(612) 475-1443
Entertainment Designs
(612) 339-9616
First Tech
(612) 377-3840
First Tech
(612) 378-1185
Top Tech
(612) 780-9707
Top Tech
(612) 920-4817
Top Tech
(612) 544-7412
Top Tech
(612) 636-5147
Top Tech
(612) 451-1765

MISSISSIPPI
Audio Advantage
(601) 328-4500
Audio Advantage
(601) 841-2400
Automotive Audio
(601) 956-8158
The Sound Circuit
(601) 445-2377
The Sound Circuit
(601) 638-6033

MISSOURI
Hi Fi Fo Fum
(314) 647-3606
Wright's Sight & Sound
(816) 365-7208

MONTANA
Sounc Pro
(406) 449-4945
Sound Pro
(406) 453-4364

NEVADA
Import Audio
(702) 731-2000
Import Audio
(702) 731-4918

NEW HAMPSHIRE
Audio Of New England
(603) 225-3313
Audio Of New England
(603) 524-1532
Cuomo's
(603) 893-1904
Soundsations
(603) 778-1402

NEW JERSEY
AC Audio Video
(201) 526-1777
Atlantic Stereo
(201) 390-0780
Elite Audio Video
(201) 884-0044
J S Audio
(201) 292-2799
Landes Audio
(201) 879-6889
Leonard Radio
(201) 267-5525
Monmouth Stereo
(201) 842-6565
Samm Sound
(201) 575-8910
Stereo City
(201) 561-5577
The Sounding Board
(201) 445-5006
Soundworks
(609) 751-1900
Sound Waves
(609) 645-1222

NEW MEXICO
The Sound Room
(505) 524-7080

NEW YORK
Audio Exchange
(212) 964-4570
Audio Exchange
(212) 982-7191
Audio Salon
(212) 249-4104
Custom Media Design
(212) 689-5916
Music Masters
(212) 840-1958
New York Video
(212) 755-4640
Park Avenue Audio
(212) 685-8102
Audio Exchange
(516) 334-7077
Audio Exchange
(516) 295-2100
Designatron's Stereo
(516) 822-5277
Designatron's Stereo
(516) 473-4242
The Sound Approach
(516) 499-7620
Sound Insights
(516) 536-9160
Audio Sound Systems
(513) 783-0938
Great Northern Stereo
(518) 561-8909
Chemung Electronics
(607) 962-4606
Chemung Electronics
(607) 733-5531
Chemung Electronics
(607) 272-2225
Rowe Phono/Video
(716) 442-8230
Stereo Shop
(716) 442-2879
Stereo Shop
(716) 621-4050
Stereo Shop
(716) 424-1820
The Stereo Advantage
(716) 632-3038
Clone Audio
(718) 987-2850
Continental Sound
(718) 459-7507
Leonard Radio
(718) 803-1111
NYC Media Room
(718) 783-2113
Sound On Wheels
(914) 471-9880

NORTH CAROLINA
Audiohaus
(704) 256-6911
Mac's TV
(704) 437-2494
Anderson Audio
(919) 633-3611
Microwave Audio World
(919) 446-1200
Stereo Sound
(919) 942-8546
Stereo Sound
(919) 732-4111

OHIO
B & B Appliance
(216) 842-5600
B & B Appliance
(216) 261-5600
Far East Audio
(216) 264-2131
Hammond Electronics
(216) 467-0070
Classic Stereo Of Ohio
(419) 228-9422
Sight In Sound
(513) 474-4776
Sight In Sound
(513) 931-7601
Sight In Sound
(513) 772-6500
Sight In Sound
(513) 471-5602
Sight In Sound
(513) 248-1110
Stereo On Wheels
(513) 898-4590
Stereo On Wheels
(513) 866-4131
Stereo Or Wheels
(513) 253-3113
Hammond Electronics
(614) 237-2504
Hammonc Electronics
(614) 278-9292
Hammonc Electronics
(614) 522-8467

OKLAHOMA
Contemporary Sounds
(405) 755-7795
Sound Station
(918) 336-2240
The Phonograph
(918) 665-6363

OREGON
Focus Electronics
(503) 364-3289
Hawthorne Stereo
(503) 234-9375
Sheckell's Stereo
(503) 476-5282
Sheckell's Stereo
(503) 773-3732
Stereo Plant
(503) 382-9062

PENNSYLVANIA
Sassafras Audio
(215) 776-1941
Sassafras Audio
(215) 527-3656
Sassafras Audio
(215) 357-7400
Sassafras Audio
(215) 884-0292
Sassafras Audio
(215) 627-2913
Sassafras Audio
(215) 362-2180
Sound Shack
(412) 224-7000
The Listening Post
(412) 443-6160
The Listening Post
(412) 681-8433
The Listening Post
(412) 856-1199
Soundworks
(609) 751-1900
Hi Fi House
(717) 564-7688
Hi Fi House
(717) 737-7775
M & M Stereo Equip.
(717) 524-9182
Summit Audio-Video
(717) 283-2770

SOUTH CAROLINA
Frawley Electronics
(803) 771-7340

SOUTH DAKOTA
Western Stereo
(605) 332-5535

TENNESSEE
Hi Fi House
(615) 693-4331
Lindsey Ward
(615) 331-4434
Nicholsons Stereo
(615) 327-4312
The Sound Room
(615) 928-9233
New Wave Car Stereo
(901) 346-3444
New Wave Car Stereo
(901) 668-6711

TEXAS
Hillcrest High Fidelity
(214) 528-0575
Hillcrest High Fidelity
(214) 352-9757
Home Entertainment
(214) 934-8585
Preston Trails Audio
(214) 248-9104
Stereo & Record Ctr
(214) 757-3500
Stereo & Record Ctr.
(214) 297-1933
Stereo & Record Ctr
(214) 938-9401
Stereo & Record Ctr.
(214) 361-7455
Texarkana Audio Ctr.
(214) 793-2866
Audio Video
(409) 696-5719
Brock Audio
(409) 832-0276
Bjorn's Audio Video
(512) 846-6991
Discovery Audio Video
(512) 396-2333
Metex International
(512) 727-8933
Showery Stereo
(512) 682-1221
Tape Town Audio Video
(512) 851-2392
Groove Audio Video
(713) 523-2900
Sheffield Audio
(713) 789-1180
Hi Fidelity of Lubbock
(806) 794-4507
Soundroom
(806) 353-9171
Sound Idea
(817) 277-1924
Sound Idea
(817) 346-4500
Sound Idea
(817) 284-4503
The Sound Room
(915) 594-8201

UTAH
Broadway Music
(801) 355-1110
Hi Fi Shop
(801) 621-5244
Lynns TV & Stereo
(801) 752-6564

VERMONT
Mountain Music
(802) 775-2308

VIRGINIA
Contemporary Sounds
(703) 371-4815
Eastwood Fine Audio
(703) 665-0199
Excalibur
(703) 548-3113
Myer-Emco
(703) 536-2900
The Audio Center
(703) 982-8793
Audio Exchange
(804) 282-0438
Digital Sound
(804) 424-5850
Sounds Unlimited
(804) 792-6717

WASHINGTON
Brown's
(206) 457-4150
Desco Electronics
(206) 943-1393
The Sound Authority
(206) 577-0900
Home Entertainment
(206) 881-1265

WASHINGTON D.C.
Myer-Emco
(202) 293-9100

WEST VIRGINIA
Pied Piper
(304) 733-2030
Pied Piper
(304) 529-3355
Pied Piper
(304) 255-0235
Sterec Video Unlimited
(304) 752-2265

WISCONSIN
General Electronics
(414) 964-7660
General Electronics
(414) 281-6651
Gene's Sound/Camera
(414) 458-2141
Wiscorsin Electronics
(414) 921-5555
Wiscorsin Electronics
(715) 423-2910

WYOMING
Murphy Sight & Sound
(307) 682-4771
The New Music Box
(307) 742-3774

LUXMAN

CHANNEL SEPARATION (at 315 Hz)	51 dB
INDICATOR "BALLISTICS"	
Response time	9.2 msec
Decay time	≈ 1,050 msec
Overshoot	1 dB
SPEED ACCURACY (105 to 127 VAC)	0.4% fast
FLUTTER (ANSI weighted peak; R/P)	±0.14%
SENSITIVITY (re DIN 0 dB; 315 Hz)	95 mV
INPUT OVERLOAD (at 1 kHz)	> 10 volts
INPUT IMPEDANCE	77k ohms
OUTPUT IMPEDANCE	1,600 ohms
OUTPUT LEVEL (from DIN 0 dB)	0.71 volt

extent in the record-play curves made at −20 dB. At 0 dB, however, HX Pro does reduce treble compression, but not by as much as we sometimes encounter. Furthermore, there's relatively little difference between the 0-dB curves without noise reduction and those with Dolby C. However, net high-frequency headroom is better than you normally would get without HX Pro.

The remaining record/play measurements document performance at about the level we have come to expect in a relatively inexpensive deck from a major component company. Erasure isn't as thorough as on many decks—even the Type 2 doesn't quite make it to −60 dB—but it's not far off the mark. In the playback-response test, head azimuth proved a fairly good match to that of the lab's BASF test tape. Playback frequency response itself is quite flat, though with some downward tilt toward the upper end.

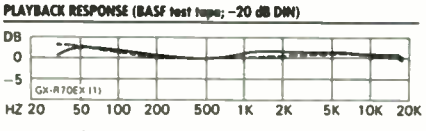
With its combination of basics and added features, the DR-M14HX should have wide appeal. Though a two-head deck suggests a relatively simple approach, the design is surprisingly sophisticated in some respects. For example, it employs three motors—for capstan, spooling, and head positioning—thus offering more than routine capabilities without making a pretense of addressing the specialized needs of the devoted recordist who wants a separate playback head or the sybarite who wants to pig out on automation. Aside from the behavior of our sample with the metal tape used for the tests, the DR-M14HX should satisfy the much broader range of users for which it has been designed. ■

T E S T R E P O R T S

Akai GX-R70EX Cassette Deck

All measurements made in forward transport direction except as specified

PLAYBACK RESPONSE (BASF test tape; −20 dB DIN)



——— **Left channel** +1 1/2, − 1/4 dB, 315 Hz to 18 kHz

- - - - - **Right channel** + 3/4, − 1/4 dB, 315 Hz to 18 kHz

DIMENSIONS: 17⅛ BY 4⅛ INCHES (FRONT), 11 INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. PRICE: $549. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: AKAI ELECTRIC COMPANY, LTD., JAPAN; U.S. DISTRIBUTOR: AKAI DIV., MITSUBISHI ELECTRIC SALES AMERICA, INC., 225 OLD NEW BRUNSWICK RD., PISCATAWAY, N.J. 08854.

IF YOU'VE BEEN THINKING OF BUYING AN Akai autoreverse deck for some time, the GX-R70EX will no doubt look quite familiar. It's typical of Akai's designs over the last few years; only the precise roster of features and refinements is unique. That in itself is reassuring, because Akai has been a major force in bidirectional cassette decks from the very start and therefore can draw on an exceptional corporate history in the genre.

If you have not been following Akai's work in this area, the first thing that will strike you on the R70EX front panel is the lack of an eject button. Push STOP, and the cassette compartment door pops open; push it again, and the door shuts. If, when the door is open, you push another of the transport keys, the door shuts and the selected function begins automatically. The recording button puts the deck into standby (recording-pause), in which state it needs only a tap on one of the play buttons to begin recording. By way of protective interlock, only the play button for the preselected direction of tape travel will respond under these conditions.

There is no playback pause mode, although there are the usual three directional modes: no reversing, out-and-back, and continuous reversing. (The last mode doesn't operate while recording, naturally.) Automatic reversing occurs at the end of the leader. You can reverse manually (and quite quickly) during recording by simultaneously pressing the recording button and that for reverse play. To change direction from stop while keeping the tape cued where it is, you can press the appropriate play key and then STOP before the tape moves.

The controls associated with level adjustment for recording are directly below the transport controls. You can set levels manually by pressing the "+" or "−" buttons. Diversified Science Laboratories found that each tap corresponds to a step of from ½ to 2 dB, representing very good performance for such a device. A numerical display next to the control shows, in dB, the attenuation below maximum level. When it read 50 dB, the lab measured 48 dB of attenuation—again, excellent performance for a design of this sort.

You can let the deck set levels automatically with a button marked CRLP (Computer Recording Level Processing). It is frequency-sensitive: When the lab fed it 0.5-volt test tones, the automatic control attenuated a 5-kHz signal 3 dB more and a 10-kHz signal 8 dB more than it changed a reference 315-Hz signal. It thus seems to take into account the signal's spectral content and records more cautiously when it encounters sounds that are loaded with highs.

To help you evaluate spectral content for manual recording-level adjustment, there's a peak/spectral mode switch for the level meters. The spectral mode displays the highs (here, a band around 8 kHz) on the upper (normally, left-channel) meter and the midrange (around 400 Hz) on the lower one. The meter also automatically shows suggested maximum levels for each range, based on the tape type that is automatically sensed by the deck using the cassette-shell keyways. Our only reservation about these level recommendations is that the Type 1's high-frequency headroom is indicated as no better than the Type 2's. In fact, Type 1's less demanding EQ affords considerably more headroom when tape formulations of equal overall quality are compared. A knowledgeable recordist will take such factors into account when reading the meters.

Finally, in this group of controls, is a button that sets up an automatic fader. If you press it while in recording standby, the fade-in will begin when you press PLAY; if you press it *while* you're recording, it starts a fade-out. Either fade lasts about 6 seconds if you give the button a single tap, 3 seconds if you tap it twice in succession. The maximum level reached by the fade-in is that already set manually or with the CRLP.

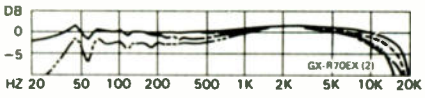
Beyond the attenuation-indicator window are the noise-reduction selector buttons (off, Dolby B, Dolby C, DBX) and the multiplex filter switch. Above these, just under the meters, are a timer-mode switch (off, recording, playback), an output-level slider (which affects both the headphone jack and the line outputs), and the bidirectional mode selector.

To the right of the meters are the recording-balance slider, the IPLS (Instant Program Location System) button that seeks out the nearest interselection blank when either of the fast-wind controls is pressed, and the counter reset. Although Akai calls the latter an "elapsed time counter," it doesn't behave like the elapsed-time mode of most other multimode displays. In forward play it counts upward, in reverse it counts downward, and it does so even in the fast-wind modes. It thus acts as a turns counter, but reads in minutes and seconds of playing time to the "left" (+) or "right" (−) of the "00:00" point.

The metering, which is surrounded by various status readouts, has 12 elements per channel, calibrated from −20 to +12 dB, with 2-dB increments between −2 and +8 dB. Akai continues to show a "0 VU" marking at approximately −4 dB (referred to the DIN standard magnetic flux level of 250 nanowebers per meter). We have yet to find any positive aspect to this confusing practice. Otherwise, the metering strikes us as good; in the peak mode, it works very much like the metering on typical contemporary decks. Many may have even finer calibration steps near the tape overload point, but the R70EX's electronic level adjustment doesn't offer enough control precision to make finer meter gradations useful. And the spectrum mode supplies pertinent information that is ignored by almost every other consumer metering scheme on record.

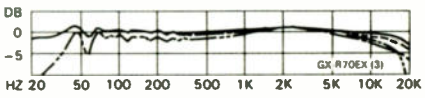
Diversified Science Laboratories tested the deck with TDK SA ferricobalt as the chrome-compatible Type 2 formulation, TDK MA as the Type 4 metal, and Maxell UDS-I as the "standard" Type 1 ferric. The record-play response curves are all very good, except for the low-frequency anomalies aptly known as "head bumps." The wiggles extend to unusually high frequencies, though they're too small in amplitude to show up clearly on our curves. Such effects are a question of tape and head geometry—here implying excessive tape wrap around the head. It's debatable just how audible such narrowband effects are, but response

RECORD/PLAY RESPONSE, TYPE 2 TAPE (−20 dB)



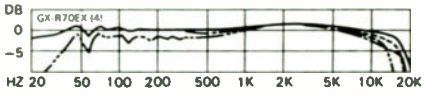
Left channel (no NR)	+1 1/4, −3 dB, 22 Hz to 19 kHz
Right channel:	
——— no NR	+2, −3 dB, 20 Hz to 17 kHz
- - - - - Dolby B	+2, −3 dB, 20 Hz to 14 kHz
— — — Dolby C	+1 3/4, −3 dB, 20 Hz to 10.5 kHz
— - — - DBX	+1 3/4, −3 dB, 62 Hz to 11 kHz

RECORD/PLAY RESPONSE, TYPE 4 TAPE (−20 dB)



Left channel (no NR)	+1 1/2, −3 dB, 21 Hz to 20 kHz
Right channel:	
——— no NR	+1, −3 dB, 20 Hz to 20 kHz
- - - - - Dolby B	+1, −3 dB, 20 Hz to 17 kHz
— — — Dolby C	+1, −3 dB, 20 Hz to 11 kHz
— - — - DBX	+1, −3 dB, 50 Hz to 13 kHz

RECORD/PLAY RESPONSE, TYPE 1 TAPE (−20 dB)



Left channel (no NR)	+1 1/2, −3 dB, 21 Hz to 19 kHz
Right channel:	
——— no NR	+1 1/2, −3 dB, 20 Hz to 17.5 kHz
- - - - - Dolby B	+1 3/4, −3 dB, 20 Hz to 15 kHz
— — — Dolby C	+1 1/2, −3 dB, 20 Hz to 11 kHz
— - — - DBX	+1 3/4, −3 dB, 50 Hz to 12 kHz

MULTIPLEX FILTER (defeatable)	−3/4 dB at 15 kHz; −39 dB at 19 kHz

S/N RATIO (re DIN 0 dB; R/P; A-weighted)

	Type 2 tape	Type 4 tape	Type 1 tape
no NR	56 1/4 dB	54 3/4 dB	52 3/4 dB
Dolby B	64 dB	63 dB	61 1/2 dB
Dolby C	71 dB	70 dB	68 dB
DBX	78 1/2 dB	78 1/2 dB	78 dB

INDICATOR READINGS FOR DIN 0 DB (315 Hz)	
Type 2 tape	+2 dB (with 2.1% THD)
Type 4 tape	0 dB (with 1.2% THD)
Type 1 tape	0 dB (with 0.51% THD)
INDICATOR READINGS FOR 3% DISTORTION (315 Hz)	
Type 2 tape	+4 dB (for +1.3 dB DIN)
Type 4 tape	+4 dB (for +3.6 dB DIN)
Type 1 tape	+6 dB (for +4.3 dB DIN)
DISTORTION (THD at −10 dB DIN; 50 Hz to 5 kHz)	
Type 2 tape	≤0.48%
Type 4 tape	≤0.35%
Type 1 tape	≤0.29%
ERASURE (at 100 Hz)	
Type 2 tape	65 1/2 dB
Type 4 tape	58 dB
CHANNEL SEPARATION (at 315 Hz)	31 1/4 dB
INDICATOR "BALLISTICS"	
Response time	2.8 msec
Decay time	≈440 msec
Overshoot	0 dB
SPEED ACCURACY (105 to 127 VAC)	
forward direction	2.4% fast
reverse direction	1.8% fast
FLUTTER (ANSI weighted peak; R/P)	
forward direction	±0.11%
reverse direction	±0.17%
SENSITIVITY (re DIN 0 dB; 315 Hz)	170 mV
INPUT OVERLOAD (at 1 kHz; for 3% THD)	4.16 volts
INPUT IMPEDANCE	49.6k ohms
OUTPUT IMPEDANCE	1,650 ohms
MAXIMUM OUTPUT (from DIN 0 dB)	0.66 volt

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.

After the mountains of Europe, the canyons of North America pose no problem for a Blaupunkt.

For a Blaupunkt car stereo, the radio reception difficulties created by big city buildings are no big deal.

Because ever since the first

Blaupunkt was introduced in 1932, our tuners have had to overcome much bigger obstacles.

The Alps.

The Pyrenees.

The Apennines.

These European mountain ranges make even the towering headquarters of modern mega-corporations appear puny by contrast.

Yet thanks to the ingenuity of our 326 car audio engineers in Hildesheim, West Germany, Blaupunkt car stereos are superbly equipped to handle even the most extreme FM reception problems.

You see, a car stereo's ability to capture an FM radio signal is determined by five factors: FM sensitivity. Selectivity. Multi-path distortion. Signal attenuation. And RF intermodulation.

Most car stereo systems do a reasonably good job with two—perhaps three—of these factors.

But due to the persistence of our engineers—and the dozens of patents we've earned in this area alone—Blaupunkt's CODEM III and ORC II dynamic tuning systems do exceptionally well in all five areas.

Which helps explain why Blaupunkt has earned a reputation for engineering the world's finest tuners.

We even take the trouble to design our own antennas.

Something not one of our competitors bothers with.

So if you're an urban motorist frustrated by all those buildings wreaking havoc with the signals of all your favorite stations, pay a visit to your independent Blaupunkt car stereo specialist. (For the one nearest you, please call us at 1-800-237-7999.)

What you hear will be music to your ears.

Without all the static you've been accustomed to.

BLAUPUNKT

Designed for people with ears. And something between them.

would be measurably flatter without them.

Strikingly good in the lab data are the traces at 0 dB (not shown), which rival those of decks incorporating Dolby HX Pro headroom extension. With the Type 2 tape, there's no compression to speak of at 5 kHz. The Type 1 does even better, and the Type 4 holds up superbly to 10 kHz. Playback response is shown for the forward direction. Measurements in reverse are very similar, though azimuth match to the BASF test tape isn't quite as excellent in reverse; it introduces a very slight droop at the top end. The remaining data are fairly typical of contemporary decks.

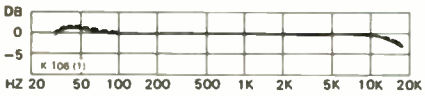
As bidirectional decks go, the GX-R70EX is more capable and a better buy than most. As an exhaustive (and exhausting) reading of our past test reports will show, it's possible to get finer performance in an autoreverse model and also more sophistication in the reversing procedures themselves—but not at anything close to this price. Some past tests of autoreverse units have uncovered what we'd consider to be very serious flaws in performance or operating logic, none of which we encountered with the Akai. This puts the GX-R70EX near the top of the heap for most users who place a high priority on bidirectional operation. ■

T E S T R E P O R T S

Luxman K-106 Cassette Deck

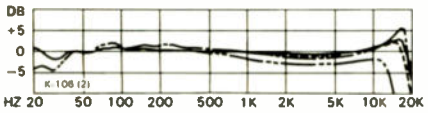
All measurements made in forward transport direction except as specified

PLAYBACK RESPONSE (BASF test tape; −20 dB DIN)



Left channel	+0, −3 dB, 315 Hz to 17.5 kHz
Right channel	+0, −3 dB, 315 Hz to 18 kHz

RECORD/PLAY RESPONSE, TYPE 2 TAPE (−20 dB)



Left channel (no NR)	±3 dB, 20 Hz to 20 kHz
Right channel:	
no NR	±3 dB, 20 Hz to 19 kHz
Dolby B	+2, −3 dB, 20 Hz to 18 kHz
Dolby C	+5 1/2, −3 dB, 20 Hz to 19 kHz
DBX	+3, −3 1/2 dB, 33 Hz to 12.5 kHz

DIMENSIONS: 17¼ BY 4 INCHES (FRONT PANEL), 11 INCHES DEEP PLUS CLEARANCE FOR CONTROLS AND CONNECTIONS. PRICE: $580; OPTIONAL AK-10 WIRED REMOTE CONTROL, $55; OPTIONAL AK-20 WIRELESS REMOTE CONTROL, $150. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: LUX CORP., JAPAN; U.S. DISTRIBUTOR: LUXMAN DIV. OF ALPINE ELECTRONICS OF AMERICA, INC., 19145 GRAMERCY PL., TORRANCE, CALIF. 90501.

LUXMAN EQUIPMENT CAN BE FUN TO USE because of its distinctive qualities. We've repeatedly experienced a sense of individual personality in Luxman's designs, and the K-106 is no exception.

The array of buttons to the right of the tape-compartment door is subtly differentiated by groupings and symbols with colored lines. First is a button (with single arrowheads in white) that reverses playback direction. A pair of buttons (with double arrowheads) first seek the nearest interselection blank in either direction and then begin playback. The next control steps the number of blanks, up to 9, that will be skipped over before playback begins in the seek modes. The selected number is displayed in the window below. Next come a pair of buttons for related functions in the recording mode. To aid the seek feature, one button inserts a four-second pause—longer if you hold the button down. The other (with a red circle) turns on the automatic recording pause, which switches the deck to standby (recording-pause) whenever there is no input signal for about 16 seconds. The next pair are less closely related: BLANK SEARCH (with a blue circle) to find unrecorded spaces at least two minutes long, and INTRO SCAN to sample the first 12 or so seconds of each selection.

Next comes a button for blank skip, which fast-winds to the next recorded section whenever it encounters an unrecorded stretch longer than 12 seconds. The final pair of buttons are a counter reset and a memory-rewind function. The counter itself, located below these buttons, measures minutes and seconds—although not just in elapsed time like most such indicators. Instead, it registers how far in playing time the current spot on the tape is from "00:00," counting upward in forward and downward in reverse, thus combining functions that are often separated into turns and time modes.

At the extreme right is the master recording-level control. To its left is the small channel-balance knob and, next to it, a ±10-percent bias trim with a center detent. The latter may be useful to some but is not easy to use intelligently for several reasons: The two-head design of the deck prevents monitoring the tape while it's recording, making it difficult to judge the effect by ear; no other setting aid is provided; and the description of the bias control's use in the rather sketchy owner's manual isn't adequate. In a deck with this degree of automation, we'd rather see the bias trim similarly automated (which would raise the cost) or omitted altogether.

Along the bottom edge beneath the level controls are three rotary switches: for the automatic timer modes (off, playback, recording), the directional modes (no reversing, out-and-back, and unlimited automatic reverse—the last in playback only, of course), and noise reduction selection (off, Dolby B, Dolby C, DBX). There is no multiplex filter switch, and, surprisingly, Diversified Science Laboratories' frequency-response traces show no evidence of a fixed internal multiplex filter. But as long as the rest of your source system feeds the deck no high-level signals beyond the normal audio passband, all should be well.

The transport controls, further to the left, are interlocked in such a way that you can either press RECORD and PLAY simultaneously for an instant start or RECORD and PAUSE to enter standby. Either way, the transport direction must be selected before you enter the recording mode. Once a recording had begun, we could find no way of switching direction manually without stopping the tape first. For quick direction changes in the middle of, say, an opera act, we feel this is a significant shortcoming, particularly since the automatic reverse occurs only after the leader has ended and you've already lost several seconds of music.

The pause operates in playback (an increasing rarity these days), though it's a bit slow to respond and therefore somewhat imprecise if you try to use it for editing in feeding signals to another deck. In recording, the pause leaves a slight blank but no click or other extraneous noise.

At the left end of the front panel are the power switch and eject button, along with a headphone jack (without output-level control). On the back panel is a multipin jack designed for either of two Luxman accessory remote controls (the wireless AK-20 or hard-wired AK-10) or for a remote-control hookup via the R-106 receiver, whose supplied remote includes deck controls.

The level meters are small but perform adequately. There are 12 segments in each channel, calibrated from −20 to +8 dB (relative to a 0-dB calibration 3 dB below the DIN standard of 250 nanowebers per meter) with minimum spacing of 2 dB between −7 and +5 dB and of 1 dB between −1 and +1 dB. This puts the area of greatest precision a little lower than might be ideal, since the maximum midrange headroom for all three tested tapes reads +5 dB on the meters.

