

Special Report! Yamaha's New Super Surround Processors

HIGH FIDELITY

AUDIO • VIDEO • TEST REPORTS • MUSIC

JULY 1988 \$2.50 USA

PROTECTING THE ULTIMATE LINK

Experts Tell How to Prevent Hearing Loss from Loud Music

TESTED:

Sony CD Changer, Revox Amplifier, Shure Cartridge,

Clapton's Crossroads on CD



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Reference Digital Power Amplifier
ULTIMATE FIDELITY STEREO COMPONENT BY PIONEER

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DIGITAL INPUT

DIGITAL REC SELECTOR

OFF ADPT/CD 2

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THE ELITE A-91D INTEGRATED AMPLIFIER.

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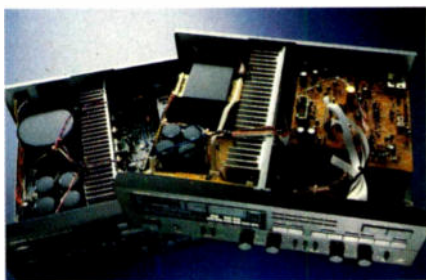
How Denon turned receiver design inside out.

Audio companies must have a fairly low opinion of the receiver customer. How else to explain the bewildering array of buttons, lights and winking fluorescent displays that festoon so many of today's receivers? These outward trappings may impress the innocent, but they contribute not one iota to better sound.



THE SAME ENGINEERS WHO DESIGN DENON PRO EQUIPMENT DESIGN DENON HOME AUDIO.

With their rugged anodized metal front panels, Denon receivers are certainly as handsome as any on the market. But Denon never forgets that it's inside, among the transistors, power supplies and heat sinks, that sound quality is determined. That's why Denon takes the typical priorities of receiver design... and turns them inside out.



DENON RECEIVER VS. DENON INTEGRATED AMP ANY RESEMBLANCE IS STRICTLY INTENTIONAL.

For the results, look inside any Denon receiver. You'll find discrete output transistors, not cheap IC "power packs." You'll notice ample power supplies that handle the most demanding

dynamic passages. In fact, the Pure Current Power Supply of the DRA-95VR reduces dynamic IM distortion by an impressive 60 dB.

"Distortion is, in a word, negligible."

High Fidelity Magazine

The circuit topology of every Denon receiver truly epitomizes the Denon credo, "Simple is Best." For example,

Of equal importance, though, is the fact that much of the circuitry used in the DRA-95VR was developed for the company's exotic components, and the result is a full featured receiver that will delight even the most ardent component separatists.

integration a practical reality. Anyone with an easy chair will enjoy the remote control supplied with Denon's top two models. It operates not only the receiver, but also a choice of Denon cassette decks and CD players.

While you might expect to pay more for a Denon, our receivers start at under \$300*



AS BEAUTIFUL AS OUR DRA-95VR IS ON THE OUTSIDE, IT'S EVEN BETTER ON THE INSIDE.

the DRA-95VR conquers distortion without resorting to the negative feedback that can degrade transient performance. And Denon's Non-Switching Class A output stage combines the purity of Class A with the efficiency of Class B.

Anyone with a Hi-Fi VCR will appreciate Denon's video switching. It makes audio/video

"The amplifier section is the 95VR's highlight."

High Fidelity Magazine

If they seem different from similarly-priced competitors, there's a good reason. At Denon, we pay more attention to the laws of acoustics than the dictates of fashion.

