

Flash! First DAT Decks - 40 Mini-Reviews: LPs, CDs, Cassettes, Videos

HIGH FIDELITY

AUDIO - VIDEO - TEST

MAY 1987 · \$2.50 USA · \$3.50 CANADA

HIGH-TECH

LAB TESTS

◆
**SONY'S SUPER CAR
TUNER/CD PLAYER**

◆
**AKAI'S HI-FI VCR
WITH STEREO AMP**

◆
**MISSION'S SOUPED UP
HOME CD PLAYER**

SPECIAL! CAR STEREO '87



First Look at Newest Models
5 Key Steps In Buying a System
Lab/Road Tests
Detroit's "Big 3" Get Serious
How to Foil Car Stereo Thieves



#131C*****5-DIGIT 70065
#65344 0MA115 # 15 AUG88
2F1E1 13440 MA192 HIF
ZB
MR EDWIN FRIED
3440 MAINE AVE
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05

Not Evolutionary,

Pioneer's Revolutionary C-90/M-90 Elite High-Fidelity Components.

Audiophiles, take note: The preamp and amplifier you've been waiting for are finally here.

Introducing the Pioneer Elite Hi-Fi C-90 Preamp and M-90 Power Amplifier. Together, they combine the finest in both audio and video to retrieve every detail and nuance found in your cherished records, tapes, compact discs, LaserVision™ discs and other software. Imagine a soundstage spread throughout your entire listening room! Stunning, transparent, three-dimensional music, the likes of which you've never heard, apart from a live performance.

We paid fantastic attention to detail to gain this level of musical truth. One example: the C-90 volume control is a motorized, high precision rotary potentiometer. This permitted us to create the world's first high-end preamp with a no-compromise hand-held "SR"™ remote-control unit.

The C-90 features three separate power transformers — two to power left and right audio channels for vanishingly low crosstalk, and a third transformer to drive the preamp's unique video capabilities, relays, display and microprocessor. All switching functions are accomplished by electronic relays. Thus the signal paths are as short as possible, improving signal-to-noise ratio and channel separation. Anti-vibration measures taken to further the C-90's sonic excellence include a solid aluminum volume control knob, polycarbonate chassis feet, and rubber-cradled PC boards. Soft copper-plated screws insure a snug fit of chassis, transformers, transistors, and help to dampen vibration.

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video enhancer, and two-buss switching (separate "Record" and "View" selectors). The C-90's unique system remote-control unit features volume adjustment, input source selection, and control of audio and video input devices such as Pioneer's "SR" compatible VCRs, CDs, LaserVision players and cassette decks.

The M-90 is a superb high-power stereo amplifier, utilizing dual-mono construction. It is conservatively rated at 200 W/CH into 8 ohms¹ and delivers 800 W/CH of dynamic power at 2 ohms.² The wide dynamic range of digital sources can now be reproduced effortlessly, with any loudspeakers. The M-90's high current capacity of 47 amps can handle the challenge of the most complex speaker loads. To further enhance S/N ratio and channel separation, relay-operated electronic switches and a long shaft volume control keep the length of signal paths down to a minimum. Why include a high quality volume control on a power amp? Simple. To pursue the straight-wire-with-gain philosophy when using a CD player connected directly. Pure sound, redefined.

The exquisite finish of the M-90 and C-90 reflects their quality. Elegant rosewood side panels and front panels with a deep hand-brushed lacquer finish emphasize the care of craftsmanship we've lavished on these two components. The Pioneer C-90 Preamp and M-90 Power Amp. Evolutionary? Hardly. Revolutionary? Most definitely.

For your nearest Pioneer Elite Hi-Fi dealer, phone 1-800-421-1404.

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on TV



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MAY

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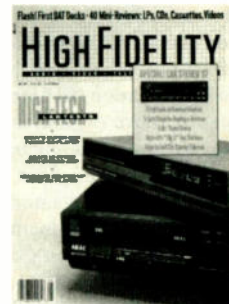
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RECEIVER/CD PLAYER; MISSION
PCM-4000 CD PLAYER; AKAI VS-
525U HQ VHS HI-FI VCR



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BY MICHAEL RIGGS

LOOKING FOR THE JOLLY ROGER

HOME TAPING IS A HOT TOPIC THESE DAYS IN the music business. The Recording Industry Association of America (RIAA) estimates that its members lose \$1.5 billion annually (in revenue, not profit) to home taping. This figure presumably is derived from the 1983 study commissioned by the RIAA that purports to demonstrate lost sales equivalent to 325 million albums per year. This report stimulated the Electronic Industries Association (EIA) to do a survey that arrives at more or less the opposite conclusion: that home taping *improves* record sales.

If my own practices are any guide, the truth is smack in the middle. I can't remember buying a record mainly because I wanted to tape it, but I don't copy other people's records, either. Most people I know fall into this category. But what about people who *do* tape their friends' records? In how many cases would they buy their own if they couldn't make copies? The RIAA claims about 60 percent, which seems implausibly high to me. Something that's worth two or three dollars to you (the cost of a blank cassette) is not necessarily worth six or eight or 15 (typical retail prices for records and CDs). After all, there has to be some economic incentive behind illegal copying.

Which brings us to the question of why the record industry has chosen to pick on DAT. The notion that people too cheap to buy their own records are going to snap up \$1,500 tape decks and \$10 blank cassettes to dub recordings they can get in a store for \$4 to \$15 and play on machines that sell for less than \$200 is a little hard to swallow. The main argument levied against the new medium is that it will enable consumers to make nearly perfect copies even of CDs and greatly reduce the generational loss of fidelity that plagues analog recording. The fear, I suppose, is that one person will buy a record that will then be copied by another, whose tape will then be duped by yet another, and so on until eventually a hit record will be one

that sells five copies in every major city.

Although DAT is more amenable to this sort of serial duplication than is the analog cassette, there still are limits. One is that no DAT deck will record at the 44.1-kHz sampling rate used for Compact Discs, making direct digital duplication of them impossible without a sampling-rate converter. More important, however, is the fact that DAT machines can detect whether a digital input signal comes from a CD, in which case they will not record. As a result, all copies of prerecorded material will have to be through the DAT decks' analog inputs. A more mundane, but perhaps more significant, safeguard is that making DAT-to-DAT copies will require two machines—costly if you buy a second one, inconvenient if you don't.

I don't believe that home taping is costing the record industry anything close to the \$1.5 billion it claims, but we all should support reasonable efforts to reduce the amount of genuine copyright violation. The kind of crude, sledgehammer analog copy-coding now on the docket in Congress is far from reasonable, however. It will degrade the fidelity of protected recordings and seriously compromise the legitimate interests of honest consumers while providing little or no benefit to copyright holders. A better approach would be to ban dual-well DAT decks (nobody is making one yet, but you know how these things go) and to *require* that DAT machines be rendered incapable of making direct digital dubs of commercial digital recordings, such as CDs. In addition, the RIAA, preferably with the support of the EIA, should embark on a consumer education campaign, carrying the message that copying commercial recordings you didn't buy is the moral equivalent of shoplifting. The computer software industry has such a program, which most observers feel has been effective. Spending money in that way will do everyone a lot more good than wasting it on lobbyists in Washington. ■

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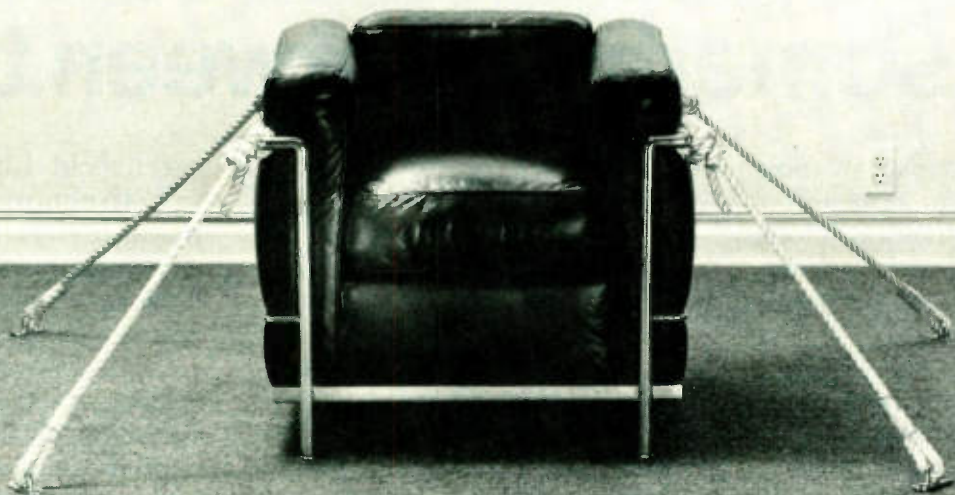
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Most speaker designers haven't changed their position in 30 years.

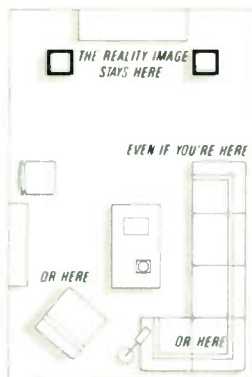


Presenting the dbx Soundfield series: Reality Imaging™ and the end of the stereo "sweet spot."

For 30 years, speaker designers have believed that the only way to achieve balanced stereo is to sit directly between and in front of both speakers. If you move out of this "sweet spot," the stereo image collapses and the frequency response is anything but flat.

At dbx, we took a revolutionary approach and developed a new speaker design that achieves stereo balance and frequency response so consistent from any listening position, so close to the real thing, we needed a new name to describe the experience: *Reality Imaging*.

Reality Imaging brings you right up to the stage. It's not only the sound, but the actual spatial reality—the feeling of being there. And it's an image that doesn't collapse if you move around.



Not only can you hear it, you can see it.

Ask your dbx dealer to demonstrate with a sound analyzer (such as the dbx 14/10) how consistently the flat and smooth response—and Reality Imaging—are maintained by dbx Soundfield speakers at every point in the room. Then ask him to do the same with any other speaker at any price.

You're in for a shock.

And we seriously suspect you'll be changing your position on stereo speakers for good.

dbx Soundfield 1A
\$3000 / pair*



dbx Soundfield 10
\$1499 / pair*



dbx Soundfield 100
\$899 / pair*



dbx Soundfield 1000
\$699 / pair*



*Suggested retail prices

dbx

Beyond stereo

A car stereo designed for people with ears. And something between them.

Odd as it may seem, most people judge how a car stereo sounds by judging how it looks.

Is it loaded with flashing lights? Littered with impressive buttons?

Then it must be a sterling example of modern technology.

This reaction, while somewhat understandable, never ceases to amaze the 326 car stereo engineers who work for Blaupunkt in Hildesheim, West Germany.

fiddle with a confusing array of buttons and knobs.

Keep this in mind, and it's easy to appreciate the difference between Blaupunkt and other leading brands.

If we don't engineer it, we don't sell it.

While other car stereo makers are content to purchase tape mechanisms, amplifiers, tuners, speaker components, and other vital equipment from outside sources, Blaupunkt

and hybrid chips.

To eliminate wow and flutter in cassette mechanisms, dynamically-balanced heavy brass flywheels are honed to within tolerances of .005 inch.

To make systems easier to operate, controls are arranged in logical fashion. So drivers can operate them by touch, without taking their eyes off the road.

It's a painstaking process. And it's repeated for every product we offer.

Cassette receivers. CD players. Amplifiers. Equalizers. Speakers. Antennas. Even the connecting cables.

Few manufacturers go to all this trouble. With every feature. On every product.

Which makes it all the more remarkable that the design stage is only the first step in making a Blaupunkt.

Now comes the hard part.

Tuners are taken from mountain ranges to bustling urban areas to measure radio reception.

Antennas spend weeks in salt baths in order to measure rust resistance.

Literally hundreds of tests are conducted.

To ensure performance at 160°F above zero.

To ensure performance at 5°F below zero. To ensure performance after 24 hours



The Blaupunkt Lexington SQR 46. Complex audio technology engineered to be simple.

They prefer to take a more intelligent approach.

When designing car stereos, don't forget the car.

Blaupunkt might be the only car stereo company that thoroughly understands this simple fact:

A car is a horrible place in which to reproduce true high-fidelity sound.

It requires an incredible effort to overcome challenges like road noise and vibration. Shrill glass surfaces. Cushiony seats. Bad reception. Temperature variations. And the obvious principle that a driver has better things to do than to

engineers do almost everything from scratch.

To pack more technology into a smaller space, Blaupunkt engineers design their very own circuitry

Controls are designed to ensure ease of operation even while wearing racing gloves.





The mountains of Europe are just one of the obstacles Blaupunkt engineers have had to overcome to improve radio reception.

of punishing vibrations.

Last year alone, Blaupunkt engineers spent hundreds of thousands of hours testing.

And once a new model is approved for production, you might imagine that Blaupunkt

to up to 400 additional tests.

Why do we do it?

If you're a rational person, you almost begin to wonder why on earth Blaupunkt goes to such incredible lengths.

Perhaps because customers

brings you up-to-the-minute traffic reports in many major U.S. cities. And it's a standard feature in most new Blaupunkt receivers.

A thank you.

And an invitation.

While we appreciate this opportunity to explain how well Blaupunkts are built, we are regrettably unable to demonstrate how good they sound.

For that, we invite you to visit the independent car stereo specialist near you who sells, services, and installs our products.

Check your Yellow Pages under "Automobile Radios & Stereo Systems."

Or call 1-800-237-7999, and we'll be happy to direct you.

Because frankly, while you may be surprised by how much goes into a Blaupunkt, you'll be even more amazed by what comes out.

Standard in VW and BMW (Europe), and worldwide in Ferrari, Porsche, and Audi.

engineers might relax a bit.

Wrong.

Every individual component is tested before assembly.

Then tested again during assembly.

Then the finished product is placed on a computer stand and tested before shipping.

But even that isn't enough.

Spot checks at random during assembly subject units

have come to expect it.

Customers like you.

And customers like Lotus. Porsche. Audi. Rolls-Royce. Aston-Martin. Ferrari. Just to name a few.

But a more important reason is simply because that's the way they do things over in Hildesheim, West Germany.

Since 1932, when Blaupunkt introduced the first car radio to Europe, Blaupunkt has been obsessed with automotive sound.

It's hard to argue with the results.

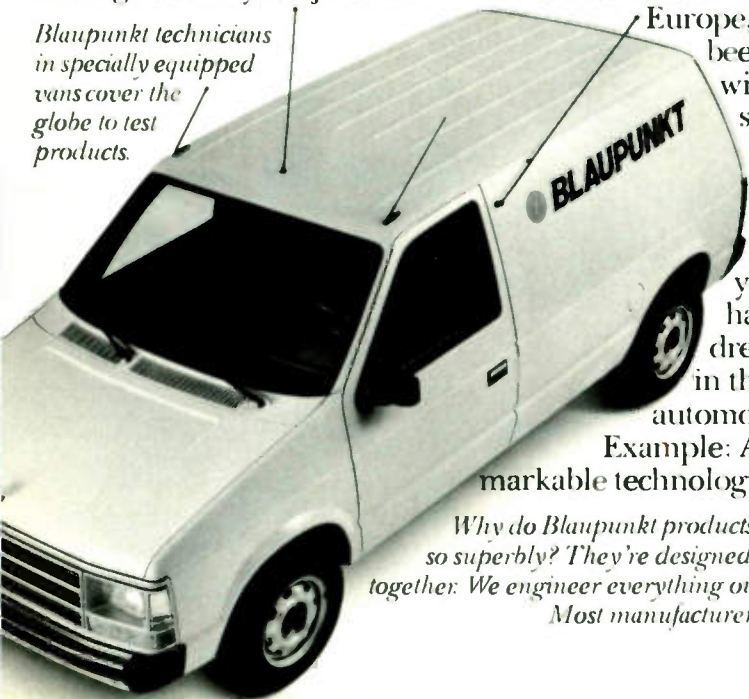
Over the years, Blaupunkt has earned hundreds of patents in the field of automotive sound.

Example: ARI, a remarkable technology that

Why do Blaupunkt products perform so superbly? They're designed to work together. We engineer everything ourselves. Most manufacturers don't.



Blaupunkt technicians in specially equipped vans cover the globe to test products.



● BLAUPUNKT

BOSCH Group



MORE DSP NOISE

I, TOO, HEAR HISS FROM THE YAMAHA DSP-1 [test report, September 1986] and have determined that it is not dependent on volume level. The hiss is audible to me during quiet passages of recordings. Therefore, your answer to R. Chris Pooser ["Letters," February] that he had his speakers turned up too loud is debatable. That you are unable to hear the hiss in "normal use" implies that audio discrimination is suspect or that your DSP-1 is more nearly perfect than ours. If the latter is the case, will Yamaha be able to correct the problem?

Bob Bruton
Torrance, Calif.

I RECENTLY BOUGHT A YAMAHA DSP-1 SIGNAL processor, largely because of your September 1986 review. I agree that the unit is very innovative and an important milestone, but you should have pointed out two things that might have influenced me not to buy it. First, the quality of the user's manual is a disgrace, and Yamaha ought to be ashamed of it. It looks as if it were thrown together the night before the product was shipped. Second is the noise level in the four ambience channels. Yamaha omits any noise figures from

its literature, and with good reason. The steady hiss in the ambience channels takes us back to the days of pre-Dolby tape. In my opinion, this flaw removes the DSP-1 from the ranks of audiophile equipment.

Joe Wharton
Belmont, Calif.

LIKE MR. POOSER, I, TOO, BOUGHT A YAMAHA DSP-1 after reading your review. The unit definitely produces an audible hiss that rises and falls continuously when no other input is present. It is, however, a fantastic piece of equipment.

B. J. Bertram
Bridgewater, Conn.

I READ THE FIRST LETTER TO THE EDITOR IN your February issue and discovered that it was almost exactly the same as the one I had been planning to write. I, too, bought a DSP-1 based on your comments and those of other magazines and agree that it is a good unit. However, from what I could determine from magazine reports, it is supposed to be as noise-free as a CD player, and \$900 is a lot to pay for something that isn't. Your February issue, by coincidence or whatever, has a double-page ad stating the wonders of the unit

and also implying that it is of CD quality. I am very skeptical of magazine reports, as I believe that since all these manufacturers run ads in the magazines there are never going to be really truthful reviews of their products. I think the DSP-1 is the last thing I will ever buy based on the opinion of any magazine except maybe *Consumer Reports*.

Robert L. Fonkhauser
Enumclaw, Wash.

Editor Michael Riggs replies: Our answer to Mr. Pooser seems not to have been very clear. The point is not that the overall volume should be low but that the level of the ambience channels should be substantially lower than that of the main stereo channels. This is true of any surround processor and is the reason you typically need only a tenth to a quarter as much power for the effects channels as you need for the main channels. The best way to achieve the necessary attenuation is to turn down the level controls on the amplifiers feeding the ambience speakers, which will reduce the noise from the processing circuitry along with the signal, and use the volume control on the DSP-1's handset only to fine-tune the resulting balance. If you do this, you should hear no noise from the DSP-1 under normal listening conditions, except that which is present in the program material itself. This was our experience, which we



Sony just extended the range of

have confirmed with others who have used the unit.

Again, we did not try to cover up any flaw in the DSP-1's design. The signal-to-noise ratios for all channels are listed in the data accompanying the review. The figures for the main channels are superb by any standard, and though the result for the ambience channels is about 25 dB poorer, we did not find this to be a practical limitation in ordinary use. Finally, the review does state that the instruction manual is inadequate.

I never know quite what to say when someone accuses us of being biased by advertising: How do you prove that you're not on the take? We do not sweeten the reviews of advertisers' products, and we regularly report on products manufactured by companies that do not advertise at all. In fact, the editors do not know who will be advertising in an issue when they are working on it. When we find problems, we point them out, but most of today's equipment is pretty good. I do not, by the way, consider Consumer Reports a reliable guide to the performance of audio and video equipment or, for that matter, much of anything else. (Ask a photography buff what he thinks of his evaluations of photo gear.) Its rating system is at best too simple-minded to be genuinely useful and at worst rather misleading.

CD OBSOLETE?

ISN'T IT TRUE THAT DAT HAS ALREADY rendered the Compact Disc obsolete as a music reproduction medium? DAT offers the convenience of the cassette and the fidelity of the Compact Disc with the great advantage over the CD of enabling recording as

well as playback. So why is DAT being denied to American consumers? And why aren't American audio publications taking a more aggressive stance in favor of DAT, which is clearly and unquestionably superior to the CD from the consumer's point of view? Could it possibly be because all of the advertisers in audio publications have invested very heavily in the Compact Disc?

D. A. Ward

Lubbock, Texas

DAT is not being "denied" to American consumers—at least, not yet. The system was just introduced in Japan in March, and it always takes at least a few months for new stuff to make its way to the U.S. market. We have taken a strong stand against the pending legislation that would cripple DAT machines imported into this country (see "Front Lines," April and May, and "Currents," April). On the other hand, we do not think that DAT makes CD obsolete. The Compact Disc still provides greater durability (CDs don't wear out) and faster access than DAT. The other drawback to DAT, at least at present, is that no high-speed duplicators are available, which makes it impractical as a medium for prerecorded music. This situation undoubtedly will change, but for the moment, that's the way it is. We see DAT complementing CD in much the way that the cassette complemented the LP. Our position on DAT is independent of what our advertisers might happen to think about it, but in any case, the companies selling DAT recorders will be the same ones who make CD players.—Ed.

CD MARKETING MADNESS

I AM BAFFLED BY DG AND LONDON'S SYSTEM OF marketing CDs. DG started a Mahler cycle with Claudio Abbado and then dropped it in favor of starting new cycles with Giuseppe Sinopoli and Leonard Bernstein. They issued two items from Bernstein's Beethoven cycle with the Vienna Philharmonic (Symphonies Nos. 3 and 6) on CD, but no more. Worst of all, London has not made Solti's Beethoven cycle available on CD, even though there is obviously a large market for Solti and the CSO. Can you tell me if I'll ever be able to enjoy the complete Abbado/Mahler and Solti/Beethoven cycles on CD?

Paul Jackson

Fountain Hills, Ariz.

We understand that the Beethoven Ninth from Bernstein and the Vienna Philharmonic is due to come out soon on a DG Compact Disc (it has already been released in Japan). The Solti/Chicago Beethoven cycle is a superior one, and we second your motion that London release it on CD. As for Abbado's Mahler, Symphonies Nos. 1, 3, 4, and 7 are available on CD. Yet to be recorded are Nos. 8 and 9 and Das Lied von der Erde. We are told by DG's New York office that we can expect to see the remaining Mahler Symphonies from Abbado (i.e., Nos. 2, 5, and 6) reissued on CD sometime in 1988.—Ed.

Letters should be addressed to The Editor, *Hi-Fi* 1175, 825 7th Ave., New York, N.Y. 10019. All letters are subject to editing for brevity and clarity.



your music.

Our new UX tapes deliver higher highs, lower lows and wider dynamic range.

If you're going to listen to music at all, you may as well get it all. No matter how high or low, how loud or soft. Captured so faithfully that trying one of these new tapes at least once is something you owe yourself. And your music.

Each of these four new UX tapes represents the kind of advancement of music reproduction you've come to expect from Sony. UX-ES, for instance, offers the best frequency response of any Type II tape we've ever formulated. Yet UX-PRO actually goes one better with a ceramic tape guide that yields the most incredibly quiet tape housing Sony has ever produced.

Sony UX tapes. Now when a musician really extends himself, so will your tape.

SONY
THE ONE AND ONLY.



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THE BEST HANDLING CAR STEREO.



There's a world of difference between driving a car hard and a car that's hard to drive. Imagine entering this sweeper fumbling for the right gear because of a notchy shiftgate. That's what using the typical car stereo is like.

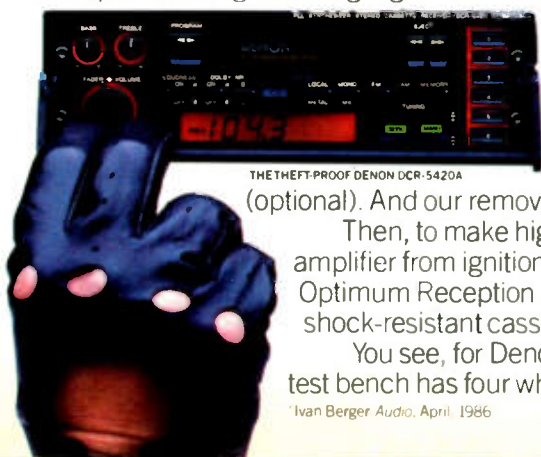
You'd think it was designed by people who take the bus to work.

In dramatic contrast, Denon's human engineering is "about the best I have yet run across."* To earn such praise, we grouped the controls by function, gave them tone confirmation, and made them identifiable by touch. Our face plates look so much like original equipment, they can even be made to match the dashboard lights (optional). And our removable, theft-proof DCR-5420A protects both your car and your car stereo.

Then, to make high fidelity even more road worthy, we isolated our Non-NFB Class A amplifier from ignition noise. We improved our quartz synthesis tuning with the Denon Optimum Reception System. And built an all new shock-resistant cassette mechanism.

You see, for Denon the ultimate test bench has four wheels.

*Ivan Berger Audio, April, 1986



THE THEFT-PROOF DENON DCR-5420A

DENON

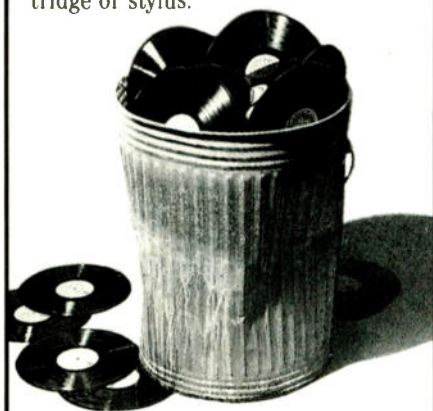
Finally, car audio as good as your car.

Denon America, Inc. 27 Law Drive, Fairfield, NJ 07006

Needle wear... By the time you hear it, your records are ruined.

With record companies expected to reissue less than 10% of existing LP's, it's more important than ever not to let a worn needle ruin your records.

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Purchase a V15 V-MR cartridge and earn a \$25.00 cash back rebate. A V15 V-B or V15 V-P qualifies for a \$20.00 rebate. Plus, you receive \$50.00 in coupons good on purchases of Shure replacement needles.

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Cartridge purchased (check one) HF

V15 V-MR V15 V-B V15 V-P

Offer valid only on purchases between March 1 and May 31, 1987. Requests must be postmarked by June 15, 1987. See nearest Shure dealer for complete details.

SHURE®

Fading is said to keep the woofers operating at controlled levels when the system is faded front-to-rear. Additional circuitry monitors speaker-cone excursion at high listening levels to forestall impending amplifier overload and the accompanying distortion. A new head unit will be available this fall with improved ergonomics, electronic volume control (with remote capability), and stereo AM reception.

A CD player is offered as a *factory-installed* option on Town Cars equipped with the Ford/JBL system, a first for the domestic car industry. The player is installed below the radio and mounted to minimize its sensitivity to shock and vibration.

At this writing, Ford is test-marketing built-in VHF television sound reception in one of its regular "premium" head units. We know of at least one other manufacturer, Proton, that includes this feature in a car radio. The prospect of television sound in the car is of more than passing interest to TV advertisers.

Not to be outdone by its two larger rivals, Chrysler called on the know-how of Infinity Systems, another prestigious American loudspeaker manufacturer, in designing an

optional system matched to the acoustic characteristics of three of the company's 1987 models: The Chrysler New Yorker and the virtual body-type twins, the Chrysler LeBaron GTS and Dodge Lancer. The system is biamplified, with crossovers dividing the signals among the four Infinity bass/midrange drivers and four dome tweeters. The tweeters are driven by the head unit's built-in amplifier, while the bass/midrange units are driven by individual self-contained amplifier modules. As in the Ford and GM systems, electronic equalization is used to achieve balanced response and effective imaging for each body style. Chrysler plans to make the system available in additional models and is investigating the possibility of offering a CD player.

The Big Three's foray into high-end autostand systems is a significant challenge to the aftermarket suppliers. Designing a system around a known acoustical space, one in which the listening positions are essentially fixed, is an advantage for the auto makers. Expect to see more aftermarket systems and components designed with the acoustics of particular cars (or other vehicles) in mind.

LENSMANSHIP

MINOLTA HAS APPLIED ITS EXPERTISE IN lenses to its new Master Series C-3300 VHS-C camcorder. The Multi-Dimensional Autofocus System found in the C-3300 comprises a compact 6X power-zoom lens and a phase detection system based on the one used in the company's 35mm autofocus SLR cameras. Unlike a conventional autofocus system, which gauges distance from the reflections of transmitted infrared beams, Minolta's relies on a through-the-lens (TTL) technique: The image formed by the camera's lens is used to determine the focus. Objects can be focused from the lens surface to infinity, and the system can automatically switch from a narrow to a wide focus area to track a moving subject. The 1/2-inch CCD image sensor automatically calculates the proper exposure by measuring the light levels of both the entire image and the central portion of the image. And the automatic white-balance system is claimed to adjust for fluorescent as well as normal lighting. The settings of both the exposure and white-balance can be locked, allowing creative shots under a different set of conditions.

Two HQ techniques are used to improve recording quality: extended white-clip level (for sharp edges) and detail enhancement. The electronic viewfinder displays short "messages" rather than indicator lights to supply camera status information.

The remarkable thing about Minolta's AF system is its ability to work through converter lenses. There are two available for the



MINOLTA'S NEW CAMCORDER HAS AN ADVANCED OPTICAL SYSTEM.

C-3300: the Tele-Converter LT-3300, which increases maximum zoom from 54mm to 81mm (equivalent to 450mm on a 35mm camera), and the wide-angle LW-3300, which sets the zoom lens to its widest position and provides a 5.85mm focal length (32mm on a 35mm camera). Both converters require Accessory Base AB-3300 for attachment.

The C-3300 is otherwise full-featured, with VCR transport controls, audio and video inputs and outputs, and supplied accessories, including a one-hour rechargeable battery, an RF adapter, a full-size VHS cassette adapter, and a shoulder strap. Prices were not announced as of this writing. Minolta plans to offer both a full-size VHS and an 8mm camcorder that incorporate a similar optical system. For more information, contact Minolta Corp., 101 Williams Dr., Ramsey, N.J. 07446. ■

TIDBITS

DAT Flash. Major Japanese audio manufacturers have started announcing their first DAT machines. Although the product introductions are, so far, *for the Japanese market only*, they have stimulated a flurry of protectionism-inspired anti-DAT lobbying in Congress and a misleading and tasteless protest against the system on the Grammy awards show.

The first detailed specs we've received for any of these units is for Sony's DTC-1000ES (¥200,000, about \$1,333 at 150 yen to the dollar), which probably will not appear in the U.S. with precisely the same features or model number. Measuring 18½ by 4 by 16½ inches and weighing 26½ pounds, the drawer-loading unit is surprisingly bulky considering the small cassette it uses and the ultraminiature prototypes I've seen at Sony headquarters. But it is packed with circuitry, as it uses separate analog-to-digital and digital-to-analog converters for each channel, with the latter driven by a four-times oversampling digital filter like the one used in Sony CD players. Sampling rate for line-input recording is 48 kHz, but the deck will record with 48- or 32-kHz sampling rates when taping through its direct-digital-dubbing input (a jack that probably will be deleted from any U.S. model). Playback—but not recording—of tapes made with a 44.1 kHz sampling rate is also possible.

As will most other DAT machines, the DTC-1000ES has many of the amenities familiar to users of analog cassette decks. Included are music-scan, blank-search, and external-timer functions. The cue/review feature will not produce a high-pitched squeal as on analog decks. Instead, the music will pass at double its original tempo but at normal pitch. And, in a feature new to home audio taping, the deck will allow the addition of automatic-cueing points to an already recorded tape.

Sony's specs are just about what you'd expect for a 16-bit digital tape recorder: frequency response from 2 Hz to 22 kHz, ±0.5 dB, harmonic distortion of 0.005 percent, wow and flutter below measurable limits, signal-to-noise ratio of more than 92 dB, and dynamic range of 90 dB. Sony also announced blank tape in 46-, 60-, 90-, and 120-minute lengths priced from ¥1,200 to ¥2,000 (\$8 to \$13.33) and a real-time software duplication system capable of making 50 copies simultaneously. A high-speed duplicator using contact printing "has passed the prototype stage and is now on its way to commercialization," says Sony.

Digital Disc Recording. After a couple of years delay, Compusonics (Palo Alto, Calif.) has released its home digital-disc recorder, the DSP-1000. It records on a *nonerasable* computer optical disc similar to, but incompatible with, a Compact Disc (it's larger and comes in a protective caddy). The unit's principal technical claim to fame is its use of digital data compression to increase its recording time without sacrificing audio quality. In the normal stereo recording mode, called CSX4, storage capacity is extended about four times over the noncompressed

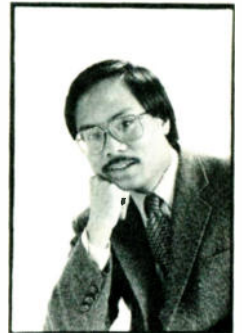
mode, for a maximum recording time of about an hour. In the CSX8 mode, bandwidth drops to 6 kHz, but more than three hours of mono recording is possible.

Compusonics actually calls the DSP-1000 a digital audio computer, and there are enough microcomputer, digital-memory, and other integrated circuits inside to fully stock several personal computers, as well as an array of digital input/output connections. This processing power is necessary not only for the data compression but also for the unit's extensive built-in editing capabilities. Unfortunately, the cost of the system (\$6,995 for the DSP-1000, \$89 at present for a blank optical disc) means that it will probably remain a technical curiosity, even for the semipro market, where I think the DSP-1000 would find its best home.