Tape-type setting is automatic (aside from the bias trim, of course) and is based on the cassette-shell keyways. The lab measured the deck with Maxell XL-IIS ferricobalt as the chrome-compatible Type 2 tape, TDK MA as the Type 4 metal, and Maxell UDS-I as the Type 1 "standard" ferric. The Type 2 tape, in particular, could have profited from an increase in bias with the trim control—though in the absence of any objective aid to correct adjustment, the lab always leaves such a control at its detent or other recommended or standard setting. Incidentally, the full range of the control with the Type 2 tape amounts to considerably more than the "subtle difference in tonal quality" claimed by the manual.

Aside from the peaks attributable to underbiasing, the Type 2 curves in our graph are quite good: reasonably flat and with no marked peculiarities. Dolby tracking is excellent. The compression visible in the lab's 0-dB traces (not shown) is about average—and therefore greater than we would hope for in a deck that, like the K-106, incorporates Dolby HX Pro headroom extension.

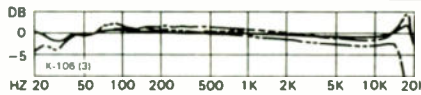
The Type 4 curves at −20 dB are excellent in the left channel (not shown), but somewhat peaky in the right. Headroom at 0 dB is much improved over the Type 2 tape, with Dolby-C response holding up very well to 17 kHz or above. The traces for the extreme settings of the bias trim (not shown) suggest that the right-channel peak may not be due to underbiasing alone. Even the maximum bias setting, which gradually rolls off a broad treble range, develops a peak at 18 kHz that we suspect may be attributable to the HX Pro circuitry.

Flattest of all are the Type 1 curves, which exhibit only a slight rise toward the top of the range. Dolby tracking is a little less exact than for the other two tapes, but not by enough to cause concern. High-frequency headroom is exceptional, with the 0-dB curves (not shown) within a fraction of a dB of perfectly flat in all cases to at least 5 kHz.

Playback response rolls off a little at the top end because of only fair-to-good azimuth match between the deck and our BASF test tape. Response is shown for the forward direction of tape travel; in reverse, the curves are very similar but slightly better. Speed accuracy is good for a bidirectional deck; wow and flutter is exceptionally good for such a design. Noise figures are unusually good for any deck.

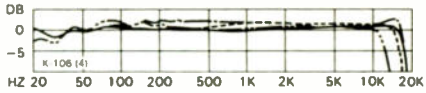
Don't believe it when you are told that any bidirectional deck is fully the equal of a unidirectional model with similar features costing more than, say, two-thirds as much. We've consistently found that the reversing models perform less impressively than their standard counterparts, and generally we found that the K-106 does not break that pattern. But in playback—which is the way most users use their decks almost all of the time—its performance is more than adequate, and it has a rare sophistication of feel and of available control modes. That's what makes it so attractive. Admittedly, some of the record/play data don't match what you'd find in a Luxman one-way model, but the K-106's noise figures are exceptionally good. It's just a question of priorities. ■

RECORD/PLAY RESPONSE, TYPE 4 TAPE (−20 dB)



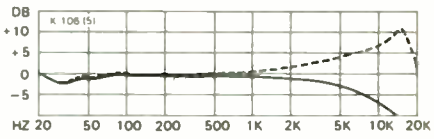
Left channel (no NR)	+1, −3 dB, 20 Hz to 20 kHz
Right channel:	
——— no NR	+2, −3 dB, 20 Hz to 20 kHz
- - - - - Dolby B	+2, −3 dB, 20 Hz to 20 kHz
— — — Dolby C	+4 3/4, −3 dB, 20 Hz to 20 kHz
——— DBX	+2, −3 dB, 33 Hz to 15 kHz

RECORD/PLAY RESPONSE, TYPE 1 TAPE (−20 dB)



Left channel (no NR)	+1 3/4, −3 dB, 20 Hz to 18 kHz
Right channel:	
——— no NR	+1 1/2, −3 dB, 20 Hz to 17.5 kHz
- - - - - Dolby B	+1 1/2, −3 dB, 20 Hz to 16 kHz
— — — Dolby C	+2 3/4, −3 dB, 20 Hz to 17.5 kHz
——— DBX	+2, −3 dB, 31 Hz to 12 kHz

BIAS ADJUSTMENT RANGE (−20 dB; Type 1 tape)



S/N RATIO (re DIN 0 dB; R/P; A-weighted)

	Type 2 tape	Type 4 tape	Type 1 tape
no NR	59 dB	58 1/4 dB	54 1/2 dB
Dolby B	67 1/4 dB	66 3/4 dB	63 1/2 dB
Dolby C	74 dB	73 1/2 dB	69 1/2 dB
DBX	86 3/4 dB	87 dB	84 dB

INDICATOR READINGS FOR DIN 0 DB (315 Hz)	
Type 2 tape	+3 dB (with 2.2% THD)
Type 4 tape	+3 dB (with 1.1% THD)
Type 1 tape	+3 dB (with 0.59% THD)
INDICATOR READINGS FOR 3% DISTORTION (315 Hz)	
Type 2 tape	+5 dB (for +1.2 dB DIN)
Type 4 tape	+5 dB (for +3.0 dB DIN)
Type 1 tape	+5 dB (for +3.5 dB DIN)
DISTORTION (THD at −10 dB DIN; 50 Hz to 5 kHz)	
Type 2 tape	≤0.63%
Type 4 tape	≤0.42%
Type 1 tape	≤0.44%
ERASURE (at 100 Hz)	≥63 1/4 dB
CHANNEL SEPARATION (at 315 Hz)	48 1/2 dB
INDICATOR "BALLISTICS"	
Response time	8.6 msec
Decay time	≈460 msec
Overshoot	0 dB
SPEED ACCURACY (105 to 127 VAC)	
forward direction	0.2% fast
reverse direction	0.5% fast
FLUTTER (ANSI weighted peak; R/P)	
forward direction	±0.097%
reverse direction	±0.082%
SENSITIVITY (re DIN 0 dB; 315 Hz)	150 mV
INPUT OVERLOAD (at 1 kHz)	>10 volts
INPUT IMPEDANCE	48k ohms
OUTPUT IMPEDANCE	1,150 ohms
MAXIMUM OUTPUT (from DIN 0 dB)	0.68 volt

MAGNETIC PE

Although they are adhering more closely to original standards, audio cassettes are still improving.

EVERY YEAR OR TWO, WE INDULGE IN AN ORGY of new-cassette testing. Our purpose is to see how the new audio tapes compare—to each other and to those of the previous generation, many of which remain on sale. We have tried not to alter the test method from round to round so that you can use past reports to supplement the current one. In fact, you'll find only one change in methodology between this year's tests and those of the August issues of 1985 and 1983. For broad, detailed coverage of most currently available major-brand tapes, you may want to dig out the previous reports, though before you finish reading this article you will already have learned what to expect of the still-available tapes we didn't retest this year.

Bear in mind that we have never bothered to test what we consider to be off-brand tapes. Readers who don't much care how their recordings sound won't bother to read reports like this one anyway, so there's little point in catering to the also-rans. We do, however, give the benefit of any doubt to a brand we've never had the opportunity to test before. If a newcomer doesn't measure up to the demanding pace set by the established producers, chances are that it won't be around for a third—or sometimes even a second—chance in our tests.

But even these borderline brands test well in comparison with the true off-brand tapes we've examined from time to time. That's important to keep in mind. A difference in performance of a dB or two may seem preemptive when you compare tapes in this report, but were we to include off-brands, the spread in test results would likely be, at the very least, about ten times as great. Some off-brands are appallingly bad in measurable factors like headroom and distortion and in audible ones like dropouts and "gritty" sound. None of the tapes you'll find in our tests is less than good.

Not that all good tapes are included: Regrettably, we've twice been unable to test the latest products of 3M's Scotch brand. Both this year and in 1985, 3M was readying a revamped line when our tests were conducted but couldn't yet supply samples of the new tapes. Since there's little point in testing cassettes that will be disappearing from dealers' shelves by the time you read the report, we didn't test the 1985 line this year, and couldn't evaluate the 1987 line. Scotch tapes have in the past ranked among the best in their respective groups, and we have no doubt that current products fully deserve representation in our tests.

In a sense, the Scotch brand may be the victim of its own caution. In the highly competitive world of tape marketing, where profit margins are low and volume must therefore be high to cover the technological and promotional overhead necessary to remain in the forefront, a certain amount of hype is to be expected. Most major brands lean heavily on the "new improved" rubric. While some of the improvements are tiny indeed, as our tests regularly document, they still claim our attention—and yours. Scotch has consistently shown itself less willing than some of its splashy competitors to make (or proclaim) change for its own sake, giving us fewer opportunities to review its products.

Test Methods

TO KEEP RESULTS AS CONSISTENT AS POSSIBLE over the years, Diversified Science Laboratories has been using the same deck for tape tests (a Nakamichi 582) since 1980. The first step in testing a cassette is to adjust the deck's head azimuth to compensate for skew in the cassette under test. Next, bias current is fine-tuned for the tape. Here is where we have made the only change since our 1985 tests. Back then, as in earlier years, bias current was adjusted until output at 10 kHz equaled that at the overall reference frequency (333 Hz). The Nakamichi's own tape-matching function uses 15 kHz as the upper adjustment frequency, but when we first began using the deck, some ferric tapes simply weren't good enough to achieve the reference level (20 dB below the DIN standard 0-dB flux-density level of 250 nanowebers per meter) at that frequency—at least, not without serious underbiasing.

Times have changed, and those tapes are gone. Moreover, as you shall see, changes in the manufacture of other tapes have altered the way they respond to this technique for setting bias current. Some sophisticated tapes require considerable overbiasing to achieve equal output at 10 kHz and 333 Hz but perform as intended when the upper test frequency is moved to 15 kHz, as was done for all the tapes this time around. In any case, the results of the test are reported as a percentage of the bias current needed when the reference tape of the same type is subjected to the same test. In other words, if bias is reported as 110 percent, it means that 10 percent more bias current was needed for the tested tape than for the reference tape.

The reference tapes used as the basis of comparison are IEC (International Electrotechnical Commission) standard cassettes. These nonbranded (and expensive) tapes are for use as benchmarks against which commercially available tapes can be measured. The IEC has defined four tape types: Type 1 for ferrics using the "standard" 120-microsecond playback equalization, Type 2 for the chromium dioxide and comparable formulations that use the quieter 70-microsecond playback EQ, Type 3 for the now almost forgotten dual-layer ferrichromes, and Type 4 for the metal-particle tapes that use 70-microsecond playback EQ but require more bias than Type 2 tapes. We adopted these categories even before they were confirmed as official standards, except that we use Arabic numerals to avoid ambiguity, while the IEC uses Roman numerals.

Sensitivity is also rated in comparison to the appropriate IEC standard tape. That is, a 333-Hz test tone is recorded on a Type 2 sample, say, and its output level compared to that produced by IEC Type 2. A figure of +2 dB means that output from the tested sample was 2 dB higher than that of the reference tape. But this compares sensitivity at only one frequency; to know something about relative frequency response, we must compare sensitivity at many frequencies.

Sweeping Statements

TO TEST FOR RELATIVE FREQUENCY RESPONSE, we run what would for a tape deck be called a frequency-response sweep (at −20 dB). But because we leave the Nakamichi's recording equalization unaltered, whereas factory optimization for some tapes would dictate a change in the recording EQ, these curves display *relative sensitivity versus frequency* rather than frequency response itself. The relative-sensitivity frequency sweep is made twice. The first trace, made with the usual vertical scale, is the basis for the curve in our graphs. The second trace, with an expanded vertical scale, helps us evaluate other aspects of tape quality in a less quantitative way. We don't extend the curves below 100 Hz because any irregularities in that frequency region are far more likely to reflect properties of the deck ("head bumps" and deliberate rolloffs) than

RSONALITIES

BY ROBERT LONG

of the tape.

Further measurements document two interrelated factors: headroom and distortion. DSL measures harmonic distortion at 333 Hz and at two recording levels: −10 and 0 dB DIN. The recording level is also raised until third harmonic distortion reaches 3 percent, long accepted as the threshold of tape overload. Similar overload-threshold measurements are made at 2, 4, 6.3, 10, 15, and 20 kHz. In this frequency range, twin-tone intermodulation distortion is measured instead of harmonic distortion, though the rating point remains 3 percent distortion. The resulting data are used to construct the dashed high-frequency headroom curves in our graphs.

Last, there is the noise measurement, which is shown in two forms. DSL records on the tape with no signal (so that the inevitable bias noise will be present) and measures the output with A-weighting to gauge the noise's audibility. A-weighting attenuates the frequency ranges to which the ear is relatively insensitive so that they have less influence on the measurement. This absolute (bias) noise is expressed in negative dB—as so many dB below the DIN 0-dB reference level. Total dynamic range from the noise floor up to midrange overload is then calculated by adding the positive value of the absolute noise to the headroom value. Thus, if noise measures −55 dB DIN and the midrange headroom is 5 dB, we show a midrange S/N (signal-to-noise) ratio or dynamic range of 60 dB.

Reading the Results

THE PRECISE MEANINGS OF OUR FINDINGS will depend to some extent on your deck. In particular, they will depend on the deck's adjustability. Ideally, it should offer independent controls for each of three factors: sensitivity (to fine-tune Dolby tracking for the tape), bias (for the best possible trade-off between low distortion and overall frequency balance), and recording EQ (to remove, or at least minimize, any remaining frequency-response quirks). The performance of a fully adjustable recorder can be optimized for any of the tapes tested here. But each of the controls costs money, and only a few luxury decks have all three. The majority of cassette decks sold have none.

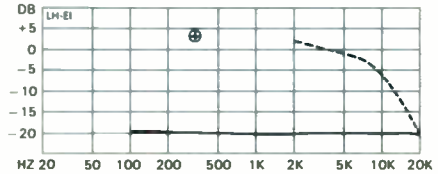
When you see a sensitivity curve that bulges upward in the region above 5 kHz and then drops off rapidly above 15 kHz, keep in mind that reduced high-frequency boost in the recording EQ could easily result in flatter sensitivity. This is because less boost would lower response at 15 kHz; in order to restore output equal to that at 333 Hz, the bias would have to be reduced, which would reduce the rolloff at the very top end (assuming it is due to self-erasure) and net a flatter curve both above and below the test frequency. ▶

THE COMPANY THAT NOT ONLY "INVENTED" (actually, manufactured the first modern exemplars of) recording tape but was also among the first producers of audio cassettes has produced two new formulations since our last tests. The Type 1, LH-EI, provides midrange headroom that is among the best of those tested this time. Its expanded trace, smoother than most, documents careful fabrication. Aside from the relatively high bias point, it is otherwise squarely in the center of the Type 1 mainstream. Much the same can be said of BASF's Type 2 entry, CR-MII. The high bias point is surprising because BASF, the sole remaining major exponent of chromium-dioxide pigment, uses a variety of it in producing the IEC standard Type 2 cassettes. We'd therefore expect CR-MII to be closer to the standard than any other Type 2s, which are made with extremely different coatings. Not incidentally, CR-MII's overall S/N figure is the best of its class: Traditionally, superior noise performance has been a major reason for preferring true chromium dioxide to its substitutes. BASF's shell is fairly conventional despite the Type 1's extra-long window. The labeling space is more generous than most, but no extra labels are supplied.

BASF LH-EI C-90

cassette tape (Type 1)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



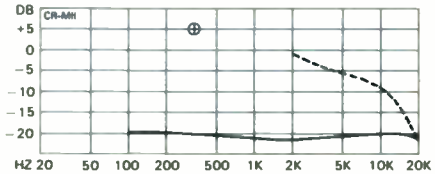
Relative output vs. frequency (at −20 dB)	
⊕ Midrange headroom (3% THD)	+3.4 dB
Maximum high-frequency output (3% IM):	
at 4 kHz	−0.2 dB
at 15 kHz	−13.3 dB
RELATIVE BIAS	101%
RELATIVE SENSITIVITY (333 Hz)	0.0 dB
A-WEIGHTED NOISE (re 0 dB)	−53.4 dB
MIDRANGE S/N RATIO (re 3% THD)	56.8 dB

THD (at 333 Hz)	at 0 dB	at −10 dB
	0.76%	0.15%
C-90 PRICE		$1.79

BASF CR-MII C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



Relative output vs. frequency (at −20 dB)	
⊕ Midrange headroom (3% THD)	+5.2 dB
Maximum high-frequency output (3% IM):	
at 4 kHz	−4.4 dB
at 15 kHz	−14.6 dB
RELATIVE BIAS	119%
RELATIVE SENSITIVITY (333 Hz)	+1.4 dB
A-WEIGHTED NOISE (re 0 dB)	−60.5 dB
MIDRANGE S/N RATIO (re 3% THD)	65.7 dB

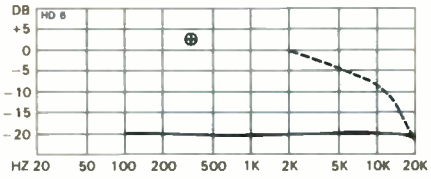
THD (at 333 Hz)	at 0 dB	at −10 dB
	0.92%	0.20%
C-90 PRICE		$4.29

THIS YEAR'S TESTS COVER THE FULL RANGE OF DENON'S current Type 2 tapes. (The line also includes two Type 1s and one Type 4, all covered in our last tests.) The three HD (High-Density) formulations present a consistent progression. HD-6 uses a fairly standard cobalt-modified ferric particle and is, consequently, representative of such tapes. Its expanded trace is less smooth than that of either of its siblings'—or than the average for the tapes we tested in this lot. HD-7 uses a finer but otherwise similar particle and ekes out improvements in every department except noise—though overall S/N ratio is 1 dB better because of the greater midrange headroom. HD-8 combines ferricobalt with metal alloy, which improves high-frequency headroom still more, but at some expense in noise and midrange distortion. Despite the pigment, the bias point measures spot-on that of the IEC standard tape and is among the lowest in this year's Type 2s. The picture-window shell design is handsome.

DENON HD-6 C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

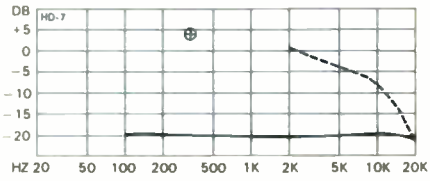


——— Relative output vs. frequency (at –20 dB)		
⊕ Midrange headroom (3% THD)		+2.6 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		–3.4 dB
at 15 kHz		–14.6 dB
RELATIVE BIAS		104%
RELATIVE SENSITIVITY (333 Hz)		+1.1 dB
A-WEIGHTED NOISE (re 0 dB)		–58.5 dB
MIDRANGE S/N RATIO (re 3% THD)		61.1 dB
THD (at 333 Hz)	at 0 dB	at –10 dB
	1.50%	0.27%
C-90 PRICE		$3.25

DENON HD-7 C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

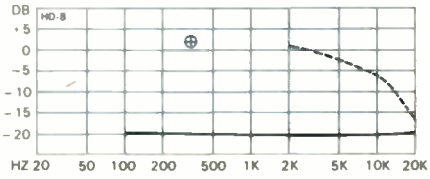


——— Relative output vs. frequency (at –20 dB)		
⊕ Midrange headroom (3% THD)		+3.8 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		–2.7 dB
at 15 kHz		–14.1 dB
RELATIVE BIAS		104%
RELATIVE SENSITIVITY (333 Hz)		+2.1 dB
A-WEIGHTED NOISE (re 0 dB)		–58.3 dB
MIDRANGE S/N RATIO (re 3% THD)		62.1 dB
THD (at 333 Hz)	at 0 dB	at –10 dB
	1.02%	0.18%
C-90 PRICE		$4.00

DENON HD-8 C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)		
⊕ Midrange headroom (3% THD)		+2.0 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		–1.5 dB
at 15 kHz		–11.5 dB
RELATIVE BIAS		100%
RELATIVE SENSITIVITY (333 Hz)		+2.0 dB
A-WEIGHTED NOISE (re 0 dB)		–55.2 dB
MIDRANGE S/N RATIO (re 3% THD)		57.2 dB
THD (at 333 Hz)	at 0 dB	at –10 dB
	1.89%	0.29%
C-90 PRICE		$4.75

If your deck is among the majority that have no recording-EQ adjustment (aside from the basic one that switches playback EQ between 120 and 70 microseconds), you may want to find our previous test results on a tape that you know produces very flat response in your deck. If a tape in the current group has a similar-looking curve for relative sensitivity versus frequency, it should produce similarly flat response on your deck. This is a tricky business, however, because recording EQ and bias can be played off against one another to improve net flatness of record/play response. And with the change in bias test frequency from 10 to 15 kHz, similar tapes won't always have sensitivity curves similar to those in past reports.

If your deck has no bias-trim control (again, beyond the basic one for the tape type itself), you'll want to look for tapes with bias points fairly close to those for which your deck was designed. (These should be listed in its instruction manual.) Similarly, if you have no adjustment for sensitivity, you should look for tapes with sensitivity ratings close to those of tapes that deliver excellent Dolby tracking in your deck. Generally, a difference in sensitivity of 1 dB won't produce audibly poor Dolby decoding, but for high-quality reproduction, a difference of 2 or 3 dB is enough to be cause for concern.

The distortion and headroom figures speak for themselves. In the latter, higher is always better, but the sort of signals you record will determine which headroom figures you should examine most closely. For much classical music, midrange overload is probably the limiting factor; with synthesizer rock or the complex transients of jazz trumpet, high-frequency headroom becomes critical if maximum possible recording levels (and therefore best possible dynamic range) are to be maintained.

Making the most of the available headroom will also be best facilitated if you understand the characteristics of your deck's metering system, the overload and noise characteristics of the tape, and the spectral content of the signal. If you have a handle on these, the tape's midrange S/N ratio is the noise measurement that will mean most. If you tend to play it safe by recording all tapes pretty much the same way, the A-weighted noise figure will mean more because it shows, relatively, how far below your standard recording level the noise will be.

Two parameters don't show up in our data: the evaluation of the expanded traces made in the sensitivity-versus-frequency sweep and the azimuth adjustment needed before the other tests could begin. This latter consideration is the easiest to dispose of: Little or no adjustment was ever needed, suggesting minimal skew in all brands. (For the record, however, the Realistic and Memorex samples and some of those from Sony seemed to profit from the fine-tuning a hair more than most of the others.)

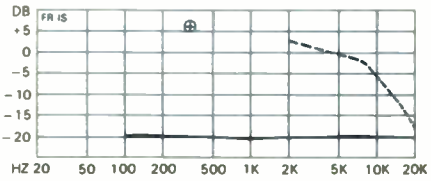
Tapes with consistent magnetic-particle size, shape, and distribution, as well as a

FUJI, AMONG THE FEW COMPANIES TO SUPPLY premium formulations in C-46 lengths, introduced its S (Super) Type 1 and 2 tapes last year, while retaining earlier types in the line. Both new tapes are based on the company's fine-grain cobalt-modified Beridox particle technology originally developed for Type 2 tapes and "tuned" for use in both Type 1 and Type 2 pigments. As Type 1, it requires relatively high bias (the highest of this year's Type 1s) but also delivers the best midrange headroom and among the very best high-frequency headroom curves of the lot. Beridox comes closer to the middle of the Type 2 field, of which FR-IIS is an excellent example. Expanded traces for both tapes are exceptionally smooth, suggesting excellent particle and film-base consistency. The shells are a conventional window design and have Braille side markings.

FUJI FR-IS C-90

cassette tape (Type 1)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+6.1 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+0.6 dB
at 15 kHz	–11.6 dB
RELATIVE BIAS	116%
RELATIVE SENSITIVITY (333 Hz)	–0.1 dB
A-WEIGHTED NOISE (re 0 dB)	–54.6 dB
MIDRANGE S/N RATIO (re 3% THD)	60.7 dB

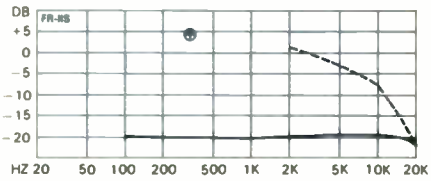
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.49%	0.18%

C-90 PRICE	$5.49

FUJI FR-IIS C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+4.2 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–2.1 dB
at 15 kHz	–15.0 dB
RELATIVE BIAS	109%
RELATIVE SENSITIVITY (333 Hz)	+1.5 dB
A-WEIGHTED NOISE (re 0 dB)	–58.5 dB
MIDRANGE S/N RATIO (re 3% THD)	62.7 dB

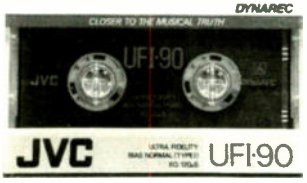
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.84%	0.15%

C-90 PRICE	$6.49

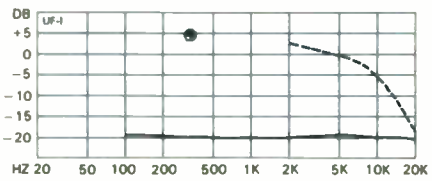
LAST YEAR, JVC ADDED TWO FORMULATIONS, UF-I AND UF-II, each fairly typical of the tested tapes in its class. In each, bias point is a bit higher and sensitivity a trifle lower than average. Noise figures are better than average; the UF-I's S/N is, in fact, the best in the Type 1 class. High-frequency headroom is a little better than average in UF-I, a little below average in UF-II. JVC has gone to a sleekly smooth, heat- and scratch-resistant, smoked transparent plastic shell. The box liners are handsome and commodious, the stick-on labels merely handsome.

JVC UF-I C-90

cassette tape (Type 1)



PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+4.5 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+0.2 dB
at 15 kHz	–12.5 dB
RELATIVE BIAS	105%
RELATIVE SENSITIVITY (333 Hz)	0.0 dB
A-WEIGHTED NOISE (re 0 dB)	–56.6 dB
MIDRANGE S/N RATIO (re 3% THD)	61.1 dB

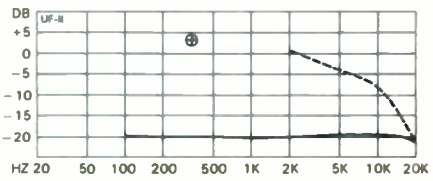
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.48%	0.12%

C-90 PRICE	$1.65

JVC UF-II C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+3.4 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–2.7 dB
at 15 kHz	–14.7 dB
RELATIVE BIAS	109%
RELATIVE SENSITIVITY (333 Hz)	+1.3 dB
A-WEIGHTED NOISE (re 0 dB)	–59.8 dB
MIDRANGE S/N RATIO (re 3% THD)	63.2 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	1.15%	0.21%

C-90 PRICE	$1.75

smooth coating and plastic base film, regularly delivered very smooth plotter curves in the expanded-trace frequency-sweep test. When the magnetic and mechanical properties are less consistent, the trace becomes relatively ragged, or "granular," as we have called it in past reports. This property defies quantization partly because it is bias-dependent and partly because it can change from one area of the trace to another. But it does correlate well with listening quality. When we have tried this test on really poor tapes that sound "gritty," the trace tends to look like an irregular picket fence. The worst of the curves for the present tapes looks, by comparison, like a cement wall with small stones and pebbles along the top; the best are almost completely smooth. So our comments on the expanded trace attempt to distinguish between good and excellent; again, there are no substandard tapes to be found in these tests.

Above all, beware of placing too much importance on small differences that may be nonexistent in practice. The distortion data, for instance, presume a flat frequency response. Insofar as tape response isn't entirely flat, the distortion data are imprecise. Similarly, fluctuating output, due to inconsistencies of the tape itself, introduces a degree of uncertainty into some measurements. More important, choosing tape from a different production batch could easily alter some findings. Minor differences are exaggerated by the similarity in performance of the tapes in a given group—you have to examine the data closely to find definite points of superiority.

What the Tests Show

IN 1985, I BEGAN THE TAPE-TEST ARTICLE BY pointing out the paradox of IEC standard formulations—the confrontation between uniformity and progress. How can tapes improve relative to the standards without making those standards irrelevant? Our last tests showed that progress was indeed leaving the standards by the wayside. "So what?" you may say. "I'd rather have the improved tape." The catch is that "progress" isn't always improvement—although it usually does signify higher prices. A manufacturer can rework the parameters of its magnetic particles in order to cite improvements in such properties as coercivity, remanence, and squareness ratio. But these changes reflect only a *potential* for improvement: Unless the deck is correctly adjusted for the changes, the audible performance with the new tape may actually be compromised.