DENON

DESIGN INTEGRITY



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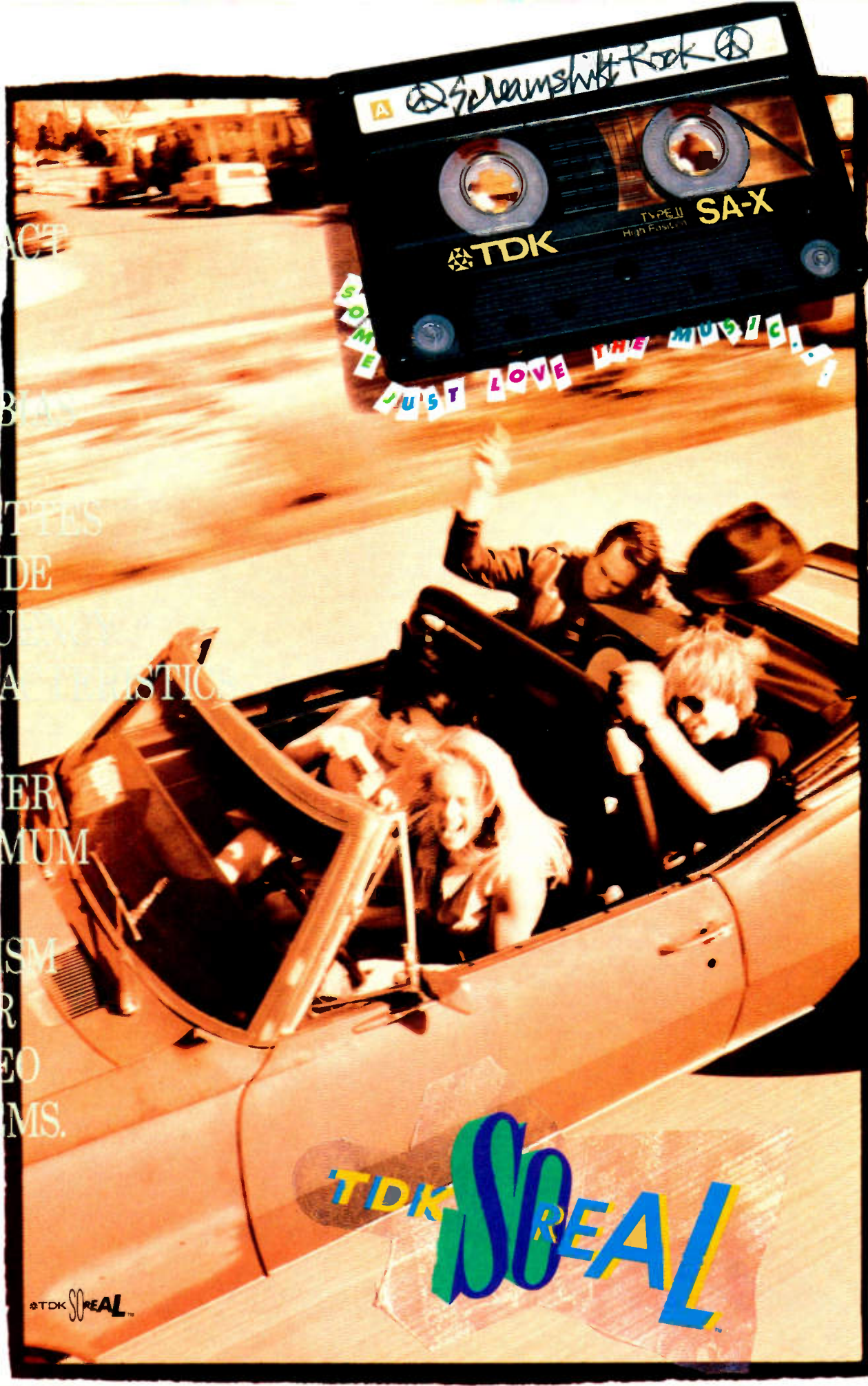
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On the cover: the Revox B-250 integrated amplifier (top) and the Sony CDP-C70 Compact Disc changer (bottom).



Cover design: Joanne Goodfellow
Cover photo: David A. Wagner

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Are We Overamplified?

By Michael Riggs

Preparing this month's special report on hearing protection reminded me of something I experienced back in the mid-'70s, when I was living in Boston. One night, I went to a now defunct club on Boylston Street called the Jazz Workshop to hear Charles Mingus and his group. It was a fairly small basement room with hard walls and floor, lots of small, tightly packed tables, and a ratty-looking sound system. What surprised me was that there was any sound system at all; clearly, none was necessary. Yet the Mingus group used it.

And they sounded horrible—altogether too loud, and when the trumpeter put the bell of his horn over his mike and blew, it was as though someone had put a buzz saw to my cranium. Maybe this is what Mingus wanted, but if so, it is hard to fathom why.