Gold-Plated CDs. Mobile Fidelity has issued its first Ultradisc (MFCD JS-1, a jazz sampler), a CD with a reflective layer of 24-karat gold instead of the otherwise universally used aluminum. The company says that the gold-plating process, developed jointly by Mobile Fidelity and an unnamed Japanese CD manufacturer, "produces a smoother, flatter, and consistently cleaner metallic disc. . . . Information is retrieved consistently, clearly, and accurately with minimal error correction required."

Well, the error correction may be "minimal," but the error rate I found for my virgin copy, although very good, is not the lowest I've encountered, and it is definitely not zero. After ten plays, the average number of error corrections performed per second was 5.62. The lowest block-error correction rate I've found for a disc of comparable playing time was 2.27 for a conventional CBS/Sony pressing of Bruckner's Symphony No. 3 (32DC-487, available only in Japan). Note, however, that these figures tabulate *corrections* and not *interpolations*, for which the player has to calculate missing data. With both these discs, and indeed with more than 90 percent of the nearly 650 clean and unscratched CDs I've tested, the interpolation rate is *zero*. All the data that's supposed to be there is decoded absolutely correctly. In other words, even with ordinary CDs, there is rarely any fudging by the interpolation circuitry, contrary to the paranoid fears of some audiophiles.

Another claim for the Ultradisc is less easily checked. Mobile Fidelity says that gold's "noncorrosive" (more correctly: noncorroding) nature will prolong the discs' lives. It is possible that in extremely hostile storage environments an aluminum reflective coating may degrade if there are holes in the lacquer layer protecting it. But recounts of error rates for aluminum-coated discs I acquired at the dawn of the CD era (late 1982) have shown no increase, despite their four years of storage in an environment not famed for its freedom from airborne contamination: New York City. A golden Ultradisc may look luxurious and have a low error rate, but I, for one, am not going to worry about disc corrosion. ■



B Y
D A V I D
R A N A D A



BASEMENT LISTENING ROOM

I'M THINKING ABOUT CONVERTING ALL OR PART OF MY basement into a listening room. Do you have any suggestions as to how to produce the best possible acoustic environment?

Arnold Spranger
Pasadena, Calif.

A room's dimensions, the reflective/absorptive characteristics of its surfaces and contents, and the listener's and the speakers' locations in relation to adjacent room boundaries will all have a significant effect on the quality of the sound reaching a listener's ears. This multitude of variables demands a certain amount of trial and error before things fall into place acoustically.

With respect to room dimensions, James Moir, in his out-of-print book "High Quality Sound Reproduction," suggests some preferred dimensional ratios that minimize standing-wave problems. For a smallish room, say 1,000 cubic feet or so, his suggested height to width to length ratios are 1:1.25:1.6; for a midsize room, 1:1.6:2.5; and for a large room, 1:1.25:3.2.

If you have the choice, there are two reasons to go for the largest room you can manage. A small room provides the least acoustic reinforcement of the bass (low-frequency reverb time is very short), meaning that your speakers will have to be driven harder to produce the same perceived level of bass as they could in a larger room. In addition, a large room allows a listener and the speakers to be reasonably distant from adjacent walls and from each other, a relationship that considerably enhances stereo imaging and naturalness. In that connection, it's almost always a good idea to minimize acoustic reflections in the speakers' immediate environment by the use of rugs, wall hangings, and the like. Ideally, the ceiling should be as high as practical and no room surfaces should be parallel to each other, but these are objectives impossible to achieve in a basement.

Here are some additional miscellaneous acoustic considerations: Interior dividing walls constructed of paneling nailed to studs will be fairly transparent to bass frequencies. This may cause the bass sound waves to behave as though they were being propagated into a much larger room, if they are not absorbed by plywood-panel resonances. If your basement room has cinder-block walls, you may get substantially stranger bass from a given set of speakers than you would in a frame-construction room with normal wall flexure. The typical basement tile floor is very reflective, so the sound will benefit from the use of rugs between the speakers and the primary listening area. Acoustic tile or, better yet, absorptive foam on the ceiling may also help reduce early-reflection coloration. Good luck!

IMPEDANCE RISE

I'VE ALWAYS WONDERED WHY A SPEAKER'S IMPEDANCE varies with frequency. Is there an electrical or physical reason for this?

Kenneth McClain
Concord, Mass.

Both. Like any other coil of wire, the voice coil of a speaker

has the electrical property of inductance, and the impedance of any inductance rises with frequency. Thus, the impedance of a speaker system usually starts going up somewhere around 400 Hz, unless the designer has taken steps to prevent it. There is another rise—to perhaps five times the nominal rated impedance—at the woofer's in-box resonant frequency. This comes about because of a phenomenon called "back voltage." When a woofer cone is getting a signal, the rapid shuttling movement of the voice coil in the magnetic gap causes it to act as a generator producing a voltage in opposition to the driving voltage. This counter-electromotive force produces an electrical effect that is identical to that caused by an increase of voice-coil impedance. (If the speaker voice coil is physically prevented from moving, there is no counter-EMF generated and no impedance rise.) When looking at impedance curves, keep in mind that an impedance rise at certain frequencies is not synonymous with an increase in output at those points.

PHONO-INPUT DAMAGE

THERE'S A SWITCH ON MY RECEIVER THAT SETS UP ITS single phono input for either a moving-coil (MC) or moving-magnet (MM) phono cartridge. Can I damage anything by accidentally playing an MC cartridge in the MM position, or vice versa?

Charles Wentworth
Pasadena, Calif.

In general, moving-coil cartridges have about one-tenth the output of moving-magnet types. This means that the preamplifier section must provide at least ten times more gain for an MC cartridge to achieve the same signal output at the same volume control setting. If an MC cartridge is fed to an MM input, the resulting signal will be weak and noisy because of insufficient amplification. Conversely, if an MM cartridge is fed to an MC input, the signal will be loud and (possibly) distorted because of preamp overload and impedance mismatch. In either case, nothing will be damaged except your sensibilities.

SPEAKERS FROM SCRATCH

AS AN ACCOMPLISHED CARPENTER, I'VE ALWAYS WANTED to try my hand at building my own speaker systems. However, there now seems to be little or no information available on do-it-yourself systems. Is there a publication that specializes in speaker construction?

Seymour Elias
Miami, Fla.

There's only one that I know of, and it's excellent. "Speaker Builder" is a quarterly whose mailing address is P.O. Box 494, Peterborough, N.H. 03458. Each issue includes several good design articles, theoretical discussions, and lots of advertisements for raw drivers, crossover parts, kits, and books. "Speaker Builder" is well worth its \$15 annual subscription rate to anyone who wants to get intimately involved in home speaker construction.

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

B Y
L A R R Y
K L E I N

Yamaha's new FFT speakers do the same for your ears.



Before you listen to a pair of FFT Series™ speakers, close your eyes. Yamaha's about to take your favorite music into a whole new dimension.

A sonic dimension of greater acoustic imaging, creating a soundstage purely and precisely articulated. Where instruments and voices are clearly defined in their own space, yet always in proper balance.

You hear the music the way it was meant to be heard: Horns stage left. Percussion stage rear. The singer's voice center stage and up front. And each distinguishable from the other.

You also hear more of each instrument's true range: Violins are rich and full. A flute riff ascends

the scale. The acoustic bass thumps its lowest possible note.

The imaging becomes so dimensional, you'll swear you can "see" the performers on stage. While the emotions the music contains become even more powerful.

A truer picture of what you're hearing emerges, because we had a truer picture of the FFT Series in its design stage. A computer program called the Fast Fourier Transform (FFT) made this expanded soundstage and greater musicality possible. And helped our U.S. engineers create speakers using the most sophisticated drivers, crossover networks and cabinet design. All integrated for optimum performance.

What's more, each model has the power handling capacity to meet the expanded dynamic range of today's digital audio sources.

So listen to the new Yamaha FFT Series at any authorized Yamaha FFT dealer today. Discover how our world-renowned expertise in the creation and re-creation of fine music has been applied to the FFT Series. Then close your eyes, and watch your music come alive.

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YAMAHA 1887-1987





B Y
R O B E R T
L O N G

MUSIC AND METERS

IN THE MARCH "TAPE TRACKS," IN WRITING ABOUT how easily tape frequency-response curves can be misinterpreted when they're made with companding noise reduction (like Dolby or DBX) turned on, I briefly touched on the ever-confusing subject of how the overload characteristics of tape correspond to the dynamic-range requirements of music. I find many home recordists misunderstand this relationship in ways that can adversely affect their recordings.

The subject wasn't so important when open-reel tapes were the norm, but the cassette medium's dynamic range and bandwidth—inherently limited by its slow transport speed and narrow tracks—have evolved to fit music's requirements with far less "slop." A few dB of dynamic range or one octave of bandwidth one way or the other from an ideal music/tape match, and you can be in audible trouble.

You can expect, however, that most musical energy will fall in the midrange—say, for the purpose of this discussion, between 100 Hz (approximately the fundamental of the G an octave and a half below middle C) and 1 kHz (about the pitch of a soprano's high C, two octaves above middle C). If you record only acoustically originated music of average spectral properties, you can usually expect the energy above 2 kHz or so to drop off by roughly 6 dB per octave. This range will be full of overtones from the midrange fundamentals, and each of those overtones must be accurately reproduced if tone color isn't to be altered; but the farther above the fundamental frequency the overtone lies, the weaker it tends to be. However, bring a snare drum or a solo trumpet or bells into a prominent place in this acoustic picture, and the sonic demands may easily pierce that sloping 6-dB-per-octave ceiling. Add a synthesizer, which can generate levels of high-frequency energy that acoustic resonances alone are incapable of creating, and all bets are off.

Our ears' hypersensitivity to sounds between about 3 and 10 kHz, as compared to those in the midrange, explains why recordists have so much difficulty grasping the degree to which music's spectral requirements usually roll off toward the top end. The resulting misapprehension often takes the form: "Why does everybody talk about tape response at -20 dB when nobody records down there?" On the contrary, *everybody* "records down there," even when the meter is reading 0 dB or above.

Let me explain. With typical classical (and most other) music and a gain setting that gives a meter reading equivalent to +2 dB DIN or so on peaks (which is near the midrange overload point of typical tapes in typical decks), during a peak there will be considerable energy in the midrange frequencies, but nothing approaching those levels toward the top end of the frequency range, where response is most critical for subjectively good sound. A spectrum analyzer applied to such a signal may show frequency components reaching around 0 dB in the midrange. But it typically will display nothing higher than -10

dB from around 5 kHz on up and nothing higher than -20 dB above 10 kHz. The majority of music does, in fact, fit within this "envelope."

It's no accident that tape overload curves generally follow the envelope as well. Budget tapes often are poorly endowed toward the top end; ultrapremium tapes may give you a few dB of "unneeded" headroom in the range around 5 kHz; and Dolby HX Pro will usually greatly extend high-level high-frequency response as well. But the stereo cassette medium matches most types of music with little headroom to spare. The name of the game is to record all frequency bands as high as possible short of overload so that noise is as far below the signal as possible.

The exceptions to our level-vs.-frequency model are ones, like some pop music, that may overstress the deep bass as well as the top end (although the former is less likely). With most metering, this means that you must know the properties of your input signal if you're to know when a 0-dB reading means "A-OK" and when it means "incipient overload." A cannon shot or a bass-drum wallop—just like a trumpet transient, a clatter of bells, or a clash of cymbals—could drive the tape into overload without registering as such on the meters. (Off-tape monitoring on a three-head deck will help, but it requires utter concentration, and not all recordists have such decks.)

Real-time spectrum analysis can help. You still have to know how each frequency band relates to the tape's overload curve, but at least you can see on a moment-to-moment basis whether the maximum energy lies in the safe midrange or in the potentially overloadable fringes. JVC built spectrum analysis into a consumer deck for this reason. Its prompt disappearance suggests that the buying public failed to perceive the worth of the feature.

A number of companies have tried a different (and less costly) approach: equalized metering. The idea is to boost the deep bass and treble so that all frequencies will register close to 0 dB (or whatever constitutes maximum recommended level) when they are high enough to possibly cause tape overload. One equalization curve can't be ideal for all tapes, but metering the signal after the recording EQ has been applied is a good approximation.

Unfortunately, old habits die hard. Flat meter response was a characteristic of the old, mechanical VU meters, which were a home-recordist's nightmare compared to the instant, accurate response of modern light-emitting diode (LED) or similar displays. But because they were "professional," moving-needle meters have acquired a mystic—and totally undeserved—reputation as being somehow better than the consumer alternatives. As a matter of fact, many professionals now use peak-reading LED displays of one sort or another, often in conjunction with conventional VU meters. *They* use whatever works best; but home recordists (or those who design decks for us) can't seem to accept that principle. If we did, we'd insist on equalized peak metering. ■

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T E S T R E P O R T S

We lead off with the

Mission PCM-4000—a

high-end Compact Disc

player based on a souped-

up 16-bit, four-times

oversampling Philips

chassis. Also reviewed

are the A-06 integrated

amplifier, a worthy

representative of AR's

new electronics line,

and the Akai VS-525U

VHS Hi-Fi VCR, which has

a stereo amplifier of its

own built in. Reports on

Sony's outstanding

CDX-R88 car receiver/
CD player and Zapco's

S-80 car power ampli-

fier appear at the end of

this month's special car

stereo section. ▶



DAVID HEDRICH

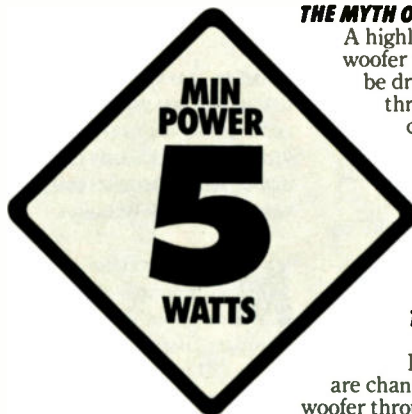
REPORT PREPARATION SUPERVISED BY MICHAEL RIGGS, DAVID RANADA, CHRISTOPHER J. ESSE, ROBERT LONG, AND EDWARD J. FOSTER. LABORATORY DATA (UNLESS OTHERWISE INDICATED) IS SUPPLIED BY DIVERSIFIED SCIENCE LABORATORIES.

THE CERWIN-VEGA SCHOOL OF DRIVER EDUCATION.



THE SUBWOOFER, EXPLAINED.

In a typical car stereo system, you hear too much of the road and not enough bass. A Cerwin-Vega car subwoofer (a separate bass speaker, simply mounted in the trunk, or for that matter, anywhere else in your car) will overcome the inherent drone, rumble and noise of the road and give you powerfully deep bass and full, clean sound.



THE MYTH OF THE MEGA-AMP.

A highly-efficient Cerwin-Vega car subwoofer with a massive magnet assembly can be driven with as little as 5 watts of power through a single amplifier and a passive crossover.

On the other hand, if you live for loud, one of our car subwoofers can handle multiple amps and up to 300 watts of power.

LOOK. IN THE TRUNK. IT'S A SUBWOOFER.

A Cerwin-Vega car subwoofer is easily mounted in your trunk or rear deck, behind the rear seat or in a separate enclosure. This goes for *any* car. Meaning, you don't have to drive a new car, a slick car or a like-totally-awesome car to enjoy great sound.



TAKING THE LOW ROAD.

Bass frequencies are channeled to the subwoofer through the CSX-110 passive crossover. A complex little device that sends all frequencies above 110Hz to your mid-ranges and tweeters, while all low frequencies, from 110Hz down to 30Hz, are sent to the subwoofer.



MEET THE LOUD FAMILY.

You can hear the Loud Family of Cerwin-Vega car subwoofers (six models are available, with either single or dual voice coils) through selected car stereo outlets and better custom installation shops nationwide.

Class dismissed.



Cerwin-Vega!

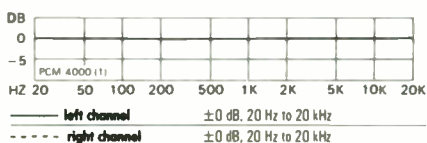
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Cerwin-Vega Canada: 2360 Midland Ave., Unit 21/Scarborough, Ontario M1S 4A9
Cerwin-Vega Europe: Skanderborgvej 71/DK-8680 Ry, Denmark

Mission PCM-4000 Compact Disc player

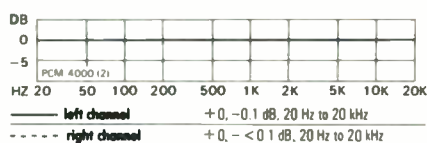


All data were obtained using the Sony YEDS-7, Technics SH-CD001, Philips 410 055-2, and Philips 410 056-2 test discs

FREQUENCY RESPONSE WITHOUT DE-EMPHASIS



FREQUENCY RESPONSE WITH DE-EMPHASIS



CHANNEL SEPARATION (at 1 kHz) 106 3/4 dB

CHANNEL BALANCE (at 1 kHz) ± 0.1 dB

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

without de-emphasis 111 1/2 dB

with de-emphasis 113 3/4 dB

HARMONIC DISTORTION (TMD + N; 40 Hz to 20 kHz)

at 0 dB $< 0.01\%$

at -24 dB $\leq 0.021\%$

IM DISTORTION (70-Hz difference; 300 Hz to 20 kHz)

0 to -10 dB $< 0.01\%$

at -20 dB 0.011%

at -30 dB 0.043%

LINEARITY (at 1 kHz)

0 to -50 dB no measurable error

at -60 dB -0.1 dB

at -70 dB -0.2 dB

at -80 dB -0.3 dB

at -90 dB -3.5 dB

TRACKING & ERROR-CORRECTION

maximum signal-layer gap > 900 μ m

maximum surface obstruction > 800 μ m

simulated-fingerprint test pass

MAXIMUM OUTPUT LEVEL 2.08 volts

OUTPUT IMPEDANCE 200 ohms

DIMENSIONS: 17 BY 3 1/2 INCHES (FRONT), 1 1/2 INCHES DEEP PLUS CLEARANCE FOR HEAT SINK AND CONNECTIONS. PRICE: \$700. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: MADE IN BELGIUM FOR MISSION ELECTRONICS, ENGLAND; U.S. DISTRIBUTOR: MISSION ELECTRONICS CORP., 5985 ATLANTIC DR., UNIT 6, MISSISSAUGA, ONT. L4W 1S4, CANADA.

MISSION ELECTRONICS IS ONE OF THOSE comparatively small, performance-oriented firms that have entered the Compact Disc arena by designing electronics for CD transports made by industrial giants—usually meaning, as here, Philips of the Netherlands. Mission is quick to point out one difference: It buys transports with some customization by Philips and then builds *onto* them, while most competitors buy finished players and then strip off and replace what they don't like, which may engender compromises Mission is able to avoid.

It may interest American readers to learn that three of the major players at this game are located near each other in Cambridgeshire, England. When we recall how audio companies sharing similar ideas and products have clustered around our own Cambridge, Massachusetts, the coincidence seems still more striking. The nearby competition must be a heady stimulant, because Mission has established an even more secure niche among the CD avant-garde than it already had done in analog electronics and loudspeakers. It now has two CD models: the PCM-4000 reviewed here and the PCM-7000 (which has a remote handset with volume control, four power supplies instead of three, and a larger power transformer, among other features).

To make a PCM-4000, Mission buys from Philips a CD transport and the associated digital decoding chips, including a four-times oversampling digital filter. The digital-to-analog converter integrated circuit is a specially selected Philips part containing a separate 16-bit converter for each channel. Most of the rest of the player is supplied by Mission: the control circuitry, the three power supplies, and a specially designed post-converter output filter. This last contains an ultrasonic comb filter providing further attenuation of the artifacts of the original sampling process and of the digital filter's oversampling—a measure that should help minimize the chances of inducing intermodulation distortion in your amplifier.

The 4000's control scheme is quite simple, considering the features it offers, but the player doesn't wear its capabilities on its sleeve. That is, the gray-on-gray main transport buttons and the arrangement of those that supply secondary functions aren't ergonomically self-explanatory; you must learn how to operate them, rather than rely on their arrangement and markings. Once you do so, however, their behavior is beyond reproach.

When you insert a disc and allow the player to read the table of contents, the display lights up with the total number of tracks and the total playing time. When you start play (or if you go directly into the play mode by pressing the transport button with the drawer open), the display shows current track and index numbers plus time. The latter can be stepped between time elapsed from the beginning of the current track, total playing time of the disc (or of the prepro-

grammed sequence), and time remaining to the end of the disc or sequence.

If you have an indexed disc, you can program by index number as well as by track number—a highly valuable feature for some purposes, and one that is shared by very few players. If you use the preprogramming to play contiguous bands (say, one multi-movement piece from an anthology disc), playback appears continuous and seamless, which isn't true of all programmable players, some of which add small but distracting noises between tracks. There are 20 memory slots, each capable of holding one track or index number. Each index number also requires a track number for a full "address," using two memory slots for each index, so you can memorize only as many as ten index cues. But you can intermix index points with full-track selections in your programmed sequence, permitting between ten and 20 selections, for overall programming flexibility at least as generous as that of any player we've tested to date.

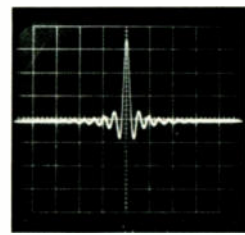
You can move from one track to another by using NEXT and PREVIOUS. The scan mode (which also can be used, without audible output, when the player is in pause) speeds up progressively if you continue to press a scan button. We judge initial scan speed to be about three times playback speed. After two seconds or so, the scan goes into high

gear; then it goes into overdrive, whipping across the record with no audible output until you release the button. The repeat controls enable repetition of the whole disc or of a programmed sequence.

On the Diversified Science Laboratories' test bench, audio performance is exceptional in every respect, putting the PCM-4000 in the champion class. A very tiny ripple can be detected at the top end of the frequency response, but it's too small (a few hundredths of a dB, at worst) to show up in our response curves or even to warrant documentation in our numerical characterization of them. You won't obtain more exemplary response from any other CD player. The player also has the interesting characteristic, shared with another recent Philips-based player we have tested, of producing too *low* an output when reproducing a -90 -dB 1-kHz test tone (which comes out too high with most other players) in DSL's linearity test. As before, we chalk this up to non-monotonicity in the dual digital-to-analog converter chip (despite its being a selected part) or perhaps to a numerical error in the digital-filter mathematics.

Listening quality, nonetheless, is superb. But the question posed by Mission's design is whether the listening quality is audibly superior to that of other excellent CD players. And here we can supply no clear consensus.

IMPULSE RESPONSE



All listeners agreed to the excellence of the sound, but not to its clear superiority over other models. Perhaps that should be expected when the measurable differences between fine models are so minute—and, with that in mind, perhaps "superb" should be good enough to please anyone.

But even if you're not among those who can discover some ineffable "extra" in the PCM-4000's sound, there are plenty of reasons to buy (or at least audition) it. Not only is performance outstanding, but so is programming flexibility. In both respects, we're satisfied that you can't do much better among today's models, and you probably won't be able to for some time to come. ■

T E S T R E P O R T S

Acoustic Research A-06 Integrated amp



DIMENSIONS: 17 BY 3½ INCHES (FRONT), 12½ INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. **AC CONVENIENCE OUTLETS:** TWO SWITCHED (100 WATTS MAX. TOTAL). **PRICE:** \$440. **WARRANTY:** "LIMITED," TWO YEARS PARTS AND LABOR. **MANUFACTURER:** MADE IN TAIWAN FOR ACOUSTIC RESEARCH, 330 TURNPIKE ST., CANTON, MASS. 02021.

FOR ACOUSTIC RESEARCH, 1986 MARKED A Freentry into electronics. Almost a generation ago, its first component line was extremely successful because it represented both excellent performance and good value—thanks to competent and, in

some cases, truly innovative design and the avoidance of frills. But those models arrived at a time when it had become increasingly difficult for American-made electronics to compete with equipment from the Far East, and eventually AR had to drop out. Now it is

RATED POWER	17.8 dBW (60 watts)/channel	
OUTPUT AT CLIPPING (at 1 kHz; both channels driven)		
8-ohm load	18.9 dBW (78 watts)/channel	
4-ohm load	20.7 dBW (117 watts)/channel	
DYNAMIC POWER (at 1 kHz)		
8-ohm load	19.5 dBW	
4-ohm load	21.3 dBW	
2-ohm load	23.1 dBW	
DYNAMIC HEADROOM (re rated power; 8-ohm load)	+1.7 dB	
HARMONIC DISTORTION (THD; 20 Hz to 20 kHz)		
at 17.8 dBW (60 watts)	≤ 0.046%	
at 0 dBW (1 watt)	≤ 0.014%	
FREQUENCY RESPONSE		
	+ < 1/4, - 1/4 dB, 20 Hz to 27.1 kHz	
	+ < 1/4, - 3 dB, 13 Hz to 102 kHz	
RIAA PHONO EQUALIZATION		
fixed-coil	+ 1/4, - 1/2 dB, 20 Hz to 20 kHz. -21 dB at 5 Hz	
moving-coil	+ 1/2, - 3/4 dB, 20 Hz to 20 kHz. -24 1/2 dB at 5 Hz	
SENSITIVITY & NOISE (re 0 dBW; A-weighting)		
	sensitivity	S/N ratio
aux input	16.7 mV	83 1/4 dB
fixed-coil phono	0.31 mV	77 dB
moving-coil phono	24 μV	74 3/4 dB
PHONO OVERLOAD (1-kHz clipping)		
fixed-coil phono	205 mV	
moving-coil phono	16 mV	
INPUT IMPEDANCE		
aux input	17k ohms	
fixed-coil phono	48k ohms, 125 pF	
moving-coil phono	100 ohms	
OUTPUT IMPEDANCE (to tape)		
from aux input	1,100 ohms	
from phono inputs	1,800 ohms	
DAMPING FACTOR (at 50 Hz; re 8 ohms)	120	
CHANNEL SEPARATION (at 1 kHz)	63 3/4 dB	

back, thanks to a contract for assembly in the Orient, and with much the same objectives. This gives the company the opportunity to call the shots from its U.S. headquarters but still remain competitive.

The most obviously proprietary element in the new line is the back-tilted front panel that all new AR electronic components share. Along the bottom is a setback that aligns with the tops of other AR components when they are stacked. At the left end of this setback, the A-06 and most other units have a headphone output. All have a flush right side and a small overhang at the left. Thus, they present a pleasantly craggy look when stacked, but their appearance may not mix very well with that of other brands.

This reinforces another reason for choosing multiple AR components: The remote-control system—which can be used for the A-06 via a multipin connector on the back panel (but which wasn't included in our test)—is centered in the T-04, the only tuner currently in the series. In every other respect, however, the A-06 is interchangeable in function with other medium-price integrated amps that include video switching.

The video portion of the A-06 consists of hookups for two video components, labeled VCR-1 and VCR-2. The first has recording connections for video and stereo audio and playback connections for the audio only; the second offers video and audio playback only. You can thus dub videotapes onto VCR-1 from VCR-2 (which would be equally appropriate for a Laserdisc player or stereo-TV tuner), but not in the opposite direction. And you can listen to the sound from either VCR input but not record sound from the A-06 onto videotape (to overdub background music onto your home videotapes, say, or to capture simulcasts via an FM tuner connected to the amp).

There are connections for two audio-only recorders as well. Each can record from any source (including the other audio recorder and the video audio) for which the A-06 has switching. But you can't record on both decks simultaneously, nor can you monitor the output of the recording deck, even if it has a separate playback head. This is, in short, not a model designed for those with complex taping requirements (whose needs AR says it is addressing in models now under development); rather, it offers more-than-minimum facilities and straightforward switching for those with relatively simple requirements in both audio taping and video switching.

The large volume knob, the selector buttons, and a "mute" that attenuates output by approximately 20 dB are on the right end of the front panel. Selecting a source lights up a green indicator above the button; the power switch, at the left, is encircled by a similar green pilot. The remaining controls are hidden behind a door that swings down at the touch of a finger. There you'll find an on/off switch for the back-panel speaker terminals (designed to accept bared wires, spade lugs,

or banana plugs for one speaker pair), Tape-1/Tape-2 and VCR-1/VCR-2 selectors, a mono/stereo mode switch, the bass and treble controls, a tone-control defeat, and the balance control.

On the Diversified Science Laboratories' test bench, the tone controls proved exceptionally gentle in action. The BASS shelves the response at about ±6 dB below 100 Hz, while the TREBLE does likewise above 10 kHz. Neither the BASS nor the TREBLE has an appreciable effect above or below 1 kHz, respectively. If you need something more extreme or complex, you can connect an outboard equalizer, replacing a pair of back-panel pre-out/main-in jumpers.

The phono response is quite flat over most of the audio range and very similar in both the fixed-coil and moving-coil modes. In both, there is a slight (about 1/2-dB) rise over a broad treble range and a somewhat more limited one in the bass, followed by a sharp infrasonic rolloff. As a result, attenuation in the 5-Hz range (where warps work their worst woes) is about 20 dB. Overall response, as measured through a high-level input, is good but not quite flat, and accounts for most of the bass rise discernible in the phono-response curves, although not for the treble rise.

The power figures not only surpass the rating by a comfortable margin but continue to rise as the load is reduced, indicating reliable behavior with speakers whose impedance is unusually low at some frequencies (or, although the output connections don't allow for it, with paralleled speaker pairs). Power is therefore available on a relatively unrestricted basis, given the A-06's moderate price and generally unpretentious overall approach.

And "unpretentious" is certainly a key characterization. For the buyer who doesn't want to settle for a run-of-the-mill receiver but isn't ready for high-end esoterica either, the A-06 is certainly a viable alternative as the central building block of a new audio-video system. For some, the radical styling may give pause; for others, it will be a considerable plus. Simple though it is in concept, the amp is utterly distinctive in this respect and offers—finally—an escape from the wilderness of squared-off black or brushed-aluminum boxes into which componentry has wandered. ■▶

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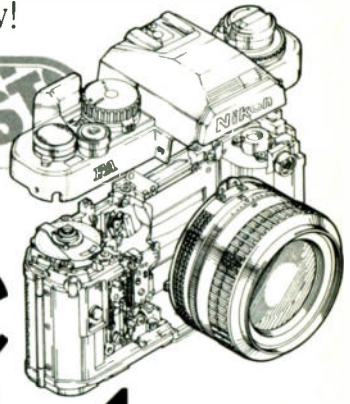
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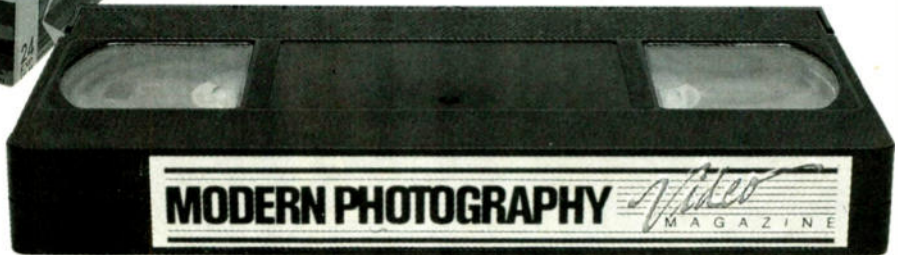
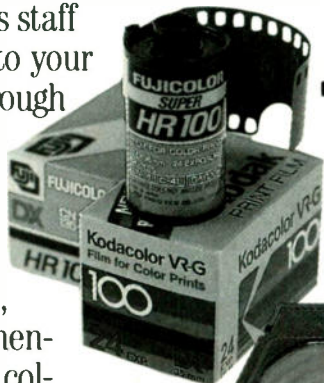
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Amazing but true: people can spend hours choosing a car receiver — and then pay no attention to the speakers. Obviously, they've never heard what a difference really good car speakers can make. They haven't experienced the muscular punch of deep bass or the breathtaking intricacy of clear treble.

In short, they've never heard AR car loudspeakers.

At some companies, speakers are an afterthought. At AR, they're a way of life. This attitude is amply demonstrated in the superior power handling of our liquid-cooled tweeters. It's evident in AR's preference for full crossover networks. It's expressed in every mica-filled polypropylene driver, every solid steel frame, every wire-mesh grille. AR even created a car amplifier to make these speakers sound their best.

AR car speakers range from most affordable to most luxurious. They're easy to install. But once they're in, you'd no sooner change them than change your car.

Acoustic Research. We speak from experience.



Akai VS-525U VHS Hi-Fi VCR



DIMENSIONS: 17 1/2 BY 4 1/2 INCHES (FRONT), 15 INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. **PRICE:** \$429. **WARRANTY:** "LIMITED," ONE YEAR PARTS, 90 DAYS LABOR. **MANUFACTURER:** AKAI ELECTRIC CO., LTD., JAPAN; **U.S. DISTRIBUTOR:** MITSUBISHI ELECTRIC SALES AMERICA, INC., AKAI DIV., 225 OLD NEW BRUNSWICK RD., PISCATAWAY, N.J. 08854.

AKAI'S VS-525U IS ONE OF THE LEAST expensive VHS Hi-Fi decks on the market, but it is equipped with what we consider to be the most useful VHS features, including the HQ (High Quality) recording system that is now becoming almost universal among VHS decks. And it has one feature we've never seen before in a VHS unit: a built-in stereo amplifier with a power rating of 10 watts (10 dBW) per channel.

Admittedly, the amplifier is rated only over a range of 90 Hz to 20 kHz and at 0.9 percent THD (which isn't exactly high-end audio quality), but it is useful in adding stereo capability to an existing mono TV set or monitor. To that end, the VS-525U's tuner will decode stereo television broadcasts (including the SAP channel) and can be preset to receive any 32 of 107 VHF, UHF, and cable channels. You can therefore use the VCR's tuner and power amp to "convert" your system for stereo-TV reception.