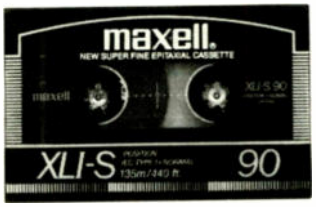
Two by-products of progress, for example, are rising sensitivity and bias requirements. If your deck worked well with yesteryear's tapes, the new generation may actually deliver *poorer* Dolby tracking (which is sensitivity-dependent) *and* a peaked high-frequency response (because the correct bias

(CONTINUED ON PAGE 50)

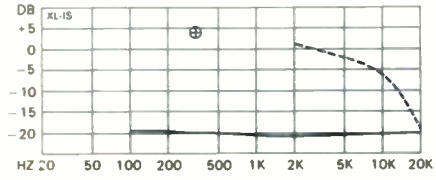
MAXELL'S NEW SHELL DESIGN, WITH A WINDOW that wraps halfway around each hub opening, is less radical and more dignified than many. It is also technically more advanced: The SS-PA rubric stands for Super Silent-Phase Accuracy. The tape inside evidently represents no radical reformulation but is more the result of the company's regular incremental upgrading. The Type 1 formulation, XL-IS, shows a very smooth expanded trace and has the lowest noise figure in its class—significantly better than that of its predecessor. Distortion figures are also lower than they were two years ago. Midrange and low-treble headroom, however, is less generous now. The Type 2 tape, XL-IIS, bears a similar relationship to its nearest prototype of two years ago, XL-II, with a similar improvement in noise figures. So does the Type 4, MX, with respect to its earlier incarnations. The current MX also displays a very smooth expanded trace.

MAXELL XL-IS C-90

cassette tape (Type 1)



PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

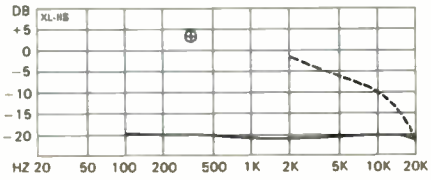


——— Relative output vs. frequency (at –20 dB)		
⊕ Midrange headroom (3% THD)		+3.7 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		–1.5 dB
at 15 kHz		–12.6 dB
RELATIVE BIAS		114%
RELATIVE SENSITIVITY (333 Hz)		0.0 dB
A-WEIGHTED NOISE (re 0 dB)		–57.1 dB
MIDRANGE S/N RATIO (re 3% THD)		60.8 dB
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.77%	0.11%
C-90 PRICE		$4.82

MAXELL XL-IIS C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

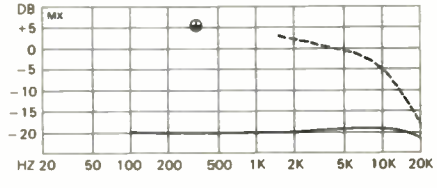


——— Relative output vs. frequency (at –20 dB)		
⊕ Midrange headroom (3% THD)		+3.2 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		–5.0 dB
at 15 kHz		–15.1 dB
RELATIVE BIAS		105%
RELATIVE SENSITIVITY (333 Hz)		+2.2 dB
A-WEIGHTED NOISE (re 0 dB)		–59.8 dB
MIDRANGE S/N RATIO (re 3% THD)		63.0 dB
THD (at 333 Hz)	at 0 dB	at –10 dB
	1.37%	0.22%
C-90 PRICE		$4.82

MAXELL MX C-90

cassette tape (Type 4)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



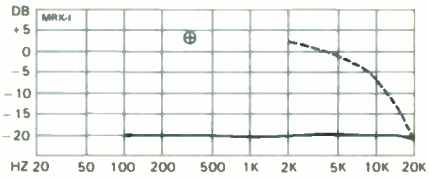
——— Relative output vs. frequency (at –20 dB)		
⊕ Midrange headroom (3% THD)		+5.5 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		0.0 dB
at 15 kHz		–11.6 dB
RELATIVE BIAS		124%
RELATIVE SENSITIVITY (333 Hz)		–0.5 dB
A-WEIGHTED NOISE (re 0 dB)		–57.1 dB
MIDRANGE S/N RATIO (re 3% THD)		62.6 dB
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.76%	0.11%
C-90 PRICE		$6.18

CONSIDERING THE GAUDY PACKAGING OF MEMTEK'S newest Type 1 formulation, Memorex DBS, we were more surprised at the ease with which it co-mingles with audiophile formulations than at the evidence that it's also among the least impressive of them. Headroom, both in the midrange and at 10 kHz, is the poorest of the lot. The bias requirement, also the lowest in the group, might be particularly well suited to elderly decks, where its remaining specifics will be welcome. Surprisingly, the bias point of MRX-I, Memorex's premium Type 1, measures almost as low as that of DBS. Other measurements are more typical of current Type 1s, though headroom at the top of the range is on the skimpy side. HB-II, the newest and least expensive Memorex Type 2, also likes its bias on the low side. The expanded trace is among the most ragged for this group; otherwise, HB-II is fairly typical. HBX-II is similar, but it does improve somewhat on both the smoothness of the trace and the generosity of the headroom. CDX-II, the only Memorex Type 2 to use metal-particle pigment, gives a significant improvement in headroom with some concomitant decrease in distortion. Noise figures are a little higher, however, and although the bias point has only been slightly raised, sensitivity jumps to one of the highest in the Type 2 group. CDX-II and HBX-II have conventionally designed shells; the HB-II and MRX-I see-through shells are made of smoky plastic; DBS's is entirely clear but for its patches of bright color.

MEMOREX MRX-I C-90

cassette tape (Type 1)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+3.4 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+0.2 dB
at 15 kHz	–13.7 dB
RELATIVE BIAS	93%
RELATIVE SENSITIVITY (333 Hz)	+0.9 dB
A-WEIGHTED NOISE (re 0 dB)	–54.3 dB
MIDRANGE S/N RATIO (re 3% THD)	57.7 dB

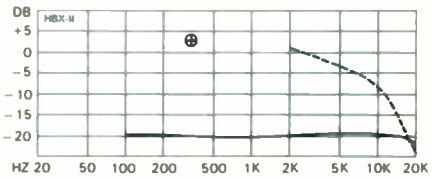
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.66%	0.15%

C-90 PRICE $5.39/2

MEMOREX HBX-II C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+3.0 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–2.2 dB
at 15 kHz	–16.0 dB
RELATIVE BIAS	100%
RELATIVE SENSITIVITY (333 Hz)	+1.3 dB
A-WEIGHTED NOISE (re 0 dB)	–58.0 dB
MIDRANGE S/N RATIO (re 3% THD)	61.0 dB

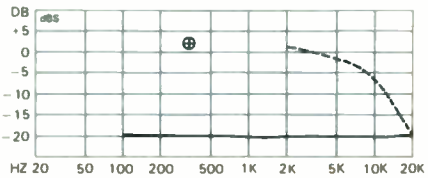
THD (at 333 Hz)	at 0 dB	at –10 dB
	1.29%	0.23%

C-90 PRICE $6.98/2

MEMOREX DBS C-90

cassette tape (Type 1)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+2.0 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–0.7 dB
at 15 kHz	–13.4 dB
RELATIVE BIAS	92%
RELATIVE SENSITIVITY (333 Hz)	–0.3 dB
A-WEIGHTED NOISE (re 0 dB)	–55.7 dB
MIDRANGE S/N RATIO (re 3% THD)	57.7 dB

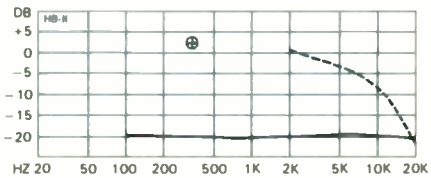
THD (at 333 Hz)	at 0 dB	at –10 dB
	1.40%	0.18%

C-90 PRICE $3.59/2

MEMOREX HB-II C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



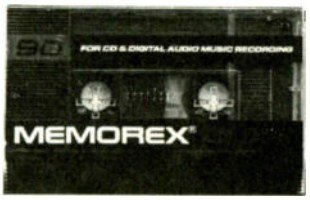
——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+2.6 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–2.4 dB
at 15 kHz	–15.3 dB
RELATIVE BIAS	101%
RELATIVE SENSITIVITY (333 Hz)	+1.1 dB
A-WEIGHTED NOISE (re 0 dB)	–59.1 dB
MIDRANGE S/N RATIO (re 3% THD)	61.7 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	1.39%	0.21%

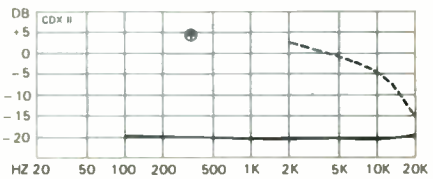
C-90 PRICE $5.58/2

MEMOREX CDX-II C-90

cassette tape (Type 2)



PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+4.2 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	0.0 dB
at 15 kHz	–9.8 dB
RELATIVE BIAS	103%
RELATIVE SENSITIVITY (333 Hz)	+3.1 dB
A-WEIGHTED NOISE (re 0 dB)	–55.5 dB
MIDRANGE S/N RATIO (re 3% THD)	59.7 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	0.99%	0.14%

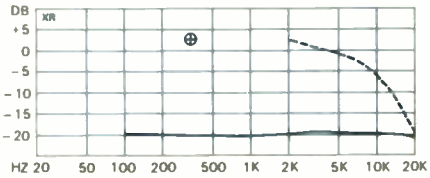
C-90 PRICE $8.98/2

RADIO SHACK'S REALISTIC SUPERTAPE LINE HAS usually concentrated on value, and past test results haven't always permitted enthusiastic comparison to the "biggies." But even we're surprised by the superlatives we're using this year. The four tapes we have chosen to test from the current line cover the whole spectrum of audio cassettes. The brand's top ferric, XR (Extended Range), is a respectable example of its type, despite somewhat less midrange headroom and more ragged expanded trace than most in this batch. C-120 and C-45 lengths are available. The standard chrome-compatible formulation, HD (High Definition), has a head-cleaning leader. The tape resembles Realistic's earlier entries in its relatively low sensitivity and, unfortunately, lackluster midrange distortion/headroom performance. Different recording EQ, permitting a lower bias point, might improve sensitivity in the ultrahighs, but at further expense in midrange distortion. In these respects, the metal-particle "chrome," M-II (Metal Type II), proves an outstanding alternative. In addition, it has the best high-frequency headroom measurements of its class and a very smooth expanded trace. The regular metal, M-IV (Metal Type IV), while not as outstanding, is the Type 4 champion in lower-treble headroom. Shell design is quite conservative, with a conventional window and relatively generous labeling space. No stick-on labels are supplied.

REALISTIC XR C-90

cassette tape (Type I)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+2.8 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	0.0 dB
at 15 kHz	–13.0 dB
RELATIVE BIAS	93%
RELATIVE SENSITIVITY (333 Hz)	+0.6 dB
A-WEIGHTED NOISE (re 0 dB)	–54.2 dB
MIDRANGE S/N RATIO (re 3% THD)	57.0 dB

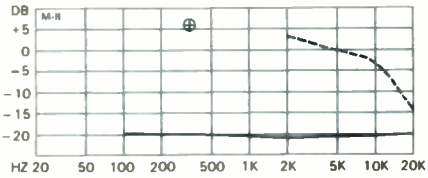
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.86%	0.15%

C-90 PRICE $3.79

REALISTIC M-II C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+5.8 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+0.6 dB
at 15 kHz	–9.3 dB
RELATIVE BIAS	110%
RELATIVE SENSITIVITY (333 Hz)	+3.5 dB
A-WEIGHTED NOISE (re 0 dB)	–54.5 dB
MIDRANGE S/N RATIO (re 3% THD)	60.3 dB

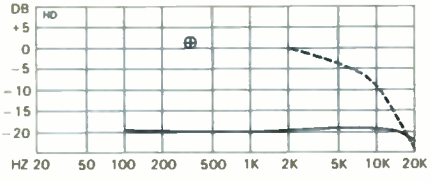
THD (at 333 Hz)	at 0 dB	at –10 dB
	0.72%	0.11%

C-90 PRICE $5.69

REALISTIC HD C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+1.3 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–2.7 dB
at 15 kHz	–16.8 dB
RELATIVE BIAS	112%
RELATIVE SENSITIVITY (333 Hz)	+0.4 dB
A-WEIGHTED NOISE (re 0 dB)	–57.9 dB
MIDRANGE S/N RATIO (re 3% THD)	59.2 dB

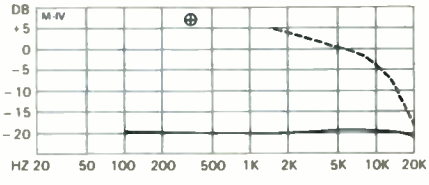
THD (at 333 Hz)	at 0 dB	at –10 dB
	2.15%	0.34%

C-90 PRICE $4.29

REALISTIC M-IV C-90

cassette tape (Type 4)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)	
⊕ Midrange headroom (3% THD)	+7.3 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+1.6 dB
at 15 kHz	–10.6 dB
RELATIVE BIAS	110%
RELATIVE SENSITIVITY (333 Hz)	+0.9 dB
A-WEIGHTED NOISE (re 0 dB)	–55.3 dB
MIDRANGE S/N RATIO (re 3% THD)	62.6 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	0.44%	0.08%

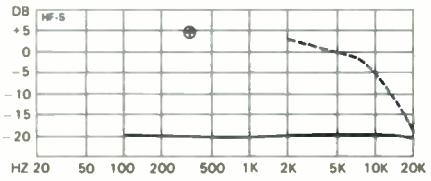
C-90 PRICE $6.99

SONY—WHOSE EQUIPMENT OVERSHADOWS ITS tape in the minds of most audiophiles, we suspect—actually has an exceptionally varied cassette line whose top formulations need take a back seat to none. We tested five of the seven tapes now in the line. HF-S, the higher-performance of Sony's Type 1 ferrics, is typical of Type 1 selections except for its excellent low-treble headroom figures and exceptionally smooth expanded trace. UX, the least pretentious of the Type 2s, is based on the Uniaxial particle and also displays an unusually smooth trace. Except for that and the low bias point (only a hair above the IEC generic), it's quite typical of the current Type 2s. UX-S, with its Super Uniaxial oxide, is a shade better all around than its sibling. We didn't test the next Type 2 step-up, UX-ES, but it is essentially the UX-S shell filled with UX-PRO tape. The latter's High Power Uniaxial pigment delivers the highest bias point in our Type 2 group and the best midrange distortion figures, though the high-frequency headroom isn't particularly impressive. The expanded trace is very smooth. The UX-PRO shell features a ceramic insert in the tape path, just behind the head openings, to hold the shell rigid and to minimize tape skew. The Type 4 Metal ES is a rather extreme member of its group. Bias point and sensitivity are the highest, midrange headroom the greatest, and noise figures the best of the lot; low-treble headroom figures are a bit weak by comparison to our other Type 4s, however. All the Sony shells have picture windows and Sony's SP-II Mechanism, with unusually generous labeling space on the cassette-box inserts.

SONY HF-S C-90

cassette tape (Type 1)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

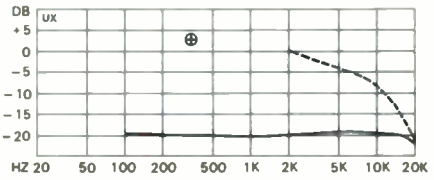


——— Relative output vs. frequency (at −20 dB)		
⊕ Midrange headroom (3% THD)		+4.6 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		+0.6 dB
at 15 kHz		−12.1 dB
RELATIVE BIAS		103%
RELATIVE SENSITIVITY (333 Hz)		+0.4 dB
A-WEIGHTED NOISE (re 0 dB)		−55.7 dB
MIDRANGE S/N RATIO (re 3% THD)		60.3 dB
THD (at 333 Hz)	at 0 dB	at −10 dB
	0.38%	0.14%
C-90 PRICE		$4.25

SONY UX C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

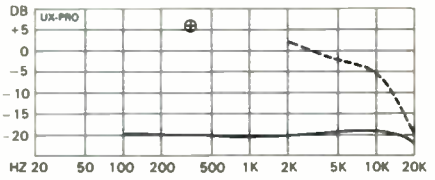


——— Relative output vs. frequency (at −20 dB)		
⊕ Midrange headroom (3% THD)		+2.8 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		−3.2 dB
at 15 kHz		−14.6 dB
RELATIVE BIAS		101%
RELATIVE SENSITIVITY (333 Hz)		+1.5 dB
A-WEIGHTED NOISE (re 0 dB)		−58.3 dB
MIDRANGE S/N RATIO (re 3% THD)		61.1 dB
THD (at 333 Hz)	at 0 dB	at −10 dB
	1.33%	0.26%
C-90 PRICE		$5.50

SONY UX-PRO C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

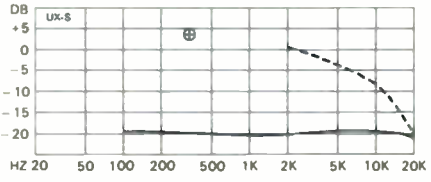


——— Relative output vs. frequency (at −20 dB)		
⊕ Midrange headroom (3% THD)		+6.0 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		−1.6 dB
at 15 kHz		−17.8 dB
RELATIVE BIAS		120%
RELATIVE SENSITIVITY (333 Hz)		+1.3 dB
A-WEIGHTED NOISE (re 0 dB)		−58.1 dB
MIDRANGE S/N RATIO (re 3% THD)		64.1 dB
THD (at 333 Hz)	at 0 dB	at −10 dB
	0.39%	0.08%
C-90 PRICE		$9.95

SONY UX-S C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)

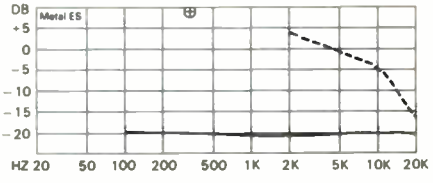


——— Relative output vs. frequency (at −20 dB)		
⊕ Midrange headroom (3% THD)		+3.4 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		−2.8 dB
at 15 kHz		−14.6 dB
RELATIVE BIAS		104%
RELATIVE SENSITIVITY (333 Hz)		+2.0 dB
A-WEIGHTED NOISE (re 0 dB)		−57.1 dB
MIDRANGE S/N RATIO (re 3% THD)		60.5 dB
THD (at 333 Hz)	at 0 dB	at −10 dB
	1.14%	0.19%
C-90 PRICE		$6.95

SONY Metal ES C-90

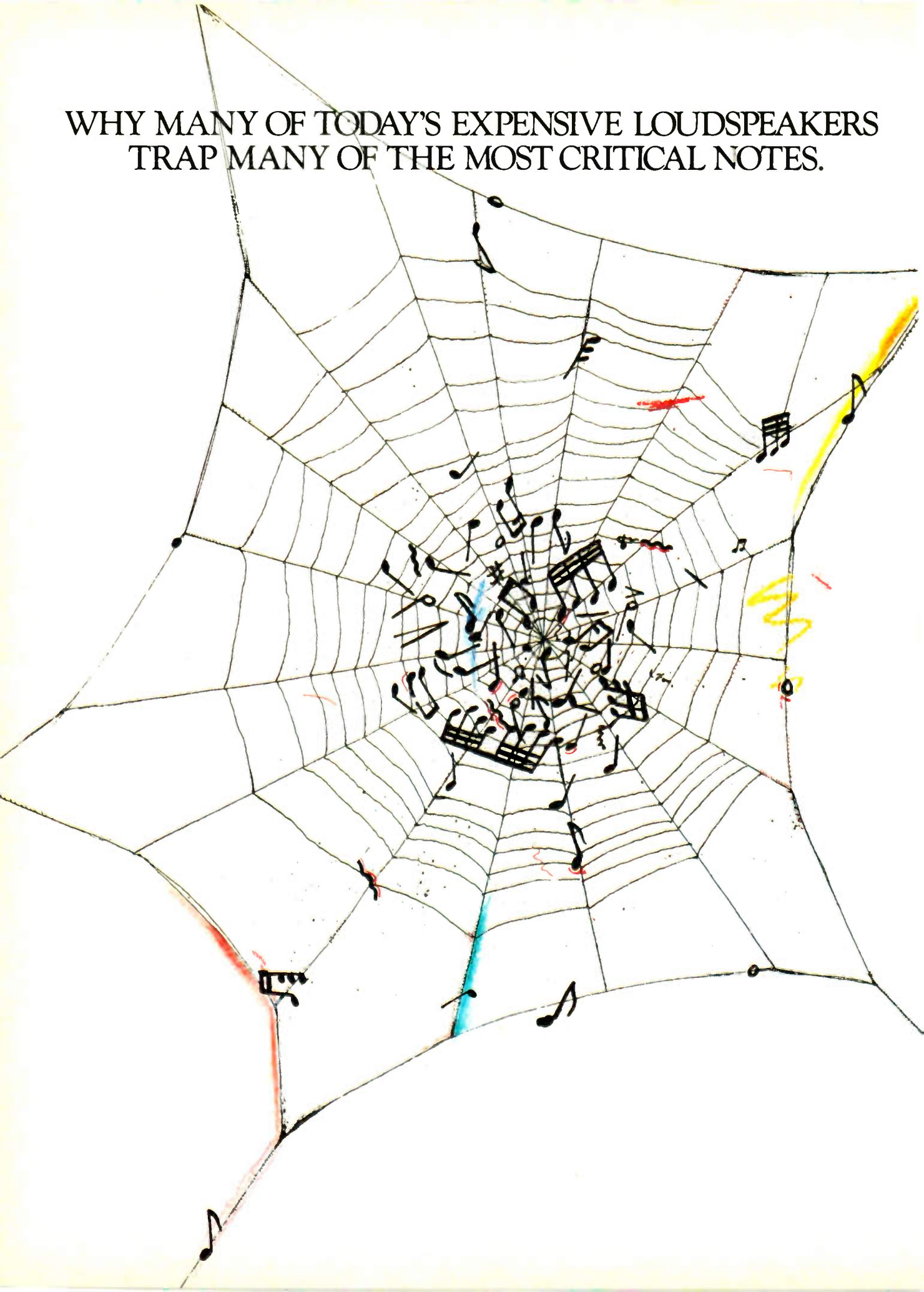
cassette tape (Type 4)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at −20 dB)		
⊕ Midrange headroom (3% THD)		+9.0 dB
- - - - - Maximum high-frequency output (3% IM):		
at 4 kHz		+0.2 dB
at 15 kHz		−11.0 dB
RELATIVE BIAS		134%
RELATIVE SENSITIVITY (333 Hz)		+1.3 dB
A-WEIGHTED NOISE (re 0 dB)		−58.5 dB
MIDRANGE S/N RATIO (re 3% THD)		67.5 dB
THD (at 333 Hz)	at 0 dB	at −10 dB
	0.31%	0.06%
C-90 PRICE		$11.95

WHY MANY OF TODAY'S EXPENSIVE LOUDSPEAKERS TRAP MANY OF THE MOST CRITICAL NOTES.



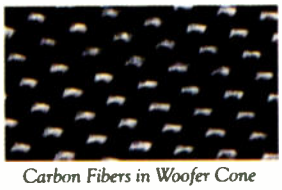
The music that goes into many of today's highly priced loudspeakers isn't always the same music that comes out. Many of the finer notes and nuances are often trapped or lost. Why? Because advanced recording techniques and digital processing demand a dynamic range of over 90 dB and an extended frequency response. Demands that are often beyond the limits of ordinary loudspeakers.

The truth is, most people can't hear what's missing from their music—like a broad frequency range—or what's been added—like coloring or distortion. But there are a few who can.

For that select group, listeners with well trained ears, Altec Lansing has engineered a new line of loudspeakers to recreate every subtlety of recorded music with a clear open sound and without coloring or distortion. Even the accuracy of CD recordings can be more fully appreciated on these Altec Lansing loudspeakers, prompting Stereo Review to remark "...the bass distortion was among the lowest we have measured. The speakers have...very good bass, and a warm, extended and unstrained character."

Polyimide/Titanium Mid-range

The secret to Altec Lansing's consummate performance? Remarkably sophisticated technology. Like woofers of a woven carbon fiber material (instead of paper or polypropylene) that is extremely rigid yet sufficiently light for maximum transient response and extraordinary low frequency definition. The result is a pure, clean, deep bass that beautifully complements the performance of our mid and high frequency polyimide/titanium domed drivers. Virtues like these compelled Stereo Review to also comment on Altec Lansing's "...high sensitivity and ability to absorb large power inputs...a speaker that can develop high sound pressure levels in any environment." Even the hand crafted walnut veneered cabinets utilize the latest computer aided design techniques, thick walls and extra bracing to eliminate resonance.



Carbon Fibers in Woofer Cone

So come hear Altec Lansing loudspeakers. And discover just how much of your music has been trapped by less than extraordinary loudspeakers. Call 1-800-ALTEC 88 for information and the Altec dealer nearest you. (In PA 717-296 HIFI.) In Canada call 416-496-0587 or write 265 Hood Road, Markham, Ontario L3R 4N3.

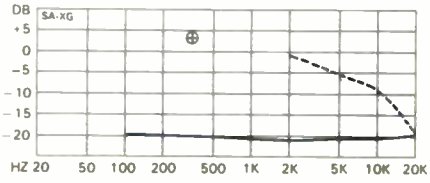
ALTEC LANSING
LOUDSPEAKERS FOR
THE WELL-TRAINED EAR

THE NEWS AT TDK CONCERNS ITS LATEST SHELL DESIGN as much as its tape. The company hones its formulations relatively frequently—both with and without announcement—and the two represented here are both current-generation. TDK introduced a two-layer shell last year to help control physical resonances. Now it has added an improved version (RS-II) of the metal-framed RS shell formerly used for MA-R tape. Like the earlier version, it has a heavy, rigid, alloy "backbone" running around three edges of the shell, with clear top and bottom surfaces screwed to it and little back-edge snap-in inserts that can be positioned for either recording or erasure-prevention. An internal molded piece just behind the tape path is the most obvious beneficiary of redesign, with four embedded stainless (rather than plastic) pins as tape guides between head openings. Tapes housed in the new shells all carry a G suffix; X suffixes continue to designate the most advanced formulation of any type. Thus SA-XG is the current top dual-layer Type 2 (Super Avilyn) tape, housed in the RS-II shell. TDK has been calling this "the world's quietest tape," and its noise figure is, indeed, the lowest we have yet measured. In addition, the S/N figure is very nearly the best we've found. Even though it doesn't always qualify for superlatives, it is an excellent Type 2 entry overall. MA-XG similarly is an excellent Type 4 formulation, particularly in high-frequency headroom—and an outright winner in the ultrahighs. Its expanded trace also is unusually smooth. The current MA-X formulation also is available in the less expensive shell (now sleekly glossy, without the traditional TDK embossing) with picture-window tape viewing.

TDK SA-XG C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



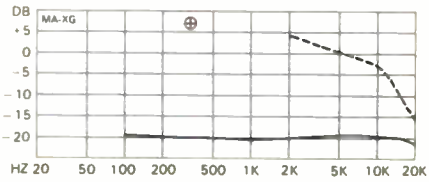
——— Relative output vs. frequency (at −20 dB)	
⊕ Midrange headroom (3% THD)	+3.4 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	−4.3 dB
at 15 kHz	−13.9 dB
RELATIVE BIAS	107%
RELATIVE SENSITIVITY (333 Hz)	+2.5 dB
A-WEIGHTED NOISE (re 0 dB)	−61.5 dB
MIDRANGE S/N RATIO (re 3% THD)	64.9 dB

THD (at 333 Hz)	at 0 dB	at −10 dB
	1.11%	0.18%
C-90 PRICE		$9.25

TDK MA-XG C-90

cassette tape (Type 4)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at −20 dB)	
⊕ Midrange headroom (3% THD)	+7.0 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+1.2 dB
at 15 kHz	−9.4 dB
RELATIVE BIAS	114%
RELATIVE SENSITIVITY (333 Hz)	+0.5 dB
A-WEIGHTED NOISE (re 0 dB)	−57.2 dB
MIDRANGE S/N RATIO (re 3% THD)	64.2 dB

THD (at 333 Hz)	at 0 dB	at −10 dB
	0.62%	0.14%
C-90 PRICE		$9.25

(CONTINUED FROM PAGE 44)
for the old tape is insufficient for the new one). And two years ago, the newest formulations continued to edge farther and farther from the standards—and therefore away from ideal behavior, in some respects, on decks designed for older tapes.