Since then, I have noticed that musicians often use amplification when there seems to be no need for it. Can anyone explain why a big band, which can make plenty of noise all by itself, might require such assistance? Beats me. One suggestion I've heard is that amplification makes it easier for the musicians to get their balances right, since they can use a little electronic assistance to beef up one instrument or play down another. Perhaps. But is this worth the compromise in sound quality that inevitably follows?

In the case of rock music, amplification is an element in the process of musical creation. But for most acoustic music, it is something grafted on and at least slightly unnatural. Perhaps in some future age, we will solve the problems of designing loudspeakers and microphones that make no mark of their own on the sound. For now, I think they should be viewed, in the main, as crutches to be discarded when circumstances or the music itself do not truly demand them.

I suppose part of the reason I object so much to unnecessary amplification, apart from out-and-out bad sound, is that it removes part of the incentive for attending a live performance. One great pleasure of hearing music live is the immediacy of the experience. The development of high fidelity audio recording and reproduction certainly has yielded enormous benefits, particularly in making it possible for nearly everyone to enjoy virtually any kind of music whenever and wherever he likes. If that were enough, however, there would be little demand for live performance. How often have you heard solo voices (especially women's voices) sound right on a recording—free of chestiness, sibilance, or excessive presence? How often do you hear natural (as opposed to shrill) violin tone on recordings, or realistic-sounding drums? My own answer to these questions is "too seldom." And naturally, you lose the electricity of the performer's stage presence and style.

None of this is to say that amplification has no legitimate place in live music. Some music is built around it, in

which case there is no argument (except that care should be taken to assure quality as well as the desired quantity). A singer may need a little help to stand out from his accompaniment or to carry over the babble of a noisy club. But performers should try to ensure that amplification is applied as sparingly and tastefully as possible. It's in everyone's interest that the music, not the PA system, be the star of the show.

Which returns us to the subject of loudness. Amplification is often overused in the simple sense of making the music annoyingly or inappropriately loud. I am not a decibel prude, by the way: I've been to Grateful Dead concerts. But everything has its place. My Charles Mingus experience is not unique, and presumably its effect was not what Mingus or the club owner would have liked. I stuck out the set in the vain hope that the situation would improve, but when I finally left, it was for good; I never went back to the Jazz Workshop.

Overamplification has a still darker side, which is the main theme of this month's special issue. Loud sounds, including music, can damage your hearing. The ear is a remarkable instrument that is surprisingly rugged considering its sensitivity and delicacy of construction. It is far from invulnerable, however, and sound does not have to be painfully loud to cause permanent, possibly severe, hearing impairment.

Ironically, those who depend most on their hearing are sometimes among the ones most at risk. B&W makes a monitor loudspeaker designed expressly to meet the output requirements of recording studios. The company is fond of demonstrating the 808's ability to deliver 120 decibels of clean, undistorted sound (if you can take it). Several years ago, KEF designed a huge powered loudspeaker for the same market. Like the 808, it can play very, very loud without distorting. The only complaint the company received from customers was that the speaker would not play loud *enough*. Anyone who is pushing these speakers to their limit in the confines of a recording-studio control room is abusing his ears.

It is therefore not too surprising to find that surveys of recording professionals (engineers and producers) indicate a high incidence of hearing loss. This may partly explain the tendency of many modern recordings to sound overbright or even strident: Volume-induced hearing loss usually is most severe around 3 or 4 kHz, the ear's range of maximum sensitivity. If the person behind the equalizers is slowly going deaf, that's where he's most likely to put the boost.

In the modern industrial world, with its heavy machinery and high-power amplifiers, your ears are under constant assault. For a detailed look at the dangers of sonic overexposure, how to determine when you're at risk, and how to protect yourself, turn to our special section on preserving your hearing. □

ORPHAN FORMATS

I am deeply concerned about the increasing recklessness with which the consumer electronics industry is introducing new audio and video formats. Products still under laboratory development are being trumpeted as if they were ready for sale, and "orphan hardware" (that is, components lacking software support) is actually being sold for several of these formats.