The VS-525U records at the two outer VHS speeds—SP and EP (which Akai refers to as SLP)—but it will play LP tapes as well. Three special effects are available: still frame, slow motion, and scan. But since it is a two-head deck, the special effects are much clearer when playing an EP tape than an SP tape, and slow motion is available only at EP. (If this limitation concerns you, you'll find the four-head VS-565U essentially identical to the VS-525U, except for superior special

effects at the SP speed.) The slow-motion feature is somewhat unusual: Playback can be changed to 1/36, 1/24, 1/15, 1/10, or 1/6 normal speed by repeatedly pressing st.ow. The deck memorizes the last setting and returns to it at the next press of st.ow.

The unit's two-week/six-event memory can be programmed to record the same time slot and channel number on the same day of every week (or daily on Monday through Friday of the same week) as a single "event." Unlike the discontinued Akai VS-603U (test report, December 1985), the VS-525U's programming system uses a fairly straightforward sequence of button pushes, which we find much simpler to remember. As with the earlier deck, Akai makes liberal use of on-screen legends to lead you through the programming operation. Akai's sleep-timer feature is run via the programming buttons; it can be set to stop recording or playback at any desired time after activation.

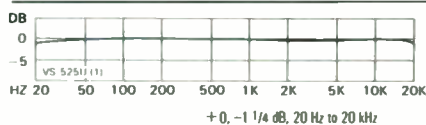
Most of the deck's front-panel controls are duplicated on the supplied wireless remote. These include buttons for power, TV/VCR selection, channel selection, autowind to counter zero, the programming controls, the transport controls (including RECORD), and VOLUME, which controls the VS-525U's built-in power amplifier. A ten-digit keypad on the remote enables you to tune directly to any channel, a feat you cannot accomplish by using the deck's front panel.

Not duplicated on the remote are the controls for tape eject, counter reset, display (which toggles the front-panel and on-screen displays between clock and counter mode), recording-speed selection, normal and slow-speed tracking, sharpness, input (CONTINUED ON PAGE 30)

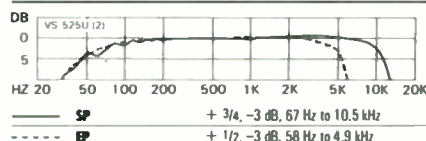
VCR SECTION

Except where otherwise indicated, the recording data shown here apply to both speeds: SP and EP. All measurements were made at the direct audio and video outputs, with test signals injected through the direct audio and video inputs. For VHS Hi-Fi, the 0-dB reference input level is the voltage required to produce 3-percent third-harmonic distortion at 315 Hz; for the standard audio recording mode, it is 10 dB above the voltage at which the automatic level control (ALC) produces 3 dB of compression at 315 Hz. The 0-dB reference output level is the output voltage from a 0-dB input.

VHS HI-FI RECORD/PLAY RESPONSE (-20 dB)



STANDARD RECORD/PLAY RESPONSE (-20 dB)



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

	standard	VHS HI-FI
SP	48 3/4 dB	97 3/4 dB
EP	47 dB	97 1/2 dB

INDICATOR CALIBRATION (315 Hz; VHS HI-FI)

for 0-dB input	+10 dB
for -10-dB input	+6 dB

DISTORTION (THD at -10 dB input; 50 Hz to 5 kHz)

	standard	VHS HI-FI
SP	≤ 1.5%	≤ 0.57%
EP	≤ 2.3%	≤ 0.57%

CHANNEL SEPARATION (315 Hz; VHS HI-FI)

	70 1/2 dB
--	-----------

INDICATOR "BALLISTICS"

Response time	0.6 msec
Decay time	≈ 1,500 msec
Overshoot	0 dB

FLUTTER (ANSI weighted peak; R/P; average)

	standard	VHS HI-FI
SP	± 0.20%	± < 0.01%
EP	± 0.30%	± < 0.01%

SENSITIVITY (for 0-dB output; 315 Hz)

VHS HI-FI	370 mV
standard	1,780 mV

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1983 — SDA 2 Speaker of the Year
1984 — SDA CRS Speaker of the Year
1985 — SDA SRS Speaker of the Year
1986 — SDA SRS 2 Speaker of the Year

"They truly represent a breakthrough."

Rolling Stone Magazine

Polk's critically acclaimed, 5 time AudioVideo Grand Prix Award winning SDA technology is the most important fundamental advance in loudspeaker technology since stereo itself. Listeners are amazed when they hear the huge, lifelike, three-dimensional sonic image produced by Polk's SDA speakers. The nation's top audio experts agree that Polk SDA loudspeakers always sound better than conventional loudspeakers. Stereo Review said, "Spectacular... the result is always better than would be achieved by conventional speakers." High Fidelity said, "Astounding... We have yet to hear any stereo program that doesn't benefit." Now all 5 SDAs incorporate many of the 3rd generation advances in SDA technology pioneered in the Signature Edition SRS and SRS2 including full complement sub-bass drive, time-compensated phase-coherent driver alignment and bandwidth-optimized dimensional signal.

Why SDAs Always Sound Better

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

Without exaggeration, the design principals embodied in the SDAs make them the world's first true stereo speakers. The basic concept of speaker design was never modified to take into account the fundamental difference between a mono and stereo signal. The fundamental and basic concept of mono is that you have one signal (and speaker) meant to be heard by both ears at once. However, the fundamental and

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

"A stunning achievement"

Australian HIFI

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

"Literally a New Dimension in the Sound"

Stereo Review Magazine

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

"Mindboggling, astounding, flabbergasting"

High Fidelity Magazine

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

"You owe it to yourself to audition them."

High Fidelity Magazine

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

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Let's say you want to connect two points with a straight line. Use the Angle Line. It produces a computer generated straight line between any two points.

What if you want a circle? Just touch the return key. Then use the diagonal arrow key to enlarge or reduce the circle. If you use the up/down or right/left arrows, you'll get an ellipse.

In the same way you can create squares, rectangles or triangles. And you'll be amazed how many things, from houses to technical drawings, are made up of squares, rectangles, circles and triangles.

But, that's not all. You can choose any of 32 background patterns to fill in enclosed areas or broad lines. And if 32 isn't enough, you can design your own.

There's so much more. You can juggle a picture. Imagine, turning it over or sideways with the touch of a button.

You can copy or move a picture or even part of a picture right on the screen. So, draw it once and copy it or move it.

But, here's my favorite. You can enlarge or reduce any picture or part of a picture right on the screen. So you can change its size equally, or you can stretch it out or make it tall and thin. Wow!

There are 12 included font/sizes. So you can have large or small type in your choice of styles within a picture or integrated with your text.

And, each of the 12 font/sizes can be shown on the screen and printed normally, in bold, in italic, in outline, or in shadow. Plus, you can write normally across the page, up the page, down the page or upside down.

Finally, you can zoom into any small section of the screen and edit your pictures, pixel by pixel. With this kind of power, you don't need to be an artist, just have the ability to push a button.

You can operate this Paint program independently. Or, you can access any picture from within word processing.

So, for banners and pictures, you can

print directly from the Paint Program. Or, for everything previously described, simply access your pictures, captions, graphs or charts through the desktop publishing section.

This program is incredibly powerful, yet you'll be comfortable using it within just a few hours.

Every picture in this ad was created with this program. And, you haven't even seen the tip of the iceberg of its capabilities. For example, if you have a picture on the screen, you can bring a second picture up and join them together.

WHO CAN USE THE SYSTEM

All you need is an IBM PC, AT, XT or 100% compatible with standard IBM CGA or EGA graphics capability. It must have at least 256K, and either two floppy disk drives or one floppy and a hard disk.

Below is a list of some of the dot matrix, ink jet and daisy wheel printers that have been tested with this program. If your printer is compatible with any of these printers, it should work too.

Special Note: Most daisy wheel printers are Diablo 620/630 compatible, so they will work with this program.

Special Note: With a color printer you can print 3 colors plus black text.

Citoh 8510, Epson Fx-80, Fx-85, Fx-185, JX-80 (color), LO-800, LO1500, LX80, MX80 with Graftrex Plus or Graftrax, RX-80, Hewlett Packard 2225C Think Jet or QuietJet, LaserJet, or LaserJet Plus, IBM 80CPS Graphics Printer, IBM Proprinter, IBM 3852 Jetprinter (color), Juki 6100, Manneemann Tally Spirit 80, NEC 3500, 3510, 3520, 3530, 3550, 5500 series, 8023A, NEC Pinwriter P5XL, P6, P7, (single or color), OKIDATA Microline 92, ML92, w/IBM Plug & Play, Microline 193, 20 (color), Panasonic KX-P1091, KX-P1091i, Quadram Quadjet (color), Radio Shack DMP-200, Silver Reed EXP 400, 600, 800 and all EXP series, Star Micronics SG-10, Texas Instruments 855, 865, Xerox (Diablo) 620, 630.

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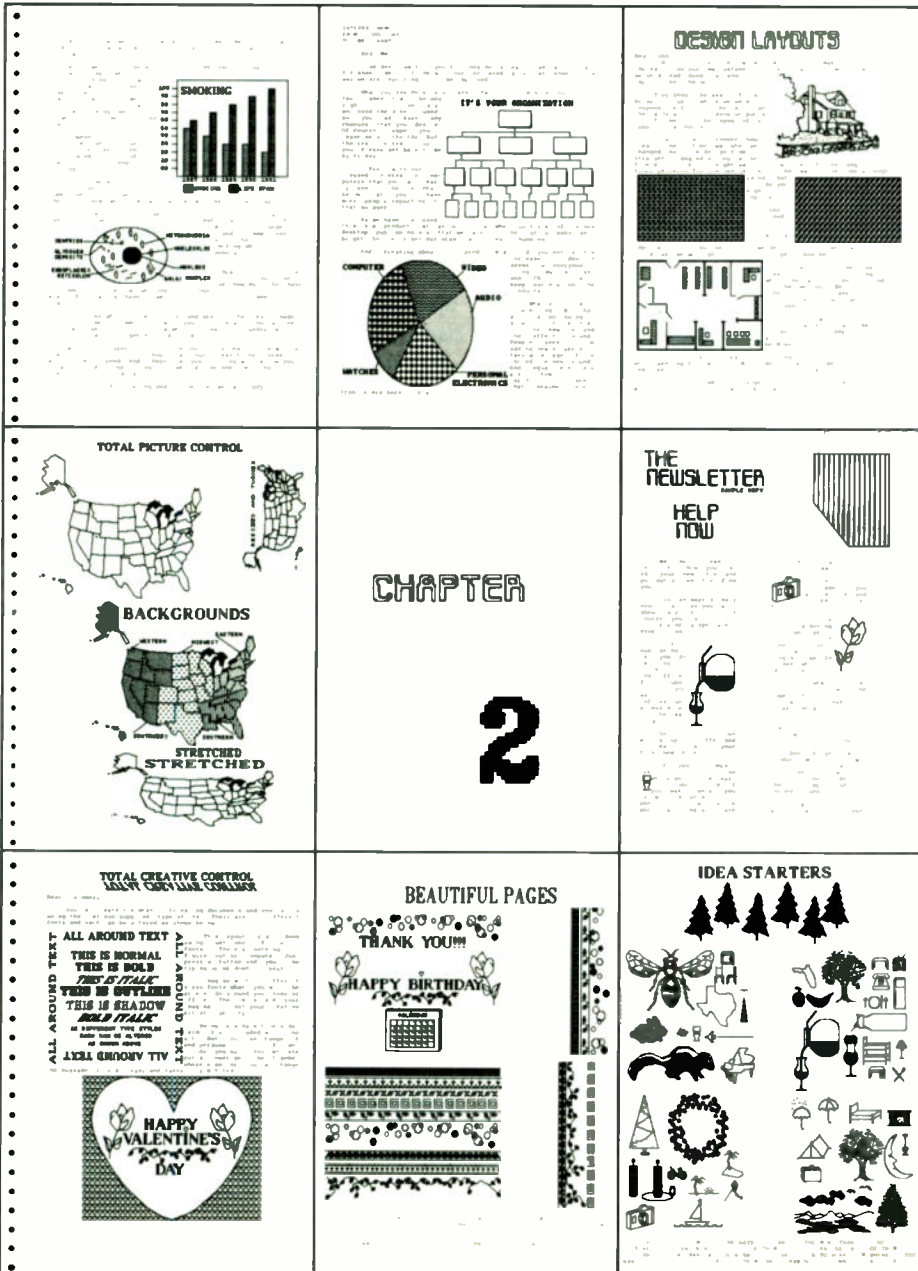
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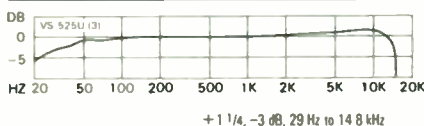
AUDIO OUTPUT LEVEL (from 0-dB input; 315 Hz)		
VHS Hi-Fi	3.0 volts	
standard	0.59 volt	
AUDIO INPUT IMPEDANCE (VHS Hi-Fi)		
	33k ohms	
VIDEO RECORD/PLAY RESPONSE		
	SP	EP
at 500 kHz	+ 1/2 dB	+ 1/2 dB
at 1.5 MHz	-2 3/4 dB	-4 1/2 dB
at 2.0 MHz	-3 3/4 dB	-7 dB
at 3.0 MHz	-20 dB	-17 3/4 dB
at 3.58 MHz	-21 dB	-3 dB*
at 4.2 MHz	**	**
SHARPNESS CONTROL RANGE		
at 500 kHz	+1 1/2, -2 dB	
at 1.5 MHz	+3, -6 1/2 dB	
at 2.0 MHz	+2 1/2, -9 dB	
at 3.0 MHz	+2 1/2, -2 dB	
3.58 to 4.2 MHz	no measureable effect	
LUMINANCE LEVEL		standard
GRAY-SCALE NONLINEARITY (worst case)		≈ 14%
CHROMA LEVEL		standard
CHROMA DIFFERENTIAL GAIN		≈ 6%
CHROMA DIFFERENTIAL PHASE		≈ ± 28°
MEDIAN CHROMA PHASE ERROR		0°

* Unstable
 ** Too low to measure

TV TUNER SECTION

All measurements were taken at the direct audio and video outputs

AUDIO FREQUENCY RESPONSE (mono)



AUDIO S/N RATIO (mono; A-weighted)

best case (no chrominance or luminance)	30 dB
worst case (multiburst pattern)	22 dB

RESIDUAL HORIZONTAL-SCAN COMPONENT (15.7 kHz)

	-54 dB
--	--------

AUDIO OUTPUT LEVEL (100% modulation)

recording-level slider at detent	0.48 volt
recording-level slider at maximum	2.75 volts

AUDIO OUTPUT IMPEDANCE

	330 ohms
--	----------

VIDEO FREQUENCY RESPONSE

at 500 kHz	- 1/2 dB
at 1.5 MHz	- 3/4 dB
at 2.0 MHz	+ 1/2 dB
at 3.0 MHz	+ 1 dB
at 3.58 MHz	- 3/4 dB
at 4.2 MHz	-15 3/4 dB

LUMINANCE LEVEL

	6% high
--	---------

GRAY-SCALE NONLINEARITY (worst case)

	≈ 8%
--	------

CHROMA DIFFERENTIAL GAIN

	≈ 33%
--	-------

CHROMA DIFFERENTIAL PHASE

	≈ ± 5°
--	--------

CHROMA ERROR

	level	phase
red	+ 1 1/4 dB	+ 7°
magenta	+ 1 1/4 dB	+ 7°
blue	+ 1 1/4 dB	+ 4°
cyan	+ 1 dB	+ 9°
green	+ 1 dB	+ 9°
yellow	+ 1 dB	+ 8°
median error	+ 1 1/8 dB	+ 6 1/2°
uncorrectable error	± 1/8 dB	± 2 1/2°

(CONTINUED FROM PAGE 25)

selection (choosing among external, tuner, SAP, or simulcast settings), and audio-monitor selection. This last switches between edge-track playback and automatic playback of the stereophonic VHS Hi-Fi tracks (if they are present). Another audio-monitor switch routes the left track to both outputs, the right track to both, or provides full stereo reproduction (from VHS Hi-Fi tapes). As usu-

al, the audio recording level can be set only from the front panel, which is also where you set the deck's clock.

On the back panel are pairs of twin-lead binding posts for a UHF antenna and its feed-through connection to a TV, along with a pair of F connectors for the VHF antenna and the RF television link. With this basic arrangement, connecting the output of a cable box to the VCR's antenna input precludes the recording of one program while viewing another. RCA pin-jack connections are provided for the direct audio and video inputs and outputs, and speaker outputs are standard push connectors.

In Diversified Science Laboratories' tests, the VS-525U's tuner exhibited good video frequency response, for a potential luminance horizontal resolution of about 300 lines. Luminance level is close to the mark and gray-scale linearity is near perfect. The rather substantial degree of chroma differential gain occurs only at the brightest scene level, so the decrease in color saturation that the measurement implies is unlikely to be apparent. Chroma differential phase (change in hue with scene brightness) is quite low. Chroma level is a trifle high, but it is uniform across the color spectrum. Chroma phase error is a bit higher than average, but almost all of it can be corrected by touching up the monitor's tint control.

The tuner's audio frequency response is quite uniform up to nearly 15 kHz, above which a whistle filter does an excellent job of suppressing the horizontal-scan component at 15.7 kHz. The audio output level varies with the setting of the recording-level sliders. At their detents, the deck is adjusted to record TV broadcasts properly, and with this setting, output level and impedance should present no compatibility problems with other audio equipment. DSL did find the tuner's audio distortion much higher than average and the signal-to-noise ratio to be also less than stellar.

For the most part, the VS-525U's video recording performance can stand comparison with that of the most expensive VHS machines. Response at the faster speed holds up to beyond 2 MHz for a luminance resolution approaching 200 lines. Even at EP (SLP), response is down only 7 dB at 2 MHz, which implies a resolution close to 160 lines. And at both speeds, resolution can be somewhat improved (with very little increase in noise) by turning up the picture control. Luminance and chrominance levels are perfect at both speeds and there is no measurable average chroma phase error. Gray-scale linearity is off only slightly, as are chroma differential gain and chroma differential phase (but to a greater extent).

Although audio response in the VHS Hi-Fi mode is excellent at DSL's standard test level, there are signs that the Hi-Fi system's noise reduction circuit is mistracking at lower recording levels (-30 and -40 dB referred to the recording level producing 3-percent THD). We found similar behavior in

early VHS Hi-Fi decks, but recent models have been free of this problem. Although this anomaly may escape aural detection when recording and reproducing the average TV broadcast, it can be heard when listening to music with wide dynamic range.

On the positive side: In the VHS Hi-Fi mode, the Akai VS-525U's residual noise level is unusually low, midband channel separation is exceptionally high, and midband distortion is very low (less than 0.1 percent). In fact, at DSL's standard test level (-10 dB referred to 3-percent THD), distortion barely exceeds 0.5 percent from 50 Hz to 5 kHz and just grazes 0.75 percent at 6.3 kHz. As expected, flutter is below reporting limits at both speeds in the Hi-Fi mode.

While no match for its Hi-Fi recording, the VS-525U's audio performance in the monophonic edge-track mode is still impressive. Response is within +3/4, -3 dB from about 60 Hz to 10.5 kHz at standard speed and from about 60 Hz to 5 kHz at EP speed. Flutter, distortion, and noise are much higher than in the Hi-Fi mode, but compared with other decks of this ilk, the VS-525U holds its own and then some.

Had the mistracking problems in the VHS Hi-Fi mode not surfaced, we would have given the Akai VS-525U exceptionally high marks, especially in light of its price and the number of features offered. Then again, a mistracking noise reduction system is nowadays usually the result of slightly misadjusted circuitry, not bad design. Perhaps some of the factory adjustments had slipped in the sample we tested. As it is, we think the deck deserves consideration by anyone whose video tastes lean more toward the cinematic than the musical and who can make good use of the Akai's stereo-TV reception and its convenient built-in power amplifier. ■

ABOUT THE dBW

We currently are expressing power in terms of dBW—meaning power in dB with a reference (0 dBW) of 1 watt. The conversion table will enable you to use the advantages of dBW in comparing these products to others for which you have no dBW figures.

WATTS	dBW	WATTS	dBW
1.0	0	32	15
1.25	1	40	16
1.6	2	50	17
2.0	3	63	18
2.5	4	80	19
3.2	5	100	20
4.0	6	125	21
5.0	7	160	22
6.3	8	200	23
8.0	9	250	24
10.0	10	320	25
12.5	11	400	26
16.0	12	500	27
20.0	13	630	28
25.0	14	800	29



SMART SINGLES.

If you're like most people who listen to audio cassettes, you've probably used a tape head-cleaner and felt pretty good about your conscientious attitude toward machine maintenance. Unfortunately, most cleaning cassettes allow contaminants to build up on the capstan/pinch roller assembly. It's a situation that, if left uncorrected, can result in your valuable cassettes being "eaten" when they stick to, and wrap around, the pinch roller (a problem that's even more common in car systems). Fortunately, Discwasher has a simple solution.

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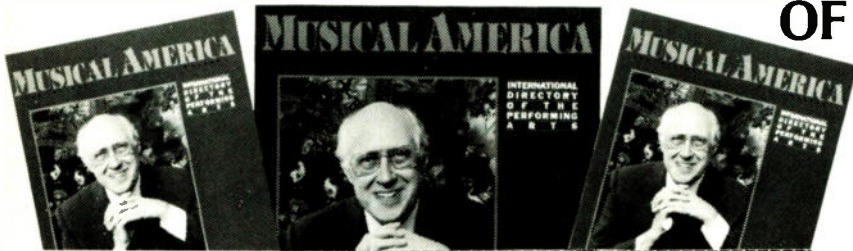
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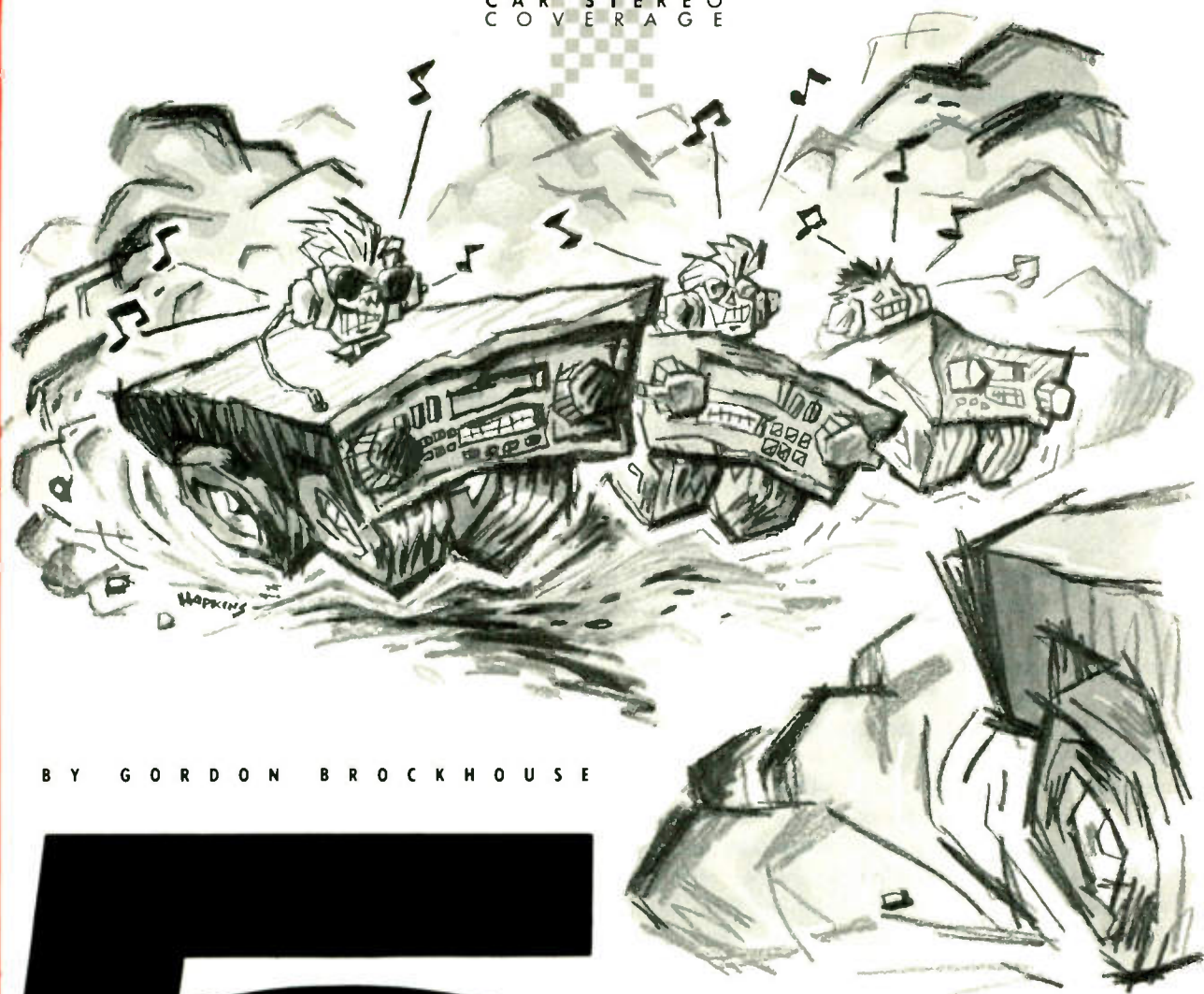
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BY GORDON BROCKHOUSE

5

SIMPLE STEPS TO HIGHWAY HI-FI

Because of the many constraints posed by the car listening environment, choosing and installing an autosound system is a complex process. Your choice of cassette/receiver, speakers,

and speaker locations will all be limited. But with a methodical approach, here broken down into five major steps, you'll get the best possible system for your car and budget. ▶

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



CHOOSE YOUR SOURCES

1 YOU'LL FIRST HAVE TO DECIDE ON THE PROGRAM sources you want to listen to. The current market offers a choice of AM and FM stereo radio, cassette tape, and, most recently, Compact Disc. Perhaps because of the high price of software, sales of car CD players have yet to take off, leaving cassettes and radio the preferred program sources. But as CD libraries expand and the sonic and ergonomic advantages of the system in a car become appreciated, this will change. At this year's Winter Consumer Electronics Show, several manufacturers showed prototype Digital Audio Tape (DAT) players for the car, which could hit the market later this year.

The most popular type of car stereo component is called a cassette/receiver or a head unit; it contains an AM/FM tuner (stereo for both, in some models), a cassette player, and a small amplifier. Because of the bulk of even the smallest CD player mechanisms, an all-in-one cassette/receiver/CD-player has yet to be introduced (another factor inhibiting car CD sales). So if you want to play Compact Discs in the car, you must choose either an in-dash unit (with or without a tuner) or an under-dash unit. There are currently two magazine-loaded, trunk-mounted Compact Disc changers as well, one storing as many as 12 discs. Discs and individual tracks are selected from a control module installed in the dash. As an alternative to a dedicated car CD player, many recent cassette/receivers have switchable auxiliary inputs, enabling you to temporarily connect a portable player. For a system without an auxiliary input, you can buy an adapter that fits in the cassette bay, with cables that are connected to the CD player's line outputs.

Your precise choice will be greatly influenced by the shape and size of the dashboard opening. Although many cars have standard DIN-sized (7- by 2-inch) cutouts, some auto makers use nonstandard openings to encourage sales of factory radios. Nonetheless, a wide range of aftermarket units is available.

MAKE A "WISH LIST"

2 WHEN YOU GO CAR STEREO shopping, you'll be confronted with an array of competitive features and options. It's a good idea to familiarize yourself beforehand with the range of features available so you won't be overwhelmed by the variety.

Tuner features: While a few low-end models still use mechanical analog tuners, most car decks now incorporate elec-

tronic tuners with digital frequency displays (you might see the term "ETR": electronically tuned receiver). ETRs tune in preset stations more precisely than analog tuners with mechanical presets and offer such useful convenience features as seek/scan tuning, which automatically tunes in strong stations. The number of radio presets varies from model to model with some capable of storing more stations than you probably can find. And some will automatically allocate presets to the best signals at the push of a button, a feature useful during cross-country drives. A local/DX (i.e., distant) switch, usually a standard feature, will help you find strong local stations that won't fade rapidly as you drive away.

Most car units aspiring to high fidelity status contain additional FM reception-improvement circuitry that blends high frequencies on weak signals to achieve an optimum tradeoff between stereo separation and noise. Also, because of the nearly constant movement, tuners installed in cars are very susceptible to multipath and the related phenomenon of picket-fencing. Multipath distortion occurs when two versions of the same FM signal arrive at the receiving antenna simultaneously. Usually, one is a signal direct from the transmitting antenna, the other a reflection of that signal off a building or hill. The sonic result of the interference is an annoying tearing sound. Picket-fencing results from rapid fluctuations in multipath reception.

The few car components with "diversity tuning" use two separate tuners and antennas. The unit automatically and continuously switches to the other set to keep audible interference to a minimum. The operation of all these reception-dependent circuits plays a crucial role in the listenability of a car radio under poor reception conditions. Unfortunately, the radio's ability to reject interference and to pull in stations is just about impossible to judge in a showroom setting. For the most reliable comparisons, you'll have to examine equipment test reports or actually install the component in your car and take it out for a test drive.

If your favorite AM station broadcasts in stereo, you might consider a cassette/receiver with a stereo-AM decoder. There are two incompatible stereo-AM formats fighting for domination in the AM-broadcast market: Motorola's C-QUAM system and the Kahn-Hazeltine system. The former seems to be winning, judging by the many stereo-AM tuners that incorporate only C-QUAM decoders, so if this feature is important (stereo AM is free from most of the FM reception problems mentioned above) check the system being used on your favorite stereo-AM station.

Tape player features: Ideally, the tape player should have a noise reduction system that can accurately decode the tapes you plan to play. Certainly, tapes recorded using DBX noise reduction are unlistenable unless played through a DBX decoder. With Dolby B and C, the compatibility problem is not so severe. Although the results cannot be described as optimum, a Dolby B-encoded tape can be played without decoding if you are willing to put up with slightly exaggerated high



frequencies (turning down the treble control will help). Some people prefer boosted highs for car listening. Likewise, Dolby C-encoded tapes can be played back with Dolby B noise reduction with approximately the same boosted highs resulting.

Most new tape units have switchable equalization (usually labeled "metal"), enabling them to play Type 4 metal and Type 2 (chromium dioxide or chrome-equivalent) tapes. The playback equalizations for these two tape types are identical, so the EQ switches labeled "metal" should be more accurately called 70- μ s. Playing chrome or metal tapes using normal tape equalization will result in boosted high frequencies, which, again, some people prefer in the car. Playing a Dolby-encoded 70- μ s tape without Dolby and with normal-tape EQ exaggerates the highs too much, however.

Autoreverse obviates manually flipping the tape over to hear the other side and is therefore a very popular (and safety-promoting) feature. But there is a price for this convenience: Because of the difficulty of maintaining ideal head alignment for both directions of tape travel, frequency response may not be the same in both directions. In fact, some high-end decks leave out autoreverse so that head azimuth can be adjusted to give consistent results.

A feature to insist on is key-off eject or key-off disengage. Respectively, these will eject the tape or disengage the cassette transport if you leave the cassette in the deck when you turn off the ignition. Without this feature, tapes can get crimped and pinch rollers can get dented, causing speed fluctuations or jams.

Amplifier features: All cassette/receivers have volume and balance controls. Most have separate bass and treble controls, but a few low-end models offer only a single tone control. Loudness compensation is offered on a few units. Others offer special tone-balancing features designed to compensate to some degree for a typical car's acoustical qualities. Any of these may be useful, depending on how well your car's interior matches the compensation.

For multispeaker installations, you will need a front/rear fader to control the relative output of the front and back speakers. If you plan to add an external amplifier, equalizer, or other processor, you should look for a cassette/receiver with preamplifier outputs. Some have two sets, allowing their fader control to work with an external amp. Others have only one set of preamp outputs, requiring you to install an equalizer or other component with a fader in order to have full control of front/rear balance.

Other features: Some car audio manufacturers ignore ergonomics by employing ridiculously tiny buttons for important functions, such as station selection. Electronic volume control, which requires the user to maintain button pressure until a desired sound level is attained, is another ill-conceived feature. Your radio should distract your attention from the road as little as possible. You should be able to feel your way around a car stereo without having to look at it. Be sure to

test any showroom model for this important characteristic. Other common features that you may want to consider include a clock and a power antenna activator. Finally, many models are either removable or contain a built-in security system that renders the unit inoperable if it is stolen. For an in-depth discussion of these features, see the sidebar, "Anti-social Security."

Given restrictions of budget and vehicle type, it may not be possible to find a head unit that exactly matches your wish list, but careful shopping should turn up something suitable.

SELECT SPEAKERS AND PLAN PLACEMENT

3 AS IMPORTANT AS THE HEAD UNIT is, speakers and their installation will influence sound quality even more. Before auditioning, though, you have to determine where speakers can be installed in your car. Most new automobiles already have speaker compartments in the dash, the door panels, the side panels, the rear deck, or in a combination of these. Have a look at the car to see where speakers can go and what sizes can be accommodated. A good dealer should be able to tell you what kinds of speakers you can use and where they can be installed in your vehicle.

None of the possible locations is ideal. Sound from upward-facing dashboard speakers will be reflected backward from the windshield. Usually, though, there is room for only small-diameter speakers in a dashboard, resulting in limited bass output, and both driver and passenger will hear mostly the nearest speakers. This drawback also applies to door-mounted speakers. To avoid interference with window operation, door speakers usually are installed low in the panel. In this position, much of the high-frequency output will be absorbed by legs and clothing. Design compromise is sometimes necessary in order to achieve a sufficiently shallow mounting depth.