Perhaps the most important finding of the present tests is that the latest tapes seem to be moving back to the standard formulations in these important respects. At the same time, they continue to chip away at noise and headroom, where progress really *is* improvement. Also notable in some areas is the similarity of the tapes we have tested. This may be partly because some less-impressive brands that brought down the averages and widened the spread in previous years have disappeared from the field.

Among the Type I tapes, this year's spread between high and low values for the various tested characteristics is astonishingly narrow. The average bias point for the group has gone from 106 percent in 1983 to 111 percent in 1985 to 103 percent today. At the same time, average sensitivity has continued to hover near that of the IEC standard. But while figures for distortion and midrange headroom average almost exactly the same for all three years, there is a small (typically less than 1 dB) but steady improvement in all average high-frequency headroom figures, and average noise figures have improved by comparable amounts.

Bias points do continue to edge up (96 to 103 to 107 percent) among the Type 2 formulations, but sensitivity has held steady since the last round and high-frequency headroom continues to improve. Most improved is the average bias noise level. That for A-weighted noise held steady at about −57 dB in two previous tests but now is −58 dB; S/N ratio, too, has increased by slightly more than 1 dB. Again, the spread from best to worst is narrower than two years ago, as the least attractive entries have been withdrawn.

That tightening of the spread is most noticeable, perhaps, in the Type 4 (metal) tapes—particularly in bias points, though the average is up from 107 to 118 percent. Headroom averages remain essentially unchanged, but sensitivity is back down to +0.4 dB from a high of +3.0 dB.

Two years ago, we were talking about the recent application of metal-particle pigments to premium Type 2 formulations. The practice continues and clearly divides the Type 2s into two groups. Those based on conventional (chromium dioxide or ferricobalt) coatings usually have A-weighted noise figures of between −58 and −60 dB and 20-kHz headroom near −20 dB; those formulated with metal pigments usually have poorer noise figures (near −55 dB) but more 20-kHz headroom (about −15 dB).

Similarly, the cobalt-modified ferric particles that were originally developed as an alternative to chromium dioxide for Type 2 tapes now regularly appear in premium Type I tapes, again with advantages in high-frequency headroom. Generally speaking, however, even the plainest of the Type I tapes this year offers more in that department than the average of the Type 2 group. This is because of the difference in equalization: Type 2's 70-microsecond standard trades away high-frequency headroom to achieve a lower noise level.

Also perceptible in our test results is the trend towards dual-layer tapes (often indicated by an *S* somewhere in the formulation's name). The concept was responsible for the now obsolete Type 3 ferrichromes, in

which a chromium-dioxide surface layer recorded the highs and was supplemented at lower frequencies by an underlying ferric stratum. Since highs don't penetrate as deeply into the magnetic coating, the thickness and magnetic composition of the layers can be juggled to optimize desirable traits in different frequency regions.

The balancing act isn't always completely successful, however, and we suspect that the somewhat sagging sensitivity curves for many of this year's tapes is the result. Again, many of these curves could be made flatter still if the deck's recording EQ were to be altered somewhat, and deck manufacturers will probably begin doing just that to realize the potential benefits of the more sophisticated tapes.

Mixed Bag of Shells

BUT CASSETTES ARE MORE THAN JUST TAPE, and the improvements in shell design may be even more important in the end than those in magnetic properties. In fact, the related field of packaging has become an issue in itself, since the appearance of a cassette on a store shelf often has at least as much to do with its sales potential as the tape inside. With cassette shells, the trend has been to re-engineer the entire structure for more mechanically inert (meaning less resonant) shell halves, lower scrape flutter (caused by friction between tape and guide parts), greater rigidity (to reduce alignment-degrading skew), and better tape/head contact (obtained by altered pressure-pad dimensions or mounting-spring shapes). As a result, shell appearance is changing—often dramatically—but a new resplendence may not always indicate mechanical upgrading.

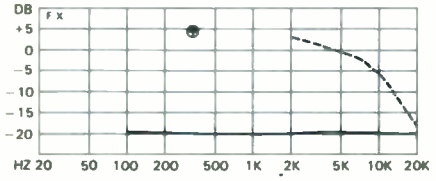
It's astonishing how much—and how gradually—tape technology has improved since our first tests in 1973. The very best cassettes of that era would be unacceptable by today's major-brand standards. In addition to higher noise and lower headroom, the old tapes had rattly, poorly molded, ultrasonically welded shells that made repair (more often needed then than now) problematic. Every one of this year's tested samples has a look and feel of quality unknown in 1973, with such niceties as five-screw shells and real idlers—not metal-clad plastic posts—in the front corners. (Some budget tapes from the same brands may have welded shells, however.) Except for the skimpy size of today's stick-on labels and the startling gaudiness of some cassette packaging, I can't think of a single characteristic that hasn't been materially improved. So if the most recent tape developments don't strike you as dramatic (and they aren't), just remember how much great progress has been forged through vanishingly small improvements. With cassette improvements now reaching the point of diminishing returns, we can safely say that analog audio tape has reached maturity. DAT, anyone? ■

A RELATIVE NEWCOMER IN THIS COUNTRY, TRIAD (marketed and distributed here by Harman America) appears in our tape tests for the second time and with the same three type designations and packaging style. As a result, we didn't expect any dramatic changes in test results, and we found none. The Type 1, F-X, is fairly typical of its class but offers distinctly better-than-average headroom in the low treble. The Type 2, EM-X, is also typical of its class but does particularly well in headroom for the extreme highs. Results for the Type 4, MG-X, least resemble those from last time, though this may be more because of our change in high-frequency bias test point than because of any change in the tape. This time, the bias point is the lowest in our Type 4 group, and figures for headroom in the midrange and lower treble and for noise aren't quite as impressive as last time. The headroom should be improved by the higher bias that we would expect in many current decks; but without a compensating change in recording EQ, high-end response might suffer. The expanded trace for MG-X is very smooth. All three formulations come in a shell whose jazzy triangular window helps you distinguish Side A from B in the dark but leaves only very cramped space for the ultra-tiny stick-on labels.

TRIAD F-X C-90

cassette tape (Type 1)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)

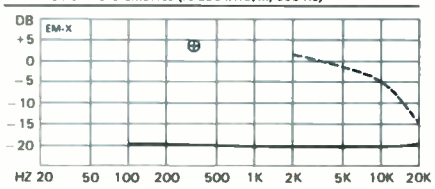
⊕ Midrange headroom (3% THD)	+4.6 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+0.3 dB
at 15 kHz	–12.4 dB
RELATIVE BIAS	109%
RELATIVE SENSITIVITY (333 Hz)	0.0 dB
A-WEIGHTED NOISE (re 0 dB)	–55.4 dB
MIDRANGE S/N RATIO (re 3% THD)	60.0 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	0.37%	0.15%
C-90 PRICE		$3.99

TRIAD EM-X C-90

cassette tape (Type 2)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)

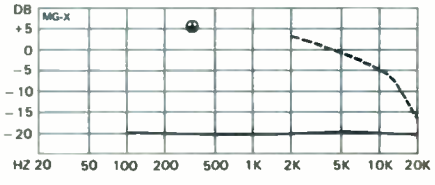
⊕ Midrange headroom (3% THD)	+3.4 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	–0.8 dB
at 15 kHz	–9.7 dB
RELATIVE BIAS	107%
RELATIVE SENSITIVITY (333 Hz)	+2.2 dB
A-WEIGHTED NOISE (re 0 dB)	–56.1 dB
MIDRANGE S/N RATIO (re 3% THD)	59.5 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	1.38%	0.19%
C-90 PRICE		$4.99

TRIAD MG-X C-90

cassette tape (Type 4)

PLAYBACK CHARACTERISTICS (re 250 nWb/m, 333 Hz)



——— Relative output vs. frequency (at –20 dB)

⊕ Midrange headroom (3% THD)	+5.4 dB
- - - - - Maximum high-frequency output (3% IM):	
at 4 kHz	+0.2 dB
at 15 kHz	–10.3 dB
RELATIVE BIAS	106%
RELATIVE SENSITIVITY (333 Hz)	–0.2 dB
A-WEIGHTED NOISE (re 0 dB)	–55.0 dB
MIDRANGE S/N RATIO (re 3% THD)	60.4 dB

THD (at 333 Hz)	at 0 dB	at –10 dB
	0.75%	0.11%
C-90 PRICE		$5.99

BY DAVID RANADA

Origins of a Species

DAT technology has its roots in video recording and the Compact Disc.

LOOKING OVER THE BASIC FEATURES OF THE rotary-head digital audio tape cassette system (DAT for short), it is difficult *not* to see its origins in the PCM-adapter/VCR combinations developed in the late 1970s. While such products are still offered (see this month's "Currents") and provide sound quality nearly equal to that of DAT, the new system has gone much further in convenience, complexity, and, above all, miniaturization.

At a time when most professional digital-audio recordings are still being done on ¾-inch U-Matic professional videocassettes, DAT, in a tape $\frac{1}{25}$ the size, offers equivalent audio performance, greater accessibility, a longer playing time, and, eventually, superior editing convenience. This is because DAT's designers have sprinkled large helpings of previous, proven technologies among the innovations of DAT. To best see how DAT's main antecedents (8mm video and the Compact Disc) have influenced its design, just start with the obvious: the size of the DAT cassette.

Small Packages

A SURVEY OF POTENTIAL DAT DECK AND TAPE manufacturers taken early in the system's development yielded results that are not only intrinsically interesting but also indicative of the various directions DAT design could have taken. For example, nearly half (48.5 percent) of the respondents favored a digital-audio cassette approximately half the size of an analog cassette, while one third preferred a tape only somewhat smaller than an analog cassette. Although the 8mm videotape cassette was a practical alternative—development work on the 8mm system having had a head start—only 18.2 percent would have preferred using 8mm videocassettes for digital audio as well. Clearly, most manufacturers were willing to give up the savings in manufacturing cost that would have occurred upon the adoption of the 8mm cassette in order to reap the gains of a small-as-possible digital cassette. The smaller the tape, the smaller the mechanism, and the simpler the adaptation to car, portable, and even personal-computer applications. The potential of an expanded DAT market would far exceed the short-term cost advantages of using 8mm tape. The final DAT spec is for a cassette measuring 73 × 53 × 10.5 millimeters, just 54 percent of the volume of an analog cassette and 46 percent the volume of an 8mm videocassette.

But 8mm was not ignored. The 8mm cassette's dustproof construction greatly influenced DAT since, in the digital format, dust and tape damage can wreak havoc with the intimate tape-to-head contact so vital to the correct playback of high-density digital data. The resulting DAT cassette (Fig. 1) protects its tape with lids and sliders, and a brake mechanism keeps the tape on the hubs from unraveling itself. When a DAT is loaded into a deck, the cassette is opened and the brakes are released automatically.

The small size of a DAT cassette tends to overshadow its mechanical sophistication, and its sealed construction further obscures many of the parts within. For an indication of the complexity of modern technical standards, glance down the following abbreviated list of factors that influenced the final mechanical design of the DAT cassette:

- The forces necessary to open and close the slider, lid, and slider locks.
- The force of the hub locks.
- The timing of release of the hub locks.
- The torques necessary to turn the hubs.
- The durability of the slider lock.
- The ability to withstand a drop test.
- The tensions exerted on the leader tape.
- The forces necessary to pull tape out of the cassette during loading.

In addition to its mechanical operating features, the DAT cassette provides ways to activate various features in the deck. A series of open or closed holes in the bottom of the cassette identifies the coating material of the tape contained inside and indicates whether or not it is prerecorded. Erasure prevention (or "write protection," as it is known in the computer industry) is accomplished by means of a rear-edge slider that opens and closes another hole on the bottom rim. Each of the other small notches and cutouts in a DAT also has a purpose, such as indicating incorrect insertion in a deck or functioning as a grip for automatic-loading mechanisms. A DAT deck senses the end of a tape optically (as do VHS VCRs) and can do so either by transmissive or reflective means; different openings in the cassette are provided for each method.

The Tape

THE SURVEY OF MANUFACTURERS ALSO CAME up with preferences for precisely what such a complicated cassette should contain. Half the respondents wanted a DAT to play for two hours, and 45.9 percent of them wanted a tape width equal to that of the analog cassette (3.81 millimeters, or 0.15 inch), possibly to reduce expensive retooling of tape manufacturing machines. These two requirements—together with a digital-audio data rate of more than 1.5 million bits per second (two channels encoded with 16-bit resolution with a sampling rate of 48,000 Hz)—virtually dictated use of the current highest-density magnetic tape coating: pure metal powder. Even though the smallest wavelength on a DAT recording is 20 percent smaller than that of 8mm video, it turns out that a metal-particle tape suitable for 8mm video recording is also usable for DAT (when slit to 3.81 instead of 8 millimeters).

The requested two-hour playing time is obtained by making the tape's overall thickness 13 micrometers (about the same as that of a C-90 analog cassette tape) and the hub diameter 15 millimeters, and, most astonishingly, by running the tape at a speed of only 8.15 millimeters (about $\frac{5}{16}$ inch) per second.

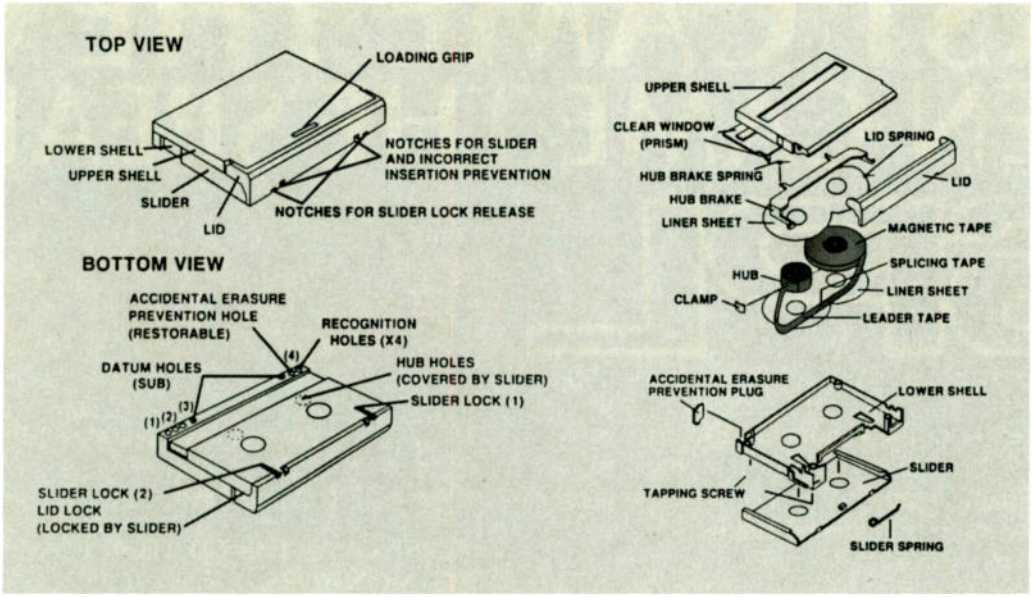


FIG. 1. THESE DIAGRAMS, COURTESY OF SONY, SHOW HOW FORM IS DETERMINED BY FUNCTION WITH A DAT CASSETTE. THE COMPLEXITY OF THE DESIGN ORIGINATES IN THE NEED TO KEEP THE TAPE DUST- AND FINGERPRINT-FREE.

just $\frac{1}{6}$ the speed of an analog cassette. By using 13mm hubs and a tape 10.8 micrometers thick, a playing time of three hours can be obtained. (However, two-hour tapes are the longest yet available in Japan.)

Laying Down Tracks

THE REASON DAT CAN HAVE AUDIO QUALITY AT least equivalent to that of Compact Discs is that the enormous amounts of digital data necessary to obtain such performance are recorded with a high-density recording technique: helical scanning, also used in home VCRs. In helical scanning, the tape is wrapped around a rapidly spinning cylinder (the drum) in which two combination record/play heads are mounted (Fig. 2). Of importance to car and portable DAT applications is the gyroscopic effect of the spinning drum, which offers substantial resistance to external disturbances. In the DAT system, the drum spins at 2,000 rpm. Mitsubishi's experiments with a car DAT playback deck showed that vertical accelerations of as much as 1 g have no effect on playback.

The angle of the tape relative to the spinning drum is such that each of the two heads mounted on the drum traces out a diagonal track 23.5 millimeters long down the length of the tape, making the tape-to-head speed—the true determinant of any magnetic recorder's abililty to record massive amounts of data—3.133 meters (about 10 feet 3 inches) per second. The actual digital-audio data takes up only 15.3 millimeters of each track; the rest of the track is filled with tracking, cueing, and other information.

The linear tape speed determines the width (or pitch) of the spinning-head tracks, and the 8.15-millimeter-per-second DAT tape speed results in tracks only 13.59 micrometers wide—about $\frac{1}{10}$ the diameter of a human hair. The width of a DAT head is $1\frac{1}{2}$ times the track pitch; in playback, the head reads one track completely and the two adjacent tracks slightly. (To see how this property is used to great advantage, see "Keeping On Track" below.) In recording, the wide head means that with each spin of the drum, each head partially overwrites the track just laid down by the other. Crosstalk between adjacent tracks is reduced by making the alignments of the gaps in each head different. The technique—called helical-scan, slanted-azimuth, guardband-less recording—had its first commercial embodiment in Sony's original Betamax VCR and is now used by all home videocassette formats.

Data along one track is crammed in at the density of 61,000 bits per inch. The high tape-to-head speed (allowing the recording of high frequencies) combined with the very narrow track pitch produce the DAT data recording density of 114 million bits per square inch (114 Mbit/in²) of tape. Compare this to the equivalent data densities of an analog open-reel audio tape (0.1 Mbit/in²), an analog audio cassette (1 Mbit/in²), a $\frac{1}{2}$-inch videotape (10 Mbit/in²), and an 8mm videocassette (100 Mbit/in²). (There is a reason for a Compact Disc being so compact, however: At one *billion* bits per square inch, the data density of a CD far surpasses that of DAT.)

Finding one's away around such massive amounts of digital information would be tedious if DAT had no provision for high-speed searching. High search speeds are possible only because the drum is a mere 30 millimeters in diameter, at least in the first-generation of DAT machines. With such decks, the tape is wrapped around only 90 degrees of the drum's circumference. The short length of tape in contact with the drum reduces tape wear, and the low tension resulting from a relatively bend-free tape path leads to long head life. Also, four heads can be mounted at 90-degree intervals on a 30-mm drum to provide simultaneous monitoring while recording, a feature essential for professional audio- and computer-data re-

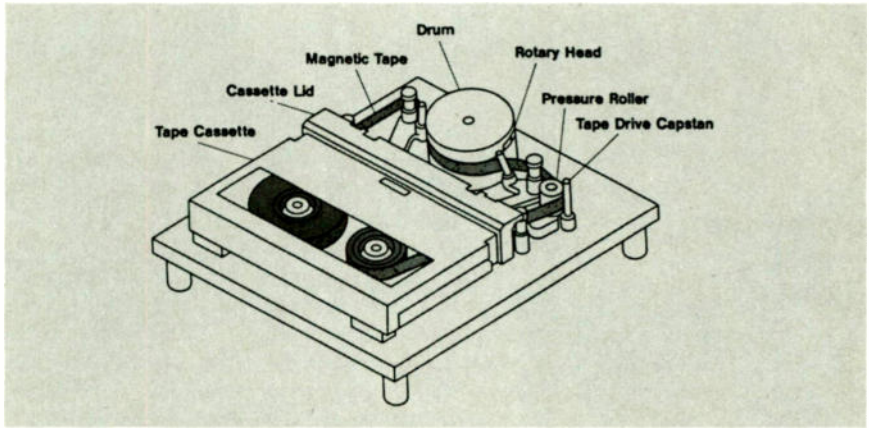


FIG. 2. THIS THUMBNAIL SKETCH OF A DAT LODGED IN A SIMPLIFIED HELICAL-SCAN MECHANISM SHOWS HOW THE TAPE IS DRAWN OUT OF THE CASSETTE AND WRAPPED AROUND THE SPINNING HEAD DRUM.

FIRST CAME THE CD
THEN CAME THE SPEAKER

SPL monitors

Since the invention of the **Compact Disc,** speaker companies have been talking about how their speakers are **"digital ready".** This seems odd when except for the addition of **"digital ready"** stickers, many name brand speakers are pretty much what they were in the days of analogue.

So you still have that agonizing choice between the very efficient, very dynamic speakers versus the softer sounding brands. Isn't it time for an end to this either/or dilemma?

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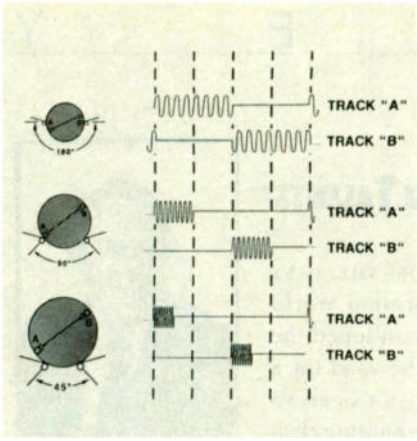


FIG. 3. THE USE OF DIFFERENT HEAD-DRUM DIAMETERS IN DAT PRODUCES THE VARIOUS HEAD-OUTPUT PATTERNS SEEN AT THE RIGHT (30 MILLIMETERS IS THE STANDARD ON THE FIRST GENERATION OF DAT DECKS). DIGITAL MEMORY CIRCUITS HELP TURN THE OBVIOUSLY DISCONTINUOUS NATURE OF DAT RECORDING AND PLAYBACK INTO CONTINUOUS AUDIO SIGNALS.

cording purposes. In high-speed forward search (at 200 times normal speed) with a deck having a 30-millimeter head drum, the drum must rotate at 3,025 rpm, instead of the normal 2,000 rpm. Searching backwards at 200 times normal speed, the head drum rotates at 964 rpm.

Interestingly, different DAT head-drum diameters are feasible while maintaining intermachine compatibility. A 15mm drum can be used in applications requiring very small mechanisms (a digital-tape Walkman —DAT-GIRL, perhaps?). Ultra-high-speed searching with still lower tape tension can be obtained using a 60mm drum. This wide range of usable drum diameters results from the ability to read digitally encoded audio from the tape discontinuously, as long as the final output to the digital-to-analog converters is continuous (Fig. 3).

Keeping on Track

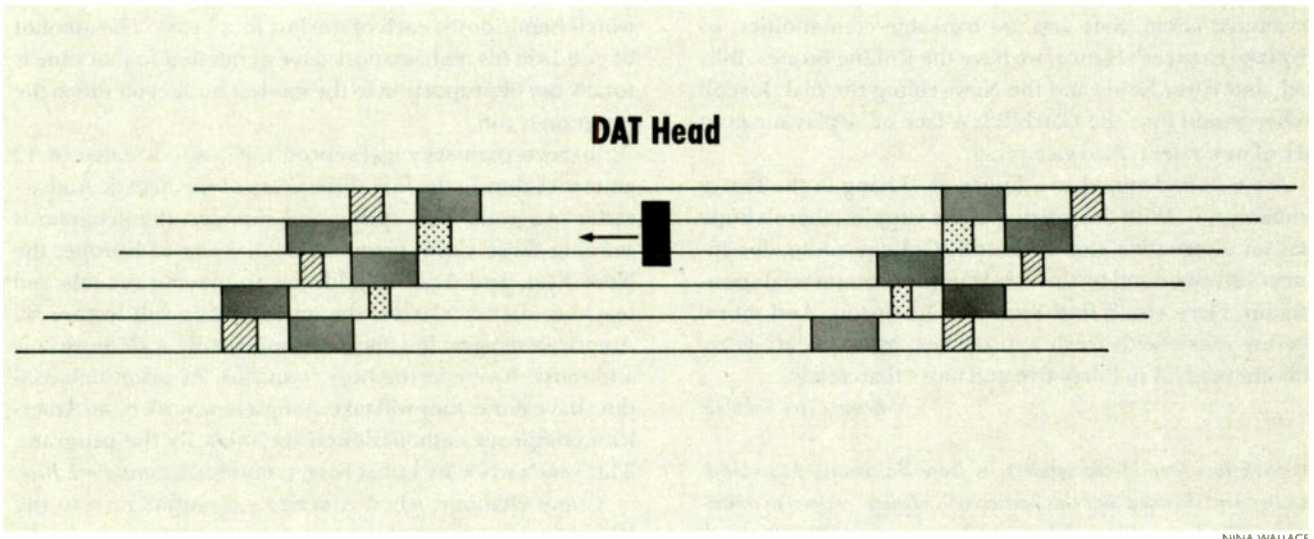
MAINTAINING A HELICAL-SCANNING HEAD IN position over its assigned track is essential for proper operation of VCRs and DAT decks, which is understandable in light of the microscopic track widths involved. In ½-inch VCRs, a fixed head, separate from the head drum, records and plays a series of synchronization pulses on the tape. The well-known tracking control on a VHS or Beta VCR is an electronic adjustment compensating for slight mechanical and electrical differences among machines and tapes. Turning the tracking control adjusts the accuracy with which a VCR's heads scan the recorded tracks.

DAT doesn't use this system, which requires the installation and alignment of a control-pulse head. Instead, DAT uses a mechanically simpler but electronically more complex automatic track-finding system similar to that employed in the 8mm video system. Three tones at around 100 kHz (relatively low-frequency compared to the audio data) are recorded at the end of each scanned track (at both ends with DAT), with the pattern of one pilot tone and two sync tones regularly changing from track to track (Fig. 4). Since the DAT head spans 1½ tracks, it is correctly aligned over the intended track only when the precise pattern of that track's pilot tone and sync tones *picked up via crosstalk from the adjacent tracks* is also correct. A servo circuit continuously changes the deck's capstan motor speed to preserve this alignment.

Error Control

IF THAT ALIGNMENT SLIPS OR THE TAPE IS damaged, or if the head loses contact with the tape in playback (because of dust, scratches on the tape, or a clogged head), it is the function of DAT's error-correction system to use the redundant data stored on a tape to correct the data errors, or, failing that, to interpolate the missing information by doing calculations on the surviving data. This is definitely not the place for a nuts-and-bolts description of DAT error correction, which is a very complicated process. Suffice it to say that it is very similar to that employed by the CD system in its use of two Reed-Solomon codes and of formalized data shuffling called interleaving (which reduces the likelihood of uncorrectable errors.)

The result is error-correction performance superior to that of the Compact Disc system. For example, a DAT will still play if, during two revolutions of the head drum, one head is momentarily clogged or if all the data between the center line of the tape and its edge are lost. Put another way, as much as 2.64 of the 15.3 millimeters of digital audio data in each track can be completely restored if lost or damaged. Interpolation will cope with a data loss of as much as 8.87 millimeters along a track. Experiments have shown that acceptable error rates (meaning all errors totally correctable with a substantial safety margin before interpolation is required) are maintained through more than 200 playbacks of the same tape. The actual upper limit—before uncorrectable deterioration sets in—depends on the precision of the deck and tape mechanisms and on environmental conditions. Although it is nowhere close to the nearly infinite playback capability of a CD and probably doesn't even approach the maximum limits of the cassette itself (the slider locks have been tested to more than 30,000 operations and the entire shell to temperatures ranging from 14 to 140 degrees Fahrenheit), the durability of a DAT should be more than adequate for most uses. ■



NINA WALLACE

FIG. 4. EACH SUCCESSIVE TRACK CREATED BY A SPINNING DAT HEAD HAS A PATTERN OF PILOT AND SYNC FREQUENCIES DIFFERENT FROM ITS TWO NEIGHBORS. SINCE A DAT HEAD SPANS 1.5 TRACK-WIDTHS, IT PICKS UP PILOT AND SYNC SIGNALS FROM ADJACENT TRACKS, AND THESE IN TURN ARE USED TO CENTER THE HEAD OVER ITS INTENDED TRACK.