I am one of the people who got burned on orphan hardware for the CD-V format, for which no discs are as yet available in the U.S. I bought a Pioneer CLD-1010 last summer, and like most others who bought at that time, I probably will not be able to determine whether its CD-V playback functions work within Pioneer's warranty period. When I spoke to a Pioneer representative, he said, "We don't know when or if CD-Vs will be available. We're a hardware manufacturer; record and video companies make software."

A nice try at handing off the hot potato of CD-V manufacturing, but it's a matter of common knowledge that Pioneer's revamped California Laserdisc plant is capable of pressing CD-Vs. The combi-player advertisements are blatantly deceptive, and the manufacturers who run them should be held legally responsible for the nonintroduction of CD-Vs. It's the only way to discourage irresponsible, poorly coordinated format introductions.

Phil Cohen
Bay Harbor, Fla.

You're mad at the wrong guys. Although Pioneer probably could press CD-Vs, it can't unless a record company decides to release product in that format. Pioneer itself doesn't own the necessary performances. Also keep in mind that the impetus for CD-V came mainly from Philips and Polygram. The hardware manufacturers have simply responded by making available the equipment necessary to play such discs. In the case of the CLD-1010, this capability is pretty much an afterthought; the product is designed primarily as a Laserdisc player that can do double-duty as a Compact Disc player.

CD-V titles are promised for this year, but we are skeptical of the format's prospects, as indeed we have been from the beginning. For more on this subject, see "Front Lines" in our September 1987 issue.—Ed.

NEGLECTING AM

Your report on the Harman Kardon TU-920 tuner [March] was quite useful, but I regret the omission of test data on its AM

section. In your June 1974 issue, you reviewed the Dynaco AF-6 tuner and included a particularly revealing report on its AM section. There is still a need for this kind of information. For example, I listen to one FM and *four* AM stations. You might be surprised at how many people still listen to AM broadcasts through their main audio systems.

Carlos E. Bauza
San Juan, P.R.

In his January "Front Lines" column, Michael Riggs makes the point that the current television system can deliver better picture quality than most monitors can reproduce. I feel very strongly that AM radio suffers from this same kind of neglect. Recently, a friend sent me a tape of a New York AM station recorded from a simple Realistic stereo AM tuner. If he had told me it were from an FM broadcast, I would not have doubted him.

So why is it that I can spend anywhere from \$200 to well over \$1,000 for a tuner or receiver with many elaborate features and still get terrible AM audio quality? We should at least get clean, wideband mono. McKay-Dymek proved almost 15 years ago that this is possible, and given modern technology, it should not be costly. Though not everyone might want better AM reception, we should at least be given the choice.

I know of no home unit for stereo AM, other than a couple of Sony portables (no longer manufactured) and a very rudimentary tuner from Realistic, or even one for high-quality mono. Do you? Is there anything on the horizon? If so, I hope HIGH FIDELITY will cover it.

Timothy Hendel
Miami, Fla.

I appreciated seeing David Hebert's letter in your March issue concerning high fidelity sound on AM radio. He's right: AM stations are permitted flat response all the way to 15 kHz (and more stations than you might expect do achieve or surpass that limit). This is better than FM stations can achieve in practice, because their transmission pre-emphasis would require that low frequencies modulate no more than 15 to 20 percent in order to provide unrestricted highs with today's recordings. The new NRSC transmission standard does impose the FM curve on AM stations, but since it also limits flat high-frequency response to 10 kHz (with a steep rolloff above that point), extremes of treble compression and clipping are not

(Continued on page 8)

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(Continued from page 6)

needed to maintain high average modulation.

You may be surprised to learn that there is considerable disgruntlement at AM stations across the country about cutting off the response in this manner—many are proud of their considerably higher fidelity! But since manufacturers refuse to consider building high fidelity AM receivers that don't use NRSC de-emphasis, pragmatism demands that the NRSC standard become universal, and the NAB has petitioned the FCC to make it mandatory. (The purpose of limiting the high-frequency response is to prevent harmonic "splatter" from old transmitters as well as interference between adjacent channels, particularly at night. The latter problem, which causes 10-kHz beat-note whistles, is the main reason most AM tuners have such restricted treble response.)