The rear deck has good possibilities for speaker mounting. But having the sound come from behind is unnatural, the stereo image is rarely good, and back-seat passengers may not appreciate having a speaker inches from their ears. Speakers can sometimes be installed in kick panels, so long as they don't interfere with operation of the foot pedals. The drivers can be pointed almost directly at the front-seat listeners. Unfortunately, this is one of the most awkward areas of the car for an installer to work in, and factory cutouts in this position are seldom included. The best—and definitely the most popular—solution will be some combination of front and rear speakers. Rear speakers will deliver good bass response; door or dashboard speakers will keep much of the



image in front of the listeners.

Since you can't experiment with speaker placement in a car the way you can at home, getting it right the first time out is essential. Buyers have a wide range of speaker styles to choose from. Full-range speakers use a single driver covering the full audio spectrum, but low- and high-frequency response is inevitably limited. Dual-cone speakers have a small "whizzer" cone in the center to assist treble response, but both cones use the same magnet and voice-coil assemblies, with resulting compromises. Small full-range and dual-cone units are available for tight spaces where nothing else will fit, but don't expect top-notch sound quality with such units.

Coaxial speakers have a fully separate tweeter suspended in front of the main driver, for the obvious benefit of high-frequency performance. Triaxial speakers suspend a tweeter and midrange driver in front of a woofer. Four-way single-package speakers are even available. More isn't necessarily better though: As with home systems, excellent performance is obtainable from two-way designs.

If your budget and vehicle will accommodate them, you might consider component speakers: physically separate woofers, midrange drivers, and tweeters, sometimes driven by separate amplifiers. For high-end systems, custom subwoofer enclosures can sometimes be built. It's easy to go overboard, though. A hodgepodge of speakers crammed into every available space will cost more, not only for speakers, but for amps, crossover, and installation charges. And the result may not sound as good as a simpler setup.

With hatchbacks and pickups, space for flush-mounted speakers is limited. Surface-mounted speakers necessarily have small enclosures, leading to a tradeoff between bass response and efficiency. A small enclosed speaker with good bass response will need a great deal of amplifier power to work properly.

After you've determined suitable speaker locations and possible speaker types, the next step is to audition different models. The process is no different from shopping for home speakers. You listen for the same things: overall smoothness, bass and treble extension, detail, spaciousness, and power handling. Concentrate on models from reputable manufacturers. Use the same source material from store to store, and try to ensure that the electronics used to demonstrate the speaker are consistent and realistic for your budget. The demonstration setup should be similar to anticipated speaker placement: your choice of front speakers arrayed in front of you, rear speakers behind.

Unfortunately, no store car-stereo demonstration environment can even approximate the acoustics of your car. Once installed in your car, the speakers you've chosen will invariably sound very different from the way they did in the dealer's showroom. It is safe to say, however, that speakers that sound better than average in the store will also perform better in your car, especially when it comes to things like bass response and the ability to handle large amounts of power.

CONFIGURE THE SYSTEM

4

BESIDES THE AWKWARDNESS OF speaker placement, the car environment suffers from high ambient noise. Moreover, because of their frequency distribution, road and wind noises are more likely to obscure the music than background noise does in a

home system. The reason car radios once sounded so bad was their inability to overcome such noise. Listeners would turn their radios up so that they could hear quiet passages. Loud passages would then be rendered hopelessly unlistenable by the inadequacies of the dashboard speaker and the overloading of the typical unit's 3-watt amplifier. On entry-level units, such low-power amps are still the norm. If you're listening mainly to newscasts and traffic reports, that will probably suffice. But for music, you'll need more power.

You must, however, read the fine print when comparing power ratings. Look for a rating in continuous or RMS watts per channel (over a specified bandwidth if possible) with specified distortion. There are other methods of rating power, all of which give higher figures. But because of the way they are derived, only continuous-power ratings can be usefully compared from brand to brand. A typical "high power" cassette/receiver offers around 10 watts (10 dBW) continuous power per channel. Remember also that you must at least *double* a continuous-power rating in watts to obtain a useful increase in maximum listening level: All other things being equal, a 12-watt (10.7-dBW) amplifier will play just about as loudly as a 15-watt (11.8-dBW) model.

If you need more than 10 watts per channel—and almost everyone can benefit from more power—you'll have to install an external amplifier. This has an important bearing on your selection of a head unit. A booster—a power amp that works off the radio's speaker outputs—is one option for increasing the output power of a receiver. But instead of buying a cassette/receiver that incorporates an amplifier, you might consider a cassette/tuner plus external amplifier. A cassette/tuner has no amp of its own, but it will often offer refinements not available with the all-in-one cassette/receivers. If funds are limited, you might start with a cassette/receiver equipped with preamp outputs and use its internal amp until you're ready to add an external model. Or perhaps you can use the internal amp to drive door speakers, while an external amp drives heftier rear-deck speakers. In any case, you should consider the possibility of upgrading before you install even the first component.

If you choose component speakers, you'll need a crossover to direct sound to the appropriate drivers. It may be a passive crossover, which is connected between the amplifier and drivers, or an active crossover, which is connected be- ▶



T H E P U R I T Y .

The crystalline clarity. The uncolored honesty of the Alpine Sound. Sound as transparent as alpine skies.

It is the sound promised by the digital medium of compact disc and fulfilled by two technologically and sonically superior tuner/CD players. The Alpine 7901 and 7902.

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And both the 7901 and 7902 feature the legendary T-10 II™—a tuner unsurpassed in discriminating signal from noise, in pulling out of thin air music's every subtle nuance.

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ALPINE.

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Bad News For Escort

Dear Customer,

From Drew Kaplan

Escort has ignored DAK's second, one-on-one Maxon versus Escort radar challenge. And frankly, I'm fighting mad. I suppose they have a right to ignore me. But after referring to my challenge as only an "advertising gambit" and calling Maxon's radar detector an off-shore, primitive, and bottom-end unit, I'd think they'd be glad to wipe us out in a head to head duel to the death. But, I'm really mad for two other reasons and I think that you may be as fascinated by them as I am.

Mad Reason 1. Road and Track Magazine held an independent general radar detector test in their September 86 issue.

As far as I can see, Maxon beat Passport in Uninterrupted Alert, and Passport beat Maxon in Initial alert. Now to be fair, neither of us seem to have beaten the other by even 2 seconds at 55 miles per hour. So, we didn't win or lose by much.

And, Maxon's \$99⁹⁰ detector was tested against the \$295 Passport, not the \$245 Escort we challenged. What's interesting is that Road and Track had nice things to say about Passport and even about Escort, which wasn't even included in the tests any more.

Now, if you've been following DAK's challenge, you know we've only been challenging Escort. If you've read Road and Track's tests, you'll be amazed when you read Boardroom Reports, which I've reprinted for you to the right. What's really interesting is that it's the exact same person in both publications.

Actually, Maxon did extremely well. Road and Track only used 'over hill' and 'around curve' tests because on straight-aways the differences weren't worth describing. (Imagine that!)

It's just as I've said in my challenge. I don't think there's much difference between Maxon's and Cincinnati's Radar detectors when it comes to sensing radar.

THE CHALLENGE GROWS

In view of the opinions stated in the article in Boardroom Reports about the \$245 Escort, DAK hereby adds the \$295 Passport to our challenge.

Mad Reason 2. Did you ever hear about the cure for dandruff that was developed in the middle-ages? It was the guillotine. And frankly, I think you should be aware of Cincinnati Micro-

wave's advertising cure for the Rashid VRSS Collision Avoidance System.

The Rashid VRSS system, as described in Popular Science magazine, January 1986, sends out a radar signal on the K band ahead of your car. The good part is that it can help you avoid running into things higher than your front bumper. The bad news is that since it operates on K band, it sets off radar detectors.

Well, hats off to Cincinnati Microwave. I've tested the Passport against the Rashid unit and, as usual, they have done a splendid job. While every other detector I tested, including Maxon's, was driven crazy, theirs didn't utter a peep.

But then, my Maxon hasn't uttered any peeps lately either and let me tell you why. I was on my way to the Far East to visit Maxon, so I asked Tom, a manager at DAK, to purchase and test the Rashid.

Well, did I ever hear from him. First the unit cost \$558 plus about \$100 to install. Then buying it and finding someone to install it took almost a month.

But the real reason he was unhappy was that the recommended method of installation involved cutting a 6 1/2" hole in the front grill of his neat new car.

Well, much to my wife's chagrin, it's now installed in her station wagon.

After installation, it has to be set by an installer. He drives between 15 and 30 miles per hour toward a solid object. When the installer thinks he's reached a safe stopping distance, he adjusts the warning alarms to sound. Then in the future, when a similar distance is reached, lights will flash and an alarm will sound.

Of course, if you accelerate too quickly into a lane behind another car the same alarms can go off.

And, I haven't figured out what to do if

there's a dog in the road, dirt on the radar sensor, or how to compensate for the different stopping distances encountered on dry, wet, icy or snowy roads.

MOST IMPORTANT PART

Speaking of advertising gambits, in virtually every magazine I pick up, I've been seeing Cincinnati's Bad News for Radar Detector ads spelling out the obsolescence of all other detectors.

If it's such an important feature that distinguishes them from us, there had better be some of these devices on the road, or Cincinnati Microwave's credibility may just be on the road as well.

I will add \$10,000 to my Escort/Passport challenge if Cincinnati Microwave can prove that there are even 1000 Rashid units on the road anywhere in the U.S. Oh heck, I'll add \$5000 if they can even find 500. (And, look at this.)

NOTE: There are several other potential collision avoidance systems on the drawing boards and each may have a DIFFERENT FINGERPRINT.

So, if you're a current Escort or Passport owner, I suggest that you find out how many Rashid units there are and what Cincinnati Microwave will do about the 'other' units before you pay \$\$\$ to have your current detector upgraded.

Besides, with over 3,000,000 square miles in the U.S., even 1,000 units would work out to less than one unit for every 3,000 square miles.

If a major car company successfully sells a collision avoidance system, then Maxon will be ready. But, the car companies currently can't even get consumers to pay \$200 for air bags. So, you decide. Is it significant, or an advertising gambit?

Below is the NEW version of the challenge. Escort, a reply please!

A \$20,000 Challenge To Escort

Let's cut through the Radar Detector Glut. We challenge Escort & Passport to a one on one Distance and Falsing 'duel to the death' on the highway of their choice. If they win, the \$20,000 check pictured below is theirs.

By Drew Kaplan

We've put up our \$20,000. We challenge Escort to take on Maxon's new Dual Superheterodyne RD-1 \$99⁹⁰ radar detector on the road of their choice in a one on one conflict.

Even Escort says that everyone compares themselves to Escort, and they're right. They were the first in 1978 to use superheterodyne circuits and they've got a virtual stranglehold on the magazine test reports.

But, the real question today is: 1) How many feet of sensing difference, if any, is there between this top of the line Maxon Detector and Escort's or Passport's? And 2) Which unit is more accurate at interpreting real radar versus false signals?

So Escort, you pick the road (continental U.S. please). You pick the equipment to create the false signals. (Don't forget our \$10,000 Rashid challenge). And finally, you pick the radar gun.

Maxon and DAK will come to your
...Next Page Please



... Challenge Continued highway with engineers and equipment to verify the results.

And oh yes, we'll have the \$20,000 check (pictured) to hand over if you beat us by more than 10 feet in either X or K band detection with the Escort, or by 2 seconds at 55mph with the Passport.

BOB SAYS MAXON IS BETTER

Here's how it started. Maxon is a mammoth electronics prime manufacturer. They actually make all types of sophisticated electronic products for some of the biggest U.S. Electronics Companies. (No, they don't make Escort's).

Bob Thetford, the president of Maxon Systems Inc., and a friend of mine, was explaining their new RD-1 anti-falsing Dual Superheterodyne Radar detector to me. I said "You know Bob, I think Escort really has the market locked up." He said, "Our new design can beat theirs".

So, since I've never been one to be in second place, I said, "Would you bet \$20,000 that you can beat Escort?" And, as they say, the rest is history.

By the way, Bob is about 6'9" tall, so if we can't beat Escort, we can sure scare the you know what out of them. But, Bob and his engineers are deadly serious about this 'duel'. And you can bet that our \$20,000 is serious.

We ask only the following. 1) The public be invited to watch. 2) Maxon's Engineers as well as Escort's check the radar gun and monitor the test and the results.

3) The same car be used in both tests. 4) We'd like an answer from Escort no later than July 31, 1987 and 60 days notice of the time and place of the conflict. 5) If Escort can prove that there are 1,000, or even 500 Rashid units in operation, we will present them with the appropriate \$10,000 or \$5,000 check at the beginning of the conflict. And, 6) We'd like them to come with a \$20,000 check made out to DAK if we win.

HOW'S THIS FOR FAIR

Cincinnati Microwave will be deemed the winner and given the check if either

Escort beats Maxon by 10 feet in both uninterrupted and initial alerts, OR if Passport beats Maxon by 2 seconds at 55mph in both uninterrupted and initial alerts. So, DAK wins only if we beat both Escort and Passport.

A tie will exist only if both the \$295 Passport and \$245 Escort fail to beat Maxon's \$99⁹⁰ Dual Superheterodyne RD-1 Radar Detector.

SO, WHAT'S

DUAL SUPERHETERODYNE?

Ok, so far we've set up the conflict. Now let me tell you about the new dual superheterodyne technology that lets Maxon leap ahead of the pack.

It's a technology that tests each suspected radar signal 4 separate times before it notifies you, and yet it explodes into action in just 1/4 of one second.

Just imagine the sophistication of a device that can test a signal 4 times in less than 1/4 of one second. Maxon's technology is mind boggling.

But, using it isn't. This long range detector has all the bells and whistles. It has separate audible sounds for X and K radar signals because you've only got about 1/3 the time to react with K band.

There's a 10 step LED Bar Graph Meter to accurately show the radar signal's strength. And, you won't have to look at a needle in a meter. You can see the Bar Graph Meter with your peripheral vision and keep your eyes on the road and put your foot on the brake.



So, just turn on the Power/Volume knob, clip it to your visor or put it on your dash. Then plug in its cigarette lighter cord and you're protected.

And you'll have a very high level of protection. Maxon's Dual Conversion Scanning Superheterodyne circuitry combined with its ridge guide wideband horn internal antenna, really ferrets out radar signals.

By the way, Escort, we'll be happy to have our test around a bend in the road or over a hill. Maxon's detector really picks up 'ambush type' radar signals.

And the key word is 'radar', not trash signals. The 4 test check system that operates in 1/4 second gives you extremely high protection from signals from other detectors, intrusion systems and garage door openers.

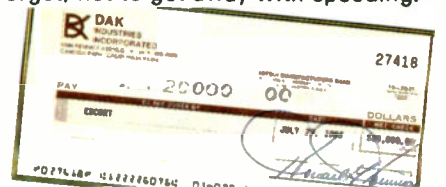
So, when the lights and X or K band sounds explode into action, take care, there's very likely police radar nearby. You'll have full volume control, and a City/Highway button reduces the less important X band reception in the city.

Maxon's long range detector comes complete with a visor clip, hook and loop dash board mounting, and the power cord cigarette adaptor.

It's much smaller than Escort at just 3 1/2" Wide, 4 3/4" deep and 1 1/2" high. But, it is larger than Passport. It's backed by Maxon's standard limited warranty.

Note from Drew: 1) Use of radar detectors is illegal in some states.

2) Speeding is dangerous. Use this detector to help keep you safe when you forget, not to get away with speeding.



CHECK OUT RADAR YOURSELF RISK FREE

Put this detector on your visor. When it sounds, look around for the police. There's a good chance you'll be saving money in fines and higher insurance rates. And, if you slow down, you may even save lives.

If you aren't 100% satisfied, simply return it in its original box within 30 days for a courteous refund.

To get your Maxon, Dual Superheterodyne, Anti-Falsing Radar Detector risk free with your credit card, call toll free or send your check for just \$99⁹⁰ (\$4 P&H). Order No. 4407. CA res add tax.

Special Note: Now that we're challenging Passport, we've added an optional suction cup windshield mount and extra coiled power cord. (Sorry we can't afford to throw them in for free.) They're just \$5⁹⁰ (\$1 P&H) Or. No. 4800.

OK Escort, it's up to you. We've got \$20,000 that says you can't beat Maxon on the road. Your answer, please?

Escort and Passport are registered trademarks of Cincinnati Microwave. Rashid VRSS, and Rashid Radar Safety Brake are registered trademarks of Vehicle Radar Systems, Inc.

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 8200 Remmet Ave., Canoga Park, CA 91304

John Tomalin, Ross & Track

Radar detectors aren't much bigger than a pack of cigarettes. They weigh less than eight ounces and have exacting new circuitry.

Why to look for:

- ▣ **Shield and shield sensitivity.** Both are used by the police.
- ▣ **Different alarm sounds.** The latest radar detectors use different types of sound for X and K band radar. X-band radar is used for short range and K-band radar is used for long range. Most newer radar detectors have a warning buzzer that can be turned on or off. Since X-band radar can be detected from as far as three miles away, the intensity of the sound is a warning buzzer that can be turned on or off. Since X-band radar can be detected from as far as three miles away, the intensity of the sound is a warning buzzer that can be turned on or off.
- ▣ **False alarm filtering.** Most newer radar detectors have a feature that filters out non radar signals. This feature is called "false alarm filtering".

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tween the head unit (or equalizer) and amplifiers. Because they require separate amps for each frequency range, active crossovers are appropriate only for relatively expensive installations. One common application is for a subwoofer. An active crossover will be used to divide frequencies below and above 125 Hz (or thereabouts). The subwoofer will be driven by a dedicated power amplifier and the other speakers by another. High, middle, and low frequencies in the main speakers will be divided by a conventional passive network. Many preamp/equalizers and some amps have built-in crossovers for subwoofers, so if you're planning to add a subwoofer, you should consider one of these models.

Remember, all components have to work as a system. In configuring a setup, you have to consider not only the components you'll buy first but also those you plan to add later, if only to avoid incompatibilities or redundancies.

ARRANGE INSTALLATION

5 FOR BEST PERFORMANCE, A CAR stereo system has to be installed properly. Unless you're an expert yourself, it's better to leave installation to someone who is. There are numerous mistakes that can be made, ranging from the innocuous (like cosmetic damage to the interior of the car) to the life-threatening.

Bass response can be compromised by wiring the speakers out-of-phase or by failing to create an effective seal between a low-frequency driver and its mounting surface. A simple mistake like reversing hot and ground leads can destroy power-supply ICs and will usually void the warranty. Incomplete or improper ground loops will cause a variety of whirring and ticking noises. Some autos are very prone to ignition noise; a good installer will be able to install a trap to eliminate this problem.

But there are reasons other than performance for choosing an installer carefully. Particularly when custom work is being done, there is a real risk that the car's appearance will be affected. Wires that could be concealed may be left exposed. Holes for door speakers may be sloppily cut, leaving frayed material. Components may be inappropriately placed. An under-dash amp or equalizer may be installed in such a way that the driver or passenger risks knee damage. A door speaker may interfere with operation of the window crank.

And there are important safety issues. Consider this real-life horror story told by a major autosound manufacturer. Dissatisfied with the performance of his \$3,000 car-stereo system and unable to get satisfaction from the dealer, the owner turned to the manufacturer for help. Apparently, whenever he drove over even a minor bump, the amplifiers would shut off momentarily, causing the subwoofers to emit

a "motorboating" sound. Other than that, he would hardly have known the subwoofers were there, as they were barely audible in normal operation. The system also emitted other annoying noises at times.

It turned out that the installation job was an abomination. The subwoofer enclosures were made of wood the quality of orange crates and were improperly vented for the drivers used. The subwoofers and 6- by 9-inch full-range speakers were installed on the rear deck. But because the fiberboard shelf was not reinforced, it buzzed and flexed along with the music. Under the rear seat was a maze of extra speaker wire and signal cable. In addition to costing far more than necessary, the extra cable made the system more susceptible to radio frequency interference, alternator whine, and ignition noise.

A more serious problem was the installer's failure to use any kind of fuse or circuit breaker in the direct tap from the battery to the bank of power amplifiers in the trunk. And though the amps were appropriately grounded to a single point, an aluminum screw—not an ideal conductor—was used for the ground. The connecting lugs were the wrong size, so the installer put in a washer. Unfortunately, he used a black-anodized washer, another poor conductor. As a result, grounding of the amplifiers was interrupted whenever the car went over a bump, momentarily depriving them of power—hence, the motorboating.

Charred areas around the ground point indicated the most serious problem: arcing due to poor conduction. That could have been fatal to the owner, because an exploratory screw had punctured the gas tank. The screw was left in place to prevent leaking, but gas fumes could be smelled in the trunk. Add an electrical spark, and you have a recipe for disaster.

This story has a happy ending, however. Despite having to pay another \$800 to replace damaged subwoofers and have the system reinstalled properly, the owner was delighted with the final results. More important, he lived to tell the tale. The store that sold and installed the original system has since gone bankrupt.

There are several morals to our tale, which admittedly is an extreme case. First of all, having a system professionally installed is no guarantee of good work: You must choose an installer with as much care as you use to choose the components. And since quality installation takes time, expertise, and special tools, you should expect to pay for it. For elaborate installations involving extra amplifiers and custom speaker enclosures, plan to be without your car for a couple of days. That's how long it will take to do the job properly. Care must be taken even on routine jobs involving a radio and a single pair of speakers installed in factory cutouts. View with caution any promise of free installation.

Most important, check out the ability of the seller to do a good installation. Is the installation shop clean, orderly, and well equipped? Get referrals from friends or examine other

installations done by the shop. In addition to evaluating sound quality, examine the neatness of the job. Are there loose wires that could be shorted by passenger traffic, or are all the cables properly routed and concealed? Does the installation look amateurish, or does the stereo look as if it were installed in the factory?

Installation is the final ingredient in the recipe for highway hi-fi. If you audition and place speakers carefully, give careful thought to the features and program sources you want, assemble the components into a well-balanced system, and have it professionally installed, you'll add a lot of pleasure to your time behind the wheel. ■

ANTISOCIAL SECURITY

AS ANYBODY WHO'S EVER shelled out five hundred bucks for a premium front end—only to have it immediately stolen—can attest: Car stereo theft is all too often a crime that *does* pay. Security is the name of the game, and how well you play it can mean the difference between hearing your favorite tape or CD during tomorrow's commute or being confronted with a gaping hole in the dash. Taking steps to protect your investment can mean not only peace of mind but perhaps a savings on your insurance premium as well.

Fortunately, there are a number of options available for fighting back. But before you can choose the best one, you must decide exactly what it is you are trying to protect: the car itself or the dashboard contents. Car alarms have become sophisticated enough to deter all but the most seasoned criminals, but they do not come cheap. Protecting your car is beyond the scope of this column, but I can give you three pieces of advice. First, the alarm will stand a better chance of succeeding if it sounds instantaneously, rather than having an "entrance delay." Therefore, I recommend a remote arm/disarm alarm—why give a thief a 20-second head start? Second, if you are having the installation done professionally, shop around, since prices can vary dramatically from dealer to dealer for the same coverage, sometimes even for the same alarm. The biggest variable is usually labor. Expect to pay a minimum of \$100 for all but the simplest installation—but it can, and usually does, go quite a bit high-

er. Third, check with your insurance company to see whether a discount is offered for a particular kind of security system. Some states now mandate a discount for qualifying alarms; others have legislation pending.

If you're not going to protect the whole car, you might still be able to hold on to your radio. The option of choice in metropolitan areas seems to be the new removable DIN-size format featuring a permanently installed and wired sleeve from which the receiver can be extracted and reinserted with a minimum of fuss. Made popular by Kenwood, removable front ends are now offered by practically every major manufacturer. If this option appeals to you, but you already have big bucks invested in a new front end, you may be able to retrofit it with a Bensi Box, which—if it fits in the dash (in my experience, it frequently doesn't)—serves both as a permanent sleeve and a masking shroud for the radio.

One of the nicest things about the slide-out format is the absence of a conspicuous radio for the window-shopping thief to steal, which could spare you a broken window. It also offers the possibility of buying one high-quality unit for use in several cars. Possible drawbacks include the hassle of taking the radio with you. If you don't and the unit is stolen, which obviously would be quite easy, expect the insurance company to deny coverage, since the radio was not a permanently installed part of the vehicle.

A security measure with great promise is secret coding.

Currently in use by Clarion, Philips, Pioneer, Nakamichi, and others, coding requires the entry of a multidigit number in order to activate the unit at any time after the power is disconnected and then reconnected. Without the appropriate code, the device is inoperable and therefore worthless. After several erroneous entries, most units will not accept further entries for a long time, to prevent "hot wiring" and exhaustive testing of all possible code numbers. Currently, however, the average thief could not be expected to know the significance of a deck marked "Secret Code" until he's already done his dirty work. There's not much chance of his giving it back at that point. A special note to both consumers and retailers: If you lose or forget your code number, it's an expensive non-warranty procedure for the factory to change it (if it can be done), and most likely you'll have to present some proof of purchase.

Sony's Disc Jockey established a new category for secure car audio systems by putting its Compact Disc changer mechanism in the trunk. The compact size of the Disc Jockey's remote allows it to be tucked out of sight. Alpine's new cassette and disc changers also put their works in the trunk, but their optically coupled control/tuner unit must be installed in-dash. Should a thief decide to try his luck, he might not realize that he is getting only half the package until he's already broken in, if then. Nevertheless, you can expect more trunk-mounted systems in the future.

Quite a few in-dash receivers are available with either a built-in alarm or "alarm-ready" wiring, which requires an optional module. Most are triggered when a circuit is broken, e.g., when a wire is cut or jarred loose. The problem I see with this arrangement is that the burglar has almost finished his job by the time the alarm sounds, and all but the most timid would probably remain long enough to finish what he has started. Still, some protection is better than none.

If you don't have the money to spend on any of the techniques mentioned above, there are some inexpensive options that are sure to fit into your budget. You can make your radio look either like a cheap factory AM model, like it's already been stolen, or like nothing at all (by hiding it). Any of these cover-up products can be added for less than \$10. Some of them are quite flimsy and probably wouldn't fool anyone. Others won't fit well enough to do the job. The opposite, and perhaps a bit more effective, approach is to stuff a conspicuous cassette-mechanism lock into the maw of your receiver. All but the first-time thief will recognize this as being more trouble than it's worth, since forcible removal of the lock will damage the cassette transport—not bad for \$20-\$30. An Audio Safe combines these two techniques by obscuring the receiver and locking it up as well. (As a bonus, an Audio Safe should also keep the elements from infiltrating your front end.) And finally, it's worth mentioning that another high-ticket accessory, the increasingly popular radar detector, is fast replacing car stereo as a thief's favorite target. —Jay C. Taylor

RECOG

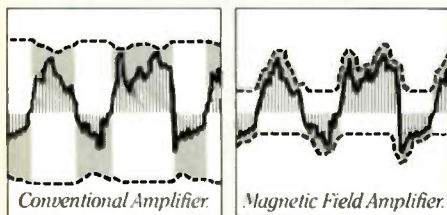
Why the Carver M-500t Magnetic Field Power Amplifier has helped begin an industry trend and how it has stayed ahead of its inspired imitators.



Twice in the last decade, Bob Carver has taught the high fidelity industry how to make amplifiers that give you better performance and value. Both times his bold lead has attracted followers. Still, as evidenced by the current release of the M-500t, Carver sets standards yet unequaled in the audio community.

With its astonishingly high voltage/high output current and exclusive operation features, it is a prime example of why Carver remains the designer to emulate:

- Continuous FTC sine-wave output conservatively rated at 250 watts per channel.
- Produces 600 to 1000 watts per channel of dynamic power for music (depending on impedance).
- Bridging mode delivers 700 watts continuous sine-wave output at 8 ohms.
- High current Magnetic Field power supply provides peak currents up to ± 100 amps for precise control of voice-coil motion.
- Designed to handle unintended 1 ohm speaker loads without shutting down.
- Equipped with infinite resolution VU meters.



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

POWER EXPRESSED BY THE DEMANDS OF MUSIC.

The Carver M-500t Power Amplifier responds to musical transients with better than 600 watts per channel of instantaneous peak power through 8 ohm speakers. Well over 900 watts per channel into 4 ohm speakers.

And yet its Federal Trade Commission Continuous Average Power Rating is 250 watts per channel into 8 ohms.

The gulf between the two power ratings represents Bob Carver's insistence that amplifier design should fit the problem at hand. That problem is reproducing music with stunning impact, not simply satisfying a sine-wave test which doesn't even include speakers or sound sources. Hence the seeming gulf between the two ratings.

Bob reasoned that since music is composed of three basic types of power waveforms, those types of waveforms are what an amplifier should be designed to satisfy.

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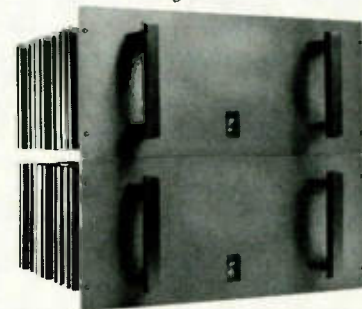
RMS of long term power for demands lasting up to several seconds. The M-500t provides more power, more current and more voltage than any comparably priced amplifier ever offered.

THE MAGNETIC FIELD AMPLIFIER VS. CONVENTION.

Audiophiles, critics and ultimately other manufacturers have each accepted the wisdom of Bob Carver's fresh approach to delivering power in musical terms. Yet only Carver has so elegantly translated theory into practice.

Rather than increase cost, size and heat output with huge storage circuits, Magnetic Field Amplification delivers instantaneous high peak and longterm power from a small but powerful Magnetic Field Coil. The result is an amplifier capable of simultaneous high current and high voltage that can do sonic justice to the dynamics of Compact Discs and audiophile records in a compact, cool-running design. An amplifier costing considerably less than the ultra-esoteric models which figured significantly into the genesis of its circuitry. For a reprint of the full story of its development as well as a catalog of Carver high fidelity audio components please call or write to us.

Figure 1



This \$7,000 pair of esoteric amplifiers figure significantly into the heritage of the M-500 "t" version circuitry.

Figure 1 above shows a \$7,000 pair of ultra-esoteric mono amplifiers. No expense was spared on their admittedly magnificent but still conventional design and construction.

Figure 2 shows the massive toroid output transformers contained in these prestigious audiophile designs. At 10% regulation, their output current is ± 50 amperes.

All conventional amplifiers are condemned to using this type of design.

ATION.

Figure 2 also shows the patented Magnetic Field Coil employed in the Carver M-500t. Its output current is ± 100 amps at 10% regulation!!!!

Figure 2



Over 40 pounds of toroid coils put out half the current of a single six pound, four ounce Magnetic Field Coil.

DISTINGUISHING FEATURES OF THE CARVER M-500t.

Power is mandatory for dynamic impact and musical realism. And yet power requires control and finesse. While the Carver M-500t isn't the only amplifier to deliver adequate output, it is one of the few that tempers force with protection circuits beneficial to both the amplifier and your loudspeaker system.

◆ These include DC offset, short circuit power interrupt as well as two special computer-controlled speaker monitor circuits which protect against excessive high frequency tweeter input and an overall thermal overload.

◆ The Carver M-500t continuously displays power output through dual, lighted infinite resolution VU-ballistic meters. Meters which can react to musical transients as brief as 1 millisecond.

◆ The M-500t is quiet. Inside and out. Its circuitry has the best signal-to-noise ratio of any production amplifier. Better than -120 dB. And, in spite of its massive output capability, the M-500t does not require a noisy fan to dissipate heat. Thanks to the cool running Magnetic Field Amplifier circuitry.

◆ No other amplifier in the M-500t's price or power ranges is capable of handling problematic speaker loads as low as 1 ohm. Whether required by certain brands of speakers, or inadvertently derived by pairing too many low impedance speakers at one set of output terminals, all conventional amplifiers simply shut down or blow their fuses when faced with this condition.

◆ In stereo use, both channels of the M-500t can actually borrow from each other during unequal output demands. In addition, Carver amplifiers have pioneered phase inversion circuitry which takes advantage of the in-phase (mono) characteristics of bass to essentially double available power supply current at low frequencies.

◆ Finally, the Carver M-500t can be used in a bridged mode as a 700 watt RMS per channel mono amplifier without any switching or modification.

MUSIC IS THE FINAL PROOF.

Were you to buy a power amplifier solely on features and performance specifications, painstaking comparison would inevitably lead you to the Carver M-500t.

But we are sure that your final judgment will be based on musicality. It is here that the M-500t again distinguishes itself.

Bob Carver has carefully designed the M-500t to have a completely neutral signal path that is utterly transparent in sonic character. The result is more than just musical accuracy. It means a total lack of listener fatigue caused by subtle colorations sometimes exhibited by conventional amplifier designs, regardless of their power rating.

It means a veil is lifted between you and your musical source as the most detailed nuances are revealed with realism, believability and delivered with stunning impact.

VISIT YOUR CARVER DEALER FOR A SURPRISING AUDITION.

We invite you to audition the Carver M-500t soon. Against any and all competition. Including those who are only now embracing the principles which Bob Carver has refined over the last several years.

We doubt that you will be surprised when the M-500t lives up to the claims made in this advertisement. What will surprise you is just how affordable this much power, musicality and accuracy can be.

SPECIFICATIONS: Power, 251 watts per channel into 8 ohms 20Hz to 20kHz, both channels driven with no more than 0.15% THD. Instantaneous Peak Power, 1000 watts into 2 ohms, 950 watts into 4 ohms, 600 watts into 8 ohms. Longterm RMS Power for Music, 500 into 2 ohms, 450 into 4 ohms, 300 into 8 ohms, 1000 watts bridged mono into 4 ohms, 900 watts bridged mono into 8 ohms. Bridged Mono RMS Continuous Power, 700 watts continuous into 8 ohms. Noise -120 dB IHF Weighted. Frequency Response, ± 0.3 dB 1Hz-100kHz. Slew Factor, 200. Weight, 25 lb. Finish, light brushed anthracite, baked enamel, black anodized.