EDITED BY KEN RICHARDSON

Radio Kills Music, Self

CLASSICS. OLDIES. BIG CHILL. THE Beatles' "Twist and Shout" is on the charts. Ben E. King is Top Ten! What's happening here? Remakes have always been with us, but recycles?

In the past, record companies depended on radio broadcasters to expose their new artists to listeners. Airplay brought sales. In return, broadcasters got an audience, and based on the size of that audience, salesmen convinced sponsors to place ad spots between the songs. Ads brought revenue. Simple, huh? A smooth kind of backscratching, agreeable to both parties—and in the process, we got our music.

No more. All bow down to the new conspicuous consumer: the baby-boomer. Racquetball, BMWs, and audio/video gear represent just some of the big-ticket interests of this group. Baby-boomers grew up in the Sixties, and that's their musical era of choice. Broadcasters, naturally viewing themselves as smart business people, now cater directly to this age group. If oldies equals dollars, so be it. Radio no longer feels any responsibility toward introducing new music. The result? On the average day, in the average city, the Doors and Procol Harum receive more airplay than in 1967.

Yet the record companies are hardly blameless for this creativity freeze. Seeking sales, they have stopped fighting and started joining, promoting sure things rather than undeveloped talent. Safe acts are bankable commodities, so why take chances? Hence, we have the Rolling Stones, Billy Joel, and Huey Lewis and the News ruling the dial. Joseph Heller would love the Catch-22: A lack of airplay means a lack of new talent. And vice versa.

Are we condemned to a future of "Living in the Past"? Probably not. With the greying of the yuppies, there's hope that an alternative can be found. College radio, for instance, is not bound by the constraints of commercial sponsorship. Here you'll find Richard Thompson. And more. Quality music with fresh approaches. Most twenty-year-olds are ready; I'm thirty-five and more than ready.

Brian Cary Sokolow

Mr. Sokolow, one of our readers, is from Baltimore, Maryland. Readers are reminded that this portion of "Medley" is open to contributions. Send your 425-word article (keep a copy) to Ken Richardson, Popular Music Editor, HIGH FIDELITY, *825 Seventh Ave., New York, N.Y. 10019. We pay $100 for each published article.*

EDITED BY TED LIBBEY

Major-League Talents

EACH OCTOBER FOR THE PAST three years, just around World Series time, I have abandoned the office and gone on the road for a few weeks. No, it hasn't been so that I could follow the autumn classic, much as I would have enjoyed that. With travel orders from Uncle Sam in my pocket, I have criss-crossed the country listening to musicians who want to represent the United States overseas as "artistic ambassadors." In my role as outside consultant to this program, which is administered by the United States Information Agency, I have heard hundreds of auditions by accomplished American instrumentalists ranging in age from early twenties to late fifties. I have heard some extraordinary, even phenomenal artists. I have learned that this country has an enormous reservoir of talent in its conservatories and universities. And I have played a small part in seeing that a few outstanding performers received the opportunity to share their gifts with a broader public, to grow as musicians and individuals, and to advance their careers at the same time.

The Artistic Ambassador program is the brainchild of John Robilette, a concert pianist of the first rank who has proved no less capable as an administrator in government service since Charles Z. Wick, director of the USIA, summoned him to Washington. If there were an annual prize for the best use of taxpayers' money, Robilette would have won it hands down each of the last four years. The amount of goodwill his ambassadors have generated in that time is totally out of proportion to the modest budget on which the program is run.

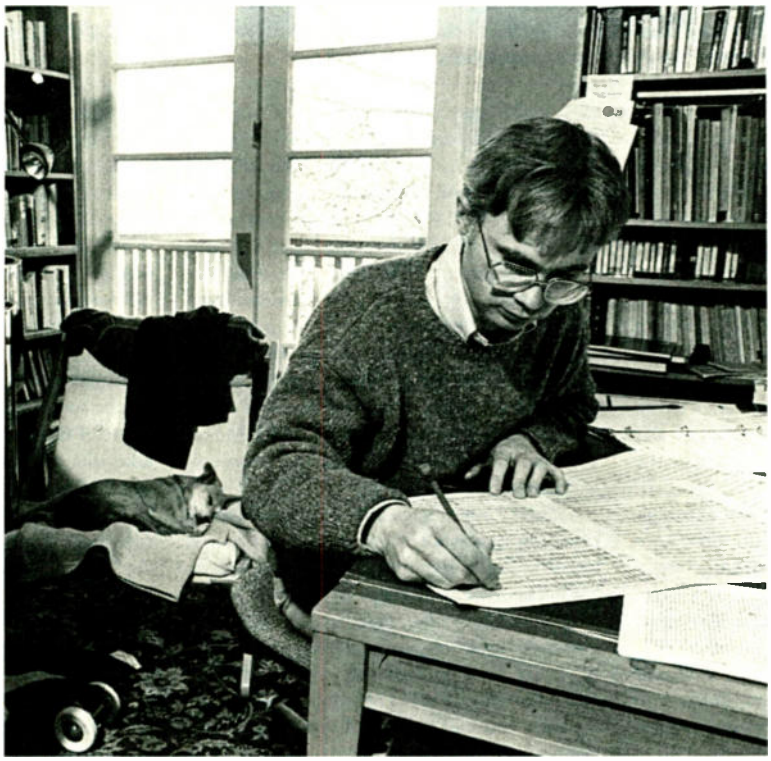
Sixteen pianists represented the United States in 42 countries during the first three years of the Artistic Ambassador program. This spring and summer, the program is sending three violin-piano duos on tours of Europe, the Near East, and Asia. In addition to playing recitals and teaching master classes, the ambassadors will lecture on American musical life and meet informally with musicians and music lovers in the host countries. As prior ambassadors have done, they will take along a new work by an American composer commissioned for them by the program. This year's work, by Lukas Foss, is entitled *Central Park Reel.*

Come October, when America's thoughts turn to the World Series, I will pack my bags for another round of auditions, proud of the fact that the Artistic Ambassador program has become a World Series of its own.

Ted Libbey

On the verge of completing his first opera, John Adams defines a new, eclectic American style.

THE MINIMALIST WITH THE MOSTEST



S SCHWARTZENBERG COURTESY NONESUCH

BY K. ROBERT SCHWARZ

AMERICAN VERNACULAR, minimalism, and Romanticism do not sound like the most comfortable of bedfellows, but together they form the basis of the musical language of John Adams. Although he has been profoundly influenced by the work of Steve Reich and Philip Glass, Adams, who is a generation younger than those pioneers of minimalism, has purged his musical vocabulary of their brand of austerity and impersonality. Moreover, by combining minimalism with an almost Romantic intensity of expression and by absorbing a variety of popular traditions ranging from band and film music to jazz and rock, Adams has achieved a synthesis not heard in America since Aaron Copland's works of the 1940s.

Adams's rise to prominence has been meteoric, and the critical consensus that he is the most promising American composer of his generation has developed swiftly. Thanks to abundant recordings on several labels (most recently Nonesuch, with which Adams has signed an exclusive contract), the progress of Adams's career over the past decade can be easily traced. Even a casual survey of those recordings reveals the rapid formation of the composer's distinctive voice.

Born in Massachusetts in 1947, Adams studied composition at Harvard University with Leon Kirchner, Roger Sessions, and David Del Tredici. Not surprisingly, he found himself composing in the atonal, highly rationalized manner so favored by our academic institutions. However, Adams's path toward modernism was soon disrupted. To celebrate the completion of his graduate studies in 1971, Adams's parents presented him with a copy of John Cage's *Silence*. Suddenly, Adams felt his entire academic training called into question. Moving to California in 1971 confirmed his aesthetic about-face, and Adams entered the ferment of San Francisco's experimental music scene.

Once in California, Adams's musical tastes underwent a series of radical shifts. He first explored Cageian aleatory, some of the fruits of which may be discerned in *American Standard* (1973). Scored for an unspecified ensemble of 12–15 players, *American Standard* combines chance procedures and the egalitarian ideals of Cornelius Cardew's Scratch Orchestra with elements drawn from American vernacular. In retrospect, it even shows a predilection for minimalism: The central movement, "Christian Zeal and Activity" (included on Nonesuch 79144), takes a tranquil hymn and, by elongating its harmonies, creates a suspended, almost stat-

DAVID ROBERTS/COURTESY HOUSTON OPERA

ADAMS (LEFT) AND JOHN McGINN REHEARSING "NIXON IN CHINA" AT THE HOUSTON GRAND OPERA

ic sense of time.

Soon Adams turned to electronics, designing his own synthesizer and composing such tape works as *Onyx* and *Sermon* (both 1976). The latter begins with the voice of a preacher, which Adams progressively divests of meaning by employing repetition, splicing, and layering; its approach to text as pure sound is not too different from such Reich tape pieces as *It's Gonna Rain* (1965) and *Come Out* (1966). On Nonesuch 79144, *Sermon* is superimposed upon "Christian Zeal," with the dogmatic tirade of the preacher standing in ironic contrast to the serenity of the hymn.

After a three-year immersion in electronics, Adams experienced his "diatonic conversion." Working with electronics "made me realize the resonant power of consonance," Adams says. "I found that tonality was not just a stylistic phenomenon that came and went, but that it's really a natural acoustic phenomenon. We all learned in college that tonality died, somewhere around the same time that Nietzsche's God died. And I believed it. When you make a dogmatic decision like that early in your life, it takes some kind of powerful experience to undo it, and mine was working with the synthesizer."

Meanwhile, another influence that was to have the most profound effect of all—the music of Steve Reich—had begun to impress itself on Adams. "I heard *Drumming* in 1974 and I was quite astonished by its rigor, because that was during a period when we were all doing these messy, free-form aleatoric pieces," Adams recalls. "A couple of years later, I conducted *Music for Mallet Instruments, Voices, and Organ*. I liked the very long-sustained harmonies and then the quick modulations, and that became the generating idea behind my own *Phrygian Gates*."

Although *Phrygian Gates* (1977), for piano, and *Shaker Loops* (1978), for string septet, reveal Reich's influence, they also mark Adams's independence from the minimalist creed. *Phrygian Gates* (New Albion NA 007) clearly leans toward minimalism in its rigorous structure, steady pulse, static harmonies, and frequent use of repetitive patterns that expand by an additive process reminiscent of Philip Glass's music. The original modular notation of *Shaker Loops* (septet version on NA 007, string orchestra version on Philips 412 214), which divides each line into a series of repeated melodic cells, similarly has elements in common with minimalism. Yet in their variety of melodic patterns, strong contrasts, and meticulous expressive markings—and in their impassioned climaxes, so far removed from the stasis of minimalism—both *Phrygian Gates* and *Shaker Loops* assert a stylistic direction that is unique to Adams.

Shaker Loops, especially, reflects Adams's rejection of the Reichian notion of process music in favor of a more intuitive approach. "What sets me apart from Reich and Glass," Adams states, "is that I am not a modernist. I embrace the whole musical past, and I don't have the kind of refined, systematic language that they have. I rely a lot more on my intuitive sense of balance. I've stopped worrying about whether intuiting a structure is right or not; as far as I can tell, most 19th-century composers wrote on intuitive levels. To me, it's the most exciting way to go, because you don't know what's going to come out on the end of that structure. It's very much like psychoanalysis or solving a crime, where you start with some clue—in my case, an image—and then build on that."

In 1978, Adams was appointed new-music advisor to the San Francisco Symphony, initiating a long and fruitful association with conductor Edo de Waart. Soon Adams attempted his first orchestral composition, *Common Tones in Simple Time* (1979). The composer has aptly summed up the work's ethereal delicacy by describing it as a "pastorale with pulse." Focusing on long, slowly shifting harmonic planes enlivened by a steady pulse, *Common Tones* (Nonesuch 79144) anticipates both the coloristic variety of *Harmonium* (1981) and the interlocking two-piano writing of *Grand Pianola Music* (1981–82).

Harmonium, a setting of poems by John Donne and Emily Dickinson scored for large chorus and orchestra, exposes the subjective, Romantic side of Adams's personality for the first time. Perhaps as a result of the expressive demands of its texts, *Harmonium* (ECM 25012) revels in grandiose climaxes and an expressive rhetoric that is much closer to Romanticism than to minimalism. The poems require a heightened emotional response, and in setting them Adams engages in an immense expansion of his melodic language. As a result, the score's minimal gestures—repeated triadic patterns and pulsing quarter notes—take on a more decorative aspect, providing a shimmering backdrop for the long vocal lines.

Those who expected *Harmonium* to be followed by an equally exalted work were shocked when *Grand Pianola Music* (Angel CDC 47331) proved to be a parodistic mixture of marching-band music, gospel, grandiose Beethovenian piano arpeggios, minimalist repetition, and—at least in the last movement—an almost perverse diatonicism. Still somewhat stunned by the negative critical response to *Pianola*, Adams feels compelled to defend the work: "I truly love it, and in the long run people will find more outrageous originality in it than in either *Harmonium* or *Harmonielehre*. . . . One of the truly tiresome things about contemporary music has been its incredibly dour, humorless quality. One of the things music can do better than any other art form is convey a sense of humor. As soon as you do that, you take yourself down off the heights of Parnassus." Humor is certainly a primary element in *Pianola*, particularly in the obsessively repeated dominant-tonic progressions of the last movement, but *Pianola*'s wittiness should not be allowed to obscure its value. Ultimately, its cultivated synthesis of quintessentially American elements is its most impressive achievement.

While *Grand Pianola Music* displays the irreverent side of Adams's personality, *Harmonielehre* (1984–85) once again manifests the seriousness of purpose and hyperexpressive rhetoric of *Harmonium*. *Harmonielehre* (Nonesuch 79115), a 40-minute orchestral work named after Arnold Schoenberg's 1911 treatise on tonal harmony, succeeds in reconciling the static repetitions of minimalism with the harmonic language and emotional intensity of Viennese expressionism. Although the work's outer movements still contain pulsing minimal patterns, its central section is one long, anguished cry, embracing a chromatic and tonally vague language new to Adams's music. Some listeners may discern echoes of Mahler and Schoenberg, but there are no literal quotations. "I use the *fin-de-siècle* language with the consciousness of a modern composer, and particularly with my own sensibility, which is very much given to repetitive structures.

"All of my music has this feeling of *déjà vu*," Adams declares, before advancing the contention that "the issue of vanguardism, the whole avant-garde, has burned itself out. As we approach the end of the century, there

is an exhaustion of this intense need to run to the barricades, to forge ahead to the future."

Just as *Grand Pianola Music* was in some sense an exorcism of *Harmonium*, the exuberant antics of *The Chairman Dances* (1985) serve as a mischievous repudiation of *Harmonielehre*'s spiritual turmoil. Recorded on Nonesuch 79144, together with such other recent orchestral pieces as *Tromba Lontana* and *Short Ride in a Fast Machine* (both 1986), *The Chairman Dances* reveals that Adams can distill his musical thought into brief, exhilarating, often amusing vignettes without compromising either his craftsmanship or the music's stylistic integrity. Inspired by a single image from Adams's forthcoming three-act opera *Nixon in China*—that of Mao Tse-tung dancing with his wife, former movie star Chiang Ching—*The Chairman Dances* deftly combines minimalist pulsing and foxtrot rhythms with the characteristically lush, sentimental violin lines of old Hollywood films.

Nixon in China, a collaboration with director Peter Sellars, librettist Alice Goodman, and choreographer Mark Morris, is scheduled to receive its premiere with the Houston Grand Opera in October, then move to the Brooklyn Academy of Music's Next Wave Festival in December and Washington's Kennedy Center in March, 1988. An advance peek at the opera reveals a surprisingly human, sympathetic portrayal of its principal characters. "There may be lots of irony, but there are moments when Pat and Dick are dancing together that are truly touching," says Adams. "It's not at all the political hatchet job that most people expect it's going to be. . . . The opera is about extraordinary human beings caught in a tangle of personal and historical events. We've been calling the opera 'mythic,' and I think it does contain a lot of myths. Nixon and the whole idea of self-righteousness and greatness and historical necessity—those are all very classic American myths. Mao created his own myth by burying myths that were thousands of years old."

Adams sees *Nixon in China* as "a consummation of all the different kinds of musical language that I've used in the last ten years." Yet the increasing prominence of American vernacular elements, particularly rock, suggests new directions for Adams's work. "Nixon's aria has a musical and rhythmic structure that really is just like a rock song," Adams points out, "and that's very exciting for me. That's going to be a bellwether of my future pieces—an even more stripped-down harmonic language."

Adams's interest in rock is indicative not only of the course his career may take in the years to come but also of his basic cultural view. Although he has been faulted for the seeming dichotomy between "serious" works such as *Harmonielehre* and "popular" ones such as *The Chairman Dances*, it is becoming clear that no stylistic disparity really exists in Adams's works. Instead, like Copland, Adams has only one style, whether he is reaching for the grand statement or simply trying to entertain his audience. Robert Hurwitz, vice-president and general manager of Nonesuch (and Adams's producer), comments that "what makes *The Chairman Dances* go is not only the wit and irony and sense of nostalgia, but the irresistible sense of energy of the musical language. That same language can be heard not only in *Pianola* but in *Harmonielehre*. Some 'serious' composers can, with a flick of the wrist, write one piece that sounds serious and another that sounds popular, but rarely do both sound like the same composer. Whether it is *The Chairman Dances* or *Harmonium*, it always sounds like John's music."

Adams's entire creative output repudiates the elitist belief that a "serious" composer should be isolated from American culture. In fact, the absorption of all aspects of American vernacular into his music presents the heartening picture of a composer who is very much a part of American society. From post-Romantic symphonic music to the rigors of minimalism, from the nostalgia of film music and marching bands to the simplicity of rock, Adams freely selects, combines, and synthesizes. That very openness makes him heir to the tradition of Gottschalk, Ives, Copland, and Reich. It also brands him as a distinctively American composer. ■

THE CD SPREAD

MINI-REVIEWS OF THE LATEST COMPACT DISCS

BY ROBERT R. REILLY, K. ROBERT SCHWARZ, TERRY TEACHOUT, AND JAMES WIERZBICKI

CHOPIN NOCTURNES, MAZURKAS: RUBINSTEIN

THIS PAIR OF TWO-CD SETS CONTAINS ARTUR Rubinstein's superb performances of the complete Nocturnes and Mazurkas of Chopin. These recordings, the cream of Rubinstein's stereo Chopin series for RCA, are an essential part of every Chopin collection, and it is a particular delight to have them on CD, where each individual piece can be cued with ease. Max Wilcox, who produced the analog originals, has done a good job of digital remastering. Playing time for Nocturnes: 107:30 (RCA 5613-2). Playing time for Mazurkas: 140:01. (RCA 5614-2.) *T.T.*

BRITTEN ORCHESTRAL MUSIC: BRITTEN, LONDON, ECO

THIS LATEST RELEASE IN LONDON'S BENJAMIN Britten CD series recouples the composer's 1964 recording of *The Young Person's Guide to the Orchestra*, performed without narration, with two earlier works for strings, the *Simple Symphony*, Opus 4, and the *Variations on a Theme by Frank Bridge*, Opus 10. Britten's conducting of the London Symphony Orchestra and the English Chamber Orchestra is masterly. The digital processing is excellent, though David Harvey's 1969 recording of the *Simple Symphony* is overresonant. *The Young Person's Guide to the Orchestra* is unbanded, but the other two works are fully banded by movement and variation. Playing time: 60:52. (London 417 509-2.) *T.T.*

BARTÓK, KODÁLY: CONCERTGEBOUW, ZINMAN

ALTHOUGH ZOLTÁN KODÁLY AND BÉLA BARTÓK collaborated in collecting Hungarian folk music, their approaches to folk material, at least in their own compositions, could not have been more different. Kodály used folk themes in a straightforward, frankly populist manner, well within the tonal and formal framework of late-Romantic nationalism. Bartók so thoroughly absorbed his heritage that his music, although it rarely quotes actual folk material, all seems to be steeped in the rhythmic and melodic characteristics of the Magyar tradition. No better examples of the composers' differences can be found than Bartók's Sonata for Two Pianos and Percussion (1937) and Kodály's *Dances of Galanta* (1933).

Bartók's orchestral arrangement of the sonata, retitled Concerto for Two Pianos and Percussion (1940), is texturally richer and perhaps more accessible, although I miss the earlier version's austerity. Nonetheless, pianists Martha Argerich and Nelson Freire here provide a performance that precisely articulates the intricate counterpoint and complex rhythms. Carefully building to climaxes, searching beyond mere visceral power, this is a reading of controlled drama and surprising delicacy. Under David Zinman's leadership, the Concertgebouw sounds less inhibited than usual, both in the Bartók and the Kodály, and the brilliant sonics capture all the pungency of the percussion writing. Playing time: 43:03. (Philips 416 378-2.) *K.R.S.*

BACH REISSUES: GOULD

GLENN GOULD'S BACH RECORDINGS ARE NOW being digitally transferred to CD by CBS. Three volumes have appeared so far: a single disc of French Suites, a two-disc set coupling the English Suites and the B minor French Overture, and a three-disc set containing the entire *Well-Tempered Clavier*. The vices and virtues of Gould's playing are widely known and need no elaboration. Suffice it to say that these performances, flaws and all, are as arrestingly idiosyncratic an exhibition of the difficult art of playing Bach on the piano as has ever been committed to tape. (Incidentally, my *Well-Tempered Clavier* program booklet has the right cover but contains the notes to the French Suites.) Playing time for French Suites: 60:42. (CBS Masterworks MK 42267.) Playing time for English Suites: 136:01. (CBS Masterworks M2K 42268.) Playing time for *Well-Tempered Clavier*: 212:04. (CBS Masterworks M3K 42266.) *T.T.*

SHOSTAKOVICH FOURTEENTH: HAITINK, CONCERTGEBOUW

BERNARD HAITINK'S DIGITAL RECORDING OF Shostakovich's Symphony No. 14 with the Concertgebouw Orchestra has now been transferred to CD, coupled with the composer's orchestration of his *Six Poems of Marina Tsvetayeva*, Opus 143a. The performance has many strengths, but the choice of male soloist is problematic. Dietrich Fischer-Dieskau is all too obviously an aging German baritone trying to sound like a Russian bass. Equally troublesome is the use of a polyglot version of the texts instead of Shostakovich's original Russian translations. Still, the strings and percussion of the Concertgebouw Orchestra are in good form, the restrained intensity of Haitink's interpretation is noteworthy, and Julia Varady is very good in the soprano movements. Ortrun Wenkel is the excellent contralto soloist in the Tsvetayeva cycle. Despite its flaws, this worthy performance will serve more than adequately until the harrowing Vishnevskaya/Rostropovich recording, still available as Columbia M 34507, is transferred to CD. Playing time: 72:04. (London 417 514-2.) *T.T.*

GRIFFES, MACDOWELL WORKS: TOCCO

JAMES TOCCO HAS RECORDED A SERIES OF four Compact Discs for Gasparo that couple the four piano sonatas of Edward MacDowell with the complete solo piano music of Charles Griffes. The MacDowell sonatas are craftsmanlike but uninspired specimens of late Romantic keyboard rhetoric. The piano music of Griffes, on the other hand, consists of a distinctive series of Impressionist miniatures culminating in the Piano Sonata (1918), a boldly conceived piece that easily ranks with Copland's *Piano Variations* or Ives's *Concord* Sonata. Tocco's performances, though occasionally a bit on the dry side, are consistently strong and sensitive. Highly recommended for the Griffes. Playing times: 44:19, 42:46, 45:17, 45:00. (Gasparo GSCD 231/4.) *T.T.*

PROKOFIEV SECOND, "ROMEO": SCOTTISH NATIONAL, JÄRVI

NEEME JÄRVI CONDUCTS THE SCOTTISH National Orchestra in a performance of the first movement of the Prokofiev Symphony No. 2 that is almost frightening in its sonic impact. The forceful brutality of the music—its violence and dissonance—are nearly unremitting. This is Prokofiev of the "age of steel" and the *style mécanique*. Järvi makes a great deal of musical sense out of it—the excitement and propulsion are exhilarating—but after 12 minutes of an allegro in sustained fortissimo, exhaustion is guaranteed.

The second, and final, movement—Prokofiev's longest symphonic span—is cast in the form of a theme and six variations. This provides a respite from the allegro; at times,

though, it is hard to believe it is even from the same symphony. Only parts of the last two variations recall the violence of the first movement. As in the other releases in his outstanding Chandos series of Prokofiev works, Järvi is able to expose such a wealth of orchestral detail that the symphony sounds utterly fresh. This impression is considerably aided by a recording of demonstration quality. The clarity and brightness are extraordinary.

The remainder of the disc is given to the first suite from *Romeo and Juliet*. Järvi unabashedly goes for the grand moments in this delightful score, which he plays with great character. But some may find his performance overdrawn and too episodic, preferring instead a more coherent, symphonic approach. Again, the sonics are stunning. Playing time: 61:06. (Chandos CD 8368.)

R.R.R.

SCHWARZKOPF SINGS SCHUBERT AND MOZART

This CD contains all of Elisabeth Schwarzkopf's 1953 Schubert recital with Edwin Fischer at the piano, as well as 11 songs from a 1955 Mozart recital accompanied by Walter Gieseking. Fischer's playing is warmly old-fashioned, if a bit retiring, but Gieseking is hopelessly angular and unfeeling. (His reputation as a Mozart specialist has always been difficult to fathom.) While Schwarzkopf's singing is characteristically vivid, it is interesting to note how dated her approach has begun to sound. Young listeners are likely to find more than a little of her work on this CD tonally precious and lacking in interpretative straightforwardness, though most of the performances are quite beautiful in their own right. The Mozart songs are in stereo and the digital remastering is very well managed. Good notes by John Steane. Playing time: 68:34. (Angel CDC 47326.)

T.T.

WEBER CLARINET WORKS: MEYER, DRESKEN

German clarinetist Sabine Meyer made headlines a few years ago when the members of the Berlin Philharmonic in essence overruled Herbert von Karajan's decision to install her in the orchestra's principal clarinet chair. Now Meyer is making a go of it as a soloist and recording artist. She has already issued chamber works by Mozart and Weber (on a Denon album that features members of the Berlin Philharmonia, not the Philharmonic), and it's with three of Weber's showpieces for clarinet and orchestra that she now makes her Angel debut. These are good performances of the Concerto No. 1, in F minor, the Concertino in E flat, and the Concerto No. 2, in E flat, all solidly supported by Herbert Blomstedt and the Staatskapelle Dresden. They are not, however, performances much different from what one might hear if the principal clarinetist of any major American orchestra addressed Weber's music on a subscription program. Meyer's virtuosity is of a high order, but her stylistic flair is rather run-of-the-mill. Playing time: 52:46. (Angel EMI CDC 47351.)

J.W.

HINDEMITH ORCHESTRAL MUSIC: ORMANDY, PHILADELPHIA

Paul Hindemith's music has received short shrift in the CD catalog, so this digitally remastered reissue of two of Eugene Ormandy's best Hindemith recordings, despite a stingy running time of under 40 minutes, is decidedly welcome. The deservedly popular *Symphonic Metamorphosis on Themes by Carl Maria von Weber* is coupled with the *Concert Music for Strings and Brass*, commissioned by the Boston Symphony in 1930 (along with, among other things, Stravinsky's *Symphony of Psalms*) to commemorate its 50th anniversary. Both works show Hindemith at his most vigorous and inspired, and Ormandy and the Philadelphia Orchestra are in fine form throughout. Playing time: 37:51. (Angel CDC 47615.)