The truth is that in a direct A/B comparison, good stereo AM sounds better than most stereo FM. Consequently, it is extremely frustrating to AM broadcasters to find their band dismissed as a high fidel-

ity medium—even more contemptuously than were the first attempts at high fidelity audio cassette machines nearly two decades ago. One of the most valuable assists in prodding manufacturers to build high-quality AM receivers would be for magazines like yours to evaluate the AM performance of tuners and receivers as carefully and uncompromisingly as you do their FM performance. If AM sections are included in what is intended as high fidelity equipment, it should be evaluated accordingly.

Clearly, one of the reasons FM receivers now exceed even FM transmission capabilities by such a large margin, and contain such sophisticated circuitry to make up for FM shortcomings, is all these years of meticulous reviews by HIGH FIDELITY and other magazines, coupled with the manufacturers' desire to excel the competition in these evaluations. If AM—and stereo AM—were given the same sort of attention in reviews, you would swiftly see amazing improvements in AM receiver performance (as you have in the cassette field). Why not give it a try? At the very

least, you'll embarrass all your competitors by the obvious additional care and thoroughness of your reviews.

Eric G. Norberg
Program Director
KPNW AM and FM
Eugene, Ore.

We gave up testing the AM sections of home equipment because they were so uniformly mediocre and so few users seemed to care. We have continued testing the AM sections of car gear because AM, with its greater range, is more important on the road for most people than it is at home. So far, our scrutiny does not seem to have sparked any great improvement in the car products. However, in light of what appears to be a recent surge of interest, we will review our policy on testing home receivers.—Ed.

SECOND-HAND ROSA?

Does anyone know why Rosa Ponselle is missing from the 1943 composite of Red Seal artists reprinted in David Rubin's article on RCA Red Seal [February]? Ponselle was one of Victor's (and the Met's)

Five years ago, the PS-10 got great reviews. It still earns them today, in a store near you.

In 1983, *Rolling Stone* said; "...the PS-10 loudspeakers by Design Acoustics could be the last pair you'll ever buy." *High Fidelity* commented; "The overall sound is smooth, clean, and detailed." *Ovation* noted that the PS-10; "provided a very open and transparent sound with excellent and stable stereo imaging." And *Stereo Review* concluded that;

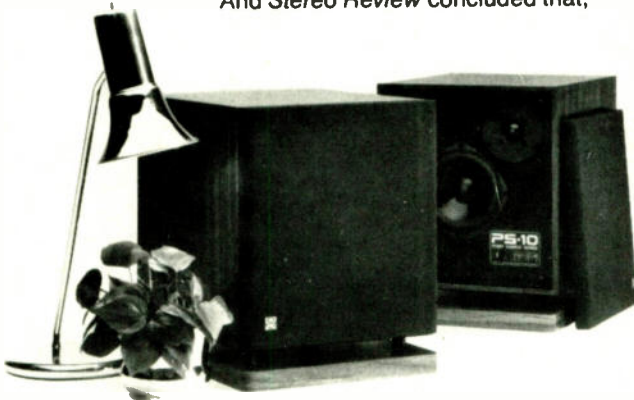
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top stars of the 1920s and '30s. She had retired by 1943, but so had others who are in the picture.

I have heard that Ponselle and Victor had some contractual disagreements. Victor apparently made her a nonperson as a result. The story might be an interesting footnote to Rubin's fascinating article.

Douglas Mitchell
La Jolla, Calif.

A spokesman for RCA Red Seal informs us that Ponselle's absence from the portrait was unintentional, not the result of any falling-out between the soprano and the label. However, we would be happy to hear from readers who have any knowledge of the disagreements you mention, so that we can provide such a footnote.—Ed.

I read with pleasure David Rubin's two-part series "The Fall and Rise of RCA Red Seal" [February and March]. President Michael Emmerson is to be commended for his forward-looking revitalization of this great label.

However, I also believe he must look to the past. RCA Victor's vault contains treasures of incalculable worth to lovers of great music in great performances. We have seen reissues of Toscanini, Reiner, Heifetz, and Munch, as mentioned in the March article. But I hope RCA will not let the work of Stokowski, Koussevitzky, and Monteux be forgotten.