CARVER

POWERFUL

MUSICAL

ACCURATE

B Y J A Y C . T A Y L O R

ROAD WARRIORS

1987

SOME OF THE LOUDEST SOUNDS AT THE WINTER CONSUMER ELECTRONICS Show emanate from autosound demo vehicles on and off the show floor. Nobody actually *sits* in these vehicles, but the sound (not to mention the sensation) does grab your attention. And so will this year's new autosound components. Compact Disc is still a hot item, as more manufacturers find a way to squeeze a player and a tuner into a single in-dash chassis. Speaking of "hot" items, theft deterrence features, such as the slide-out chassis, are becoming commonplace. DAT players are in the development stage, but their fate is tied to that of their home counterparts. Our resident autophile, Jay C. Taylor, reports. *Christopher J. Esse*

DIGITAL TRAVELS

CAR COMPACT DISC PLAYERS CONTINUE TO draw attention in disproportion to their meager share (so far) of the 12-volt market. Alpine, in particular, showed a renewed commitment to the format with three models. Heading the list is the 5950 (\$1,500), a 12-disc changer that ends the Sony Disc Jockey monopoly (Sony's changer uses a 10-disc magazine). Features distinguishing the new Alpine include fiber-optic coupling of the in-dash controls to the trunk-mounted changer mechanism and a programmable memory card that allows disc and track selections to be made in advance (presumably when you load the magazine) at a remote location. In addition, the memory card acts as a coded antitheft device: Upon insertion, it will power up the system only if its factory code matches that of the control unit. And if the power has been disconnected, a four-

digit number matching the factory code must be entered before the unit will operate again. So if the unit and its memory card are removed (read "stolen"), only the owner will be able to make the system work. Other new digital offerings from Alpine are two in-dash CD/tuner combos, the full-featured 7902 (\$850) and the more basic 7901 (\$650). Each CD/tuner is housed in a single 7- by 2- by 5/8-inch (DIN-size) chassis for

ease of installation.

Can't afford even the least expensive car CD system? Try hooking up Sony's D-10 portable CD player, which has an entire package of accessories available for mobile use. There's nothing new about the cigarette lighter power cord or the cassette adapter (Recoton has offered one for some time), but Sony's new gooseneck mounting stalk (\$75) with its own suspension system breaks



ALPINE 5950 AND 1341

CD changer control unit (below) with matching FM/AM tuner



KENWOOD KDC-9R

CD player/tuner combination

new ground while possibly solving the two biggest problems with car-bound portables—mistracking and placement. You might recall Blaupunkt's gooseneck equalizers, which similarly attacked the problem of location.

Kenwood displayed a new CD/tuner, the KDC-9R (\$850), but attracted more attention with its prototype car DAT player. Don't expect to see a mobile DAT unit anytime soon, however, regardless of Alpine's stated intentions. There are still some technical obstacles and legislative concerns. Clarion also showed a prototype player-only unit, but it announced plans to bring in a combination DAT/tuner, having evidently learned from the unpopularity of CD-only models. When car DAT does make its debut, look for a price above \$1,000 and few or no prerecorded tapes.

Of perhaps greater significance are two new half-DIN-size products, a format previously available only in equalizers and a couple of amplifier models. Alpine's 1341 tuner (\$220) is designed to integrate with the in-dash control unit of its 5950 CD changer (also half-DIN); Sony's XK-8 (\$270) is a cassette player similarly conceived for use with the head-end of its two-piece CDX-R88 CD/receiver (reviewed in this issue). The prototype XK-8 we saw, however, did not include Dolby noise reduction, an omission that immediately dismisses it from serious consideration for a true audiophile system. It is not clear whether the Alpine CD changer, add-on tuner, and Sony's cassette player could be patched together into one have-it-all system, but the half-DIN-size format promises greater flexibility in mixing and matching the best car audio components from each category. This is long overdue.

TAKE-AWAYS

WHILE HALF-DIN PRODUCTS MAY BE HARD TO come by for now, removable DIN models are flooding the market. They can be stowed in the trunk (stealthily) or taken along when

you leave your car. Leading the field is Kenwood, which introduced its fourth and least expensive model, the KRC-333 cassette/receiver (\$340). Denon's top slide-out, the DCR-5520 cassette/receiver (\$600), features a dual-azimuth head, a logic-controlled tape transport, and a front-panel input jack for a portable CD player. And at least four other manufacturers have entered this burgeoning category: Pioneer, Alpine, Yamaha, and Sansui. The latest Supertuner cassette/receiver from Pioneer, the KE-3050QR (\$320), is positioned at the low end of the extractables market. Yamaha is launching two models, each available with an optional (\$50) mounting bracket for slide-out installation: the YCR-50 cassette/receiver and the YCT-40 cassette/tuner, with approximate prices of \$450 and \$400, respectively. All three of Alpine's new receivers include a cassette door that closes completely and a mechanism to release the capstan and pinch roller when the handle is lifted for removal. Both features help prevent damage while the units are stored. The 7283 (\$400) is a high-power model with



DENON DCR-5520

Removable cassette/receiver

Dolby B; the 7284 (\$500) adds a logic-controlled tape transport and backlighting; and the 7285 (\$550) offers Dolby C and Alpine's proprietary HLTAC tape head. A Cordura carrying case is available as an option for each. And finally, Sansui has two high-power, autoreverse models, the RX-5100 (\$450) and the Dolby B-equipped RX-7100 (\$550).

FLAGSHIPS

BLAUPUNKT'S BERLIN TQR-07 AUTOREVERSE cassette/tuner (\$1,500) uses a data bus for internal communication among its various subsections. The company says that the data bus design will enable future components, such as navigation and security devices, "to interface with a universal dashboard display and control system." Among the Berlin's notable features are a diversity FM tuner section, C-QUAM stereo AM reception, a programmable antitheft code, and a high-contrast LCD display for control and status information.

Clarion's new top model is the Audia 2000E autoreverse cassette/tuner (\$700). Like the Blaupunkt, many of its operating controls are shared among a limited number of buttons. The 2000E also includes a diversity FM tuning system, stereo AM reception, and a programmable antitheft code.

As manufacturers try to fit more and more features into their head units, they are relying on tiered control schemes and informative displays. We hope this trend is followed by a renewed emphasis on control-panel ergonomics.

OPTIONS

SIGNAL PROCESSORS—CROSSOVER UNITS IN particular—are drawing more attention from both consumers and manufacturers, with the result being increasingly sophisticated products. Consider the Harman Kardon CXO-1 (\$250), an active crossover and system controller. In addition to providing both stereo and mono subwoofer outputs,

the CXO-1 allows for as many as four amps to handle the upper frequencies. Mid- and high-frequency output is available for both front and rear speakers, but the crossover points need not be the same. For full-range speakers, the midband filter is simply switched to "flat." Output for all five bands—front and rear mid, front and rear



THE EPICENTER FROM AUDIO CONTROL

Bass signal processor

high, and subwoofer—is individually adjustable for sensitivity and gain matching. A 50-Hz boost of up to 10 dB can be added to the subwoofer or to both the subwoofer and rear-channel outputs. Resonance (at 200 Hz) can be controlled with a midbass attenuation switch for both front and rear outputs.

One of the most unusual processors is Audio Control's Epicenter (\$180), a 12-volt version of the company's home model Phase Coupled Activator (test report, January 1986). Detecting trace elements of bass lost in the recording process, the Epicenter reconstructs the bottom end to recapture the impact of the original material. The processor itself can be remotely mounted and operated by a small control unit placed in an accessible location.

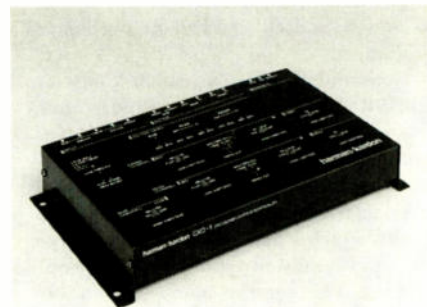
If dash space is at a premium, you can still

have seven bands of equalization and a fader to balance two amps with Alpine's 3330 (\$160), which can be mounted with double-sided tape or Velcro or stowed up to seven feet away from the main installation. Connection is via a mini-DIN plug. Changes in setting still must be made on the actual unit, however.

ADS unveiled just the second parametric equalizer in autosound, the EQ-1 (\$200). Meant to be installed in the trunk, the EQ-1's settings are not user-adjustable but instead are preset for eight front-channel and eight back-channel frequencies with plug-in ADS modules, some of which are designed for the acoustics of specific vehicles. Generic modules are available as well, with additional custom EQ modules planned. Another ADS piece, the 642-CSi (\$230), functions

not only as an active crossover but as a switching device for separate cassette/tuner and CD head units as well. Its most unusual function, however, is Constant Bass processing, which enables the installer to add signals below 85 Hz to front or back satellite speakers. The amplitude of these low frequencies can be individually adjusted to prevent overdriving the woofers.

Altec Lansing broadened its base with electronic products, including the ALC-10 crossover (\$120) and two amplifiers. The ALC-10 has a subwoofer output with adjustable low-pass frequency, a fixed 100-Hz high-pass output, and a full-range output. What's unique about this crossover is its adjustable dynamic equalizer control, which boosts bass response at low listening levels



HARMAN KARDON CXO-1

Electronic crossover/system controller

but decreases it as the volume rises in accordance with accepted loudness compensation curves. The two-channel ALA-270 (\$360) and four-channel ALA-435 (\$400) amplifiers, 70 watts (18.5 dBW) and 35 watts (15.5 dBW) per channel, respectively, both feature Dynamic Stored Energy circuitry to pass musical transients without distortion. The resulting extra 5 dB of headroom is said to provide ample power for the dynamic range of Compact Discs. The DSE circuitry charges large capacitors during musical lulls, providing stored power for momentary peaks. Both amps will accommodate low-level preamp inputs, as well as high- and low-level speaker inputs, thanks to their input transformers. For the four-channel ALA-435, this allows front-to-rear balance control with virtually any head unit on the market.

Multichannel amps saw their ranks increase with introductions from Blaupunkt, Kenwood, and Yamaha. The latter's YPA-700 (\$350) can provide 140 watts (21.5 dBW) total power into four, three, or two channels. But the new multichannel champion is ADS, with four models, two of which offer six channels. The PH-12 (\$320) is a relatively straightforward unit, with six channels at 20 watts (13 dBW) each, while the PH-15



BLAUPUNKT BERLIN TQR-07

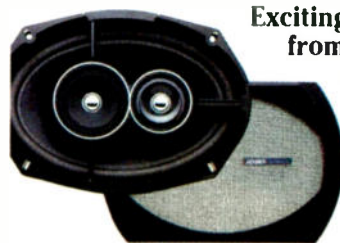
Cassette/tuner

Before you listen to a Jensen JXL, we suggest warming up with something a little less exhilarating.



If you're about to buy car speakers or a car receiver, it's important to warn you about Jensen® JXLs. The sound of a JXL is so dynamic that if you're not prepared for it, listening to one could be dangerous.

Exciting sound from exciting speakers.



What could be more exciting than a JXL? Each model is

compact disc ready and handles the accurate sound of today's digital recordings with ease.

They pack a lot of power, too. Poly-carbonate dynamic cone tweeters and long throw woofers give the JXLs up to 175 watts of peak power handling. And thanks to their very efficient design, the JXLs get plenty of volume out of any receiver.

Listen to a JXL receiver and you're ready for anything.

If our speakers don't take your breath away, our receivers will. They've all been designed with the most advanced technology money can buy. Features like Dolby "B," Auto Reverse Tape Transport, Phase Locked Loop tuning, Seek, Scan and Automatic Program Control.

In the unlikely event you need even more excitement, the JXL-45 and JXL-55 have Pre-Amp outputs and compact disc player inputs. So you can add an amplifier or CD player to your system whenever you're ready.

So, go jump off a building. Put your head in a lion's mouth. Do whatever it takes to prepare yourself for the exhilarating sound of a JXL.

Then go down to your local Jensen dealer and experience the real thing.



COMPACT DISC



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JENSEN

We make music a moving experience.



JENSEN JTE-802

Pick-up and car speaker system

(\$560) offers 240 watts (23.8 dBW) total for either six-, five-, four-, or three-channel applications. Multichannel monster amp honors go to Soundstream, however, whose MC-500 (price unavailable) has 500 watts (27 dBW) available to divide between four, three, or two channels. A Low Frequency Compensation circuit allows for a linear boost of as much as 6 dB centered anywhere between 35 and 280 Hz. Another significant Soundstream introduction is the Class-A-50 (\$350), not surprisingly a Class A amplifier rated at 25 watts (14 dBW) per side.

SPECIALTY SPEAKERS

ANOTHER PRODUCT CATEGORY FOR WHICH there seems to be no shortage of suppliers is pickup-truck and hatchback speaker systems. Some big names are coming into a market previously dominated by a number of smaller companies. Gerwin Vega and Yamaha showed products for "dealer comment," but from the looks of it, finished goods will not be far behind. Jensen calls its JTE-802 (\$300) The Force, a pair of 8-inch two-way enclosures that fit behind the seat of a van or pickup and use a vent to direct the bass under the seat. Sparkomatic introduced a 6½-inch two-way, the SK-480 (\$60), to

capture the low end of the market. And Pioneer has two new models, the diminutive TS-TRX3 (\$150), a 5-inch two-way bass reflex system, and the TS-TRX5 (\$270), a 6½-inch two-way with passive radiator and horn tweeter.

In the bass-only department, Southern Audio Service showed one-piece versions of its popular 6½- and 8-inch Bazookas, designed to look at home in the rear of a hatchback, while ADS entered the bass box business at the high end with two enclosure-mounted subwoofers: The SB-7 (\$400) has a pair of 7-inch drivers, and the SB-10 (\$650) has 10-inch twins. Blaupunkt's SUB-W100 (\$300) is its first powered subwoofer system and has a built-in 80-watt (19-dBW) amp to drive two 5¼-inch woofers. About the size of a shoe box, the SUB-W100 can easily be mounted under the rear deck; a complementary crossover, the BXX-Sub 07 (\$100) is

aged multiple-driver market. Pioneer showed the DMSS-70 (\$480), a three-way system comprising 6- by 9-inch woofers, 3½-inch midranges designed to mount in-dash, surface-mount dome tweeters, and crossovers that accept the input of one or two amplifiers (bi-amplification). Altec Lansing displayed the ALS-525 (\$270), with 5¼-inch carbon-fiber woofers, dome tweeters, and crossovers. Essentially the same components are available in a plate-mount version, the ALS-500 (\$250). The designers at KEF introduced a series of 4-ohm component drivers (prices were not available) identical to those comprising its GT-200 automotive loudspeaker system. The KAR-33 tweeter, adapted from KEF's 104/2 home model, is available in both "A" and "F" configurations. The former is an angled surface-mount, the latter a flush-mount. The KAR-110 is a 4½-inch bass/midrange driver with



SANSUI RX-7100

Removable cassette/receiver

also available. Stillwater Designs produced the 2 by 10, an enclosure with two 10-inch woofers and a foam gasket to fire through the back seat from the trunk! Now where do I put my spare?

COMPONENT SPEAKERS

COMPONENT SPEAKERS ARE ALSO PLENTIFUL AS a variety of manufacturers enter the pack-

a fiberglass-reinforced polymer basket. The KAR-200SW Coupled Cavity Subwoofer system employs the same technology used in the 104/2 and includes a pair of 8-liter enclosures. Mounted in the trunk, each 8-inch woofer is coupled to the car's interior through a flexible hose terminating at a 4-inch hole in the rear deck.

And finally, it should be mentioned that honeycomb flat-diaphragm speakers seem to be gaining acceptance in autosound. Blaupunkt has three new models, the 4-inch HC-1030, the 5¼-inch HC-1340, and the 6½-inch HC-1660, ranging in price from \$70 to \$90. And Pioneer adds a new twist with its hybrid two-way systems: The TS-F606 (\$180) and the TS-F202 (\$120) offer honeycomb woofers with an integral cone tweeter. Look for more new car speakers using this material and technology in the future. Happy motoring. ■



PIONEER KE-3050QR

Removable cassette/receiver

For an overview of the latest in high-end factory-installed autosound systems from GM, Ford, and Chrysler, see "Currents" in this issue.

TWO FOR THE ROAD

WE TEST SONY'S NEW IN-DASH
TUNER/CD PLAYER AND A
40-WATT CAR STEREO
POWER AMPLIFIER FROM ZAPCO.

SONY CDX-R88



Car Receiver/CD Player

DESPITE ITS EXCEPTIONALLY GRATIFYING behavior on the road, the Sony CDX-R88 differs from the typical car stereo unit in only two obvious respects: It substitutes a Compact Disc player for the usual cassette tape transport, and its electronics are housed in two separate chassis. The DIN-size dashboard-mount head-end chassis contains all the controls and the CD play-

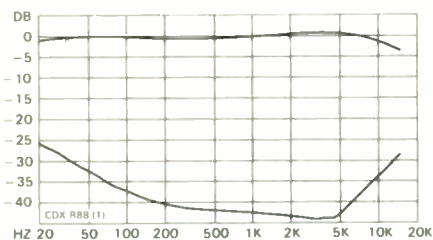
er. It attaches to the second, "hide-away" chassis through a ground connection, signal leads, and an umbilical that plugs into a multipin socket. This second chassis contains the system's amplifier and has connections for the antenna input, DC supply, and speaker outputs; all but the antenna input are included in a single plug-in wiring harness.

DIMENSIONS: MAIN CHASSIS, 7 BY 2 INCHES (CHASSIS FRONT), 5/8 INCHES DEEP; "HIDE-AWAY" CHASSIS: 7 BY 7 BY 1 1/4 INCHES. CONNECTIONS: ROUND MALE OR FEMALE FOR ALL POWER AND SWITCHING FUNCTIONS, SPEAKER OUTPUT; SPADE LUG FOR GROUND; FEMALE PIN PAIRS FOR AUX (OPTIONAL CASSETTE) INPUT, LINE (OPTIONAL SECOND AMP) OUTPUT; STANDARD COAXIAL FEMALE FOR ANTENNA INPUT. FUSES: 6.3-AMP IN IGNITION LINE, 1-AMP IN BATTERY AND LIGHTING LINES. PRICE: \$750. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: SONY CORP., JAPAN; U.S. DISTRIBUTOR: SONY CORPORATION OF AMERICA, SONY DR., PARK RIDGE, N.J. 07656.

Sony suggests that the amplifier chassis be stashed under a seat or in the trunk (even though the umbilical is only five feet long) and be used to drive the front speakers if you opt for a second amp and a pair of back speakers. The second amp can be driven from a line output (in-line pin jacks) on the head-end unit, making use of the fader tab protruding to the left of the volume/balance

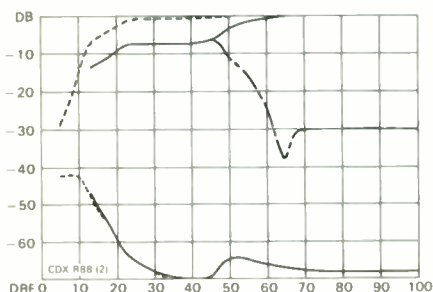
FM TUNER SECTION

FREQUENCY RESPONSE & CHANNEL SEPARATION



Frequency response	+1, -3 dB, 20 Hz to 14 kHz
Channel separation	≥ 30 dB, 38 Hz to 11.5 kHz

FM SENSITIVITY & QUIETING



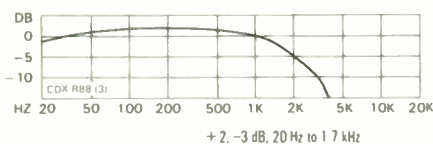
Stereo sensitivity (for 50-dB noise suppression)	see text
Mono sensitivity (for 50-dB noise suppression)	18 1/4 dBf
Stereo S/N ratio (at 65 dBf)	67 dB
Mono S/N ratio (at 65 dBf)	72 dB

CAPTURE RATIO	3.6 dB
SELECTIVITY (alternate-channel)	68 1/4 dB
AM SUPPRESSION	66 dB

	DISTORTION (THD + N)	
	stereo	mono
at 100 Hz	0.24%	0.58%
at 1 kHz	0.26%	0.41%
at 6 kHz	0.70%	0.75%

AM TUNER SECTION

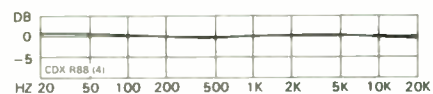
FREQUENCY RESPONSE



Sensitivity	3.8 μV
Selectivity	see text
AVC RANGE	66 1/2 dB

COMPACT DISC SECTION

FREQUENCY RESPONSE



no de-emphasis	+1.0, -0.7 dB, 20 Hz to 20 kHz
with de-emphasis	+1.0, -0.3 dB, 20 Hz to 20 kHz

knob. You can also add a Sony XK-8 half-DIN cassette transport if you want both tape and CD. The necessary auxiliary input and switching connections are also attached to the head unit.

There are three DC supply connections: for ignition (the main supply), battery (the memory backup), and night illumination. Some panel elements (the tuner/clock/CD readout, the tuner band identification, and the pilots for local and mono reception modes) are run from the ignition DC and are illuminated whenever the set is on; the preset numbers and other "beacons" go on with the car lights. It all works extremely well except in direct sunlight, which washes out the two pilots, leaving your ears the only arbiter of the mode settings.

The controls could hardly be more straightforward. At the left end are the basics. Above the volume/balance/fader knob cluster are two small sliders with center detents for the treble and bass controls. Below the knob are buttons for tuner/CD selection (you need not eject the disc in order to check a radio weather report) and tuner preset-bank selection (FM-1/FM-2/AM, corresponding to the three memory slots for each of the six presets). Just to the right of the volume knob are the manual tuning buttons.

On the opposite side of the readout panel are four small buttons: for memory, local/DX, mono/stereo, and display. This last steps between frequency and clock time when the tuner is selected and between track number, elapsed time, and clock time for CDs. Across the bottom are the preset buttons, which are large enough to be fumble-free.

At the far right are the CD controls: forward and backward track skipping, play, stop, and eject. No attempt has been made to supply direct access to individual bands by way of a numerical keypad, but in a moving car, it's probably easier just to tap the cueing buttons several times. Access times are, of course, much faster than in the comparable functions on a cassette transport, and for pick-and-choose listening, we much prefer the CD's control scheme to that of any tape transport we've tested. Add to this the CD's much greater ruggedness and its freedom from any problems of head azimuth, noise reduction tracking, or EQ matching, and we now consider it the clear medium of choice for music playback in the car. As Compact Disc libraries grow, we expect that the R88's format will become increasingly commonplace, replacing the now standard tuner/tape-deck arrangement.

We might be less confident of this had the CD transport in the R88 not performed so superbly. The extremely low-mass (and, therefore, low-inertia) laser pickup with its "hyperlamped" suspension—a new design

—responded flawlessly, despite road shock that was, if anything, worse than usual because of unrepaired winter potholes and frost heaves on our "test track." Part of this shock resistance may also stem from the unit's "auto memory" circuit that quickly returns a jolted laser pickup to its pre-pothole position.

Compared to the performance of typical car stereo tape transports, all the figures from Diversified Science Laboratories' bench tests are outstanding, and most will stand direct comparison with those for home CD players. The frequency response won't quite do so, but the minor aberrations shown in our data column are similar to those found in the FM section's response and thus must be attributed more to the preamp electronics than to the CD circuits. In the interrupted-signal test of ability to play imperfectly made discs, the pickup did begin to stumble on the 600-micrometer "dropout," whereas most home models will get past the maximum (900 micrometers). On the other hand, the test simulating surface dirt—which is more important, particularly in a car environment—posed no difficulty even at the worst case (800 micrometers).

At full volume level, 0-dB peaks from the CD section clip the line output. For this reason, the lab measured it set for a maximum output of 1.5 volts—a volume setting more representative of one you might choose in practice. Surprisingly, the output low-pass filter is unusually gentle in its rolloff, permitting passage of spurious ultrasonics. This puts a premium on the avoidance of amplifiers with high intermodulation distortion or that can deliver very high power at ultrasonic frequencies.

The FM section also uses a new system (or algorithm, you might more accurately call it) for responding to fading stations. As in most models, the channels are progressively blended as signal strength declines, and for severely attenuated inputs, the output level is reduced to minimize noise and distortion. In addition, the high end is rolled off as the input drops "into the mid." One result is that the design has no conventional stereo sensitivity figure: By the time quieting is reduced to only 50 dB (the measurement criterion), there is no channel separation at all—hence, no stereo.

However, the proof of this pudding is in the listening. On the portion of our test track where we assess behavior on weak and fluctuating signal strength combined with severe and fluctuating multipath, the Sony produced the most listenable results we've yet encountered. Noise bursts were so low in level and so softened by the high-end rolloff that they seemed vanishingly faint. As a matter of fact, we counteracted some of the

automatic rolloff by turning up the treble control a notch or two to restore lost brightness, but even so, the noise remained extremely faint. At times, rapid changes in separation produced a "billowing" stereo image that we judged mildly annoying, but choosing the mono mode (a valuable feature unfortunately missing from many other "signal optimized" models) banished even that effect.

The tuner bench measurements generally are very good, though not as exceptional as the in-car listening quality (which is the ultimate criterion, especially in a car system). All this proves is that what measures best on the basis of standards set by home gear isn't necessarily best when you get it on the road. The AM section goes, if anything, even farther in the same direction: With essentially no high end at all (a telephone circuit can have a more extended frequency response), it definitely lacks sparkle. But it banishes a lot of noise at the same time, going for speech intelligibility and leaving music listening pleasure to originate from the other two sources. The sensitivity measurement is outstanding, however; as in many other car receivers, the standard AM selectivity test results in no meaningful figure.

The tone controls are relatively restrained in overall boost/cut range, but they

are well behaved and useful. Power from the supplied amplifier is generous by car radio standards, moderate by those of custom installations. Many users will consider it ample to drive one pair of high-performance speakers; for high acoustic levels, Sony's recommended setup with a separate, subsidiary (and higher power) amp driving the back speakers and the built-in amp powering the less demanding front ones is an excellent approach. (With a properly adjusted fader, the deeper bass and greater distance from the front-seat listeners creates extra current drain in the back, which creates the need for more power there.)

All things considered, we are extremely impressed by the CDX-R88. Cassettes seem clunky and positively antediluvian after you've grown accustomed to CDs in the car. The front-panel ergonomics are outstanding, partly because Sony has avoided unnecessary accoutrements that get in the way of standard functions. But the design is conceived in terms that let you add outboards (particularly the matching cassette transport) relatively easily if you want extra features. And the FM section is superb in its civilized way with fading signals. No other car stereo system we've tested has so much going for it where it really counts—in a moving vehicle. ■

CHANNEL SEPARATION (at 1 kHz)	53 3/4 dB
S/N RATIO (re 0 dB; A-weighted; see text)	
without de-emphasis	89 dB
with de-emphasis	92 3/4 dB
HARMONIC DISTORTION (THD + N; 40 Hz to 20 kHz)	
at 0 dB	≤ 0.52%
at -24 dB	≤ 0.044%
IM DISTORTION (70-Hz difference; 300 Hz to 20 kHz)	
0 to -30 dB	< 0.01%
LINEARITY (at 1 kHz) no measurable error to < -60 dB	
TRACKING & ERROR-CORRECTION	
maximum signal-layer gap	≥ 600 μm
maximum surface obstruction	> 800 μm
simulated-fingerprint test	pass
PREAMP/AMPLIFIER SECTION	
BASS CONTROL	+ 7 1/2, -8 3/4 dB at 100 Hz
TREBLE CONTROL	+ 6 1/2, -9 1/2 dB at 10 kHz
LINE OUTPUT IMPEDANCE	1,030 ohms
MAXIMUM LINE OUTPUT LEVEL	
from FM (100% modulation)	1.56 volts
from CD (0 dB, at clipping)	2.18 volts
OUTPUT (per channel into 4 ohms; at 3% THD + N)	
at 1 kHz	13.8 watts (11.4 dBW)

ZAPCO S-80



DIMENSIONS: 10 BY 6 1/2 INCHES (MOUNTING PLATE), 2 INCHES HIGH.

CONNECTIONS: FEMALE PIN JACKS FOR SIGNAL INPUTS; SCREW CONNECTIONS FOR DC POWER, SWITCHING, GROUND, AND SPEAKER

LEADS. FUSE: 25-AMP RECOMMENDED FOR USER-SUPPLIED DC-POWER

ER LINE. PRICE: \$275. WARRANTY: "LIMITED," TWO YEARS PARTS AND

LABOR. MANUFACTURER: ZEFF ADVANCED PRODUCTS CO., 2549 YOSEMITE BLVD., SUITE E, MODESTO, CALIF. 95354.

Car Power Amplifier

THIS IS THE FIRST PRODUCT THAT WE'VE tested from Zeff Advanced Products Company (Zapco), a West Coast car stereo specialist manufacturer offering a variety of power amplifiers, preamplifiers, and equalizers, including one of the very few

parametric models we're aware of for automotive systems. Both the products and the literature imply a focus on ultrahigh-performance custom systems. That is, Zapco goes for performance on the assumption that its installers already know their business and

makes no attempt to hold a neophyte's hands.

In addition to the high power and rugged construction you'd expect in the products of such a company, the S-80 offers what Zapco calls "balanced differential whine rejection

RATED POWER (4-ohm load)	16.0 dBW (40 watts) / channel
OUTPUT AT CLIPPING (at 1 kHz; both channels driven)	
4-ohm load	16.9 dBW (49 watts) / channel
DYNAMIC POWER (4-ohm load)	16.9 dBW
DYNAMIC HEADROOM (re rated power; 4-ohm load)	+0.9 dB
HARMONIC DISTORTION (THD; 20 Hz to 20 kHz; see text)	
at 16 dBW (40 watts)	≤ 0.178%
at 0 dBW (1 watt)	≤ 0.027%
FREQUENCY RESPONSE	
	+0, -1/4 dB, < 10 Hz to 23.5 kHz,
	+0, -3 dB, < 10 Hz to 99.7 kHz
S/N RATIO (re 0 dBW; A-weighted)	see text
SENSITIVITY (re 0 dBW)	see text
INPUT IMPEDANCE	see text
DAMPING FACTOR (at 50 Hz; re 8 ohms)	65
CHANNEL SEPARATION (at 1 kHz)	52 1/4 dB

circuitry.” Simply put, this design seeks to cancel noise picked up in the signal leads feeding the input amplifier. To this end, the sleeve contacts of the gold-plated input pin jacks are connected to the inverting input of an integrated circuit whose noninverting input receives the signal from the jack’s central conductor. Assuming that the engine ignition or any other noise source induces the same spurious signal components in both elements of the lead, these components should cancel when they meet in the IC, since the IC amplifies only the difference between the two leads. The input isn’t truly balanced in the sense of, say, the three-prong Cannon (XLR) connections commonly found in most professional gear, however. For that, it would need two conductors *both* surrounded by a *grounded* shield.

While this part of the design achieved its purpose in our road-test vehicle, it posed some problems to Diversified Science Laboratories’ standard test setup and precipitated some changes in measurement method from those used in past reviews of competing amplifiers. So, while we must document the differences to permit fair comparisons, the problems DSL encountered in its testing appear unimportant in light of the amplifier’s exemplary behavior in our test car.

On the test bench, DSL found considerable hum at 60 Hz and its harmonics, obviously deriving from the lab’s AC power supply and presumably entering via the shield. When noise was measured with no input connected and the gain set at minimum, it registered a very encouraging 70 dB below a 0-dBW (1-watt) output—or what would have been a 1-watt output if a standard test signal had been present. With gain at maximum (boosting any noise generated ahead of the input level controls), noise measured $-52\frac{3}{4}$ dBW (that is, $52\frac{3}{4}$ dB below 0 dBW, or therefore, $68\frac{3}{4}$ dB below rated power), which is still good. In these tests, what little noise was present consisted predominantly of spikes from the amp’s own switching power supply.

For the distortion measurements, the normal full-gain setting proved unusable because of the 60-Hz artifacts in the output. The lab reduced gain until a 1-volt input produced rated output (an alternative method that seeks to simulate in-use conditions), which still delivered a 0-dBW output from an input of only 0.16 volt. This really is closer to the setting that probably will be ideal in most systems. With minimum gain, input sensitivity measures 0.3 volt (possibly preventing full rated output on peaks even with your front end running wide open); at the S-80’s maximum gain setting, sensitivity measures 0.035 volt (requiring less than full output from typical front ends if the amplifier is not to overload itself or the speakers on

peaks).

Another measurement that frustrated normal lab technique was that for input impedance. The differential configuration simply prevented definitive data from being obtained. It appears, however, that input impedance is close to 100,000 (100k) ohms and that, unless the output impedance of your head unit is extraordinarily high, you need not worry on this score.

Zapco supplies with the S-80 a sheaf of suggested multiamp hookups and recommendations about wire gauge and fusing—and that’s it. Fortunately, the rest is pretty obvious. The baseplate has slotted flanges at the ends for secure mounting. At one end of the amp are the input jacks and gain controls; at the other end are a long screw-terminal strip that accepts bared wires or small spade lugs for the DC supply, the amp-on signal from your head unit, a ground connection, and the four loudspeaker connections (hot and return in each channel).

In a multiple-amplifier installation, the S-80’s 25-amp (per amplifier) fuse recommendation adds up to a huge current drain if you make a wiring mistake. (An S-80 is actually rated for 50 amps maximum current in the output stages, though the fuse will blow before this level can be sustained for any time.) On the other hand, there’s protection against overload, over-voltage, and under-voltage built into the circuitry, which will save you blown fuses (or melted wire, if you ignore the wiring recommendations) under certain conditions. But if you are going multiamp, make sure your battery can deliver all the current it may be asked for.

As we said, the S-80 performed flawlessly in our test car. Because of the lab’s experience, we were particularly concerned with noise pickup. But using the car’s electrical system (for which it is designed) instead of a lab AC adapter, and at any reasonable setting of the amp’s input-level adjustments and the head end’s volume control, we could hear no engine whine at any driving speed. If any was there, it was entirely masked by the engine noise itself, giving the subjective impression of total background silence. Nor were we able to detect any tuner noise attributable to RF (radio frequency) output from the S-80, confirming another of Zapco’s stated design aims.