T.T.

WAGNER CONCERT: TOSCANINI, NBC SYMPHONY

Red Seal made the mistake of dumping an atrociously mastered series of Japanese Toscanini CD reissues on the market a few years ago. This scared off potential customers for its new and infinitely superior Toscanini/NBC Symphony series, which languished in limbo for months after the initial appearance of a pair of Beethoven CDs. Now RCA is back on track with this Wagner collection. The famous 1941 broadcast of Act 1, Scene 3 of *Die Walküre* with Lauritz Melchior and Helen Traubel has been coupled with Toscanini's 1952 studio recordings of the *Siegfried Idyll*, the "Ride of the Valkyries," and the Prelude and *Liebestod* from *Tristan und Isolde*. Full texts for the *Walküre* scene are included, and all selections are fully banded and handsomely remastered. One only hopes that RCA wastes no more time in bringing out further installments of what promises to be a very important reissue series. Playing time: 67:08. (RCA 5751-2.)

T.T.

MOZART CONCERTOS: BILSON, ENGLISH BAROQUE

With his new compact disc of K. 451 and 453, fortepianist Malcolm Bilson has passed the one-third mark in his laudable cycle of recordings of Mozart concertos with John Eliot Gardiner and the English Baroque Soloists. As with those already available (Nos. 9, 11–15, and 18–19), the crispness of these performances has much to do with the sound of Bilson's relatively hard-hammered instrument, as contrasted with the dynamically active yet generally "light" accompaniment. It owes even more, though, to Bilson and Gardiner's penchant for unambiguous phrasing. There's plenty of ornamentation here; in both concertos, the cadenzas are Mozart's own, and they—like the eight-bar segment of the Andante from K. 451 that Mozart postscripted as a sort of tutorial for his sister, Nannerl—set the standard for Bilson's filigrees. But the decorations never detract from what is being decorated, and even in the slow movements, they only add to the music's rhythmic momentum. Playing time: 53:28. (Archiv 415 525-2.)

J.W.

MESSIAEN AND BARTÓK: CHAMBER MUSIC NORTHWEST

Chamber Music Northwest consists of clarinetist David Shifrin (recently named a recipient of the Avery Fisher award), violinist Ik-Hwan Bae, cellist Warren Lash, and pianist William Doppmann. There is no information about the group or its members anywhere on this CD, but these confident and shapely performances of Olivier Messiaen's 1940 *Quartet for the End of Time* and Bartók's *Contrasts* for Violin, Clarinet, and Piano, a logical and generous coupling, speak eloquently for themselves. First-rate digital recording by Marc Aubort and Joanna Nickrenz, intelligent liner notes by William Doppmann. Highly recommended. Playing time: 62:54. (Delos CD 3043.)

T.T.

SPOHR, LACHNER SYMPHONIES: SINGAPORE, HOEY

This is one of the most successful CDs in Records International's imaginative series of releases. Ludwig Spohr, whose Symphony No. 2 appears here, is a known quantity, even if he has suffered neglect over the years. But Franz Lachner? One always has high hopes for forgotten music, and here they are rewarded by his Symphony No. 1. This melodic charmer, written in 1828, retains a festive alfresco feeling that is bound to delight. Spohr's wonderfully wrought symphony, dating from 1820, does not share this infectious good cheer; apart from its sprightly scherzo, it is weightier, more melancholic, and quite touching. While less than great masterpieces, both symphonies are certainly minor gems and deserve the capable revival they receive here from conductor Choo Hoey and the Singapore Symphony Orchestra. The sound is fine. Playing time: 61:40. (Records International 7004-2.)

R.R.R.

SPOHR CONCERTOS: NISHIZAKI, PEŠEK

The Ludwig Spohr revival continues with this new CD from Hong Kong Records, which makes available Violin Concertos Nos. 7 and 12. Both are good examples of Spohr's sweet lyricism and gentle melancholy, though they do not approach the level of his Nonet, Octet, and Symphony No. 2. Still, it is good to be able to sample, from among the 15 violin concertos Spohr wrote, something other than the ubiquitous No. 8. The violinist, Takako Nishizaki, gives fully committed performances and receives capable backing from the Philharmonic Chamber Orchestra, Bratislava, led here by Libor Pešek. However, the violin is too forward in the recording, which has good, but not completely natural, sound. Playing time: 49:08. (Hong Kong 8.220406.)

R.R.R.

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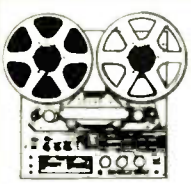

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Misunderstanding Toscanini

BEETHOVEN:
Symphony No. 1, in C, Op. 21; Symphony No. 3, in E flat, Op. 55 ("Eroica").

◑ NBC Symphony Orchestra, Toscanini. Leroy Parkins, reissue prod. RCA RCD1-7197 (A, digitally remastered).

BEETHOVEN:
Symphony No. 2, in D, Op. 36; Symphony No. 7, in A, Op. 92.

◑ NBC Symphony Orchestra, Toscanini. Leroy Parkins, reissue prod. RCA RCD1-7198 (A, digitally remastered).

WAGNER:
Die Walküre: Act 1, Scene 3; Act III: Ride of the Valkyries. Tristan und Isolde: Prelude; Liebestod. Siegfried Idyll.

◑ Traubel, Melchior; NBC Symphony Orchestra, Toscanini. Leroy Parkins, reissue prod. RCA 5751-2-RC (A, digitally remastered).

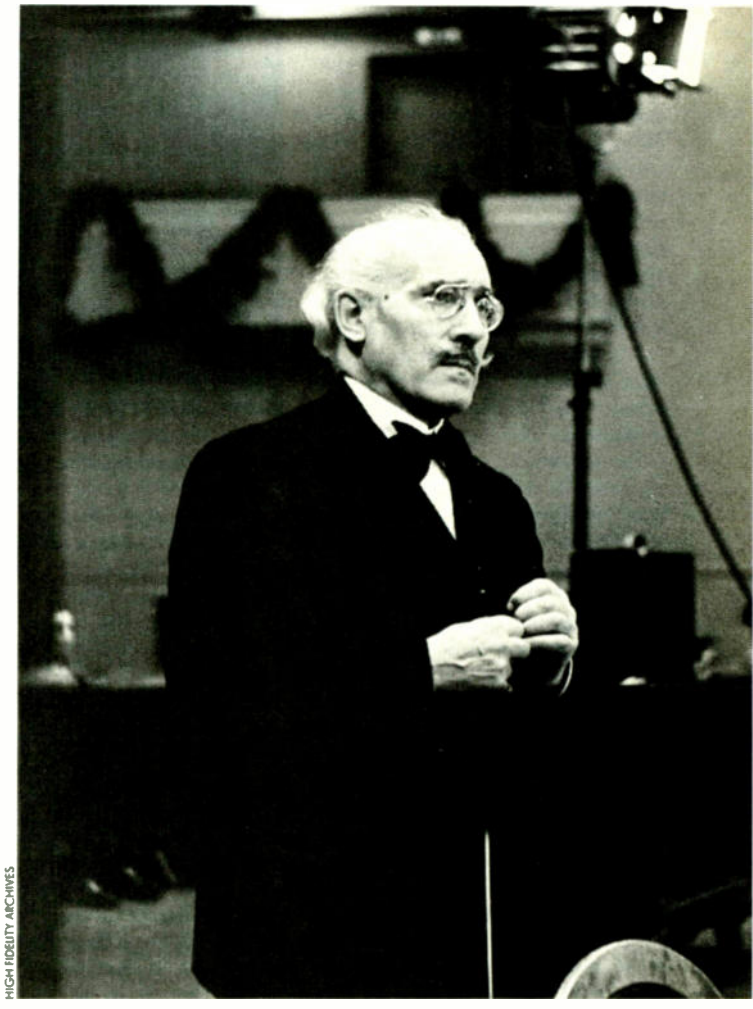
THE FIRST THREE DISCS IN RCA'S TOSCANINI Compact Disc series (distinguishable from the inferior Japanese CDs by the ribboned medallion on their covers) contain his expansive performances of four Beethoven symphonies and several Wagner excerpts, all reproduced with resonance, spaciousness, clarity, and warmth. Given the prevailing critical opinions of Toscanini and the NBC Symphony Orchestra, these are not qualities that most people may expect from his late recordings. But facts are facts, and for the most part, the consensus has been incorrect.

RCA projects 56 CDs in the series, most of them to be drawn from NBC Symphony Orchestra recordings previously issued on LP. Scheduled for release will be most of the major works, including all of the complete operas and several long-discontinued recordings (such as Haydn's Symphony No. 98, Mozart's Divertimento K. 287, Berlioz's *Harold in Italy*, Strauss's *Don Quixote*, and the 1947—*not* the familiar 1953—recording of Schubert's Ninth Symphony). As the list stands, there will be omissions, notably Berlioz's *Romeo and Juliet* and many earlier versions of pieces Toscanini recorded twice. However, if the first CDs sell well, others may follow, beginning, one hopes, with the New York Philharmonic and Philadelphia Orchestra recordings.

What distinquishes this from earlier projects is RCA's reported intention of returning to the master tapes of the recording sessions—rather than using the variously altered working tapes used in previous LP editions—and, in the case of concert broadcasts licensed for records, to the tapes and acetate discs NBC made for its own files. Furthermore, there are the beneficial differences inherent in CDs themselves: no overlay of record noise and no compression of volume beyond the limitations of the source material. The unobtrusive introduction of a small amount of artificial reverberation into two pieces, and the slight evidence of stereophonic channeling that makes it preferable to play these discs with one's equipment in the monaural mode, are not sufficient to spoil what has been achieved. The results, as heard on these first three discs, are cause for celebration.

It has been said that Toscanini's performances were broadcast and recorded in a dry NBC studio. In fact, most of Toscanini's recordings were made in Carnegie Hall. However, this alone offered no guarantees: RCA's engineer for the 1953 recording sessions of Beethoven's *Missa Solemnis* spoiled the excellent balance NBC had achieved between the soloists, chorus, and orchestra at the concert. The results—like the bassoon that is louder than the tenor near the end of the *Gloria*—were a caricature. On another date, Carnegie Hall produced the cramped, dead sound heard on Toscanini's NBC record of Tchaikovsky's *Pathétique* Symphony.

However, the sound of Carnegie Hall was usually not spoiled in the recordings. And although NBC's Studio 8-H was unreverberant when filled with an audience, it could usually be made to sound resonant and agreeable on records. But in the 30 years since Toscanini's death, what occasionally went wrong has been made to seem as if it had *always* gone wrong. One explanation is that once the live broadcasts ceased with Toscanini's retirement in 1954, all anyone heard was what was issued on RCA's long-playing records, which did not accurately reproduce what had been recorded by the microphone.



HIGH FIDELITY ARCHIVES

PINCE-NEZ IN PLACE, THE MAESTRO RELAXES AFTER A STUDIO BROADCAST, C. 1950.

Rather than RCA's recording methods, it was instead the procedures of certain individuals at the company for transferring tapes to long-playing discs that made many of the LP records it began to issue in the 1950s (Koussevitzky's as well as Toscanini's) sound distant, compressed, and colorless. In some instances, that sound represented losses in transferring 78s to LP. In others, filters, volume limiters, and artificial reverberation were used to alter new material. But in many cases, the company's tape-copying and disc-cutting processes produced inferior results even when there was no attempt to change good source material. And what RCA did badly to begin with was subsequently made worse through attempts to improve it artificially.

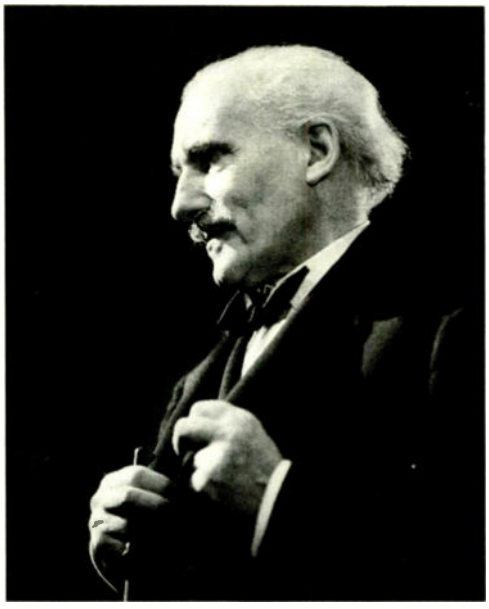
The sound of many Toscanini LPs made them unendurable to anyone not listening primarily for those character-

istics of formal organization that could not be obscured by disagreeable sound. This meant that most record buyers heard nothing exciting in Toscanini's records. Most people, musicians included, have difficulty appreciating phrasing, pacing, and formal coherence if the sound is unpleasant. That the sound of Toscanini's records should have put people off is ironic, because what he obtained in the hall was said to be nearly miraculous. Even Otto Klemperer, who had developed reservations about Toscanini's tempos late in his own life (when he himself was conducting everything slowly), exclaimed in wonderment over that uniquely radiant sound, a secret he said he had never been able to learn.

As listeners who had grown up after Toscanini's retirement began to wonder what all the fuss was about, those critics who had heard him live failed to correct the growing impression that Toscanini's performances after 1949 (almost the only ones circulated after the mid-1950s) had been as hectic and dryly played by the NBC orchestra as they seemed on record. Moreover, long-playing discs brought on something novel in the history of recording: an industry campaign to persuade people to replace outdated records with new ones made in stereo by living artists currently in the public eye. The enthusiastic reviews of new releases in leading record magazines, which made little reference to earlier performances, continued to encourage this idea. When RCA tried later to regenerate interest in Toscanini—first with artificially enhanced monophonic reissues, then with ones artificially rechanneled for stereo, and finally with partially remastered monophonic records again—it was too late. People had developed an aversion—partly natural and partly influenced by critics—toward the tight sound of Toscanini's NBC records, and they were convinced nothing could be done about it.

Like the public, the critics who only heard him on record also wondered what was special about him, only they did their wondering in print. One might think a professional would at least be able to hear that the performances had eloquence and beauty of outline, but many apparently did not. However, this seems less inexplicable than it did a short while ago, because it now appears that even Toscanini's admirers have formed wrong impressions that will be dramatically altered by the unexpectedly stunning sound revealed on RCA's new CDs.

I would have said that Toscanini's long-withdrawn 1949 recording of Beethoven's *Eroica* was more driven than the 1953 concert performance RCA substituted for it in the 1960s. But hearing it again in the warm, spacious sound on this CD, I was startled to hear how similar the two are in tempo, and to discover how often the "taut" 1949 performance turns out to be the slower and more rhetorically expansive of the two, when they *are* different. Moreover, the freedom of tempo and poignant delicacy of tone and attack that are now plainly audible at the conclusion of the second movement, and the easy tempo in the last movement that broadens out tremendously at climaxes, allow us to form the same, correct impression of the dramatic expansiveness of Toscanini's readings that audiences formed during his lifetime, as opposed to the impression today that they were relentlessly hurried.



WHAT MADE TOSCANINI UNIQUE AMONG GREAT CONDUCTORS WAS HIS COMBINATION OF INTELLECT, MELODIC GIFT, AND ENERGY.

One of the ideas that must be revised is that Toscanini in old age conducted music faster and less expressively than he did in his early recordings. To begin with, *all* of Toscanini's recordings were made in old age. After all, in the 1930s he was approaching seventy. The changes that occurred in tempo, flexibility, and accentuation did so from one performance to the next and followed no identifiable tendencies. Toscanini's 1946 NBC recording of Mozart's *Haffner* Symphony has been said to exemplify his later, simpler style because it exhibits a certain rigidity of tempo compared with his 1929 record with the New York Philharmonic. But the 1946 recording was preceded by a broadcast a few days earlier that in some instances had broader, more flexible tempos than in 1929, as well as more exquisite and often bolder inflection of phrase.

What the 1946 record actually exemplified was Toscanini's occasional practice of simplifying for records what he did more broadly in concert. This accounts for a number of records that are less expansive, often faster, and, in few cases, less effective than the companion concert performances of the same pieces. But this reduction, brought on when Toscanini heard his performances played back, did not occur every time. Nor were the concert performances always relaxed and expansive from the start. Moreover, the overall impression a performance made was determined by the combination of all its elements. A faster performance could be the more genial one if the rhythm were more pliant, and a reading with only slight modifications of tempo could be the more vivid if it had sharper accentuation and inflection of phrase.

What all of Toscanini's performances, early and late, had was an Italianate quality of containing expressive nuance within a flexible but unbroken overall shape. He created a sense of outline in the listener's mind primarily by relating each new tempo within a movement to the previous one, with no abrupt departures. This itself was achieved not only by the choice of tempos, but also by preparing the moment of transition with subtle accelerations or ritards (or both) that led the ear to anticipate what was to come and to hear it as natural and inevitable when it arrived. The same care in preparation governed his subtle gradations of dynamics in building to a climax and his timing of the moment of release that followed.

This is not a description of the streamlined near-elimination of nuance and detail that Toscanini has been accused of by even so perceptive a critic, on occasion, as Will Crutchfield. Rather, it is a description of a controlled shaping of musical elements into a coherent progression. It can be legitimately said that not everyone likes music played this way. The people who contend that Toscanini conducted without any tempo variation at all are, of course, wrong. But the ones who object on principle to subordinating detail to a seamless delineation of outline make a point that is at least based on correct observation.

On the other hand, those who are most moved when every element contributes to the harmonious unity of the whole (which is possible in music as well as in architecture)

FORMAT KEY

- ⊙ LP
- Cassette
- ◑ Compact Disc
- Videocassette
- Ⓥ Videodisc
- Open reel

RECORDING INFORMATION

(A) analog original

(D) digital original

Large symbol beneath title indicates reviewed format. Small symbols following catalog number of reviewed format indicate other available formats (if any).

Catalog numbers of all formats of a particular recording usually are identical except for differing prefixes or suffixes. Catalog numbers of formats other than the reviewed format are printed only if their basic numbers differ substantially from that of the reviewed format.

Arabic numeral in parentheses indicates number of items in multi-item set. Unless otherwise indicated, all multi-LP sets are in manual sequence.

find that Toscanini's performances of familiar pieces by Mozart, Beethoven, Brahms, Dvorák, Tchaikovsky, Richard Strauss, Verdi, or Debussy reveal the sense of the music as never before. The players in Toscanini's orchestras admired him for revealing to them the order in the separate strands of a complex work like Debussy's *La Mer* and the progression of ideas in sectional works like Verdi's *Requiem* and the finale of Beethoven's Ninth Symphony. The word "revelation" also occurs in the comments of many of the contemporary musicians who admired him, among them Rudolf Serkin, Fritz Kreisler, Richard Strauss, Bruno Walter, the Wagner family, Pierre Monteux, Fritz Busch, and Herbert von Karajan.

What made Toscanini unique among other great conductors was his combination of gifts. Along with his intellectual understanding of structure, he had an inborn sense of rhythm that enabled him to sustain cohesive tension over a long span. With this discipline went a natural melodic gift that brought every line to life. There were, as well, the energy and animation of his performances—which some people mistook for speed—and their transparency of texture, in which every note was heard in the right relation to the rest and no subordinate phrase was thrown away expressionlessly. (One distinguished Viennese musician complained of this clarity: "Beethoven did not intend that every note should be heard," he said. Yet it's unclear how the musician knew that or how he knew which notes Beethoven wanted covered up.)

These new RCA CDs, then, are a fresh revelation. Since the master tapes were first recorded, few outside RCA have ever heard what was actually reproduced on them. Their marvelous sound on CD reveals that the NBC Symphony Orchestra was equal to the greatest orchestras of its day, particularly those in Chicago, Cleveland, and Philadelphia, with which it is most often unfavorably compared. The orchestra's playing in the last years is marred only by the thin tone of its first oboe and by the tinny sound principal trumpeter Harry Glantz produced on loud notes (as he did even in the New York Philharmonic in the 1930s). For the rest, the orchestra's responsiveness, unanimity, and lustrous tone are breathtaking. And these particular three discs reveal that, in his last years, Toscanini gave some of his greatest recorded performances.

Even the sales of these new discs (each with a playing time of more than 60 minutes) reveal something unexpected. One had anticipated that the continuing denigration of Toscanini in *The New Grove Dictionary of Music and Musicians*, *The New York Times*, and various books and journals would scare people away. In the last five years, what began earlier as puzzlement over his recordings has degenerated into a wholesale attack on his intelligence, education, and character, culminating in some of the most preposterous utterances I can recall reading about any musician. Robert Craft, for example, said, "Whether or not, as some believed, he was a political opportunist with his eye on the New York press . . . Toscanini did speak out against Mussolini and Hitler, whatever one may think of his motives."

Yet in spite of all that, record-store owners tell me the Toscanini CDs are selling faster than they can be stocked. If this is true everywhere, RCA will be encouraged to continue the series, which would be wonderful. But I am getting almost as much pleasure from the thought that while all these critics—some of them very eminent indeed—have been picking away at Toscanini's reputation as a musician, the public apparently has not been paying attention. My delight derives in part from the realization that the same thing happened repeatedly during Toscanini's lifetime. In the 1920s, when some German musicians complained about Toscanini's way with Beethoven's Fifth Symphony, no less a figure than Fritz Kreisler remarked, "I don't believe Toscanini is wrong, but even if he were, I should rather hear it wrongly played by Toscanini than correctly by anyone else." *Thomas Hathaway*

CAMPRA:
Cantates françoises: Arion; Les femmes; La dispute de l'Amour et de l'Hymen; Enée et Didon.

◑ Les Arts Florissants, Christie. Harmonia Mundi, U.S.A. HMC 901238 (D).

ANDRÉ CAMPRA (1660–1744) REMAINS THE BEST-known French dramatic composer of the era between Lully and Rameau, a time of steadily increasing Italian influence on French culture. In his three books of *Cantates françoises* (1708, 1714, and 1728), Campra consciously sought to merge the most fashionable aspects of both national styles. Da capo arias, melismatic vocal display, dramatic text-painting, and trio-sonata textures all reveal the strength of Italian influence. Yet French traits assert themselves in the fluid recitatives (perfectly matched to textual declamation), the copious *agréments* (ornaments), and the fondness for dance types such as the sarabande, bourrée, and gigue. Partisans of both nations must have been pleased by Campra's skillful compromise. More than two centuries later, these ravishing cantatas have lost none of their freshness.

Admirers of the French Baroque already know that Les Arts Florissants, directed by William Christie, offers some of the most consistently inspired interpretations of the music of this era. In these chamber cantatas, scored for one or two voices, flute or violin, and *basse continue*, the textures are sparkling and transparent. The instrumental solos are ornamented skillfully, and the clavecin part, played by Christie, is realized vivaciously. Most impressive are the three vocal soloists—Jill Feldman, soprano; Dominique Visse, alto; and Jean François Gardeil, baritone—who prove once again that Baroque vocal technique imposes no limits on self-expression. All three display a contagious enthusiasm, tempered by narrow vibrato and an agile, effortless command of ornamentation. Historical performances as fine as this appear all too rarely; that distinction, together with the fact that it offers an opportunity to discover virtually unknown music, makes this Compact Disc irresistible. Playing time: 55:08. *K. Robert Schwarz*

HUMMEL:
Sonatas for Piano (6).

◑ Hobson. Ward Botsford, prod. Arabesque Z 6564*, 6565†, 6566°. ⊙ ⊡

Sonatas: No. 1, in C, Op. 2a/3*; No. 2, in E flat, Op. 13†; No. 3, in F minor, Op. 20°; No. 4, in C, Op. 38°; No. 5, in F sharp minor, Op. 81†; No. 6, in D, Op. 106.

JOHANN NEPOMUK HUMMEL (1778–1837) LIVED at the crossroads of musical life in the early 19th century. A student of Mozart, Clementi, Salieri, Haydn, and Albrechtsberger, he taught Mendelssohn, Czerny, Thalberg, and Henselt. Liszt and Schumann wanted to study with him but couldn't afford to; Chopin knew him and liked him; and Schubert dedicated his last three piano sonatas to him. Spohr, Gottschalk, and all of Europe raved over Hummel's improvisations, and during his lifetime he was one of Europe's dominant musical figures—a master performer and a great composer who combined the virtues of Mozartean classicism with elements of the new Romanticism.

Why, then, did Hummel's reputation fall so precipitously after his death? It is not enough to say that he was overrated during his lifetime. More likely it is the fact that, with one foot on each side of the Classical/ ▶

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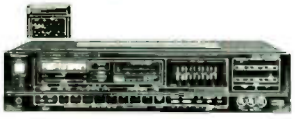

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J&R MUSIC WORLD

Romantic divide, Hummel leaned more heavily toward the Classical than the Romantic.

But was the neglect justified? Not if one listens to these three new Compact Discs from Arabesque, which contain Ian Hobson's performances of Hummel's six piano sonatas. These readings suggest that Hummel's eclipse was brought on by external causes, specifically the Romantic excesses that followed and overwhelmed music of such delicacy and grace. These elegant sonatas, composed from 1792 to 1824, reflect a compendium of styles from Haydn to Schubert but, for the most part, they stand up very well on their own. One hears most often the influence of Mozart, some Beethoven, and perhaps a bit of Schubert—not a bad pedigree. (It is interesting, if not ironic, that the current revival of Hummel's music is focusing attention on his role as a link to, or precursor of, Chopin, Schumann, and even Liszt.) Like Mozart, Hummel was able to write deceptively simple, exquisite melodies, but he also employed complex counterpoint and cascades of figurations.

Ian Hobson's performances are immensely enjoyable. He plays the most difficult passages with expressive ease, never letting his virtuosity overwhelm the musical substance. His beautifully shaded playing is all the more impressive because the recording captures the piano so fully and brilliantly. These are demonstration-caliber recordings. For those on a budget, here is a ranking of these three individually available CDs in order of appeal: Volume 2, containing Sonatas Nos. 2 and 5 (playing time: 51:04); Volume 3, with Sonatas Nos. 3 and 4 (playing time: 50:40); and Volume 1, with Sonatas Nos. 1 and 6 (playing time: 46:05).

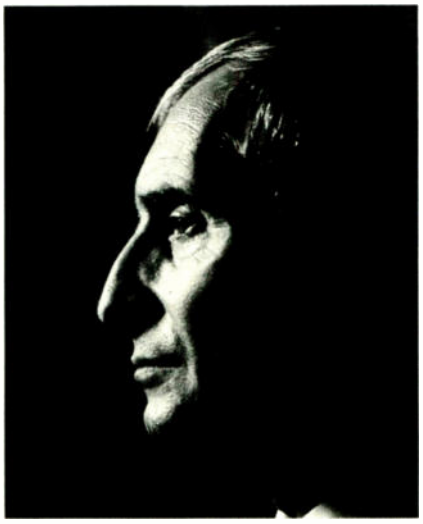
Robert R. Reilly

MAHLER:
Symphony No. 8, in E flat.

◑ Connell, Wiens, Lott, Schmidt, Denize, Versalle, Hynninen, Sotin; Tiffin School Boys' Choir, London Philharmonic Choir, London Philharmonic Orchestra, Tennstedt. James Mallinson, prod. Angel EMI 47625 (D, 2). ⊙ (2). ⊂⊃ (2).

WITH THE RELEASE OF THIS NEW COMPACT Disc, Klaus Tennstedt's well-earned reputation as a visionary Mahler conductor has finally been sustained by a recording and performance worthy of him. While other installments in his Mahler cycle have been noteworthy, especially the Second and Ninth Symphonies, Tennstedt's work has been sabotaged by consistently horrible recorded sound and by the often scruffy playing of the London Philharmonic. Not here. The LPO is in top form, and the recording easily outclasses others in the series.