I have in front of me the 1948 RCA Victor catalog. Listed in it are dozens of performances by these consummate musicians that can rightly be called "classic" or "definitive" and that cry out for reissue using the latest in digital restoration technology. I cite, as examples, the Stokowski/Philadelphia Orchestra renditions of Shostakovich's Fifth Symphony (M/DM 619, a performance of searing intensity) and all that marvelous Wagner, "synthesized" or not; the Koussevitzky/Boston Symphony account of Roy Harris's Third Symphony (M/DM 651, still the finest recorded performance of this work), Ravel's *Daphnis et Chloé* Suite No. 2 (M/DM 1108, a famous interpretation, unaccountably unavailable for decades), and Debussy's *La Mer* (M/DM 643, considered at the time to be the only "rival" to Toscanini's account); and the Monteux/San Francisco Symphony recordings of Rimsky-Korsakov's *Scheherazade* (M/DM 920, an elegant, rapturous performance) and Stravinsky's *The Rite of Spring* (M/DM 1052, a performance among Monteux's best ever, almost schizoid in its alternation between tenderness and violence).

I could list many more, but I would just be hand-copying the catalog. My point is that to successfully build a future, RCA Victor must present a balanced picture of its past. A start was made some years ago with the Victrola America series, but this petered out after only a few wonderful reissues of orchestral and vocal music. Is there any way Mr. Emmerson might be

persuaded to revive this series?

In any case, I wish Mr. Emmerson the best of luck with all his recording endeavors—past, present, and future.

Gregory Bottini
San Francisco, Calif.

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

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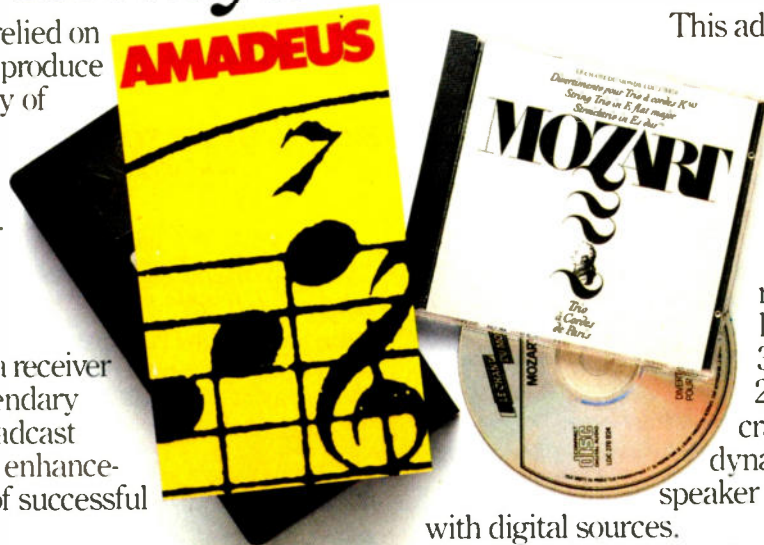
While you're at it, experiment with the new video Rec Out Selector feature. Use it to mix your video with different audio sources to create original music backgrounds and sound effects.

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with digital sources.

Now, walk to the other side of the room, where you can appreciate the new RS interactive remote control to its fullest.

Notice how it packs fingertip operation of the receiver, as well as other Yamaha RS-remote CD players, cassette decks and turntables, into one slim hand-held unit that ends coffee table clutter forever.

Home entertainment has certainly changed. It had to. You started out as an audiophile and find yourself becoming a videophile as well. Or vice versa.



But you can still trust Yamaha to satisfy your needs.

Because when you want to know what's new in top performing equipment, we've always been the ones to listen to.

Now, with our RX-1100U, we're the ones to keep an eye on as well.

*125 watts RMS per channel, both channels driven into 8 ohms, from 20 to 20,000 Hz, at no more than 0.05% Total Harmonic Distortion.

Recordable CDs in 1990?