That the S-80 passed its power rating with a comfortable margin almost goes without saying. In most cars and for most tastes, almost 17 dBW (50 watts) per side on peaks will be more than enough. But Zapco’s aim is to give you the option of being as extreme as you want in this regard. Whether you go for a standard setup with a single amplifier or for a megasystem—catechism or cataclysm, as you might say—the S-80 is ready to supply the need. ■



LIVE VS. STUDIO

JAMMED UP AGAINST THE STAGE OF New York's Bottom Line at a performance by Fairport Convention, I anticipated reliving the concert at home through repeated playings of the tour's LP, *Expletive Delighted!* I enjoyed the exuberance of the band's new lineup, which was infused with a special energy by the burlesque antics of fiddler Ric Sanders and by the intimacy and heat in the 400-seat club.

When I got home to the record, I was disappointed to discover that it contained no vocals and few of the songs that had made the evening I wanted to recapture. I found the instrumentals unambitious and cold, and my attention drifted. My memory of the sweating fivesome, kibitzing and crooning before a rapt crowd, demanded more passion, more color, and more dirt than the antiseptic and Spartan studio record offered.

When I'd listened through once, I dispatched the LP to my shelves, where it hasn't been heard from since.

Performances and recordings serve different purposes, so it's unfair to measure them against one another or expect them to be interchangeable. But I, like most audiences, usually do—even though we know that a dull performance can strike an inspired performer and that the excessive cleanliness of modern recording can mute the most vivid. While we fight to see our favorites, we also like to collect souvenirs—that's why record sales increase following artists' appearances and why so many artists sell LPs and tapes along with T-shirts after their shows.

Many bands try to find a correlative between the stage and the studio with live recordings. But musicians often are tempted to clean up the tapes—to eliminate the inevitable buzzes and hums and imbalanced sounds. This intervention strips concert recordings of the very attribute that makes them valuable to fans: the opportunity to share in or recall the immediacy and intensity of a live performance.

Tour-related albums—those that cover the currently performed material—can be recorded live or in the studio. But each runs the risk of diminishing the remembered event. Treating live performances and studio recordings as separate entities, even though some material of each may be heard in the other, alleviates their need to be interchangeable. Instead of half-heartedly trying to bridge the live/studio gap, performing bands and record companies should remain discrete and serve their audiences separately but equally. Discerning fans will approve. *Leslie Berman*

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BIRTHDAYS

CASTING AROUND FOR AN IDEA FOR this month's column, I decided that a little music might help. With nothing particular in mind, I pulled one of Gidon Kremer's records off the shelf and read on the jacket that he was born forty years ago today, February 27. A happy coincidence, I thought. Now I can write about birthdays.

First of all, Happy Birthday, Gidon, wherever you are. Turning forty isn't easy, but at least you do it only once. My second birthday greeting is directed to another Russian, also a string player, who turns sixty a month from today. Mstislav Rostropovich has a lot to celebrate, beginning with ten years as the music director of the National Symphony Orchestra in Washington, D.C. He has had a brilliant string of musical successes in Paris, where he now makes most of his records, and in New York, where he is currently engaged in a marathon series of concerts with the New York Philharmonic, the National Symphony, and the Boston Symphony. Before he turns sixty, he will have played 15 major concerted works for cello and orchestra on five different programs here, plus the complete solo suites of Bach in two recitals. He will also have conducted two weeks of subscription concerts with the Philharmonic, the first devoted to the Fifth Symphonies of Tchaikovsky and Prokofiev, the second to Benjamin Britten's *War Requiem*.

"I'm doing it as a sort of exam," Rostropovich told me a few weeks before D-Day (as in Dutilleux, whose *Tout un monde lointain* was the major work on the first program in the cellist's birthday marathon). Some people are content to rest on their laurels at his age, but Rostropovich insists on going out and winning new ones. An especially important one, presented to him last week by MUSICAL AMERICA, our sister publication, is the title Musician of the Year. "The longest cello concerto in the repertory is the concerto of Rheinhold Glière," Rostropovich noted in his acceptance remarks. "It's about an hour long. When I started it, I was clean-shaven; when I finished, I had a little beard. Then I felt like a musician for an hour. Never before have I been a musician for a whole year!"

Another birthday celebrant of note: Conductor Carlo Maria Giulini shares a May birthday with the author of these lines. As I write, he is in Milan, preparing to record Mozart's Piano Concerto No. 23 with Vladimir Horowitz for Deutsche Grammophon. *Buono compleanno, Maestro!* *Ted Libbey*

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CLAS

BY EDWARD E. SWENSON

Memories of His Master's Voice

*AN EXCLUSIVE INTERVIEW
WITH THE LATE RONALD
KINLOCH ANDERSON, THE
EDINBURGH-TRAINED
MUSICOLOGIST AND
PERFORMER WHO
BECAME EMI'S ARTISTIC
DIRECTOR AND CHIEF
CLASSICAL PRODUCER.*

AS THE ARTISTIC DIRECTOR AND THE CHIEF producer of classical recordings at Angel EMI in the heyday of stereo, Ronald Kinloch Anderson had contact with many of the great artists of the postwar years and was responsible for many widely admired recordings. The following excerpts from a radio interview that took place shortly before Anderson's death in 1984 are here published for the first time.

In the interview, Anderson candidly discussed his working methods and, in company with other revealing details, described the surprising, sometimes bizarre behavior of noted artists in front of the microphone: Sviatoslav Richter's manic concentration and machinelike endurance astonished and nearly starved Anderson; Birgit Nilsson's heat-resistant, wear-resistant constitution got him out of a hot spot during a session at the Rome Opera; and Janet Baker's secret high A launched a lasting friendship.

The interview includes Anderson's remarkable first-hand account of musical life in Nazi Germany, culminating with a description of Wilhelm Furtwängler's benefit concert at the old Berlin Philharmonie, with Hitler, Goering, and Goebbels in the audience. With the imminent release on Compact Disc of the bulk of Anderson's finest work, his insights into the art of recording and his behind-the-scenes glimpses of some of the century's most significant artists provide an important link to what was surely a golden age.

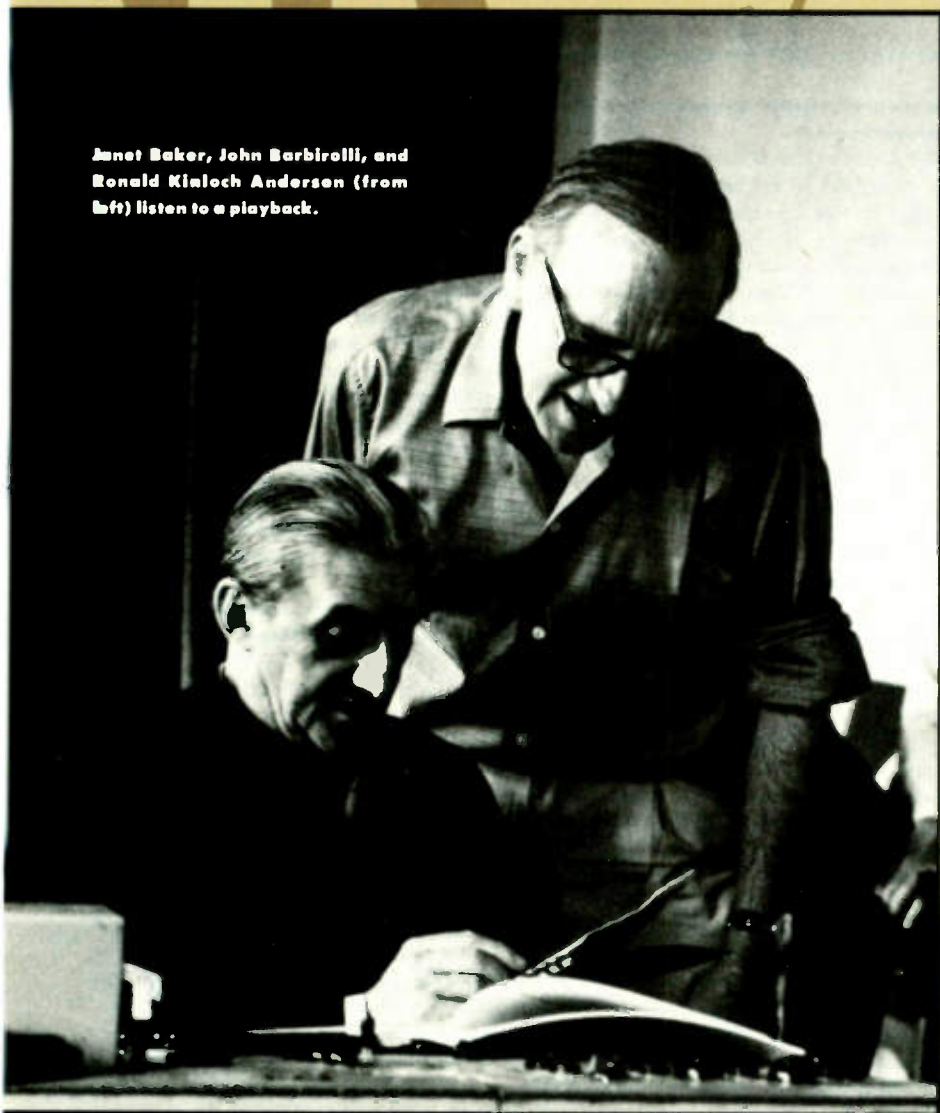


ES: You have been responsible for some major recording projects, including the PBS broadcast of Puccini's *Tosca*, which was filmed on location in Rome.

RKA: Actually, we made the soundtrack in London. I don't think it is any secret that Sherrill Milnes was unable to be present when we recorded the opera with Plácido Domingo, Raina Kabáivanska, the rest of the cast, and the chorus. We knew beforehand that he couldn't be there, so we simply recorded all of his part. Then the tape was flown across to him in San Francisco, and he recorded his part there. When it came back, it sounded very good. Mind you, when he was in London, I had gone very, very carefully through the role with him, marking abso-

STICHAU

Janet Baker, John Barbirolli, and Ronald Kinloch Anderson (from left) listen to a playback.



DAVID FARELL

lutely everything in regard to tempos and rests. I then went through this with the conductor.

ES: You mean you actually recorded the orchestral soundtrack and dubbed the voice onto it later?

RKA: Listen to the recording and you won't be able to tell.

ES: Do you find that artists are as inspired in the studio as they are in front of an audience?

RKA: On the whole, I think rather less. Most artists have said to me that they really don't like recording much, that they would prefer to perform in public. I think one of the chief and most difficult functions of somebody working in the position I was in is to make

the recording artist feel that recording is the same as performing in a concert. Because, after all, when we play at a concert, we know it's going to start at eight o'clock, and then, come hell or high water, we've got to do the best that we can. The man in the recording studio doesn't know this. He knows that the session starts at two-thirty, but he knows equally well that by three-thirty, he may still be able to do the same bit over again. This is a very different point of view. I used to try, not always successfully, to achieve something of the feeling of "Now it is important. We are now going to do our best." That is why I would like to say to the conductor or the pianist, "Now play the whole movement—play the whole work, if you want to—and get into a real performing spirit."

ES: Would you tell us something about your student days in Berlin before the war?

RKA: I was studying with Edwin Fischer in Berlin during the early days of the Nazi period. Berlin still had a very, very fine musical life, although it was beginning to lose some of its best people. The Jewish artists were leaving one by one, for very understandable reasons. Wilhelm Furtwängler was the director of the Berlin Philharmonic, and at the time, he was also the director of the Berlin Opera. He was a world-famous conductor, one of the absolutely top conductors. He was not Jewish and he wasn't a Communist. He had no special reason for wanting to leave Hitler's Germany. He was a very powerful man, and so he tried to take up the cudgel for other people—like the composer Paul Hindemith—who were being suppressed. He also tried to help other artists and even attempted to perform some music by "that Jew, Mendelssohn."

I remember when he put the Mendelssohn Violin Concerto on the program of the Philharmonic. This event, which would have meant nothing two or three years earlier, became a sensation. Furtwängler, to do him justice, did at least try. But he hadn't reckoned on the fact that the Nazis might overrule him. So life was made difficult for him. He had a property in Switzerland and went there to cool his heels for a while. At some point, he was invited back by the most powerful of the Nazi lot and was told that he could have absolutely everything he wanted. Every sort of facility would be put at his disposal if he would just come back. The Nazis had begun to realize that they soon would have no conductors of any distinction at all. Bruno Walter had left because he was a Jew. Fritz Busch had left because of his socialist—or at any rate, democratic—principles. Hermann Scherchen had left. Otto Klemperer had left. Practically everybody had left, and Furtwängler really was their one hope.

Eventually Furtwängler, perhaps weakly, did come back. His first great concert was to be in the old Berlin Philharmonic Hall for the benefit of what was called the Winterhilfswerk, a Nazi organization that was supposed to help the jobless. It was very shortly after Hitler came to power. How I ever got a ticket for this concert I don't know, but I did. ▶

Edward E. Swenson is an associate professor of music at Ithaca College School of Music, Ithaca, N.Y.

*I COULDN'T HELP THINKING, BECAUSE THEIR
HEADS WERE IN ONE LINE FROM WHERE I WAS
SITTING, "ONE BULLET WOULD DO IT ALL."*

It was the great event of the time. Furtwängler was coming back to Berlin. The three Nazi leaders—Goering, Goebbels, and Hitler—had decided that they would support this event. They sat in a box at the hall, which was a rectangular building with the boxes on the right. I happened to be sitting on the very end seat of one of the rows just below the box where these three "gentlemen" were sitting. It was a very exciting concert, but it was made even more so for me: I couldn't help thinking, because their heads were in one line from where I was sitting, "one bullet would do it all."

ES: What was musical life like in London during the war?

RKA: Part of the time, there was no musical life at all. During the very beginning of the war, our government was so understandably terrified of what might be going to happen that it imposed a total blackout. Literally, there was not more than a pinpoint of light allowed in the streets, and this meant that nobody went out in the evening. Then we went through what was called the "phony war," which was the period when the Germans sat behind their barriers and the French behind theirs and absolutely nothing happened.

It seemed a bit silly. We weren't having any concerts. We weren't going out in the evening. Little by little, these restrictions were loosened, but people still were afraid to go out in the evening. Myra Hess had the marvelous idea to use the National Gallery, which had been emptied of its treasures, for midday concerts. She was just on the point of going on tour in America when the war started. She canceled her tour and decided to stay in England. She got in touch with all the artists and organized concerts at lunch time. She succeeded in enlisting every artist who was in England, including a lot of distinguished people. I remember even somebody quite unusual appearing at these concerts: the German Lieder singer Elena Gerhardt, who had been a great name in my youth. She had left Germany for all sorts of admirable reasons and was living in London. She sang with Hess quite a lot.

I played at the National Gallery concerts once or twice with my ensemble during the worst part of the blitz. When the air raids were really serious, the concerts were moved from the gallery down to a sort of subbasement. There was a lunch counter with sandwiches and coffee. It was all done voluntarily. The artists got paid three pounds or something like that for their participation.

As odd as it seems, it was a wonderful time.

ES: Did Benjamin Britten participate in these concerts later on?

RKA: I don't think so. He was in America. He came back to England about 1943. Although he was a pacifist and had no intention of fighting, he felt he had to come home. Another person who returned to England, who was a much closer friend of mine than Britten, was Sir John Barbirolli, who had conducted the New York Philharmonic for some years. In 1941, at the height of the submarine business, he returned for about a month and conducted a lot of concerts in aid of war charities. After his contract expired in New York, he returned to England and reorganized the Hallé Orchestra in Manchester under the most difficult wartime conditions. Even though he didn't have many good players to choose from, he formed a superb orchestra. He was a great friend, and together we made many recordings of both orchestral music and opera. In his younger days, he had been an active opera conductor. By the late '60s—when he had a recording contract with EMI and I was working very closely with him—we managed to persuade him to go back to conducting opera. We started with a recording of Purcell's *Dido and Aeneas*, and from that we went on to do *Madama Butterfly*. The latter is a marvelous recording, which we made in Rome with Renata Scotto and Carlo Bergonzi. Rome remained our regular recording location for a number of years. Scotto was already an established artist, but I wouldn't say that she was yet quite as famous as she now is. The way Barbirolli molded the performances was absolutely marvelous. In the first act, there's a point before *Butterfly* appears when Pinkerton is being shown around the house by Goro, the marriage broker. Barbirolli used to say he should be an "elegant villain." It was absolutely wonderful the way Barbirolli coached the singer of that part and shaped the character of his voice.

ES: One of the recordings you made with Barbirolli that has always fascinated me is Verdi's *Otello*, with a cast I find a little puzzling. The Iago is Dietrich Fischer-Dieskau, the Otello is James McCracken, and the Desdemona is Gwyneth Jones. I am most surprised about Fischer-Dieskau singing Iago. One doesn't think of him normally as a Verdi baritone. For example, I just can't imagine a lyric baritone and specialist in Lieder ever singing the duet "Si, poi ciel," which requires a dramatic, dark-timbered tenor voice and a corre-

spondingly dramatic baritone.

RKA: Perhaps. In a sense, he *isn't* a Verdi baritone, but he had sung Iago in Germany. The recording has considerable weaknesses, but I still think that Fischer-Dieskau, in his way, is a very, very good Iago. Above all, he is an extremely intelligent Iago. He knows exactly what he is doing and controls his voice very well. I don't think it's an ideal part for him. Roles like Mandryka in Strauss's *Arabella* are absolutely wonderful for him. Unfortunately, I never had a chance to record him doing Lieder with Gerald Moore, but I think he is a splendid artist. He and Janet Baker have done a lot together. Their approach is very much the same. They have this tremendous depth of interest, refined taste, and an extraordinary technical command. They love working together because their minds work on the same wavelength.

ES: Would you tell us something about your association with Janet Baker?

RKA: I've known her since about 1956, when she was just beginning her career. It was just after I had stopped playing with the Masters Quartet and had taken up with another pianist doing some four-hand piano work. There was a chamber music organization in London—it still exists—that used to put on Sunday evening concerts at very low prices. It was the sort of place where you would go to try out a program. I had arranged to do a Schubert and Brahms program. We would do the two sets of the Brahms *Liebeslieder* Waltzes at the beginning and at the end, and in the middle, we would play some of Schubert's four-hand piano music. So I talked to the organizers and to a very charming Austrian soprano named Ilse Wolf, whom I asked to assemble a young quartet who would be willing to sing for very little money. Well, that young quartet had as the contralto a lady named Janet Baker, and the baritone was a gentleman named John Shirley-Quirk. Wolf was the soprano, and the tenor was Edgar Fleet, who was also very good. That was our quartet for *Liebeslieder*, and I've known Janet ever since.

I think one could tell even then that she was going to be something quite remarkable. During my recording days, I got to know her much better and, indeed, I think I introduced her, artistically at least, to Barbirolli. I don't think he had ever worked with her before. We had this really remarkable experience, one of the things I shall never forget. He was going to record Elgar's oratorio *The Dream of Gerontius*, which was a work he was deeply attached to. I think it is a very

SOMEBODY HAD TO RUN AROUND IN CIRCLES, BECAUSE
AT NIGHT IN THE SUBURBS OF LONDON, FINDING
A BUNCH OF GRAPES ISN'T ALL THAT EASY.

fine work, although I'm not sure it's quite as great as *he* thought it was. It has among the soloists a very strenuous, high, dramatic, Wagnerian sort of tenor, a bass who is much less important, and an alto who has to be a sort of alto *cum mezzo* because the part goes up to a top A.

Barbirolli and I were discussing the casting of the alto part. There were two singers we thought were possible, including Baker, who was beginning to be very well known, although she was not yet an international celebrity. We decided to ask both ladies to audition on different days. I'll never forget the day Baker came to sing bits of *Gerontius* to us. It was a remarkable experience. I knew she was very good, but I didn't know how good she had become. The audition was held in a perfectly terrible little dirty side room of this rather broken-down hall with a dreadful old upright piano that was practically falling to pieces. When she started singing, it was as if the whole room had been lit up. After she had sung just a few phrases, John and I looked at each other. We knew each other very well at this point and felt we didn't need to hear any more.

But he was always the practical musician. Although he admired very much what he had just heard, he said to her, "Yes, and that phrase with the top A, would you like to sing that for us?" In those days, she was billed as a contralto. You don't necessarily expect a contralto to soar up there. Well, the top A came out like a ship in full sail running into the sunshine. From that time on, I became her devoted admirer and I'm proud to say that we are still very good friends.

ES: You have also recorded a number of notable pianists, including Sviatoslav Richter.

RKA: Yes, that was quite an experience. None of us had heard the generation of artists that had grown up in Russia during and after the war. I remember that, in those days, I was naive enough to look at a Russian as if he were something out of the zoo. Were they really quite human or like something from Mars? The Iron Curtain was so solidly iron that people didn't come and go. Then, after the war, little by little they began trickling out. David Oistrakh was one of the first. And I heard rumors, as one does in the musical world, about another Russian, a pianist, who hadn't been to the West. Then Richter came and played in America, and the reports were absolutely fabulous. He didn't visit England on that occasion: He must have been hurried back to Russia in case he would somehow get infected with democracy.

The next year, he was coming to London, and every recording company was after him. In Russia, where their own state bureau manages the artists, they never made exclusive contracts with any one recording company in the West. The companies simply bid against each other. EMI, among several others, succeeded in getting one record out of Richter when he was in London. Of course, the red carpet was laid out, and Richter was not asked if he would come to a recording session at a specific time, but instead was asked when he would *like* to come. So he chose to start at four in the afternoon, which was an unusual time for us to begin. I had planned that he would do the ordinary three-hour session. We would take a break about seven and then go on till eleven.

We started with the Schumann C major Fantasy, Op. 17, which he played magnificently. We went on and on. He played long stretches. He listened to playbacks. He played them again. We'd discuss the results in German. We had started at four and had had our cups of coffee handed in. I asked him, "Wouldn't you like to have coffee or anything?" "No, no, I just want to go on playing." It got to be seven. It got to be half-past seven. It got to be eight. I thought, "My God, I have to keep all these engineers here. They're hungry. They've got to have something to eat." So I said to him, "Wouldn't you like to stop just for a short time?" "No, I want to go on playing." Eventually I had to say, "Look, I'm sorry, but I'm responsible for this whole team of people. They must have a meal. Would you be kind enough just to stop long enough for us to have something to eat? Can I get you something?" "No, no, no, I don't want anything . . . A bunch of grapes, yes, get me a bunch of grapes." So somebody had to run around in circles, because at night in the suburbs of London, finding a bunch of grapes isn't all that easy.

We went on until two in the morning, but we got half the recording made. When he decided to begin again at four the next afternoon, we were prepared for it. We had food ready. We had people bringing in trays for us, and for him, if necessary. I think we went on until about midnight. He had enormous stamina. He just did not stop.

ES: Several of the opera recordings you have done feature Birgit Nilsson as the soprano. Perhaps you could tell us something of your association with her.

RKA: Birgit Nilsson is a marvelous person. She is as tough as they come. When I say tough, I mean physically tough. One story

about her will show exactly what I mean. The first opera I recorded with her was *Turandot*. It wasn't her first *Turandot* recording, but the subsequent one with Franco Corelli. We recorded in Rome in midsummer heat at the opera house. At the time, they were giving opera performances out-of-doors at the Baths of Caracalla. The seats were taken out of the house, and we worked with the orchestra on the floor of the stalls and on a platform built forward over the orchestra pit. When I made the recording schedule, which began with her biggest aria, "*In questa reggia*," I didn't know that she was rehearsing in Bayreuth and that she was coming down especially to do the recording in Rome. She arrived at four, which was supposed to be after the day's heat. It wasn't. It was at the worst of it. We had no air conditioning in the opera house, and the streets were like burning furnaces. I arranged for a car to go to her hotel to bring her to the recording session. When she arrived, she said, "Well, I've just come from Bayreuth. I only arrived in Rome at two. I got up at six this morning and I drove to Nuremberg, where I caught a plane for Munich, and I then got another plane to Rome. I've been to the hotel, where I had a little wash, and I've come right along to your session." I said, "Well, if I'd known anything like that, I'd never have put down this aria. We can change it, but it's going to upset the whole schedule if we do. I'm terribly sorry." "Oh, that's all right," she said. "Don't worry. I'll be all right, I'm sure." So she sang, and sang magnificently. Twice through was all we needed to do. I thought it was quite something, particularly after coming into that heat after a long journey. I asked her, "Are you feeling all right?" "The floor is going up and down a little, but it doesn't worry me," she said. I replied, "Well, at least we are finished. We don't have to do any more today. You can go home and have a good rest and I'll see you tomorrow. I'll call a car to take you back." She said, "Oh no, I think I'll walk."

ES: It's fascinating to hear about your career and the artists with whom you have collaborated. Before I say thank you, do you have any final thoughts?

RKA: Do me a favor. If you play some of the *Butterfly* recording, put on the end of the first-act love duet.

ES: You mean the section that begins "Bimba non piangere"?

RKA: That's right. It's very beautiful. Every time I hear it, I cry. ■

THE CD SPREAD

MINI-REVIEWS OF THE LATEST COMPACT DISCS

BY ROBERT E. BENSON, PAUL MOOR, K. ROBERT SCHWARZ, TERRY TEACHOUT, AND JAMES WIERZBICKI

BARTÓK SONATAS: KREMER, SMIRNOV

OF THE FIVE OR SIX RELATIVELY NEW PAIRINGS on record of Béla Bartók's two sonatas for violin and piano, Gidon Kremer and Yuri Smirnov's on Hungaroton is the most impressive. Its flavorings are perhaps not so spicy as those in the vintage recordings by Joseph Szigeti and Bartók himself. But even in their basically "cool" approach to the music, the Kremer/Smirnov versions maintain a heated tension more consistently than do most of the other recent treatments, and they project the complex forms of the music in ways that are eminently more graspable. The analog LP was vibrant and clean, and in this CD reissue, the sound is radiant and virtually spotless. But the sonics seem almost not to matter when one considers the interpretations. This is great music, brilliantly—and profoundly—interpreted. Playing time: 52:29. (Hungaroton SPLX 11655. Distributed by Qualiton Imports, 39-28 Crescent St., Long Island City, N.Y. 11101.) J.W.

SCHUBERT DUETS: ROHMANN, SCHIFF

SCHUBERT WROTE ENOUGH FOUR-HAND PIANO music to fill at least a half-dozen albums. Yet aside from the Fantasy in F minor, D. 940, the Allegro in A minor ("Lebensstürme"), D. 947, and the so-called "Grand" Rondo in A, D. 951, relatively little of it has ever found its way onto disc. Hungaroton's CD reissue of Inre Rohmann's and András Schiff's 1979 effort offers those pieces plus the two *Marches caractéristiques* that make up Op. Posth. 121 (D. 968b); it would get a warmer reception from me if it contained more of the off-the-beaten-track repertory or if the interpretations had a lighter, more inventive touch, but there's no denying the basic solidity of the performances. Playing time: 56:20. (Hungaroton SLPX 11941. Distributed by Qualiton Imports, 39-28 Crescent St., Long Island City, N.Y. 11101.) J.W.

RACHMANINOFF "BELLS": SCOTTISH NATIONAL, JÄRVI

RACHMANINOFF'S MAGNIFICENT CHORAL symphony, *The Bells*, Op. 35, which he considered to be his finest work, has received its fourth CD recording (prior interpretations have come from Leonard Slatkin on Moss Music Group, Vassil Stefanov on Fidelio, and Vladimir Ashkenazy on London). There

are many pluses to this new version: The male soloists, Keith Lewis, tenor, and David Wilson-Johnson, baritone, are excellent; the Scottish National Orchestra and Chorus are fine, and conductor Neeme Järvi is responsive to the changing moods of this magical score. As for the filler, a seldom-heard love duet by Tchaikovsky (using the same theme as his *Romeo and Juliet* overture) is a welcome addition to the CD catalog, and his *Festival Coronation March* in D brings the program to a rousing conclusion.

Soprano Suzanne Murphy does solo duties in Rachmaninoff's *Vocalise*, Op. 34, No. 14, in the Tchaikovsky duet, and in the second movement of *The Bells*; unfortunately, she produces a fragile sound that is light and characterless. It is difficult to imagine that she is capable of singing major Verdi and Bellini roles, as she is reported to do, and she is surely not the equal of Roumiana Barveva or Natalia Troitskaya, the sopranos heard on the Fidelio and London recordings. Chandos's sound is typical of much of the label's work—bright, resonant, and rather distant. Complete texts and translations are provided. While there is no ideal CD recording of *The Bells*, the best currently available is the London disc with Ashkenazy conducting the Concertgebouw Orchestra, even if the choral sound is at times rather congested. Playing time: 62:12. (Chandos 8476.)

R.E.B.

BARTÓK, BARBER, SCHOENBERG WORKS: STOKOWSKI

ON THIS RECENT ANGEL EMI COMPACT DISC, Leopold Stokowski can be heard at his best in Barber's *Adagio for Strings* and Schoenberg's *Verklärte Nacht*, two post-Romantic scores that seem to have been custom-made for him. The Barber, in spite of an unusually brisk tempo, reaches a climax of soaring intensity, while the Schoenberg gives Stokowski the opportunity to draw remarkably rich sonorities from the strings. This account of the Schoenberg dates from 1957 (it was Stokowski's second recording of the piece); the Barber was recorded in 1956.

Unfortunately, Bartók's *Music for Strings, Percussion and Celesta*, also recorded in 1957, receives a reading as flaccid as any I've ever heard, and the digital remastering does little to clarify the blurred sonics of the original recording. Fritz Reiner's Chicago Symphony recording of the Bartók, made only one

year after Stokowski's, is superior in every way and is coupled with Reiner's magnificent reading of Bartók's *Concerto for Orchestra*. Admirers of Stokowski will probably want this CD anyway, just for the Barber and Schoenberg. Playing time: 67:57. (Angel EMI CDC 47521.)

R.E.B.

TCHAIKOVSKY CONCERTO: SCHIFF; CHICAGO, SOLTI

THE PLAYING TIME OF THIS RECENT LONDON Compact Disc is fairly generous (58:03), and the Chicago Symphony plays spectacularly. Right from the famous opening horn subject of Tchaikovsky's Piano Concerto in B flat minor, the playing makes it obvious that this is a top-notch orchestra. Conductor Georg Solti and his forces make many fine points: One might mention particularly the tension that marks the orchestral buildup before the soloist's double-octave flurry in the finale. Ernst von Dohnányi's charming *Variations on a Nursery Song*, Op. 25 (on "Twinkle, Twinkle, Little Star"), is also presented in dazzling fashion. Solti's concept captures both the whimsy and power of this strange score, which includes an almost terrifying passacaglia whose spell is finally broken by the simple nursery tune. It is a great convenience to have all 14 variations separately indexed. Unfortunately, there are some drawbacks here. While András Schiff is an accomplished soloist, he is also a cautious one; there is little excitement in his Tchaikovsky, which he plays almost as if it were written by Bach. He is more successful in the Dohnányi, although Earl Wild's now-deleted recording had considerably more sparkle. Also, London's engineers still have not solved the problems of recording in Orchestra Hall: The CSO sounds hard and unresonant, and the solo piano seems subdued and lacking in brilliance. (London 417 294-2.)

R.E.B.

HINDEMITH WORKS: ROSENBERGER, DE PREIST

THE WORLDWIDE VOGUE OF PAUL HINDEMITH, certainly one of our century's greatest composers, seems to have diminished since his death in 1963, perhaps because recording companies depended on him to conduct the definitive realizations of his important works himself. This drop in his popularity (a transitory one, I believe) makes the present coupling of two major Hindemith works—*The Four Temperaments* and the suite from *Nobilis*—

suma Visione—all the more welcome.

My pleasure here began, before the music even started, with the unusually insightful notes provided by Amelia Haygood, the remarkable music-loving idealist who founded the Delos label in her Santa Monica garage a few years ago. Dr. Haygood, a former practicing clinical psychologist, provides an intriguing analysis of the four personality types, or temperaments, that Hindemith depicts in his score—melancholy (black bile, according to the Greeks), sanguine (blood), phlegmatic (phlegm), and choleric (yellow bile)—and deals with the score accordingly, bit by bit. Wonderful!

This work offers the solo pianist less opportunity to shine than a true concerto, but Carol Rosenberger makes the most of her part, displaying crisp, clear articulation in the rapid passagework, which benefits from the fact that her resonant instrument's rich sound is reproduced with notable beauty and fidelity. *Nobilissima Visione* comprises three movements from Léonide Massine's 1938 ballet about St. Francis of Assisi. James De Preist leads the Royal Philharmonic with energy and a keen ear for Hindemith's intricately linear neoclassic polyphony. Playing time: 51:24. (Delos CD 1006.) P.M.

MENDELSSOHN "MIDSUMMER": LONDON SYMPHONY, PREVIN

A WORD OF CAUTION BEFORE YOU PUT ON THIS disc: EMI's remastering of this recording has an unusually wide dynamic range. If you set your control to give the forest rustlings at the start of the overture an apt degree of pianissimo audibility, the fortissimo that explodes at letter A in the score may just explode your speakers as well.

Otherwise, this recording offers little but sheer delight, although EMI really ought to have included the texts for the two vocal movements—sung, incidentally, in English. What captivating music! How long since you've really *listened* to the more familiar of these movements? André Previn has obviously studied them as thoroughly as he might have for the world premiere, and his loving revelation of detail brings it all vibrantly alive. If it makes you feel, as it does me, like a total failure to contemplate that Mendelssohn wrote this overture at the age of seventeen (with his Octet for strings already a year old), you may derive some slight consolation, as I do, from his referral to "the fruit of much hard work" when he composed the 13 further movements at the doddering age of thirty-four. Playing time: 57:30. (Angel EMI CDC 47163.) P.M.