Tennstedt's personal view of the Eighth also contributes significantly to our understanding of the work. Conductors and critics too often approach this symphony as a gigantic aberration of Mahler's muse: Where are the strife, satire, and nostalgia so characteristic of his style? Leonard Bernstein



KLAUS TENNSTEDT CAPS HIS MAHLER CYCLE WITH THE EIGHTH

found an answer to the question in his apocalyptic 1968 London performance, happily preserved on surprisingly fine-sounding CBS CDs. He treated the Eighth as a unique, poignant, and fleeting moment of supreme grandeur. Georg Solti, in his much acclaimed 1971 recording, conducted the work like any other sonic blockbuster: fast and loud, with scant evidence of any guiding intelligence at all. Tennstedt presents a third alternative: He places the Eighth in context of the composer's other works, at every turn revealing just how much Mahler it really contains.

Tennstedt's use of a smaller than normal (but still substantial) chorus allows vocal and instrumental lines to be balanced with maximum clarity, giving the entire texture a truly Mahlerian leanness and edge. His soloists don't scream out from the front of the orchestra; they sing from within a firm cushion of Mahler's most characteristic woodwind writing, especially in Part One. In Part Two, aided by the detailed recording, Tennstedt reveals all the glorious colors of Mahler's orchestra: flashes of sound from flutes, bass clarinet, harps, celeste, and mandolins. Here is the Mahler of the *Wunderhorn* songs, singing his simple tunes with typical sophistication one last time. The soloists are all adequate or better, the chorus very good, and the boys' choir excellent.

Recording the Eighth has never been easy, and EMI's solution is not wholly successful. Any producer or engineer facing the triple whammy of organ pedals, bass drum, and string basses usually has to make some hard choices. In this particular contest, the organ, dubbed in separately, wins hands down. Cellos and basses suffer most of all, though the situation improves in Part Two, where the organ has a smaller role. Furthermore, the sonic perspective has a curiously hollow quality that disappears at a high volume setting—but then watch out for those organ pedals! For the sheer physical sense of a huge sound filling a vast space, Bernstein is unsurpassed. But Tennstedt's Eighth has much to recommend it, and is an experience akin to recognizing an old friend after a long absence: warm and wonderful. Playing time: 82:37.

David Hurwitz

MARTINŮ:
Symphonies: No. 3; No. 6 ("Fantaisies symphoniques").

◑ Czech Philharmonic Orchestra, Neumann. Supraphon 33C37-7760 (D).

IF, LIKE ME, YOU REGARD BOHUSLAV MARTINŮ as one of the truly great 20th-century composers, then this release is cause for celebration—even euphoria. Everyone else take note as well: These are two stunning orchestral works by the hand of a master symphonist. It's all here—gorgeous melodies, fabulous orchestration, passion, and pathos.

The Third, Martinů's darkest symphony, is, in part, a musical reaction to World War II. The first movement is dramatic and turbulent. The second, which begins tensely, encompasses moments of innocent simplicity before working up to a climax of screaming anguish, finally dissolving into musical mist. The finale takes off at full speed, loses impetus, wanders into one of the most haunting lullabies ever written, attempts a jubilant conclusion, and finally settles for uneasy calm. The Sixth is more amazing still. Seraphic sweetness contrasts with an almost neurotic despair, and the orchestration is often of luminous beauty. This is like no music you've ever heard.

REG WILSON

VÁCLAV NEUMANN TURNS TO THE SYMPHONIES OF MARTINŮ

Vaclav Neumann conducts performances that are in every way superior to his efforts of several years ago: exciting, impulsive, yet carefully detailed. The superb Czech woodwinds shine, as they always do, and the light, airy strings keep Martinů's complex textures perfectly transparent. The sound is appealing. However, rabid Martinutians (what *do* you call a Martinů lover? Martinuvian? Martinizer? Martinudnik?) beware: Neumann makes a small cut in the finale of the Third, presumably authorized, since it appears in the score.

Pray that the rest of the symphonies show up soon. As Tom Lehrer says in one of his

songs: "More! More! I'm still not satisfied!" Playing time: 59:08. *David Hurwitz*

SCHUMAN:
Symphony No. 7.
BALADA:
Steel Symphony.

◑ Pittsburgh Symphony Orchestra, Maazel. Robert Woods, prod. New World NW 348-2 (D). ⊙⊂⊃

CONTEMPORARY AMERICAN MUSIC CERTAINLY needs support, and New World deserves credit for making recordings such as these available. However, unless you feel strongly enough about the Cause to buy records on principle, there's little justification for acquiring this disc. Sound and performance are excellent, but the music—by composers William Schuman and Leonardo Balada—just doesn't cut it.

Schuman is an enormously problematic composer. His music has energy, purpose, and an instantly recognizable style, and the Seventh Symphony fully represents his mature work. Unfortunately, the man can't write a tune to save his life. In styles that don't rely so heavily on melody (like Elliott Carter's, for instance), this is no liability. But Schuman's love of drama, rhetoric, and passionate gesture requires something to get dramatic, rhetorical, or passionate about—like a good, strong, memorable theme. Alas, all we get in the Seventh Symphony are grayish semi-tunes.

MAAZEL: LEADING THE PITTSBURGH IN A PAEAN TO PITTSBURGH

The orchestration only confirms the general feeling of leaden dullness. Monochrome string textures, heavy-handed brass writing, scant coloristic sensitivity (partially evidenced by an almost total refusal to use percussion at anything less than fortissimo), and plodding rhythms produce a style that sounds rather like Copland with a migraine. Schuman seems to be at his best when he uses other people's melodies, as in his *New England Tryptich*, and parts of his new cantata *On Freedom's Ground*.

Balada's *Steel Symphony* couldn't be more different in sound, though perhaps not in worth. Composed as a sort of paean to Pittsburgh's heavy industry, the work at least has documentary significance. Despite the decline of the "rust belt" economy, Pittsburgh has transformed itself into a high-tech, entrepreneurial model. (Recent surveys hail the city as one of the country's most attractive urban environments.) Thanks to Balada's symphony, we can always hear just how bad conditions in Pittsburgh must have been when he wrote it in 1970.

Actually, it's not *that* bad. Aside from the silly device of beginning and ending with the orchestra tuning, Balada makes some entertaining noises. Sections that would have made an excellent soundtrack to *The China Syndrome* alternate with bits of minimalist melody (workers whistling on their coffee break?). It's possible that some listeners might enjoy this, especially if they like weird noises for their own sake. But there's something philosophically troubling about attempts by the so-called artistic elite to sing the praises of the common worker in styles which most of them, common or not, would find repulsive. Playing time: 49:42.

David Hurwitz

SUBOTNICK:
The Key to Songs*; Return—A Triumph of Reason.

◑ The California E.A.R. Unit*; Yamaha Computer Assisted Music System (YCAM). Michael Hoenig, prod. New Albion CD 012 (D). ⊂⊃

MORTON SUBOTNICK'S *THE KEY TO SONGS* (1985), for chamber ensemble and live digital electronics, is currently making the rounds of new-music festivals in this country and Europe. That it should appeal to organizers of such events is easily understandable: In addition to being a serious, substantial composition, this is surely one of the decade's most sonically spectacular works. It begins with a burst of activity that is obviously human yet seems—in part because the mix includes ominously resonant computer-generated percussionlike sonorities—driven by some superhuman force. Quite a few minutes pass before the momentum lets up; by that time, the sound-colors of man and machine have become so thoroughly integrated that the piece sounds like the work of bionic performers.

The juxtaposition and opposition of electronic elements with sounds produced by the six instrumentalists (who play viola, cello, two pianos, and percussion) is not a superficial element here. Although Subotnick calls the work "an imaginary ballet," its effect is rather more comparable to that of an imaginary novel. *The Key to Songs*, inspired by and structurally based on Max Ernst's 1933 surrealist collage novel *A Week of Kindness or the Seven Deadly Elements (Une semaine de bonté)*, offers its listeners not a "narrative" but a dynamic sequence of fantastic, and fantastically combined, images. The only direct

Critics' Choice

The most noteworthy releases reviewed recently

CARTER:
Piano Concerto*; Variations for Orchestra.
Oppens*; Cincinnati Symphony Orchestra, Gielen. ◑ New World NW 347-2, May.

ELGAR:
Symphony No. 1, in A flat, Op. 55.
Royal Philharmonic, Previn. ◑ Philips 416 612-2, May.

HAYDN:
Symphonies: No. 60, in C; No. 63, in C; No. 66, in B flat; No. 67, in F; No. 68, in B flat; No. 69, in C.
L'Estro Armonico, Solomons. ⊙ CBS Masterworks M3 42157, May.

RACHMANINOFF:
Concerto for Piano and Orchestra No. 1, in F sharp minor, Op. 1.
DOHNÁNYI:
Variations on a Nursery Song, Op. 25.
LITOLFF:
Scherzo, from the Concerto Symphonique for Piano and Orchestra, No. 4, in D minor, Op. 102.
Ozolins; Toronto Symphony Orchestra, Bernardi. ◑ CBC SMCD 5052, May.

ROUSSEL:
Symphonies: No. 1, Op. 7 ("Le Poème de la Forêt"); No. 3, in G minor, Op. 42.
Orchestre National de France, Dutoit. ⊡ Erato MCE 75283, May.

SHOSTAKOVICH:
Quintet for Piano and Strings, in G minor, Op. 57*; Quartets for Strings: No. 7, in F sharp minor, Op. 108; No. 8, in C minor, Op. 110.
Richter*; Borodin Quartet. ◑ Angel EMI CDC 47507, July.

SIBELIUS:
Symphony No. 1, in E minor, Op. 39; Aallottaret ("The Oceanides"), Op. 73.
City of Birmingham Symphony Orchestra, Rattle. ◑ Angel CDC 47515, May.

FISCHER-DIESKAU:
Salzburg Festival Live Recordings.
Fischer-Dieskau, Moore. ◑ Orfeo C 140 101, 201, 301, 401, 501, June.

GRUBEROVA:
Famous Opera Arias (5).
Gruberova; Munich Radio Symphony Orchestra, Gardelli. ◑ Orfeo C 101 841, July.

quotations are from Schubert—misty snatches of "*Erlkönig*" and *Die Schöne Müllerin*'s "*Wohin?*" in the piece's final section. Much of it feels bizarrely familiar, though, especially in those more lyrical moments when the computer only approximates natural sounds. The music moves powerfully through its seven "chapters," and the logic that holds it all together is as strong—and as enigmatic—as that of a fast-paced dream.

Compared to most of Subotnick's recent output, the all-electronic *Return—A Triumph of Reason* (a 20-minute capsule history of the world, pegged to various returns of Halley's Comet) is rather lightweight. Not all of the visitations are illustrated with contemporaneous music, but there are enough benchmarks—bits of Scarlatti, Mozart, and Liszt—to make the whole thing seem just a little hokey. Nevertheless, the sounds are spectacular, and that makes it a good companion for *The Key to Songs*. Playing time: 62:15.

James Wierzbicki

TUBIN:
Symphony No. 4 ("Sinfonia lirica")*; Symphony No. 9 ("Sinfonia semplice"); Toccata for Orchestra.

◑ Gothenburg Symphony Orchestra; Musikselskabet Harmonien, Bergen*; Järvi. Robert von Bahr, prod. BIS CD 227 (A).

THIS GENEROUS DISC—THE MOST APPEALING CD yet in BIS's compilation of Estonian composer Eduard Tubin's ten symphonies—opens with Tubin's Symphony No. 4, appropriately subtitled *Sinfonia lirica*. As heard in this lovely performance by the Musikselskabet Harmonien of Bergen, led by the able Neeme Järvi, the score has Sibelian breadth, expansive melody, grandeur, and an unforced quality missing from some of Tubin's later, angst-ridden works. Tubin said he wrote the work "fairly quickly," which is not surprising, since the piece seems to spring from a single, intense inspiration. For those whose tastes run to the rhapsodic, the Fourth may well become a favorite. For this listener, its charms have remained intact through repeated listenings since its first release on LP several years ago.

Symphony No. 9, written in 1969, seems to have escaped the feeling of grimness Tubin expressed in some of the works he wrote between its appearance and the composition of Symphony No. 4. Certainly this much briefer and somewhat leaner work has a telegraphic concision, if not compression, that is quite different from the flowing lyricism of its 1942 progenitor. But it also quite clearly inhabits the same tonal and expressive universe. In fact, some may find it a surprisingly traditional composition for 1969, though not unlike similar efforts by contemporary English exponents of tonality. While its two movements are both marked Adagio, there is no lack of propulsion, and the melodic interest never flags.

The last and shortest piece on the disc—the *Toccata* (1939)—is also the earliest. A perky, percussive work with the immediate appeal of a showpiece, it also contains the germ of an idea that Tubin seems to have resurrected in Symphony No. 9.

In the latter two works, Järvi conducts the impressive Gothenburg Symphony Orchestra with his usual sympathy. Although all three analog recordings are taken from concerts, the minor annoyances of live recording, including applause, are amply compensated for by the bright and full sound, to say nothing of the privilege of hearing these neglected works. Any Tubin collection should include this excellent CD. Playing time: 65:24.

Robert R. Reilly

RECITALS AND MISCELLANY

FRITZ KREISLER:
The Immortal Fritz Kreisler: Legendary Performances.

◑ Kreisler; Rachmaninoff†, Lamson°; Philadelphia Orchestra*, Ormandy*; RCA Victor Symphony Orchestra•, Voorhees•. Sam Parkins, reissue prod. RCA Red Seal 5910-2 (A).

PAGANINI (arr. Kreisler): Concerto for Violin*. BEETHOVEN: Sonata for Violin and Piano, in G, Op. 30, No. 3†. KREISLER: Caprice viennois°; Liebesfreud°; Liebesleid°; The Old Refrain°; Schön Rosmarin°; Tambourin chinois°; Viennese Rhapsodic Fantasietta•; DOHNÁNYI (arr. Kreisler): Ruralia Hungarica, Op. 32c°.

TWO MAJOR IMPRESSIONS ARE LEFT BY THIS new release, a compilation of some of Fritz Kreisler's finest performances. First, it is a perfect way to commemorate the 25th anniversary of Kreisler's death. Second, with this jewel of a disc, RCA hurdles two obstacles that have so far held back other companies in the reissuing business: monaural sound and 78-rpm originals.

Never before have these master performances sounded as good as they do here. Rather than picking out any masterpiece, or even one of the immortal Kreisler short selections, let me cue the final band, the *Viennese Rhapsodic Fantasietta*. Never released on any of the several previous Kreisler LPs, this was perhaps the last work that Kreisler composed and recorded. Some listeners might on first hearing call it but a pale reflection of what Kreisler said better before. Yet repeated listenings will show that in this work, Kreisler summed up everything he knew and felt about his youth and early career. Or, as Kreisler himself said in a 1942 interview, around the time the work was being composed, "We knew then a wine of the spirit. We were preoccupied with beauty. And thank God, the spell did not wear off." Every band on this well-filled Compact Disc proclaims that spirit to the letter.

As a minor postscript to this essential disc, one might lament slightly that the great Sergei Rachmaninoff, whose many fine solo recordings are overdue for reissue, had to make his CD debut as an accompanist only. But let's hope that this turns out not to be as much a pity as a preview. This release is a must for any serious collector's CD library. Playing time: 71:29.

Thomas L. Dixon

The rehabilitation of the accordion: American pop's got a squeeze-box.

WHAT'S WRONG WITH THIS INSTRUMENT?

BY JOHN MORTHLAND

DOUG MILNER

CARL FINCH OF BRAVE COMBO: FROM "NUCLEAR POLKA" TO JAZZ, BY WAY OF TRASH-ROCK AND TEX-MEX

NOTHING!

DON'T LOOK NOW, but 1987 is winding up as the Year of the Accordion in pop music. The instrument has always been most commonly associated with Lawrence Welk and the like, but now, as another pop phrasemonger declared not too long ago, it's hip to be square. Polkas, anyone?

Also cumbias, two-steps, and flat-out rockers. The accordion is capable of a great range of sounds and styles. Just a quick look at the pop routes it has already taken confirms this: Rockin' Sidney's 1985 zydeco novelty, "My Toot Toot"; the breakthrough just before that of Los Lobos, whose David Hidalgo plays long, flowing lines on his Hohner; Paul Simon's discovery of the accordion through African music.

Then there are David Byrne, Joe Jackson, Elvis Costello, David Thomas (and his former group, Pere Ubu), and even hizzoner Bruce Springsteen, to name the most prominent members of the rock intelligentsia who've picked up the squeeze-box. Scratch a little deeper and you find bands like the Wallets (from Minneapolis) and They Might Be Giants (from Hoboken), both of whom feature the accordion as essential to their sound and specifically as a rock instrument [see reviews of the Wallets and They Might Be Giants in this issue]; the Mekons, who use it as a legit folk and country instrument; and even dubious wild cards like Polkacide, bored San Francisco art students out on a lark. There are eclectics, such as Ponty Bone (from Austin) and Augie Meyers (from San Antonio). And if you want to get *really* eclectic, the London-based Globe Style record label has a marvelous series called "Accordions That Shook the World." But let's *not* get too esoteric. Let's limit this story to a few recent American recordings that provide a working introduction to the contemporary accordion.

If Los Lobos are most responsible for making the accordion acceptable to rock fans, Brave Combo is probably most respon-

The Summer of '87

TOM COPI

BACKBEAT REVIEWS

SLICK AND BALIN '69: TALENT COLLISION ON AN ESSENTIAL COMPACT DISC

JEFFERSON AIRPLANE:
2400 Fulton Street.

◑ Various prods. RCA 5724-2 (2). ⊙ (2). ⊡ (2).

THE MYTHIC WEIGHT OF THE SIXTIES IS THE Jefferson Airplane's albatross, distorting the still vital beauty of the group's music. Sex and drugs and Vietnam couldn't help but shape this band, yet the Airplane's finest work stands up almost 20 years after Woodstock by way of its intelligence and far-reaching success at stretching the boundaries of pop music. *2400 Fulton Street*, an anthology of greatest hits and shining moments, is a litmus test of durability that this classic group passes with ease and (no pun intended) considerable grace.

Tension was the very stuff of the Airplane: The vocalists pushed against each other, the band pushed against the vocalists, and the material railed against pop song conventions. Listen to anything from the great 1966–69 period—thankfully, the bulk of this set—and what you are left with is how *busy* each track is, yet how each part somehow fits. The collective force of, say, "She Has Funny Cars," "Wild Tyme," "Crown of Creation," and "Wooden Ships" overwhelms with activity: Grace Slick, Marty Balin, and Paul Kantner's wonderful vocal interplay, bassist Jack Casady's extraordinarily melodic lines, Jorma Kaukonen's live-wire guitar solos, and Spencer Dryden's inventive drum fills. If a lyric occasionally betrays its era (the hippie-love tribute "Won't You Try Saturday Afternoon" probably sounded dated by 1968), the sheer guts of the singing and playing cut right through. Unfortunately, the very same competitive collision of creative talent also ensured the band's self-destruction.

The CD version is an essential buy, with 11 additional cuts, for a total of 36 tracks on two 65-minute-plus discs. Among the extras are two of *Volunteer*'s best songs, "Eskimo Blue Day" and "Good Shepherd," as well as the wonderfully pessimistic opening track from *Jefferson Airplane Takes Off*, "Blues from an Airplane," and the charming folkish outtake from *Surrealistic Pillow*, "J.P.P. McStep B. Blues." One can quibble with the silly categories the tracks are placed in ("Funny Cars" has as much place in Psychedelia as it does in Beginnings, let's say); chronological order would have made a lot more sense. The CD sound adds vivid brightness to the vocals and pinpoints details (Casady's overdubbed bass lines, little percussion asides, etc.) that add color to this already detailed music. The only previously unreleased "material" is the CD's addition of "The Levi Commercials," two self-parodistic screams that prove that even committed hippies could take the money and run. *There* lies the roots of the Starship. *Steve Futterman*

DAVID BOWIE:
Never Let Me Down.

⊙ David Bowie and David Richards, prods. EMI America PJ 17267. ⊡◑ CDP 46677.

AFTER DAVID BOWIE'S LAST ALBUM, *TONIGHT*—a skimpy and tired-sounding collection of moods for moderns, which indicated that perhaps the great chameleon's near flawless grasp of the moment had finally slipped—it's tempting to hear this energetic new one

The rehabilitation of the accordion: American pop's got a squeeze-box.

WHAT'S WRONG WITH THIS INSTRUMENT?

DOUG MILNER

CARL FINCH OF BRAVE COMBO: FROM "NUCLEAR POLKA" TO JAZZ, BY WAY OF TRASH-ROCK AND TEX-MEX

BY JOHN MORTHLAND

NOTHING!

DON'T LOOK NOW, but 1987 is winding up as the Year of the Accordion in pop music. The instrument has always been most commonly associated with Lawrence Welk and the like, but now, as another pop phrasemonger declared not too long ago, it's hip to be square. Polkas, anyone?

Also cumbias, two-steps, and flat-out rockers. The accordion is capable of a great range of sounds and styles. Just a quick look at the pop routes it has already taken confirms this: Rockin' Sidney's 1985 zydeco novelty, "My Toot Toot"; the breakthrough just before that of Los Lobos, whose David Hidalgo plays long, flowing lines on his Hohner; Paul Simon's discovery of the accordion through African music.

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If Los Lobos are most responsible for making the accordion acceptable to rock fans, Brave Combo is probably most respon-

sible for getting other musicians intrigued with the instrument. The band was formed eight years ago in Denton, Texas (just northwest of Dallas), by Carl Finch, who plays accordion, guitar, and electric piano. He dubbed the Combo's sound "nuclear polka" and found quick (if limited) acceptance on the new wave circuit as well as at the German and Bohemian polka festivals held regularly in central Texas. But what started as a joke became more serious, as Finch discovered first the Tex-Mex polkas of the Rio Grande Valley and then related musics from Central and South America. He remained, however, an aficionado of trash-rock, so Brave Combo performances consisted of rocked-up versions of traditional gems like "Beer Barrel Polka" and polkafied arrangements of classics by Jimi Hendrix, the Doors, the Who, Iron Butterfly, and James Brown.

Today, Finch is the only original member left. But if the band is a product of his pop-schlock sensibility, it also has been shaped by the stream of crack musicians who have played with him. Denton is the home of North Texas State University, which has one of the most respected jazz departments in the country. Indeed, Jeffrey Barnes, the Combo's current horn man, would be right at home in a jazz group. Drummer Mitch Marine and bassist Bubba Hernandez can play the entire weird spectrum of rhythms with finesse and dexterity, but they can embellish things in unorthodox ways, too. Despite Brave Combo's rep as a "punk polka" band, *Polkatharsis* (Rounder 9009) is actually its first all-polka album (well, *almost* all polkas) and surely its best. The LP opens with grinding bass, drum, and guitar that clearly reflect those trash-rock affinities. Later, during "Lovesick," Finch's accordion hovers in the background; he's on a completely different plane, if not a different planet, from the others. How they make all this fit together is not readily apparent, but it's deranged and delightful on contact.

Joe King Carrasco started out fronting an organ-based Tex-Mex band, playing cumbias and polkas along with three-chord garage-rock inspired by Sam the Sham and the Pharaohs, Question Mark and the Mysterians, and the Sir Douglas Quintet. When organist Kris Cummings left Carrasco's band, the Crowns, early in 1985, Joe replaced her with guitarist Bobby Balderrama (an original Mysterian) and accordionist Marcelo Gauna, anticipating the increased interest in the accordion by several months. But *Bandido Rock* (Rounder 9012) is his first album with *las nuevas Coronas*. For those who remember Carrasco as the avatar of happy dumb-rock, these political songs are likely to be a shock—though "Banana" shows he hasn't lost his taste for idiocy, and the slogans he's pushing here do make for some effective hooks that don't exactly tax the brain.

But what's most interesting is how Gauna has replaced the organ with his own surging, atmospheric lines—and how he plays them all the way through the songs. This is unheard of in the Tex-Mex scene that spawned him, where the accordionist plays solos and obbligatos but rarely backgrounds. Gauna's style demonstrates the way pop absorbs and reshapes its outside influences. Originally, the cheesy Farfisa lines of Chicano-influenced rock replaced (and extended) accordion lines borrowed from the more ethnic forms of Mexican music; here, the accordion has come back to take over the organ's role.

FLACO JIMENEZ: USING HIS ACCORDION LIKE A BLUES GUITAR

TEX-MEX DEVELOPED IN THE TWENTIES AND Thirties when Chicanos took up the accordion, first brought to Texas by Germans. Playing single-row button accordion, Chicanos merged carefree gringo polka rhythms with the keening, lonesome melodies and harmonies of Mexican *rancheras* to create *norteño*, or Tex-Mex *conjunto* (group) sounds. By the Fifties, instrumental skills had replaced vocal prowess as the standard of excellence, and the three-row button accordion had taken over. This evolution is traced on a series of albums on Chris Strachwitz's Arhoolie subsidiary Folklyric. For the state of *conjunto* accordion today, you need only check out Flaco Jimenez and Steve Jordan.

Jimenez, whose father, Santiago, is a pioneer of the style and whose own roots are in the Fifties transitional forms, won a Grammy earlier this year for his fine *Ay Te Dejo en San Antonio* (Arhoolie 3021). But I prefer the more recent *Recordar es Vivir* (CBS International JML 13315), which is looser and earthier. Backed by a small acoustic group, Jimenez uses his accordion as a bluesman uses his guitar. The lines he plays are full of festive times and high feelings. He is snappy, to the point, and downright irresistible.

Jordan is hailed as "the Jimi Hendrix of the accordion" for redefining how the instrument can be played. The last few times I've heard him, I've thought more of *East-West*-era Mike Bloomfield. Like Jimenez, Jordan uses the end of his vocal line as a taking-off point, but he's more apt to launch into a soaring improvisation or a string of short, nervous bursts than to simply play the melody. He is as startling as ever on his new *Porque Sera* (RCA International 5626-1), but the electronic drums are tentative and obtrusive. Instead, go back to last year's *Turn Me Loose* (RCA International IL6 7498); 1985's *My Toot Toot* (IL6 7412), which grafts his bilingual version of the Rockin' Sidney song onto his old *Soy de Tejas* album; or even 1983's *El Bro* (Hacienda 7003), which features his take on "You've Lost That Lovin' Feelin'," best described as Chicano dub.

In Cajun music, the accordionist functions more like a keyboard man does in blues or rock, pumping away through the entire song, stepping forward to solo or to trade licks with the fiddler. The evolution of this Americanized French dance music is best followed via a series of Arhoolie albums, but the culmination of the process is exemplified by *A Cajun Legend: The Best of Nathan Abshire* (Swallow 6061), which collates prime performances such as "Pinegrove Blues," "Belisaire Waltz, " and "Valse de Bayou Teche" from previous albums. Abshire, who died in 1981 in his native Basile, Louisiana, played a single-row button accordion, unusual in Cajun music, but he had the double-time licks and slurred phrasing that help distinguish the form—and that also complemented his harsh, bluesy voice.

In the early Fifties, Louisiana Creoles infused the music of Abshire and others like him with rhythm and blues. The result is known as zydeco. Clifton Chenier, who created this black form and then ruled it for a quarter-century, is every bit as important an American music synthesist as Bob Wills, Ray Charles, or Elvis Presley, and most of his many Arhoolie albums make clear why. In the last decade, the leader in the field has become Buckwheat Zydeco, whose deft show band can be heard most conveniently on his Rounder LPs (though he's now with Island).

Meanwhile, the biggest trend on the bayou today is dubbed Zydeco Cajun, which is most simply defined as white Cajuns playing black zydeco or Creoles playing Cajun. Wayne Toups's *ZyDeCajun* (Kajun 5032) is an impressive example. Toups is one of the most rhythmic players around, bouncing off stinging slide and blues guitars rather than the more traditional fiddle. His accordion sounds like a wailing blues harmonica, and his music is riff-heavy and swinging. Coming from the opposite direction are Fernest and the Thunders with *Zydeco Thunder* (Greybeard 1001). Fernest Arceneaux plays a churning, melodic accordion that rides on top of a chugging rhythm section. Despite the jazzy horns, everything moves at a comfortable country gait, and the overall sound is both blacker and bluer than that of Toups. Though perhaps a tad samey from cut to cut, this album will have to do until Terrance Simien and the Mallet Playboys get one out.