Tandy Corporation, parent company of Radio Shack, stunned reporters attending its April 21 press conference by announcing it has developed a method for recording and erasing digital audio on a CD-compatible optical disc. The technology—called THOR, for Tandy High-Intensity Optical Recording—enables repeated recordings of digital audio or computer data on a disc that can be played on existing audio CD or CD-ROM players. Tandy is currently talking to CD-player manufacturers with the goal of licensing the technology, and the company expects to be selling its own recorders as well, possibly within two years.

Would a CD recorder be affordable? Tandy says the machines themselves could cost as little as \$500 "in the early years of development." No estimate was given as to the cost of the discs, although Tandy chairman John Roach suggested that manufacturing yield should not be a problem and that cost should be no more than that of a blank DAT cassette (currently around \$20 for a two-hour length).

On a THOR-CD, the trail of pits and bumps that represent an encoded audio recording are optically recreated using a thermal process (rather than stamped out on a mold). As in a conventional CD player, a laser reads the trail, and a digital-to-analog converter (DAC) restores the signal to its original form for reproduction (in CD-ROM applications, the data is processed instead by the computer). Tandy indicates that the problems plaguing recent efforts to develop a recordable disc have been solved, resulting in an environmentally stable and permanent (until you erase it) encoding technique.

In the computer world, CD-ROMs are used to store enormous amounts of data—for example, the entire contents of the Grolier encyclopedia, with plenty of room to spare. But these are ROM (read-only memory) discs, stamped out in much the same manner as a conventional audio CD. Tandy's THOR-CD, which will require an additional year of development for computer applications, will be able to store several hundred megabytes of computer data (in contrast, a typical 5¼-inch floppy disk holds less than half a megabyte). Video applications are also being researched.

Anyone who's been following the controversy over DAT recorders will wonder what effect Tandy's announcement will have on that format's future—not to mention the reaction of the Recording Indus-

try Association of America (RIAA), which is devising fresh schemes for barring DAT recorders in the wake of Copy Code's failure.

We were a bit surprised by Tandy's early show of confidence in the performance and feasibility of THOR-CDs. The fallout in the coming months should be interesting. (Technical Editor David Ranada plans to discuss THOR-CD in an upcoming "Bits & Pieces" column.)

Famous Maker

A new company called Cambridge Soundworks has already caused quite a stir, for two reasons. First, it is headed by Henry Kloss, and, second, its initial product—a speaker system—will not be sold in stores.



The Ensemble's bass units can be laid flat.

Henry Kloss has achieved, well, legendary status as a founder of Acoustic Research, KLH, Advent, and the now defunct Kloss Video Corporation. He marks his return to audio with the Ensemble speaker system, which consists of a pair of miniature two-way satellite units and two bass modules. The latter—each containing one long-throw, 8-inch acoustic suspension driver—produce frequencies only below about 170 Hz, making them essentially nondirectional and of little consequence to stereo imaging. Therefore, the

bass units can be placed almost anywhere in a room (and hidden, if desired). The unobtrusive satellites can be mounted on a wall or a pole or placed on a bookshelf.

Kloss chose to use a *pair* of bass units not for spatial considerations but to avoid any cancellations caused by combining discrete left- and right-channel bass signals (if present in a recording). Each satellite and its bass unit connect in parallel—either coming first—to one speaker output on an amplifier, simplifying wire runs.

Would you buy a speaker you haven't heard? That's the \$499 (plus shipping) question. Cambridge Soundworks maintains that by communicating directly with prospective buyers, it can better explain the design and operation of the Ensemble, get feedback from customers, and keep its selling price to a minimum. It plans to advertise a toll-free number staffed by knowledgeable salespeople who will, according to the company, also be free to give advice about other audio components. Naturally, a liberal return policy is part of the deal. *Cambridge Soundworks, 154 California St., Newton, Mass. 02158.*

Surround Sound

NEC's Renaissance Series of audio components includes the PLA-610 surround-sound decoder (\$599), featuring Dolby Pro Logic and a 30-watt (14.8-dBW) stereo amp to power front- or back-channel speakers. Essentially, Pro Logic decoding provides greater separation between the front and back channels in Dolby Surround videotapes and Laserdiscs. The PLA-610 provides three other surround effects, plus four settings for its 16-bit digital delay line. The wireless remote includes channel-balance and master volume controls, as well as presets for storing three groups of balance, volume, and effect settings. A built-in pink-noise generator aids in setting individual output levels. *NEC Home Electronics, 1255 Michael Dr., Wood Dale, Ill. 60191.*