WALTON "BELSHAZZAR": ROYAL PHILHARMONIC, PREVIN

LONDON'S ROYAL PHILHARMONIC HAS CANNIBLY established its own label with the obvious purpose of eliminating the middleman—in this case the commercial recording firm—to the professional and financial advantage of this fine orchestra and the musicians who compose it. Certainly any enterprise that

subsidizes music and musicians, in effect, deserves benevolent attention.

This release, pairing William Walton's choral masterpiece *Belshazzar's Feast* with a suite from his music for the film *Henry V*, marks a stunning debut. The Leeds Triennial Festival of 1931, where Malcolm Sargent unveiled *Belshazzar's Feast*, featured the Berlioz Requiem, with its two auxiliary brass bands, so Walton decided to make full use of those mammoth forces in his own piece as well. Such personnel demands have restricted subsequent performances, but this 1986 recording, with the RPO's principal guest conductor André Previn presiding and baritone Benjamin Luxon serving as soloist, exhibits the ultimate in technological perfection and makes for a literally thrilling experience. Walton's exemplary music from Olivier's film masterpiece *Henry V* makes the disc all the more appealing.

Funny Coincidence Department: Angel EMI has just rereleased, on CD, a 15-year-old recording of *Belshazzar's Feast* with the London Symphony Orchestra and Chorus under Previn and with John Shirley-Quirk as soloist; it also offers three attractive shorter works of Walton, including his jolly, boisterous overture *Portsmouth Point*. I have had no opportunity to compare that older recording with this brand-new one, but you might want to bear in mind that two CD versions now exist. Playing time: 52:19. (RPO CD 8001. Distributed by MCA.) P.M.

FRANCK, SAINT-SAËNS VIOLIN SONATAS: ZUKERMAN, NEIKRUG

THE MUSIC OF CAMILLE SAINT-SAËNS AND OF César Franck reveal two divergent strains within French Romanticism. One, represented by Saint-Saëns, was far more conservative, closer to Classical forms and craftsmanship. The other, represented by Franck, was imbued with a love for Wagnerian chromaticism and was considered *avant-garde* in its day. Yet despite the schism between the two schools of thought, both exhibited an essentially French emotional reticence, a reluctance to bathe in the excesses of German Romanticism.

Pinchas Zukerman and Marc Neikrug find the perfect balance between Germanic intensity and French reserve in their performance of the Franck Sonata in A (1886). Zukerman's phrasing is suave and seamless, his tone polished and refined. He seems incapable of producing an unattractive sound or a rough attack, and he carefully deploys his expressive tonal resources so as to avoid overstatement. Neikrug, always a sympathetic partner, maintains a light pianistic touch that prevents Franck's notoriously thick, bass-heavy textures from turning ponderous.

Paradoxically, it is in Saint-Saëns's Sonata No. 1 (1885) that Zukerman chooses to deliver a reading of impassioned, occasionally overwrought, intensity. It is true that this sonata is an unusually emotional utterance for Saint-Saëns; no doubt Zukerman

decided to reflect that in his playing. Yet I find the understated, airy lyricism of the Adagio the most affecting and feel that the rest of the sonata would have gained from some of the almost patrician poise Zukerman brings to the Franck. Playing time: 52:01. (Philips 416 157-2.) K.R.S.

BACH, MARCELLO, VIVALDI VIOLIN CONCERTOS: SUK

A BACH CONNECTION EXISTS AMONG ALL THE composers on this disc. During Bach's youth, when he was attempting to absorb the textural lucidity, formal precision, and melodic thrust of the Italian style, he arranged for the keyboard a number of Italian solo concertos. Among these were the Oboe Concerto by Alessandro Marcello (often wrongly attributed to his younger brother, Benedetto) and the Violin Concerto, Op. 3, No. 9, by Vivaldi. In addition, his original harpsichord concertos, composed much later in Leipzig, are themselves mostly adaptations of his own (now lost) solo concertos. What is presented here as the Concerto for Violin and Oboe, BWV 1060a (usually performed in C minor, but recorded on this occasion in its D minor incarnation), is an attempt to reconstruct the possible model for Bach's later C minor harpsichord concerto.

Violinist Josef Suk and oboist Jiří Adamus perform two concertos together and are each allotted a single solo vehicle. They are accompanied by the Suk Chamber Orchestra, a small ensemble whose only concessions to Baroque performance practice are its reduced size and its use of harpsichord continuo. Otherwise, both soloists and orchestra agree on a slightly anachronistic view of Baroque style, a full-blooded approach that embraces sustained bows, a wide, throbbing vibrato, and hefty ritardandos. Whether or not one accepts the interpretive premise, the playing proves to be robust and expressive, never exaggerating stylistic anachronism to the point of tastelessness. Fans of similar Western European ensembles—such as the English Chamber Orchestra or the Academy of St. Martin-in-the-Fields—will surely be delighted by Suk's spirited performances. Playing time: 49:14. (Supraphon CO 1074. Distributed by Denon America.) K.R.S.

DEBUSSY PIANO MUSIC: MICHELANGELI

ARTURO BENEDETTI MICHELANGELI'S LONG-celebrated Deutsche Grammophon recordings of Debussy have finally been transferred to CD. The first disc contains the first book of *Préludes*; the second, both books of *Images* and the *Children's Corner* Suite. Michelangelo's exquisitely cool and breathtakingly assured performances are deservedly legendary. The original analog recordings have been competently remastered. Playing time for *Préludes*: 43:50. (Deutsche Grammophon 413 450-2). Playing time for *Images/Children's Corner*: 45:03. (Deutsche Grammophon 413 372-2.) T.T.

CLASSICAL
REVIEWS

Live Bellini From Covent Garden



PHOTOGRAPH BY JOHN WILLSON

SOPRANO EDITA GRUBEROVA (LEFT) AS GIULETTA AND MEZZO-SOPRANO AGNES BAL TSA AS ROMEO FORM A PARTICULARLY APPEALING PARTNERSHIP IN BELLINI'S *I CAPULETI E I MONTECCHI*.

BELLINI:

***I Capuleti e i Montecchi*.**

Gruberova, Baltsa, Raftoy, Hewell, Tomlinson, Orchestra and Chorus of the Royal Opera House, Covent Garden, Milan. John Willson and David Groves, prods. Ange EMI CD 47387 (2, D). Ⓢ DS 39.95. Ⓢ (2).

I SOMEHOW MANAGED TO MISS THE FAMOUS pirate recordings of Vincenzo Bellini's *I Capuleti e i Montecchi*—one with Renata Scottò and Giacomo Aragall as the ill-fated lovers, the other with Antonietta Pastori and Fiorenza Cossotto. My first contact with the work was in Boston in the mid-1970s when Sarah Caldwell invited Tatiana Troyanos to make her majestic return to the United States as Romeo to Beverly Sills's incandescent Giulietta. In addition to being swept away by Troyanos (then at the peak of her vocal powers) and by Sills's fragility and pathos (in spite of her being far less than good voice), I was startled to discover what a delightful piece Bellini's telling of the story really is. Bellini the master spinner of melody is amply apparent in this mid-career work (*La Sonnambula*, *Norma*, and *I Puritani* were yet to come), and his ability to give the singers remarkable showcases, great ensembles,

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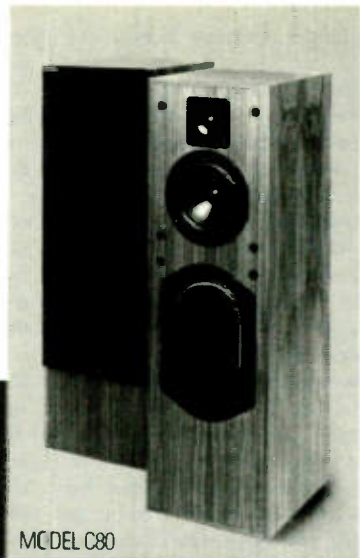
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and rousing finales is already fully in evidence.

Bellini tells a different tale than Shakespeare, but the outcome is the same. Here, in the climax of the first act, Romeo crashes the wedding ceremony and reveals himself to the gathered Capulets as the dreaded scion of the Montague clan. There is still a magic potion, and Romeo still does not learn about it in time. At the opera's end, the warring factions witness the scene of death and blame Capellio as the curtain falls.

Angel's first try at the opera put Sills against the hopelessly miscast Janet Baker. It was conducted by the often brilliant Giuseppe Patanè, who somehow missed the mark on that occasion. In the present release, recorded live at Covent Garden, Angel EMI has a *Capuleti* of which it can be proud, one that does full justice to the most important characters in the opera. This means that the Romeo and the Giulietta, Agnes Baltsa and Edita Gruberova, deliver everything one could hope for. Unfortunately, it also means that neither John Tomlinson nor Gwynne Howell (Lorenzo and Capellio, respectively) is up to the standards of an international opera cast. And it means that the recording is sonically not ideal, merely good enough.

Firebrands are Baltsa's specialty. Even in roles that can be interpreted demurely, she bends the character to her temperament. She has tackled the big Verdi roles for Karajan, but she is really most at home in the bel canto repertory. Thus, Romeo is an ideal role for her, and she rises thrillingly to the occasion. No less in moments of introspection than of confrontation, she communicates. And she listens carefully to Gruberova so that their voices blend, a talent that seems to be vanishing in duet singing these days.

Gruberova lays her cards on the table with "*Oh! quante volte*," offering a complete demonstration of her fabled control, her ability to spin long, hushed lines, and her sense of vocal dramatics. She is an elegant, eloquent singer, and she and Baltsa together forge a particularly appealing partnership. If the basses are not up to par, at least tenor Dano Raffanti is in his correct repertoire, and he manages the role of Tebaldo with style.

Conductor Riccardo Muti's contributions are uneven. There is a sense that he wants to be in control of every facet of the musical proceedings. But at times one gets the impression that the singers are simply not watching him—forcing him, for the sake of the performance, to let them do what they want. At his best, however, he makes Bellini soar with beauty and pulse with passion. In every respect, this is a better performance than his tepid, peculiar *I Puritani*, released on Angel five years ago.

In general, Muti's live recordings have been more interesting than his studio efforts. This one is no exception. Covent Garden does not sound like the ideal house for microphone placement—the recording

tends to favor the orchestra over the singers, and when the ladies turn away from the microphones, they seem to vanish altogether—but that is a small price to pay for the added intensity the singers and the maestro summon in front of a live audience.

The CD version puts the first two scenes of the first act on the first disc, the remainder of the opera on the second. My only major complaint with the recording concerns the disastrous layout error in the four-language libretto: Instead of placing the four columns of translated text across two pages, Angel EMI put the German and Italian on the right-hand page, the English and French on the overleaf, which means that the Italian and English are back to back, rather than side by side. Clearly, someone was not on the ball when this one went to the printers. Playing time: 130:12. *Thor Eckert, Jr.*

BERG:

Chamber Concerto for Violin, Piano, and 13 Wind Instruments*; Concerto for Violin and Orchestra†.

Stern, P. Serkin*; members of the London Symphony Orchestra, Abbado*; New York Philharmonic, Bernstein†. Steven Epstein*, John McClure, and Howard Scott†, prods. CBS Masterworks MT 42139 (D*, A) © (f from MS 6373, 1962, digitally remastered.)



LEONARD BERNSTEIN AND ISAAC STERN IN VENICE, SEPTEMBER 1954

OF ALL THE COMPOSERS OF THE SECOND Viennese school, Alban Berg (1885–1935) is by far the most accessible to conservative listeners. This is because he, more than any of his colleagues or even his master, Arnold Schoenberg, diluted strict serial techniques with tonal and highly lyrical elements. Intricate and dissonant as some of his music may be, it is never really excruciating to tender ears and is often rewarding in its sheer expressiveness. This expressiveness was never more apparent, surely, than in his celebrated last work, the Violin Concerto, commissioned by Louis Krasner in early 1935 and completed on August 11, only four months before Berg's death. Dedicated *Dem Andenken eines Engels*, as a memorial to Alma Mahler's teenage daughter, Manon Gropius

(who had died of polio), it was to serve as a requiem for the composer himself. It was first commercially recorded by Krasner with the Cleveland Orchestra under Artur Rodzinski for Columbia c. 1941, and since then, it has been frequently interpreted on disc. (The current discography includes a still earlier broadcast performance by Krasner with the Stockholm Philharmonic under Fritz Busch, from 1938, on GM Records.)

One of the best of these versions was the first in stereo, recorded in 1962 by Isaac Stern and Leonard Bernstein, herewith reissued in a digital remastering that makes it sound even better than it did originally, when it was widely acclaimed for its vivid realism. Certainly, even expert ears would never guess that these sonics go back 25 years. They are particularly notable for the tonal warmth and sweetness both of Stern's solo passages and of the orchestra itself—an overall richness that admirably enhances the profoundly moving interpretation.

My personal preference has been the Itzhak Perlman/Seiji Ozawa/Boston Symphony version for Deutsche Grammophon (which I treasure in its Barclay-Crocker open-reel edition, now out of print). It features a more idiosyncratic solo technique and a more dramatic reading overall, but for poignancy, Stern and Bernstein remain beyond compare.

The overside Chamber Concerto (*Kammerkonzert*) is a recent, fully digital recording of an earlier work (c. 1925, the period of *Wozzeck*) that has also been recorded quite often, which is rather surprising, since it is considerably more difficult for unsophisticated listeners. But it need only be given a chance to speak for itself. Stern and pianist Peter Serkin collaborate ideally with Claudio Abbado's British wind players to make the most of it. I only regret that the able annotator George Perle didn't include the composer's dedicatory letter to Schoenberg, in which he describes in detail the incredibly intricate formal structure of this remarkable double concerto. *R. D. Darrell*

CARTER:

Piano Concerto*; Variations for Orchestra.

Oppens*; Cincinnati Symphony Orchestra, Gielen. Elizabeth Ostrow, prod. New World NW 347-2 (D*, A).

OF ALL THE COMPOSITIONS WRITTEN IN THE last forty years, Elliott Carter's remain among the most formidable. This is not because of their surface qualities. Carter's harmonic arrangements are bracing, to be sure, but no more so than those of many composers in the pre-*neo-Romantic* mainstream. His melodic patterns, which are angular and motivic, and his rhythms, which are often driven by severe fluctuations in rates of acceleration, are far removed from what the average music lover might regard as endearing, yet in a general sense—a generic sense—they are not much different from the basic ingredients of most of the atonal works produced in the aftermath of World War II.

Like the music of Boulez, Stockhausen, Xenakis, Wuorinen, Babbitt, and others, Carter's music is hard on the ears.

Carter's music is also hard on the brain, but not because it is—as a casual listener might put it—impenetrable. Indeed, the music of Carter is accessible in a way that the music of his fellow front-line modernists, by and large, is not. As with the work of others who share his wavelength, the impact of a typical Carter composition derives from the solidity of its large-scale tensions and resolutions and from the tight integration of its materials, an integration that allows the listener at least to *feel* that almost all the musical ideas emerge from a single, finite pool of rhythmic figures and melodic cells. But the impact that is most immediate comes from the shape and motion of the phrases. However controlled their designs are and however well they fit into an abstract, formal plan, the phrases are gestures that seem to spring not so much from the composer's brain as from his spirit; they roil and surge and flow and ebb like the tides of genuine human emotion, and they do so constantly, losing their momentum only in pauses that are themselves corollaries of psychic states.

Carter's music is perhaps no more densely packed with information than the music of his contemporaries; the difference is, Carter's information can be grasped, at least to a certain extent, even by the first-time listener. The amount of graspable information seems to increase with each hearing. It has a multiplicity of "meanings," and it seems that the more intimately one knows a Carter composition, the more one realizes how much there is that remains unknown. This music is formidable, not because it is difficult to digest, but because—like Beethoven's late quartets and Bach's *Art of Fugue*—it offers virtually limitless food for thought.

New World Records' first Compact Disc release brings together two of Carter's loftiest creations—the 1955 *Variations for Orchestra* and the 1965 Piano Concerto—in performances led by a conductor who apparently responds as much to the music's emotive content as to its technical workings. Rumor has it that Michael Gielen was encouraged to abandon his position as music director of the Cincinnati Symphony because his approach was too cerebral for that city's largely conservative audience. In any case, while these are certainly intellectual readings, they are at the same time as forceful and propulsive as any Carter treatments can be. And they make it possible for a listener to get the gist of Carter's enormously complex arguments far more than do earlier recorded versions of these works (Erich Leinsdorf's account of the Piano Concerto with Jacob Lateiner and the Boston Symphony, on RCA's long-out-of-print LM 3001; Robert Whitney and Frederik Prausnitz's *Variations* with, respectively, the Louisville Orchestra on Louisville LOU 58-3 and the New Philharmonia Orchestra on Columbia MS 7191). What is more significant, they fairly sweep away the

FORMAT KEY

- Ⓛ LP
- Ⓜ Cassetto
- Ⓛ 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.

competition in the way they compel the listener to become involved—not just intellectually but viscerally—with Carter's very human, very impassioned musical gestures.

Especially in the concerto—in which pianist Ursula Oppens shares solo duties with a concertino group consisting of flute, English horn, bass clarinet, violin, viola, cello, and double-bass—the playing is brilliant. But the Cincinnati Symphony's collective virtuosity, like its musicianship, is apparent everywhere on this disc. For their execution as well as for their concept, these performances are, quite simply, superb.

Both pieces were recorded during concerts in Cincinnati's Music Hall (the Piano Concerto on October 5–6, 1984, the *Variations* on October 22, 1985). Audience noise is more apparent in the *Variations* than in the concerto, but not objectionably so; the tape hiss that accompanies the analog-recorded *Variations* is an annoyance to which the ears can easily enough adjust, but it comes as something of a shock after the very clean digitally recorded concerto. Playing time: 45:02.

James Wierzbicki

ELGAR:

Symphony No. 1, in A flat, Op. 55.

Ⓛ Royal Philharmonic, Previn. Philips 416 612-2 (D), Ⓛ Ⓜ

SOME CRITICS MADE THE CASE THAT GEORG Solti's performance of Edward Elgar's Symphony No. 1 proved that a non-Englishman could capture the spirit of this quintessentially English music. I was mystified by this accolade when I compared Solti's march through the opening andante to the much slower but superbly built and exquisitely expressive statement heard on the Barbirolli recording of 1963. In Elgar, a sense of natural flow must be established as a base from which any buildup comes, from which the ecstatic slowly develops. Rush is fatal to Elgarian drama. (It is not simply a matter of speed,

but Solti's performance ran 48:25, compared to Barbirolli's 53:15.)

On the present disc, André Previn has captured the correct pacing and proportion and proven what Solti could not, in an idiomatic performance with the Royal Philharmonic Orchestra that unleashes the power, grandeur, and passion of this score by letting it unfold naturally. There is a wonderful sense of rightness here. The combination of conviction, performance, and superlative recording makes the CD indispensable, if not definitive. One can thus be content while awaiting the CD resurrection of the Barbirolli, which in any event is unlikely to match the staggering, finely detailed sound captured here. Playing time: 51:43.

Robert R. Reilly

HAYDN:

Symphonies: No. 60, in C; No. 63, in C; No. 66, in E flat; No. 67, in F; No. 68, in E flat; No. 69, in C.

Ⓛ L'Estro Armonico, Solomons. Martin Compton, prod. CBS Masterworks M3 42157 (3, D), Ⓜ

THESE SIX SYMPHONIES PROBABLY WERE written between 1774 and 1777, years of changing attitudes and priorities for Haydn. Despite the subtitle of the set (*Sturm und Drang*), his storm-and-stress era was past [Friedrich von Klinger's drama *Sturm und Drang* is dated 1776—*Ed.*], its impassioned tone and willful eccentricities integrated into a more polished, elegant manner. During the mid-1770s, Haydn was preoccupied with directing the opera theater at Esterháza. As a result, he could hardly have been expected to focus on symphonic production. In these sparkling, wonderfully unpredictable works, one occasionally detects moments of haste or routine; after all, there were only so many hours in an Esterházy day. Yet there are also delightful theatrical cross-fertilizations, such as the two symphonies (Nos. 60 and 63) that began their lives as incidental music for plays.

With the present release, Derek Solomons, the concertmaster and director of L'Estro Armonico, continues his traversal of the complete Haydn symphonies, recorded on historical instruments and in their approximate chronology. Solomons's Haydn is revisionist indeed, far more drastic than Hogwood's in its paring away of stylistic incongruities. The ensemble of about twenty uses very little vibrato, favors brisk tempos, and achieves brilliantly incisive articulations. Considering their small size, they also convey an enormous dynamic range, which is especially effective in the *Surprise* Symphony-like contrasts of Symphony No. 60. Although there are occasional rough moments in intonation and ensemble, the ferocious energy of these readings renders such things irrelevant and seems perfectly suited to the nervous dynamism of the music. In fact, Solomons's band, far from being timid or polite, communicates an untamed force quite unprecedented in Haydn performance. ▶

Critics' Choice

The most noteworthy releases reviewed recently

BARTÓK:

Concerto for Orchestra; Music for Strings, Percussion, and Celesta.

Chicago Symphony Orchestra, Reiner. Ⓛ RCA Red Seal 5604-2, March.

HILDEGARD OF BINGEN:

Symphonia armonio celestium revelationum (selections).

Kirkby; Gothic Voices, Page. Ⓛ Hyperion CDA 66039, April.

LOEFFLER:

La Mort de Tintagiles, Op. 6; Five Irish Fantasies*.

Rosenshein*; Indianapolis Symphony Orchestra, Nelson. Ⓛ New World NW 332, March.

ORFF:

Choral Works (7).

Carl Orff Choir, Gross. Ⓛ Wergo WER 4006-50, Feb.

RIMSKY-KORSAKOV

Symphonies: No. 1, in E flat minor, Op. 1; No. 2, Op. 9 ("Antar"); No. 3, in C, Op. 32.

U.S.S.R. National Orchestra, Svetlanov. Ⓛ Le Chant du Monde LDC 278.771/72, March.

SIBELIUS:

Kullervo, Op. 7.

Mattila, Hynninen; Laulun Ystävät Male Choir, Gothenburg Symphony, Järvi. Ⓛ BIS CD 313, March.

STRAUSS:

"Dance of the Seven Veils" and Final Scene*, from "Salome"; Monologue*, Recognition Scene*† and Final Scene, from "Elektra."**

Borkh*, Yeend*, Schaeffler†; Chicago Lyric Theatre Chorus*, Chicago Symphony Orchestra, Reiner. Ⓛ RCA Red Seal 5603-2, March.

VERDI:

Otello.

Scotto, Domingo, Milnes. National Philharmonic Orchestra, Levine. Ⓛ RCA Red Seal RCD 2-2951, March.

ZORN:

The Big Gundown.

Zorn, Lindsay, Galas, Fier, others. Ⓛ Nonesuch 79139-2, April.

A final word to CBS: Why are these fascinating interpretations unavailable on CD? If you wrongly believe that they won't sell on CD, at least release some sampler volumes of selected symphonies. These interpretations deserve the broadest possible public exposure.

K. Robert Schwarz

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 (D). Ⓛ (Distributed by Intercon Music Group.)

IN THE PAST FEW MONTHS, THERE HAVE BEEN several Compact Disc issues of works of Rachmaninoff, some less than enthralling. But it is a pleasure to review this one. First, the couplings.

Arthur Ozolins's performance of the Litolff Scherzo not only matches older versions but, for once, commends the work as something more than a minor vehicle for egoistic exploitation. In the Dohnányi *Variations on a Nursery Song*, Ozolins faces formidable rivalry from the recent London release featuring András Schiff as soloist with Georg Solti and the Chicago Symphony. One would have to call this contest a draw, were it not for the fact that Schiff and Solti accompany their lovely Dohnányi with a performance of the Tchaikovsky Concerto so boring as to rule their CD out of court.

What about the Rachmaninoff? To develop my first impressions into firm opinion, I went through my archives and spot-checked virtually every commercial recording of the Rach One. My conclusion: This account from Ozolins and conductor Mario Bernardi is equaled, but not surpassed, by two previous ones: Rachmaninoff's own with Eugene Ormandy, from 1940, and the Byron Janis/Fritz Reiner collaboration of 1958. Only those two recordings realize the immense dramatic and poetic potential of the concerto as well as this one does. Indeed, there is nothing in the score that Ozolins and Bernardi do not express to the fullest.

While it has been rumored for some time that Ozolins is the greatest virtuoso pianist in Canada, this release (playing time: 58:32) should help promote a higher claim: that he is currently one of the greatest young virtuoso artists in the world. André Gavrilov, move over!

Thomas L. Dixon

ROUSSEL:

Symphonies No. 1, Op. 7 ("Le Poème de la Forêt"); No. 3, in G minor, Op. 42.

Orchestre National de France, Dutoit. Guy Chesnois, prod. Erato MCE 75283 (D). Ⓛ ECD 88225

GEORGES PRÊTRE'S ARRESTING ROUSSEL program, released not long ago on Angel

EMI (offering the complete *Bacchus et Ariane* ballet and the magical *Le Festin de l'araignée*, reviewed August 1986), proved to have been a happy augury of more new Roussel issues. The latest one comes from Charles Dutoit, who may be as effective an interpreter today as Koussevitzky was during his years with the Boston Symphony, where his many performances were crowned by commissioning—for the 50th anniversary of the orchestra—Roussel's Third Symphony. This work has been fairly frequently recorded in the past, perhaps most notably by Charles Munch and the Lamoureux Orchestra for Erato. The Pierre Boulez/New York Philharmonic version for CBS (recorded c. 1976) is the only cassette/LP version currently listed in the SCHWANN catalog. Dutoit now gives us a reading as persuasive as Munch's and subtler than Boulez's, and Erato's digital recording easily surpasses both of those efforts in its lucid sonics.

What makes this new release especially rewarding is its inclusion of what is only the second recording [just nosed out by Cybelia CY-801, with the Swedish Radio Symphony conducted by Leif Segerstam—*Ed.*] of Roussel's First Symphony. This was Roussel's first large-scale orchestral work, written in 1904-6, when he was still fresh from his studies with Vincent d'Indy at the then relatively newly established Schola Cantorum. As suggested by its title (*Le Poème de la Forêt*) and the titles of its individual movements (*Forêt d'hiver, Renouveau, Soir d'été, and Faunes et dryades*), it is an entirely different sort of work than the muscularly austere Third Symphony. Indeed, it well may be the most neglected and underappreciated masterpiece of French orchestral impressionism. I can't understand why it is not better known, because its vivid tonal depictions are quite spellbinding and reveal a surprisingly thorough mastery of the techniques of evocative orchestration.

I look forward to more Roussel from Dutoit and hope that program notes will be included with the next cassette edition.

R. D. Darrell

SIBELIUS:

Symphony No. 1, in E minor, Op. 39;

Allegretto ("The Oceanides"), Op. 73.

Ⓛ City of Birmingham Symphony Orchestra, Rattle. David Groves, prod. Angel CDC 47515 (D).

THIS IS SIMON RATTLE'S THIRD SIBELIUS recording, the second he's made with the once provincial but now apparently world-class City of Birmingham Symphony Orchestra, which he's headed since 1979. It's a remarkable product in and of itself, all the more impressive because it's yet another demonstration of this conductor's continuing growth.

It seems that each time Rattle steps into a recording session, he elicits a performance not just more technically polished and more viscerally exciting than its predecessor, but also more insightful, more powerfully driv-

en, and more lastingly affecting. Rattle is only thirty-two years old; one assumes that he still has some maturing to do and that the peak he'll eventually reach will be of awesome height.

Rattle here dispenses with interpretive fat and emphasizes the too-often-ignored leanness of Sibelius's writing, even more than he did with his CBSO reading of the Symphony No. 2 and the *Scene with Cranes* from the incidental music for *Kuolema* (Angel EMID 38169). The feeling of dynamic motion is pervasive and intense, but the significant rhythmic fluctuations tend to be large-scale. There are indeed many dramatic mini-pauses and many phrases made exquisitely supple by elongations of dissonant notes that cry out for resolution. There is no milking of the music for only momentary expressive purposes, however, or any real disruption of the music's flow once a movement gets going. The "little" nuances are important, for they make the music seem constantly warm, human, and intimate; but it is the "big" nuances—the minutes-long buildups to absolutely unambiguous climaxes—that give the music its strength and ultimately make the symphonic argument seem monumental.

The 1914 *Oceanides*—not at all a programmatic tone poem, but certainly an evocative seascape whose vapory textures and surging volume levels, at least, owe a debt to Debussy's *La Mer*—holds out many temptations to conductors who know how to make a big splash with a virtuoso orchestra. Rattle does not succumb to them. His treatment is wonderfully effective, to be sure; but, as in the symphony, the effects he pulls off remain subordinate to the accomplishment of broader, more noble goals. Playing time: 52:14. *James Wierzbicki*

THEATER AND FILM

HORNER:

Gorky Park (soundtrack).

London Symphony Orchestra, Horner. James Horner, prod. Varèse Sarabande VCD 47260 (A). © STV 81206. □ CTV 81206.

Aliens (soundtrack).

London Symphony Orchestra, Horner. Varèse Sarabande VCD 47263 (A). © STV 81283. □ CTV 81283.

IT'S DIFFICULT TO FULLY ASSESS THE TALENT of James Horner. It's not that there's a dearth of material on which to base a judgment; on the contrary, he is one of the most widely recorded film composers of recent years. What makes evaluating Horner so difficult is the curious fact that one time out he is able to offer original and appealing scores, the next time out blatantly imitative pastiches, churned out for an industry that obviously rewards adherence to successful formulas.

Gorky Park (playing time: 36:05) is one of Horner's most interesting efforts. The main title (which admittedly took its unusual form from the juxtaposition of visuals opening

the film) is an interesting mix of driving rhythms, effectively placed bell-like sonorities, and snippets of Tchaikovsky. The instrumentation is chamber-sized, and for once, Horner's textures are a pleasure. Recommended.

Aliens (playing time: 41:02) is such a total mélange of ideas lifted from other sources that I'm surprised Horner put his name to the work. In his space-opera/epic scores, Horner almost always slides in an otherwise uncredited classical steal. There was Prokofiev's *Alexander Nevsky* in *Battle Beyond the Stars*, Prokofiev's *Romeo and Juliet* in *Star Trek II*, and now Khachaturian's *Gayane* in *Aliens*. Horner also likes to take ideas from Jerry

Goldsmith, and the quotations here are more obvious than usual, including the almost literal lift of a sequence (in "Ripley's Rescue") from Goldsmith's *Capricorn One* score. In this age of truth in advertising, how can scores such as this continue to appear with the credit "Music composed by James Horner"?

Varèse Sarabande has lavished its usual care on the production of these Compact Discs. Sonics are first rate, and the indexing is all that one could wish for. Richard Kraft's laudatory essay on Horner's career (in the *Aliens* package) more than slightly overstates Horner's importance, I think.

Noah André Trudeau

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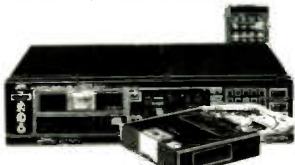
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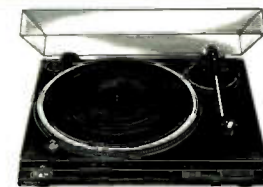


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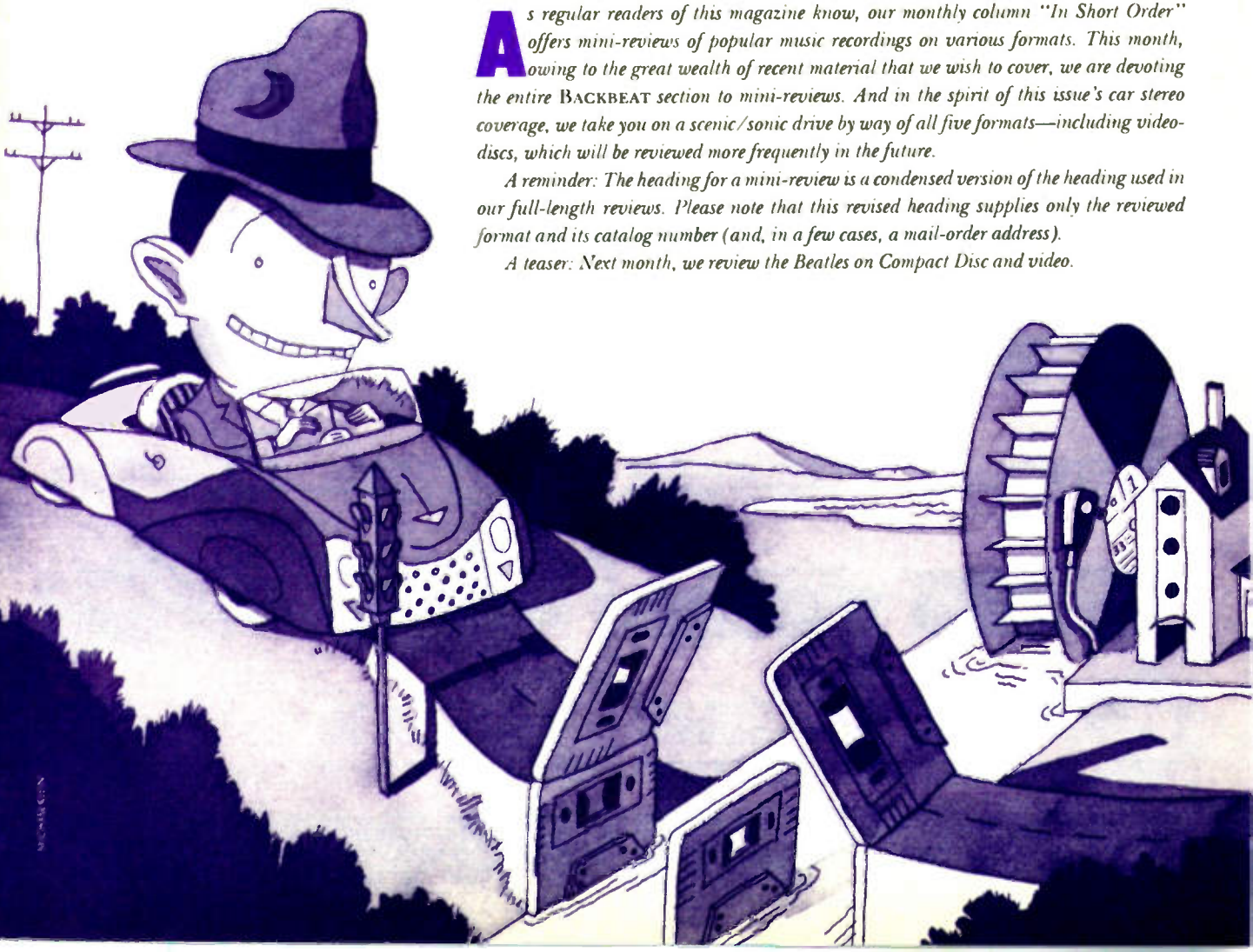
Roll up for a fast-paced, multiformat field day: more than 35 mini-reviews of LPs, cassettes, Compact Discs, videocassettes, and videodiscs.