If your notion of accordion music has heretofore been defined by the two Yankovics—Frank and Weird Al—you need to hear the instrument anew. Any of these albums would be a good place to start. ■

IN Short ORDER

POP AND JAZZ MINI-REVIEWS

THE WALLETS:

⊙ **Take It.** Twin/Tone TTR 8685.

GOOD LUCK IN CATEGORIZING THIS CULT BAND from Minneapolis, whose debut album fulfills the promise of a handful of indie singles and numerous unforgettable live performances. With two keyboards (frontman Steve Kramer doubles on accordion), drums, bass, and sax, material is bound to be out of the ordinary, and on *Take It* there are touches of jazz, zydeco, polka, funk, Africa, the Orient, you name it. But Kramer's quirky visions (he sings about ghosts in love and parties in Senegal as if they're everyday events), the band's dazzling instrumental flourishes (which turn on each other as often as they go forward), and Allen Toussaint's sure production hand make the Wallets *the* band to watch. *Jim Bessman*

HENRY THREADGILL SEXTETT:

◑ **You Know the Number.** Novus 3013-2.

FEW CONTEMPORARY JAZZ PLAYERS HAVE flutist/saxophonist Henry Threadgill's ability to move fluidly from the most poignant postmodernisms to the gruff ebullience of New Orleans. He uses chords as colors, not as changes, and riffs as a frame. He's no solo-hog either. And with pristine digital clarity, we can hear, even feel, Fred Hopkins's probing fingers on bass, the mournful counterpoint of Diedre Murray's cello, the growl of Frank Lacy's trombone. Although these compositions occasionally rest on too simple a melodic foundation, they make up for it through texture, development, and the careful use of old-fashioned collective improvisation. *Joe Blum*

ADRIAN BELEW:

⊙ **Desire Caught by the Tail.** Island 90551-1.

THE BEARS:

⊙ **The Bears.** Primitive Man IRS 42011. (I.R.S.)

ON *DESIRE CAUGHT BY THE TAIL*, ADRIAN BELEW seems to be exorcising some eccentric ideas. His guitar work has always been distinctive, even in collaborations with the likes of David Bowie, Frank Zappa, Laurie Anderson, and Talking Heads. Here, he continues to get new noises out of the instrument. An entirely guitar-and-percussion solo project, *Desire* starts simple but becomes nightmarishly chaotic before it's over.

With *The Bears*, Belew extends his break from making superstars look good and plays some down-to-earth pop songs with three ex-Raisins. One quiet track is pure Belew, but the rest shows quite a bit of chemistry at work: The Bears sound like a charged-up, adventurous improvement on Huey Lewis and the News. While *Desire* is never less than interesting and *The Bears* is often more than a romp, neither album touches Belew's best work with King Crimson and on his 1982 masterpiece, *Lone Rhino*. *Andrew Nash*

KRISTI ROSE AND THE MIDNIGHT WALKERS:

⊙ **Some People.** Rounder 9002.

WHO'D THINK NEW YORK CITY COULD BREED such a dynamite country-rock band? The Midnight Walkers are a smoking trio who cook behind Kristi Rose's robust voice, a wide-ranging instrument that can hold notes forever, as on her wrenching cover of "Love Hurts." She also knows when to put that catch in her throat and how to milk her Kentucky twang. The six originals by Rose and guitarist Chris Christos stand out, especially the ominous "Chain Gang," where the lady wakes up shocked to find a dead man in her bed. *Some People* is a smashing debut. *Kate Walter*

GERRY MULLIGAN:

Jazz in America Starring Gerry Mulligan. Embassy Home Entertainment 1223.

VARIOUS ARTISTS:

Jazz in America. Embassy Home Entertainment 1221.

WHAT A DIFFERENCE A BAND MAKES. GERRY Mulligan's elegant playing can drift off into cat-purring comfort at times, yet on *Jazz in America Starring Gerry Mulligan* he's all daggers and pedal-to-the-floor motion. The reason: a sleek backing trio propelled by super drummer Billy Hart. With these guys breathing down his neck, Mulligan is forced to deliver, and he does. This is an exceptionally committed performance from a player who could stand to get this excited more often.

Mulligan makes another winning appearance as part of Dizzy Gillespie's all-star Dream Band on *Jazz in America*, a 1981 concert tribute to the grand old man of bop. Gillespie is in crackling form, blowing and carrying on with passion, relentless rhythm, and of course, humor. Guests John Lewis, Max Roach, and Milt Jackson and that fiery big band couldn't have dampened his spirits any. The vibrant sound of both videos captures the snappy give-and-take between frontman and prodding supporting group. *Steve Futterman*

KRIS KRISTOFFERSON & THE BORDERLORDS:

⊙ **Repossessed.** Mercury 830 406-1.

ONCE UPON A TIME, KRIS KRISTOFFERSON WAS being linked to outlaws and outsiders, and in many ways *Repossessed* reaffirms his political separateness from the country/Nashville establishment. "Shipwrecked in the Eighties," "They Killed Him," and "What About Me" might be dubbed hopelessly left-wing, but Kristofferson sings them resolutely and sounds more convincing here than on standard fare like "The Heart." The guy's a fine lyricist, too, and he has assembled a solid backup band, including the outstanding guitarist/vocalist Billy Swan. But something's missing: *Repossessed* doesn't have the tugging quality you expect from great country, and its politics won't make you feel either angry or supportive. Instead, you sort of drift into the album and drift out. So Kristofferson's first vinyl release in seven years isn't the kind of event his fans hoped it would be. *Ron Wynn*

SUZANNE VEGA:

⊙ **Solitude Standing.** A&M SP 5136.

CHRISTINE LAVIN:

⊙ **Beau Woes and Other Problems of Modern Life.** Philo PH 1107. (Rounder.)

WHEN SUZANNE VEGA RELEASED HER eponymous first LP in 1985, critics and fans anointed her folk madonna of the '80s. I didn't buy it; still, a few hypnotic cuts ("Cracking," "Small Blue Thing") indicated promise. But on *Solitude Standing*, Vega's waif-like charm really wears thin. Her talk-poems all suffer from a stringy voice that barely gasps out the lyrics, and the further addition of band members only makes it more difficult for Vega to project her small tones. Catchy melodies on the title cut and "In the Eye" aren't enough to balance this bland approach. Unlike most '80s folkies (though she eschews that tag), Vega is on a major label that has pushed her to an audience desperately seeking leaders. If half the cuts here were as compelling as "Gypsy" (written in 1978), I wouldn't think that Vega's acolytes are worshiping at the wrong altar.

Meanwhile, back in Greenwich Village, Christine Lavin remains lesser known. She is a sharp satirist on "Camping" and "Biological Time Bomb" (a wild solution for childless women over thirty), but she's also a bittersweet romantic on her ballads "Roses from the Wrong Man" and "Gettin' Used to Leavin'," soothed by Robin Batteau's violin and harmonies. Lavin wittily captures the realities of being single in the city—and unlike her brooding counterpart, she even sounds like she's having fun. *Kate Walter*

DAVID TORN:

◑ **Cloud About Mercury.** ECM 831 108-2.

GUITARIST DAVID TORN HAS COMBINED THE tradition of ECM spacey program music and his own rough-edged tendencies to come up with this satisfying set. Over a variety of exotic rhythms laid down by drummer Bill Bruford and bassist Tony Levin, Torn coaxes a wide range of post-psychedelic sounds from his guitar, both indulging in ecstatic tones

(CONTINUED ON PAGE 80)

The Summer of '87

BACKBEAT REVIEWS

TOM COPI

SLICK AND BALIN '69: TALENT COLLISION ON AN ESSENTIAL COMPACT DISC

JEFFERSON AIRPLANE:
2400 Fulton Street.

◑ Various prods. RCA 5724-2 (2). ⊙ (2). ⊡ (2).

THE MYTHIC WEIGHT OF THE SIXTIES IS THE Jefferson Airplane's albatross, distorting the still vital beauty of the group's music. Sex and drugs and Vietnam couldn't help but shape this band, yet the Airplane's finest work stands up almost 20 years after Woodstock by way of its intelligence and far-reaching success at stretching the boundaries of pop music. *2400 Fulton Street*, an anthology of greatest hits and shining moments, is a litmus test of durability that this classic group passes with ease and (no pun intended) considerable grace.

Tension was the very stuff of the Airplane: The vocalists pushed against each other, the band pushed against the vocalists, and the material railed against pop song conventions. Listen to anything from the great 1966–69 period—thankfully, the bulk of this set—and what you are left with is how *busy* each track is, yet how each part somehow fits. The collective force of, say, "She Has Funny Cars," "Wild Tyme," "Crown of Creation," and "Wooden Ships" overwhelms with activity: Grace Slick, Marty Balin, and Paul Kantner's wonderful vocal interplay, bassist Jack Casady's extraordinarily melodic lines, Jorma Kaukonen's live-wire guitar solos, and Spencer Dryden's inventive drum fills. If a lyric occasionally betrays its era (the hippie-love tribute "Won't You Try Saturday Afternoon" probably sounded dated by 1968), the sheer guts of the singing and playing cut right through. Unfortunately, the very same competitive collision of creative talent also ensured the band's self-destruction.

The CD version is an essential buy, with 11 additional cuts, for a total of 36 tracks on two 65-minute-plus discs. Among the extras are two of *Volunteer*'s best songs, "Eskimo Blue Day" and "Good Shepherd," as well as the wonderfully pessimistic opening track from *Jefferson Airplane Takes Off*, "Blues from an Airplane," and the charming folkish outtake from *Surrealistic Pillow*, "J.P.P. McStep B. Blues." One can quibble with the silly categories the tracks are placed in ("Funny Cars" has as much place in Psychedelia as it does in Beginnings, let's say); chronological order would have made a lot more sense. The CD sound adds vivid brightness to the vocals and pinpoints details (Casady's overdubbed bass lines, little percussion asides, etc.) that add color to this already detailed music. The only previously unreleased "material" is the CD's addition of "The Levi Commercials," two self-parodistic screams that prove that even committed hippies could take the money and run. *There* lies the roots of the Starship. *Steve Futterman*

DAVID BOWIE:
Never Let Me Down.

⊙ David Bowie and David Richards, prods. EMI America PJ 17267. ⊡◑ CDP 46677.

AFTER DAVID BOWIE'S LAST ALBUM, *TONIGHT*—a skimpy and tired-sounding collection of moods for moderns, which indicated that perhaps the great chameleon's near flawless grasp of the moment had finally slipped—it's tempting to hear this energetic new one

as something of a comeback. Brimming with catchy tunes, Rorschach lyrics, and identities, borrowed and revived, *Never Let Me Down* arrives just when our expectations are at an all-time low. So anxious to please and impress is the album that the fact it's just as disconnected and unfocused as *Tonight* takes a while to sink in: Its quick change-ups give the impression that there's a lot going on here. But what's going on is a sort of Greatest Hits of past poses. The soul singer c. *Young Americans* appears, as does a Ziggy-like character ("Zeroes"); the dangerous-moonlight dance crooner is our host on a handful of tracks; and on the title cut, Bowie does his best John Lennon impersonation yet, even throwing in some harmonica. Harmless fun, executed by a pro.

This lack of a coherent persona may indicate an artist adrift, but then maybe "harmless pro fun" is the intended direction now. Bowie has always been canny in his choice of collaborators: Mick Ronson during his alien rave-up period, Robert Fripp and Brian Eno for his avant-garde stretch, Luther Vandross to aid his soul entry. So what are we to make of the fact that the most noticeable hired hand on *Never Let Me Down* is Peter Frampton, bearer of several clean and generic guitar solos? That Bowie is just biding his time and playing it safe enough to guarantee that his face will appear on the MTV playlist with this year's models? Maybe this guy is more plugged into the late '80s zeitgeist than one would hope. *Richard C. Walls*

FRANK SINATRA:
Songs for Swingin' Lovers.
◑ Voyle Gilmore, prod. Capitol CDP 46570.
In the Wee Small Hours.
◑ Voyle Gilmore, prod. Capitol CDP 46571.
"Close to You" and More.
◑ Voyle Gilmore, prod. Capitol CDP 46572.
"Sinatra's Swingin' Session" and More.
◑ Voyle Gilmore, prod. Capitol CDP 46573.

THIS IS THE GOOD STUFF: CD VERSIONS OF four of Frank Sinatra's very best Capitol LPs. Unfortunately, Capitol has chosen, as is its usual custom, to do it on the cheap. Meaning moderately hissy AAD transfers instead of the beautiful digital remastering lavished on Sinatra's Capitol recordings by EMI just a few years ago. Meaning short liner notes and incomplete discographical information. Meaning, most of all, a "special abridged Compact Disc version" of *In the Wee Small Hours*, a sickening piece of hypocritical cant that translates, "We lopped off a couple of songs to keep the royalties down." (No Capitol CD that I have seen to date contains more than 15 tracks.)

Should you buy? On balance, yes. These remasterings may not be ADD, but they are still clear and honest. The producer, Voyle Gilmore, knew exactly how to make Sinatra sound good. Nelson Riddle's charts are brilliantly tasteful. *Sinatra's Swingin' Session* and *Close to You* are filled out with extra tracks taped at the original sessions but not released on the original albums. And Sinatra is *in form*. Emotionally profound saloon singing on *In the Wee Small Hours*. Pure bel canto lyricism, with exquisite backing by the Hollywood String Quartet, on *Close to You*. Immaculately hip-in-the-pocket swing on *Sinatra's Swingin' Session* and *Songs for Swingin' Lovers*. So buy all four and keep your eyes peeled for more. And write a really nasty letter to the Scrooges at Capitol, asking them about the missing tracks from *In the Wee Small Hours*.
Terry Teachout

FORMAT KEY

⊙ **LP/EP**
Cassette
◑ **Compact Disc**
Videocassette
Ⓥ **Videodisc**

Large symbol beneath title indicates reviewed format. Small symbols following catalog number of reviewed format indicate other available formats (if any).

Catalog numbers of all formats of a particular recording usually are identical except for differing prefixes or suffixes. Catalog numbers of formats other than the reviewed format are printed only if their basic numbers differ substantially from that of the reviewed format.

Arabic numeral in parentheses indicates number of items in multi-item set.

THEY MIGHT BE GIANTS:
They Might Be Giants.
⊙ Bill Krauss, prod. Bar/None A-HAON 002. (P.O. Box 1704, Main Post Office, Hoboken, N.J. 07030.)

THOUGH THEY QUOTE AND PARODY FREELY from the compleat pop lexicon like so many other groups, there's no mistaking the quirky world view or self-styled genius of They Might Be Giants, a duo of brazen pop stars. Onstage, John Flansburgh and John Linnell are the antithesis of style in their grubby T-shirts and trick hats, one vocalizing self-deprecatingly behind thick black eyeglasses, the other thumping breezily along on a mammoth accordion, backed by recorded tracks. They give amorphous performances—private jokes the audience is privileged to eavesdrop on—that range from cheerfully morbid to greasily moptop.

The Giants do the same on their debut LP, flipping together lyric fragments and non sequiturs with come-from-nowhere careering musical phrases and stylistic juxtapositions that, in combination, sound sensible and whole. From the Beatlesque "Everything Right Is Wrong Again," casually suggesting dislocation and terror ("draw the line dividing laugh and scream"), to the country strains of "Number Three," in which the President is asked for tips on ending writer's block ("If there's just two songs in ya, boy/Whaddaya want from me?"), the Giants take on the 20th century and pop's past and present with mingled love and dismissal. In the process, they freshen the overworked genre better than have any of their near peers.

The Giants landed on their imprecise allusions and mastered the rhythm of the short song while creating answering-machine-message-length tidbits for their self-promoting Dial-a-Song service, which has charmed New Yorkers for the last few years. Each of the 19 cuts on *They Might Be Giants* could be one of those sharp-shot advertisements of snappy hooks and riffs coupled with small-change hints of philosophy, social science, political remonstrance, and the psychology of personal relations. What makes these songs so endearing is the Giants' fecklessness and arrogance of innocence that lets them carve large ideas into small, manageable bites. Planned or not, in so doing they rewrite the pop canon. So while "Wake up and smell the cat food in your bank account" (from "Don't Let's Start") may not become a household slogan, and the memory of their MTV appearance ("Put Your Hand Inside the Puppet Head") may fade, the Giants have already made their free-associating mark. All that follows will be commentary. *Leslie Berman*

ELVIS PRESLEY:
Elvis Memories.
Ⓥ George Klein and Jerry L. Williams, prods. Vestron Music Video 1054. Ⓥ
ELVIS PRESLEY:
Mondo Elvis.
Ⓥ Tom Corboy, dir. and prod. Rhino Video RNVD 2912.

ELVIS MEMORIES COLLATES HOME MOVIES, concert and press-conference footage, and interviews about the King. Like most such projects, its intent is less to tell us something new about Elvis Presley than to establish that the perpetrator (in this case, producer George Klein, a lifelong chum) was indeed close to the King. The celebrities and factotums interviewed talk about the singer's generosity, humanity, etc., with the same clichés one normally uses to describe any other dearly departed, be it a head of state, a great uncle, or the family pet.

No, if you want to learn something about El's place in our culture, you should look instead at *Mondo Elvis*, interviews with Presley fans. Featured are a father/son Elvis-impersonator team ("It's not all glitter and glamour," the wife/mother warns of the impersonator life); a woman who divorced and moved to Memphis after Elvis's death so that she could commune with him (among other things, she's shown reaching up to fondle the crotch of a huge Elvis statue); and a pair of identical twins who believe Elvis is their father and who bring men home to play Yahtzee—but only one game, and then the lugs are thrown out "on their ass" before they get any wise ideas, because Elvis wouldn't approve of no messaround. (People might ridicule them, but people used to ridicule Elvis, too, and "Look where Elvis Presley is now." He's dead, girls. Dead.) There's also a photograph a woman took, after a memorial service, of a cloud that

(CONTINUED ON PAGE 79)

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*** DEADLINE SEPT ISSUE ***
JULY 1, 1987

(CONTINUED FROM PAGE 75)
looks "just like Elvis," and you're not gonna believe this, but *the durn thing looks just like a cloud!*

Anyhow, if you ever wondered how a priest is like an Elvis impersonator, this one is for you. I know, because whenever I sit at the typewriter, Elvis's brain enters my own, and his thoughts pour out of me and onto the paper in my typewriter. Like everything else that appears with my byline, this review was really written by him. *John Morthland*

THE JUDDS:
Heart Land.
⊙ Brent Maher, prod. RCA 5916-1.

JOHN ANDERSON:
Countrified.
⊙ John Anderson and Jim Ed Norman, prods. Warner Bros. 25373-1.

COUNTRY MUSIC'S STEADY RESURGENCE OVER the past few years has been credited in large part to a group of performers labeled "new traditionalists"—a contradictory term, to be sure, but one with some degree of accuracy. These artists have both a knowledge of the idiom's roots and the ability to rework and enliven them with a focus that's unalterably contemporary but that retains the folksy, uncluttered sound and values of the white soul music we know as country.

The Judds epitomize the wholesome end of this neotraditionalism. And they are a certifiable cultural phenomenon, two genuinely exciting singers who have become mass media idols without surrendering the charm and sense of purpose that made them so striking in the first place. *Heart Land* opens with a cover of "Don't Be Cruel" that manages to be as fresh as possible without distorting the Elvis Presley standard. Wynonna Judd is a captivating lead voice; her versatile and formidable delivery, along with Naomi Judd's flickering second voice, Don Potter's omnipresent guitar, and occasional delights like Emmylou Harris's wispy background vocals on "The Sweetest Gift," stamp *Heart Land* as another impressive addition to a fast-growing legacy.

John Anderson represents the other end, the uproarious, butt-kicking fraternity, although he has never pandered to the stereotype of beer-drinking redneck. Rather, his best songs are hell-raisin'/good-ole-boy numbers suited for his twisting exclamations and guffaws. On *Countrified*, tunes such as Tony Joe White's "Do You Have a Garter Belt," Merle Haggard's "The Fightin' Side of Me," and Tom Lazaros's title track are steeped in frolic, rustic contentment, and country pride and are sung with enthusiasm and even occasional raggedness. Yet the LP also includes a decent version of Rev. Thomas A. Dorsey's "Peace in the Valley" and an exuberant treatment of Willie Dixon's "You Can't Judge a Book by the Cover." The latter, though, is inconsistent; Anderson understands the kinship between black music and country but has yet to do a soul or r&b cover that effectively explores the shared territory. Still, the best songs here are uplifting and kinetic, and Anderson shows that, at times, you can be silly and also inspired.

Ron Wynn

BILLY JOEL:
The Video Album, Volume 1.
Various dirs. and prods. CBS/Fox Video Music 6198-80.

BILLY JOEL:
The Video Album, Volume 2.
Various dirs. and prods. CBS/Fox Video Music 3569-80.

THESE VIDEODISCS EACH CONTAIN TEN BILLY Joel clips, apparently in no particular order. This is good from a marketing standpoint, since admirers of Joel's great videos of tracks from 1983's *An Innocent Man*, which are evenly split between the two volumes, will be forced to buy both. But it would have been better stylistically and aesthetically to program the clips in chronological order, since the differences between old and new are often jarring.

On *Volume 1*, for instance, an undistinguished studio performance of "All for Leyna" from *Glass Houses* (1980) finds Joel in the white tie, black shirt, and equally square hairstyle typical of this time in his career; it also has him mugging uncomfortably into the camera. But it's followed by *An Innocent Man*'s "Tell Her About It," the glorious *Ed Sullivan Show* rock 'n' roll tribute that immediately established Joel as a top video artist. Unfortunately, the sequencing allows no transition from the nerdy, self-conscious performer of the earlier clip to the superhip song-and-dance king of the later.

However, some of the pre-*Nylon Curtain* clips actually were filmed much later than their songs' original release dates—yet while they generally look better than the true '70s performance clips included, they lack historical authenticity. Of the mostly excellent *Nylon Curtain*-and-after clips, two on *Volume 2* stand out: the widely seen "Allentown," with its poignant portrayal of the dying steel town and its postwar generation, and the seldom seen "Baby Grand," which features a remarkable duet between Joel and idol Ray Charles.

As for audio quality, the discs have all the advantages of digital sound, though Phil Ramone's LP productions are just as good.

Jim Bessman

JAZZ

VARIOUS ARTISTS:
Piano Legends.
Burrill Crohn, dir. and prod. Video Artists International 29038 (Beta), 69038 (VHS).

THIS VIDEOCASSETTE FOLLOWS THE SAME format as *Trumpet Kings* [see review last month]: A noted practitioner of the instrument under scrutiny—in this case, Chick Corea—narrates its jazz history, with stills and two- or three-minute-long snippets of performance. The limitations imposed on this project are somewhat severe. Jazz has never been well documented on film, and thus many of these clips seem to be of old TV appearances (sources are not given). Though 80 years and 24 artists are covered (all in 63 minutes!), 20 of the 24 pianists are represented by post-1955 performances. Most of these are in black and white, and both picture and sound vary in quality (usually, the picture is so-so, the sound a little better). Still, the video fulfills its intentions admirably: to instruct the neophyte and supply the devotee with rare footage.

Ranging from Jelly Roll Morton to Cecil Taylor, this general history touches all the relevant bases. And though Corea is a somewhat lackluster host—"what a rich legacy," he intones dispassionately toward the end—the narration, written by Burrill Crohn, makes the important point that innovations evolve out of existing ideas, and it also offers distinct capsule descriptions of the various stylists. But for the seasoned fan, the biggest kicks here will be visual: the look on Count Basie's face as he watches Thelonious Monk playing "Blue Monk," a shot of Monk's feet scraping the floor during his solo as though he were trying to dance sitting down, Horace Silver waxing frantic on "Señor Blues," Bud Powell lost in reverie amid the changes of "I'll Remember April." Beautiful stuff. If only there were more! *Richard C. Walls*

(CONTINUED FROM PAGE 73)
for their own sake and carefully building his pieces to climactic highs (which may explain why the cut "3 Minutes of Pure Entertainment" lasts seven minutes). Mark Isham contributes some leaning-toward-cool jazz trumpet, helping some of this to sound like recent (pre-*Tutu*) Miles Davis. Within this occasionally derivative context, Torn remains a consistently intelligent and uninhibited player. The sound is all that one expects from Manfred Eicher, CD or otherwise.

Richard C. Walls

DOLLY PARTON, LINDA RONSTADT, AND EMMYLOU HARRIS:

⊙ **Trio.** Warner Bros. 25491-1.

MAYBE IT'S THEM, MAYBE IT'S US, BUT THIS long-awaited teaming of three former country-pop starlets makes for sweet but inconsequential ear candy. *Trio* has all the correct ingredients: songs by Jimmie Rodgers, Jean Ritchie, Kate McGarrigle, and Public Domain, beautifully sung over the skillful, low-key acoustic backing of distinguished pickers like guitarist Albert Lee and multi-instrumentalist Mark O'Connor. But as the three singers swap lead vocals, *Trio* takes on the feel of a patchwork superstar jam session. That's not to say the record is a failure: Linda Ronstadt and Dolly Parton haven't sounded this natural since bell-bottoms fell out of style, and Parton has contributed a too-rare original ("Wildflowers") that self-consciously recalls her songwriting heyday. But one of the album's shining moments, Ronstadt's cover of Linda Thompson's angst-drenched "Telling Me Lies," is essentially a solo showcase, and that's not what *Trio* is supposed to signify. Oh well—at least they didn't do "Will the Circle Be Unbroken."

David Browne

THE CULT:

⊙ **Electric.** Sire 25555-1.

HARD, LEAN, AND RIPPED OFF: *ELECTRIC* IS THE only type of record that producer Rick Rubin knows how to make. Unlike his extraordinary work with rap releases, though, there is no sense of adventure in his use of rock clichés, and the Cult depends on Led Zeppelin, Aerosmith, and AC/DC so much for inspiration it ought to be illegal. I mean, Jimmy Page, Steve Tyler, and Angus Young should be suing the Cult's butts off. Call it white retro-neuvo, a homage to great music, or plagiarism: This is a retread. It isn't a *bad* record for those of us without fond memories of rock before the freeze, when moussed hair wasn't a prerequisite, it's just kinda like déjà vu.

Havelock Nelson

CARLY SIMON:

⊙ **Coming Around Again.** Arista AL 8443.

CARLY SIMON IS REIGNING QUEEN OF THE confessionals. Since the early '70s, she has reworked her life into diaristic dramas about marriage, motherhood, relationships, romance. That's gutsy. On this LP's resilient title cut, written for the movie *Heartburn*, the despondent wife remains a true believer: Love will come again, just wait and see. The idea comes full circle when Simon fades out on Side 2, repeating "I believe in love." Even her breezy remake of "As Time Goes By" fits the theme, with Simon's inventive phrasing darting through Stevie Wonder's harmonica. Unlike the upbeat *Spoiled Girl*, the new LP stays closer to a folk-rock format. But it's the characters, more than the melodies, that make these songs memorable. Whether it's the demanding paramour in "Give Me All Night," the wise woman in "The Stuff That Dreams Are Made Of," or the flirtatious adolescents in "Two Hot Girls (on a Hot Summer Night)," you'll know someone here.

Kate Walter

VARIOUS ARTISTS:

⊙ **Get Wise!** Epic BFE 40639.

WHEN IT CAME TO ROCK 'N' ROLL, THE BRITISH got lucky, but if this compilation is any clue, they'd better ditch their new jazz fling pronto. Over there, FUN rules: fun rhythms (synthetic Latin, mainly), fun tunes (jive bebop jive), fun vocals (watch out, Manhattan Transfer, you hep cats). This is jazz with the tough (read "challenging") parts taken out: all the hipness with none of the hard work. Keep this up and the British will be as well known for their jazz as they are for their cuisine.

Steve Futterman

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