MINI-A-TOUR

As regular readers of this magazine know, our monthly column "In Short Order" offers mini-reviews of popular music recordings on various formats. This month, owing to the great wealth of recent material that we wish to cover, we are devoting the entire BACKBEAT section to mini-reviews. And in the spirit of this issue's car stereo coverage, we take you on a scenic/sonic drive by way of all five formats—including videodiscs, which will be reviewed more frequently in the future.

A reminder: The heading for a mini-review is a condensed version of the heading used in our full-length reviews. Please note that this revised heading supplies only the reviewed format and its catalog number (and, in a few cases, a mail-order address).

A teaser: Next month, we review the Beatles on Compact Disc and video.



BEAT

BEASTIE BOYS:

Licensed to Ill.

Def Jam/Columbia BFC 40238.

THE BEASTIE BOYS ARE LOUD AND LEWD. "Being bad news is what we're all about," boasts one set of lyrics on *Licensed to Ill*, the biggest rap album ever. "We went to White Castle and got thrown out." Elsewhere, they eulogize the joys of girls, gunplay, and getting high. A parent's worst nightmare, you bet. But that's the point: Outrage all the right people and create the ultimate teenage music, uniting those who revolt against poverty and those who revolt against affluence. The Beasties cut-and-paste Barry White, War, Led Zeppelin, and Whodini, among others, fitting them into astounding rap/rock grooves. They even approach this hybrid from the AC/DC side with "Fight for Your Right," the most rebellious anthem since Twisted Sister's "We're Not Gonna Take It." Despite the obnoxious veneer, *Licensed to Ill* is among the most entertaining LPs you'll ever hear.

Havelock Nelson

ERROLL GARNER:

① *Afternoon of an Elf*. Mercury 826 457-2.

ERROLL GARNER WAS ONE OF THE MOST popular jazz musicians of the '50s and '60s, and this was one of his most popular albums. It was recorded, astonishingly, in a long session in March 1955 when Garner had a broken left index finger. He made 20 numbers that afternoon; 12 are on this 68-minute CD, including all the pieces from the original LP.

several from *Erroll*, and the previously unissued "Sleep." Garner's oblique intros and his broadly declamatory chords and peg-legged walking bass were the expression of a man with a powerful dramatic sense and an elfin sense of humor. This is an excellent introduction to his work.

Michael Ullman

BARBRA STREISAND:

① *My Name Is Barbra*. CBS/Fox Video Music 3519-24 (Beta), 3519-34 (VHS).

② *Color Me Barbra*. CBS/Fox Video Music 3518-24 (Beta), 3518-34 (VHS).

THESE TWO ICONS OF NOSTALGIA—BARBRA Streisand's first TV specials from the '60s—remind us how incredibly mature her vocal art was even at conception. Twenty years later, however, what had initially fascinated the public—the Brooklyn accent, the manic monologues, the vulnerability—now seems like an overworked joke, and two thirds of these tapes are dedicated to personas that are cute but ultimately taxing. *Color Me Barbra* features an exquisite romp through the Philadelphia Museum of Art, in which she "tries on" various paintings and sculptures,

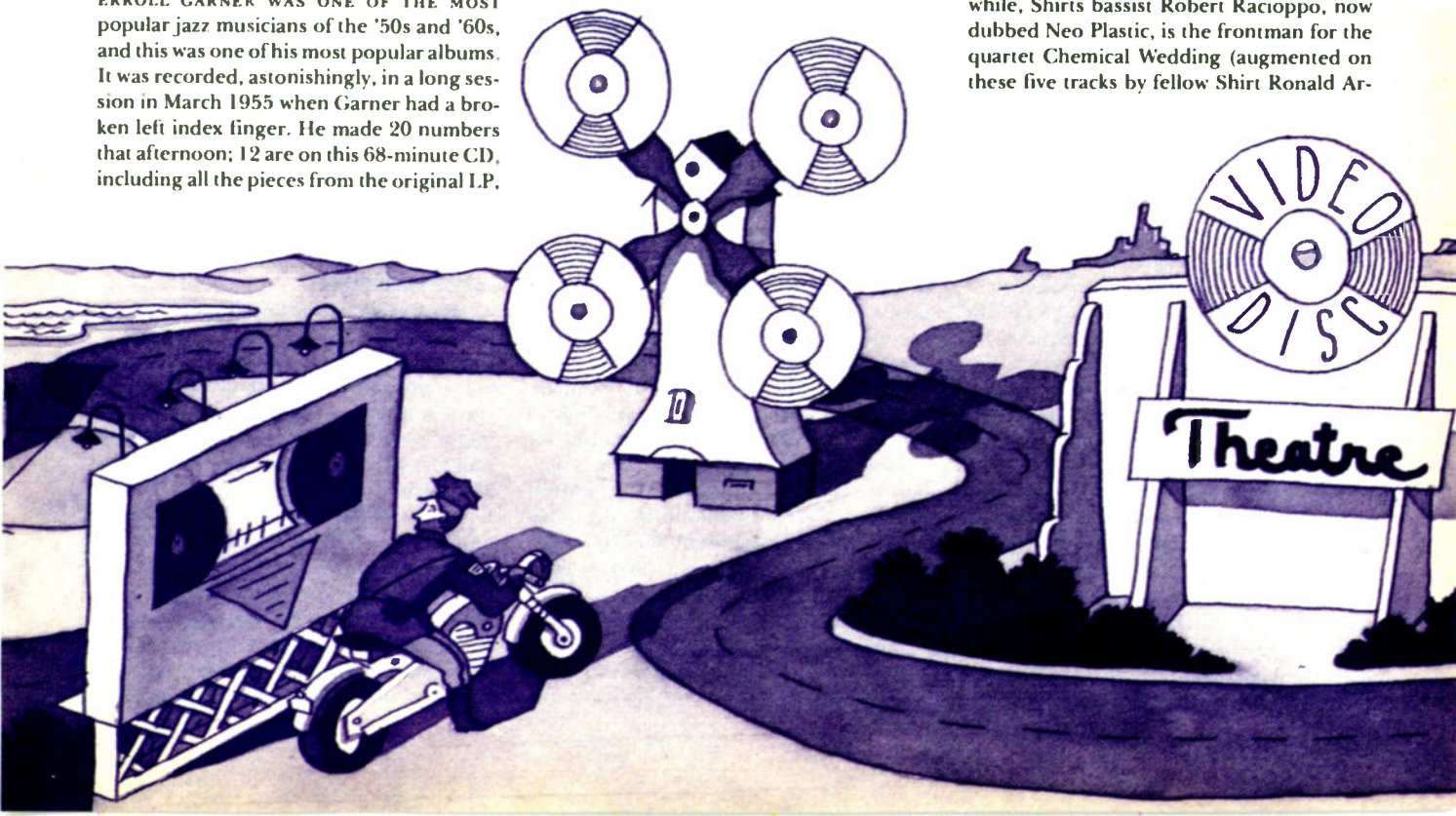
but you'll have to be a die-hard fan to love the close-ups of the nose, the mouth, and the incredibly crossed eyes. When stripped of her mannerisms and dressed in the simplest gowns, though, Streisand does what she has always done best: sing. *My Name Is Barbra*, recorded during her Broadway run of *Funny Girl*, features a medley from the show that is surprisingly pure—and simply mist-provoking. But in general, these videos left me feeling, "What a voice. What a talent. What a shtuck."

Pamela Bloom

JING/CHEMICAL WEDDING:

① *Jing/Chemical Wedding*. Off the Board 609. (c/o CBGB, 315 Bowery, New York, N.Y. 10003.)

FANS OF THE LATE, LAMENTED BROOKLYN BAND the Shirts will want to grab this tape to catch up with two of its members. Guitarist Arthur Lamonica now leads a quintet bearing his new surname, Jing, and there are plenty of his trademark hooks in these six samples of keyboard-centered pop. Artie still quips mostly about the many faces of love, with the social commentary of the fine "World Gone Mad" thrown in for good measure. Meanwhile, Shirts bassist Robert Racioppo, now dubbed Neo Plastic, is the frontman for the quartet Chemical Wedding (augmented on these five tracks by fellow Shirt Ronald Ar-



MINI-A-TOUR

dito, alias Maurice Rev). Bob has switched to guitar, yet his band leans on a hard-dancing mix of bass and percussion, and he still sings in his endearing twisted-Turkish-Taffy voice. Absolute gem: the sly "Just Like Mondrian," which was a hit in the Midwest. The sound of this cassette is a little thin in places but generally good. Try to see these bands live, too; I saw Chemical Wedding the other day, and like the Shirts, they positively smoked on stage. *Ken Richardson*

WILLIE NELSON AND FAMILY:

📺 **In Concert.** CBS/Fox Video Music 6623-80. THIS EARLY-EIGHTIES HBO SPECIAL WAS SHOT live before an Austin home crowd, the first half a straightforward presentation of the then current *Tougher Than Leather* album, the second half a more typical, free-flowing Willie Nelson show full of his own country classics and more recent pop ballads. Visually, there's nothing fancy—nor should there be for this most laid-back of artists. Soundwise, this videodisc particularly sparkles, especially in Nelson's beat-up acoustic guitar notes, sister Bobbie's piano figures, and Mickey Raphael's brisk harp blowing. *Jim Bessman*

LADYSMITH BLACK MAMBAZO:

📀 **Inala.** Shanachie 43040. THE BRILLIANCE OF *INALA*, LADYSMITH BLACK Mambazo's third U.S. release, underscores Paul Simon's contention that his collaboration with the South African a cappella group on *Graceland* was precisely that and not some boycott-busting form of cultural colonialism. In rock's ongoing dialogue between voice and beat, the role of group harmonizing has all but disappeared from even its traditional wellspring, black pop. Ladysmith's intricate, conversational style may be as important in refreshing our appreciation of the joyous sounds of human voices working in unison as it is in granting us some understanding of the music and the people of a troubled land. *Wayne King*

VARIOUS ARTISTS:

📀 **Soweto Never Sleeps.** Shanachie 43041. FORTUNATELY, THIS WELL-PRODUCED SET OF "Classic Female Zulu Jive" features the Mahotella Queens, for they are certainly the female masters of Soweto's *mgqashiso*, or "indestructible beat." And when they're joined by "groaner" Simon "Mahlathini" Nkabinde on call-and-response songs, the party gets going. Even more vocals and some swinging guitar riffs intertwine on highlight track "World Favourite," but the imitation-rock "Hippies Come to Soweto" flunks musically. Two Mahotella splinter groups are also represented: Irene and the Sweet Melodians ("Let the Weekend Come"), who keep up the pace despite a dull mix, and the Mgababa Queens (the title track), who can't seem to find the common ground in jive

where the mother group reigns. Voices are distinct on the Dark City Sisters' "The Musicians," but their hymnlike "Outside South Africa" doesn't hold up. *Mildred Camacho*

McCOY TYNER:

📀 **Double Trios.** Denon CY 1128. BLUE NOTE RECENTLY RELEASED A PLEASANT MOR-jazz recording featuring McCoy Tyner with Jackie McLean; it worked well, largely because it didn't try too hard to cross over. This piano-plus-rhythm CD retains the mellowed-out quality of that set and will probably win Tyner new converts, offering as it does the full acoustic range of his pianistic dynamism within the confines of such easy-to-hear tunes as "Satin Doll" and "Lover Man." Although Tyner's emergence as a mainstream artist may perturb some older fans, it is a mask he wears gracefully: Underneath it are his many teeth, and their cutting edges are still quite sharp. *Joe Blum*

XTC:

📀 **Skylarking.** Geffen GHS 24117.



ALTHOUGH THE COMPARISONS WITH *SGT PEPPER* are a bit much, it's nice to see my colleagues praising this LP to the heavens, for *Skylarking* is yet another solid recording from XTC and one of the best albums of 1986. The trio follows up on its psychedelic *25 O'Clock* (import-only Virgin EP as the Dukes of Stratosphear) and, with Todd Rundgren at the board, creates a shining pop sound. Andy Partridge, still the equal of Elvis Costello, scores best with the "Eleanor Rigby"-esque "1000 Umbrellas," the deep-synth "Another Satellite," and the rocking "Earn Enough for Us," which deserves to be a No. 1 hit for ten weeks. Colin Moulding contributes melodies-to-the-rim in "Grass" and "The Meeting Place," yet as usual he also has the clunkers ("Big Day," "Sacrificial Bonfire"). Still, the LP's overall strength and variety are well worth your dollars. And by the time you read this, Geffen will have rereleased *Skylarking* with Partridge's previously non-LP "Dear God" included, a track as tough as anything already here. *Ken Richardson*

JOE ELY:

📀 **Live from Texas.** Praxis Media PMP 918V (Beta, VHS). (Barznton Productions, 18 Marshall St., South Norwalk, Conn. 06854.)

TAPED LAST SEPTEMBER BEFORE A SUPPORTIVE and clearly juiced crowd, this video showcases Joe Ely in the best possible light: leading his band through barroom basics at a stagecoach-stop-turned-dance-hall in Gruene, Texas. Given the ups and downs of his career (he was dropped by MCA soon after this concert) and his recent failed flirtation with synthesizers, the sight of Ely confidently reprising some of his best country-rock barnstormers is comforting. Down-home music and locale notwithstanding, *Live from Texas* features digitally recorded sound and crystal-clear camerawork—nothing low-tech here. Even better, from inspired versions of "Dallas" and "Fools Fall in Love" to raunchy rip-throughs of "Cool Rockin' Loretta" and "Musta Notta Gotta Lotta," this tape makes for a dandy Ely anthology. And that has been a long time coming. *David Browne*

LOS LOBOS:

📀 **By the Light of the Moon.** Slash/Warner Bros. 25523-1.

ALTHOUGH IT MAY NOT KICK IN QUITE AS forcefully as their previous efforts, this should prove to be Los Lobos' finest recording. The quintet now reminds me more of the Band than of anyone else—not that they sound like that group, only that they share the importance of ensemble work and the virtues in saying your piece quickly and then getting out. As the Band did, Los Lobos have transcended their barroom roots: those roots, from Tex-Mex to Motown, are still resonant, but they've been molded into a new idiom. As before, Cesar Rosas writes and sings the jook-joint rockers, while the songs by David Hidalgo and Louie Perez are meant to be deeper looks at promises kept and broken in America today. Los Lobos have kept theirs, and then some. *John Morthland*

ROOMFUL OF BLUES:

📀 **Dressed Up to Get Messed Up.** Varrick CD 018.

ROOMFUL OF BLUES IS AN ODDITY, A GROUP OF musicians with various ethnic backgrounds and a wide range of ages (the eldest, a trombonist named Porky Cohen, is in his sixties) who play blues, soul, and '50s rock 'n' roll. They've backed up blues stars (Joe Turner, Jimmy Witherspoon), and now they have a CD of their own. They're at their best on glib r&b numbers like "Money Talks" and on "The Last Time," which adds the lead vocal of Kim Wilson from the Fabulous Thunderbirds. As blues players, they create a rollicking sound, but they lack character and, finally, commitment. This CD may be useful at

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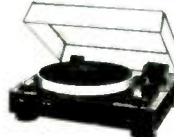
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MINI-FOUR

could rise above the travails all the time; on *Monterey*, recorded a year before she died, she sounds almost beaten. Her trio and guest star Gerry Mulligan are more than game, but Holiday's performance never rises above the perfunctory—probably an accomplishment in itself. A bit too close to the bone without hitting any aesthetic nerves, *Monterey* might have been better left in the vaults.

Steve Futterman

CHERYL WHEELER:

Cheryl Wheeler. North Star W 0001.



SONGWRITER/VOCALIST CHERYL WHEELER made a few tentative forays into the Big Time in the mid-Seventies, playing showcases at New York City clubs. Her voice and presence were first-rate, but her music—a pastiche of covers and a few naive originals—was unmemorable. Now she's back with a vengeance on her independent debut. The 11 tracks articulate love and pain with a fresh voice, and Wheeler paints several striking portraits: the craziness/loneliness of an "Invisible Lady" in a pizza joint, the "Lethal Detective" caressing his spy paraphernalia and skulking around almost for the thrill. Wheeler also makes an astute cover choice in "Game of Love."

Leslie Berman

BOB GELDOF:

Deep in the Heart of Nowhere.

Atlantic 81687-1.

GIVE THIS A CASUAL LISTEN, AND IT ISN'T TOO bad: The big pop production's attention to detail and the Bowie-esque throb of Bob Geldof's singing can be pleasant. But once you get into the lyrics, you'll find that it's this same sentimental delivery that gives these well-meaning jeremiads their disagreeable tone. It's as though Geldof had decided that self-pity is the proper response to suffering in the world. Bob was a witty fellow with the Boomtown Rats; maybe it was the band. In sum, maudlin.

Richard C. Walls

THE MANHATTAN TRANSFER:

Vocalese. Pioneer Artists PS 85-003.

NONE OF THE FIVE AMBITIOUS VIDEOCLIPS from the Manhattan Transfer's 1985 *Vocalese* LP have been widely seen, though all are better than 90 percent of those that have. As the group's Tim Hauser explains in a charming press-conference intro, "vocalese" is the singing of bebop lyrics to classic jazz instrumental solos, and this the Transfer does, gloriously on videodisc. "Blee Blop Blues" stands out for its hysterical use of the *I Love Lucy* television-studio set, with the quartet mastering the comedic roles as readily as the complex vocals. But "To You" is equally memorable, with its simple, black-and-white, in-studio face-off between the Transfer and the Four Freshmen.

Jim Bessman

CROWDED HOUSE:

Crowded House. Capitol 4XT 12485.

CONTENTS OF HOUSE: FOUR OKAY SONGS, SIX spectacular songs (Side 2's "Hole in the River" and all of Side 1), lively Mitchell Froom sound, and edgy guitar and abundant hooks from Neil Finn (of Split Enz). What more could you ask of great pop?

Ken Richardson

THE POINTER SISTERS:

Hot Together. RCA 5609-1.

WITH *BREAK OUT*, THE POINTER SISTERS brought their steamy postdisco glitz to perfection. This is RCA's second attempt to recycle that perfection—and what a waste of talent. It's time for producer Richard Perry to consult his astrologer—or at the very least get a new stable of songwriters—because few of these numbers support the Pointers in the manner to which they are accustomed (notable exception: "All I Know Is the Way I Feel"). Even the drum machines sound bored.

Joe Blum

WILLIE COLLINS:

Where You Gonna Be Tonight?

Capitol ST 12442.

WILLIE COLLINS HARDLY FITS THE STANDARD profile of a heartthrob vocalist: A full-time New York City mailman, he was seen singing at a small club one weekend and so impressed a record executive that he landed a date on a major label. What's even more surprising is that Collins sounds like the kind of down-home singer who's recorded mostly by independent/Southern labels. Though the trappings of slick, love-man pop sometimes crop up, Collins wails, shouts, and stretches out in true soul fashion. It's refreshing to know that the drudgery of the Post Office hasn't worn down his vocal enthusiasm.

Ron Wynn

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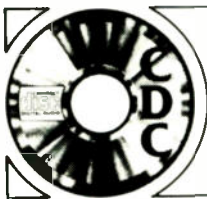
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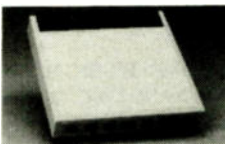
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Mobley died in May 1986, and these sides, from '63, '65, and '66, represent the last of his previously unreleased material. But though this may be odds and ends, it's by no means dregs. Three different quintets, featuring Lee Morgan, Freddie Hubbard, McCoy Tyner, Herbie Hancock, and (of course) Billy Higgins, work out with the usual aplomb on a variety of favored early-Sixties formats. Highlight: Mobley's "Chain Reaction," an 11-minute modal piece à la "Impressions/So What" that displays his ability to be hard-driving and almost wistful simultaneously. For Mobley fans, a must; for others, a good sampler. *Richard C. Walls*

JONATHAN RICHMAN, THE MODERN LOVERS:

It's Time for Jonathan Richman.

Upside UCD 60001-2.

NO MATTER "WHAT THE CALENDAR SAID" IN this disc's highlight track "Just About Seventeen," Jonathan Richman thankfully remains teen at heart. His continued preoccupations with that age's hopes and dreams are further reflected in the rest of the dozen tunes here, and while a few are too slight, others like "This Love of Mine" and "When I Dance" revel in the poignance and sincerity of his boundless idealism and optimism. On CD, Richman's deliberately unpolished, gut-level honesty rings clearer than ever, thanks to beautifully simple rock 'n' roll melodies, minimal rhythm accompaniment, and similarly unaffected doo-wop backup singing. *Jim Bessman*

PETER, PAUL, AND MARY:

No Easy Walk to Freedom.

Gold Castle 171 001-1.

PETER, PAUL, AND MARY OFFER FEW SURPRISES on their new LP; still, it's reassuring that their fervor for social justice hasn't waned. The cover photo shows them getting arrested at the South African embassy, and the title song repeats the anti-apartheid theme. That cut and "Light One Candle," for Jewish dissidents in Russia, rank with their best protest material. There are solos—Mary on "I'd Rather Be in Love," Paul on "State of the Heart," Peter on "Whispered Words"—but it's their passionate three-part harmonies that get me every time. *Kate Walter*

HÜSKER DÜ:

Warehouse: Songs and Stories.

Warner Bros. 25544-1 (2).

DESPITE ITS SKIMPY 68-MINUTE RUNNING TIME, this double LP vigorously reinforces Hüsker Dü's reputation as the most uncompromising band recording for a conglomerate. But unlike last year's *Candy Apple Grey*, it introduces some fresh elements amid the usual clang and clatter: near-Beatlesque hooks ("Friend, You've Got to Fall," "Could You Be the One?"), riveting assimilations of Crazy Horse-era Neil Young ("Bed of Nails,"

"Charity, Chastity, Prudence, and Hope"), and even the first recorded merger of Celtic music, the Byrds, and Hüsker's thrash ("She Floated Away"). *Warehouse* would have made a tighter single album, and it's unlikely to win over any new admirers, but such are the drawbacks of sticking to your guns.

David Browne

GINGER BAKER:

Horses and Trees. Celluloid CELL 6126.

TALK ABOUT OUT OF AFRICA, HERE COMES Ginger Baker, well-known rock recluse, with an international cast of dozens, making a lot of noise that says very little. These six instrumentals are good, a little beyond droning New Age stuff, but tracks like "Mountain Time" don't bear repeating, as they are repetitive enough. "Interlock" sounds a bit like a dub track from the Golden Palominos, largely owing to Nicky Skopelitis's 12-string work. But the real agenda here—coupling Baker's kit work with the sounds of talking-drummer Aiyb Dieng—gets lost in producer Bill Laswell's secret sauce. *Hank Bordowitz*

VAN HALEN:

Live Without a Net.

Warner/Reprise Video 38129 (VHS only).

ON ITS CURRENT 90-MINUTE VIDEO, VAN HALEN (or should I say "Van Hagar"?) has done its best to blot out the existence of its former lead singer. Ignoring the bulk of a decade's worth of great stuff and concentrating on material from *5150*, the band fills in the holes with drawn-out solos by the three remaining original members, and all of them are overlong and boring on video. Then there's a slavish imitation of Led Zeppelin's "Rock and Roll." Edward Van Halen is still one of the hottest things on six strings, but Sammy Hagar lacks the flamboyance and imagination this band needs in a frontman. The sound is superb, but the stage lights wash out many images. And even the pyro is less than impressive. *Hank Bordowitz*

THE CHARLIE WATTS ORCHESTRA:

Live! Fulham Town Hall.

Columbia CK 40570.

THERE ARE BIG BANDS, AND THEN THERE ARE huge bands. On this busman's holiday from the Rolling Stones, closet jazz fan Charlie Watts gives work to more than 30 of his Brit buddies, cutting them loose on six swing and bop standards. Its rock 'n' roll excesses (does any band really need three drummers and two vibists?) also contribute to its rousing, over-the-top spirit. The repertoire could be a bit more daring, the charts lean toward Vegas, and the horn soloists aren't identified, but I'll take this over Mick Jagger's solo album anyway. The CD gives more clarity to the swelled rhythm section, but both LP and CD retain the band's elephantine punch. *Steve Futterman*

MINI-A-TOUR

FELA ANIKULAPO KUTI:

In Concert. View Video 2305 (Beta), 1305 (VHS), (34 E. 23rd St., New York, N.Y. 10010.)

THIS 1981 PARIS CONCERT STARTS VERY SLOWLY but builds relentlessly on the simplest riffs until it creates meaning through repetition itself. The dancing girls and occasional sexual metaphors are just window-dressing for an underlying message that is always political. (It can be somewhat *drôle* watching French teenagers boogie to lyrics about colonization and exploitation.) Fela's act is highly visual: As he struts his stuff, his wives shimmy and shake in colorful costumes and vivid make-up, yet the serious mood is never lost. Though the camerawork is smooth, the audio gets muddy; the subtle African bass should not, cannot, be recorded like jazz or rock. Still, Fela is someone Americans need to get familiar with, and video is certainly the best way to his music. *Joe Blum*

VARIOUS ARTISTS:

New Jersey Rock 5. WDHA DHA 5.

THIS IS THE FIFTH COLLECTION OF GARDEN State artists compiled by WDHA, a rock radio station based in Dover (105.5 FM). The CD sound is admirable, though not outstanding. No matter: The music is what counts. No tired Springsteen copies, just wonderful, original pop-rock. To lengthen the CD to a generous 65 minutes, the 13 unsigned artists here are joined by major-label contractees Glen Burtnick, Joe Lynn Turner, and the Smithereens. And virtually all of the unsigned acts deserve a break, ranging from Carolyne Mas (who returns with a beautiful ballad) to Winter Hours (wide-open guitars) and even Angelz (fun metal, truly). By the time you read this, the limited-edition CD may be sold out, but fear not: Cassette copies are available from WDHA, 419 Route 10, Dover, N.J. 07801.

Ken Richardson

E.U.:

2 Places at the Same Time. Island 90536-1. ON THE BASIS OF THIS LIVE SET—ONE SIDE recorded at New York City's Irving Plaza, one side before an audience in a hometown studio—it's clear that the Washington, D.C., band E.U. represents the more melodic wing of go-go. Can it be a coincidence that it is the only such group to also show a marked Sly Stone influence? E.U. remains, happily enough, just as rhythmically combustible as Trouble Funk and other more celebrated go-go bands; Side 2 in particular struts like nobody's business. This comes courtesy mainly of drummer William "Juju" House and assorted other percussionists, but the horn section has plenty of punch, and the band is also blessed with a prickly guitarist in Valentino "Tino" Jackson. E.U. shouldn't remain the dark horse of go-go for much longer. *John Morthland*

JENNIFER WARNES:

Famous Blue Raincoat. Cypress 661 111-2.

LEONARD COHEN'S HAUNTING SONGS WERE among the finest covered in the '60s because they called to mind so many tender and tearful moods. On this recording, Jennifer Warnes sings nine of his songs, including "Bird on a Wire"; though she strikes no new ground with that number, Warnes proves she is a stylist with range in other choices of more obscure material. It's an ambitious project, yet she gives each jazz-poem lyric its own reading, interpreting quite clearly Cohen's usually inscrutable symbolism. Cohen himself is the guest vocalist on "Joan of Arc," and Stevie Ray Vaughan plays guitar on "First We Take Manhattan." The production is a bit overlaid with synthesizers and strings, but it is disturbing only on this CD version, where the original mix's failure to individualize sounds is especially noticeable. *Leslie Berman*

NANETTE NATAL:

Hi Fi Baby. Benyo Music BY 3335.

NANETTE NATAL'S JAZZ VOCALS ARE SO PURE and unpretentious that they seem to belong to another age. On her third album, she makes passing references to Ella, Sarah, and Elvis, but her unique sense of phrasing stems totally from a brilliant connection to her own instrument—an intimate but voluptuous little creature that can suddenly go scurrying off into magnificent flights of improvisational fancy. A composer and arranger of no small worth, Natal has labored in the downtown New York scene for the last 20 years because of her low-gloss profile as well as her insistence on self-production, but it's exactly this absence of mainstream megalomania that makes this disc so compelling. Natal's biggest treasure is her scat that never obscures a song in esoterica: the Africanese reggae of "Lose Control" particularly showcases linguistic outbursts that are deeply rooted in primal emotions. If there is a feminist tinge to any of her work, she has tucked it inside an expansive spirituality that makes

no distinctions between the sexes. Simply, she is—without question—available for anyone in search of a good, honest voice.

Pamela Bloom

ALBERT COLLINS, LONNIE MACK, AND ROY BUCHANAN:

Further on Down the Road. Praxis Media PMP 912V (Beta, VHS). (See Joe Ely address.)

THIS IS NOT YOUR BASIC CONCERT VIDEO: Production values are high, camerawork is ambitious, and the acoustics of Carnegie Hall, which the engineers do their best to live up to, need no introduction. The interviews with celebrity musicians are the usual gush, though Dicky Betts puts Lonnie Mack in context pungently and Robbie Robertson is his usual entertaining self talking about Roy Buchanan. And the music? It's mostly fine, thank you. Albert Collins is cool and clean, as always, though the use of split-screen during his set is clumsy and distracting. Mack starts out solo acoustic and adds players until the whole band is wailing and the whang bar is working overtime, his meaty solos soaked in tremolo. After those two, Buchanan sounds like the Edward Van Halen of blues rock. For 90 minutes, Carnegie Hall is Guitar Town. *John Morthland*


MARTI JONES:

Match Game. A&M SP 5138.

AND YOU THOUGHT BOSTON'S ALBUM WAS THE perfect indication that the great '70s revival is upon us. *Match Game* uses one of the favorite gambits of that lost decade: The heralded new vocalist, hooking up with a couple of crack bands and some sessioneers, tackles classics old and new (many specially written for her by the finest contemporary songwriters!). Neither Marti Jones, a singer of some distinction, nor Don Dixon, an estimable producer and musician in his own right, deserves to be flipped off. But it is certainly puzzling that on an outing featuring so many of New Wave's finest graybeards, the best tunes are, well, kind of Teen Pop.

Wayne King

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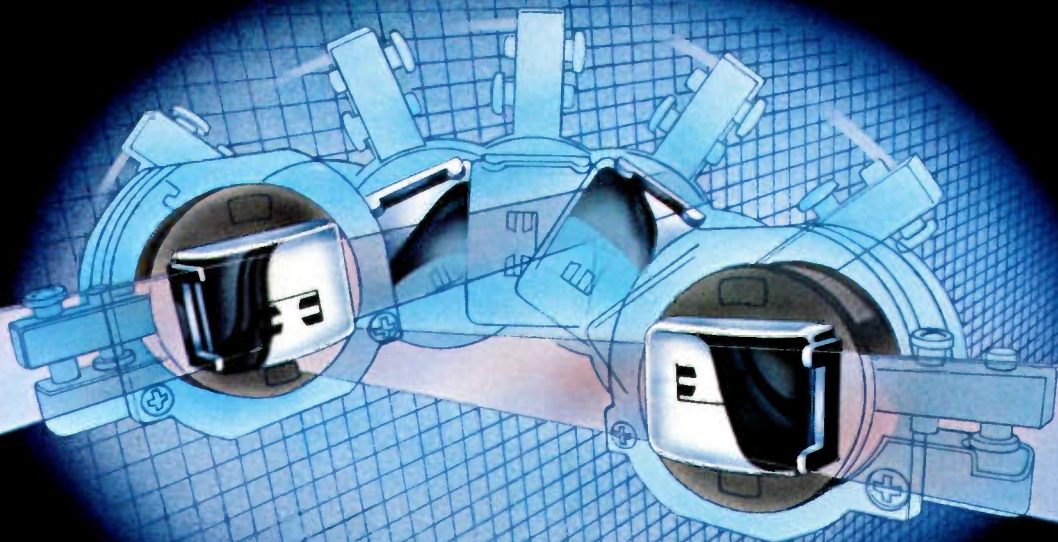
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with features you'd expect to find only in full-sized models. In fact, with 21-track selection programmability, 4 repeat modes and optional remote control, the D-10 performs splendidly as the centerpiece of your home stereo system.

But when you're as portable as a Discman, it's tough to stay put for long. Which is why it comes with a

rechargeable battery for up to 4½ hours of digital music on the go. There are even optional accessories that can make Discman an integral part of your car stereo system.

Whether you choose the D-10 or any new Sony Discman, one thing is certain. You get the most advanced CD player technology available today. For at Sony, we not only created the world of Compact Disc, we keep making it bigger and better. Even when we make it smaller.



Discman SONY®

THE LEADER IN DIGITAL AUDIO™



Never has a compact disc player with so much going for it



Actual size.

kept such a low profile.