(Continued on page 80)



NEC's PLA-610 Dolby Pro Logic decoder with stereo amplifier



Answers to Readers' Questions

By Larry Klein

Signal Leakage

My system includes an FM tuner that feeds a high-powered integrated amplifier. I find that if I leave the tuner on when I'm playing records, I can hear the broadcast faintly in the background during quiet passages and when the turntable shuts off. A friend who has the same problem thinks it is caused by a weak link in the amplifier. Can the problem be corrected?

*David Bergstrom
Garden City, N.Y.*

Your crosstalk "problem" is caused not by a weak link, but rather by unwanted linkage between the amplifier's tuner-input circuits and the circuits carrying the phono signal. This sort of thing usually results from accidental capacitive coupling through closely spaced signal-carrying wires or through the conductors on a printed-circuit board. The crosstalk is aggravated if you have the output signal on your tuner turned up very high, or if your phono-cartridge output is so low that you need to run your amplifier with its gain turned up very high. Whatever the reason for the crosstalk, you can eliminate it by simply turning off your tuner when playing records. (Patient: "Doctor, it hurts when I do this." Doctor: "Then don't do that.")

Head Noise

For no apparent reason, I sometimes hear a ringing inside my head that lasts for several minutes and then disappears. Can you tell me what's happening and whether I should do anything about it?

*Herman Bloch
El Paso, Texas*

The medical term for what you've described is "tinnitus." For a million or so Americans, it is not a minor temporary annoyance (as in your case), but a constant affliction that causes a great deal of discomfort. Transient cases of ear ringing can be brought on by overexposure to Twisted Sister, Mötley Crüe, Metallica, or sinus congestion. (The last-named is *not* a new heavy-metal band, so please don't write asking where their concerts can be caught.) About 20 percent of long-term tinnitus sufferers can trace their problems to prolonged exposure to high noise levels, either from industrial or musical sources. Others attribute their problems to brief high-level noise exposure, illness (particularly ear or sinus infections), physical injuries, or drug side effects. However, for more than a third of tinnitus sufferers, the onset of their condition seems to be independent of any event or circumstance in their lives.

Those suffering from acute tinnitus have tried everything from biofeedback to acupuncture to drug therapy, usually with only limited success. Many sufferers get

symptomatic relief by means of acoustic masking, using sounds in the general frequency region of their tinnitus ringing. In many cases, interstation FM hiss (with the tuner's antenna disconnected) or the output of a pink-noise generator is of some help. Apparently, the relatively high level of the rushing, waterfall-like noise obscures the tinnitus frequencies but can itself be ignored—or perhaps even appreciated for its tranquilizing effect.

One final thought: People who suffer from tinnitus are likely to be more sensitive to the effects of loud noise and should always wear some sort of ear protection in noisy situations. For more information, write to the American Tinnitus Association, P.O. Box 5, Portland, Ore. 97207.

Noise Reduction

I understand that noise reducers work by compressing the dynamic range of the audio signal during recording and expanding it during playback. What I don't understand is how that results in noise reduction, since the signal is restored to its original form in playback.

*Donald Burke
Virginia Beach, Va.*

It's helpful to keep in mind that the *only* noise reduced by a compression/expansion type of noise reduction system (such as the Dolby and DBX circuits found in tape recorders) is the noise introduced *after* the signal has been compressed. Compression describes the process of making the low-level or soft signals louder and (in DBX and part of Dolby C) the loud signals softer. Also keep in mind that the incoming signal is compressed *before* it is recorded. During recording, the noise (hiss) inherent in analog recording intrudes on the compressed signal in the same amounts that it would intrude on a normal noncompressed signal.

When, during playback, the original dynamic range of the signal is restored by reducing the level of the soft signals, the hiss level is reduced by the same amount. In other words, if the soft signals were boosted by 10 dB before recording, it would be necessary to reduce them by 10 dB to restore the original signal balance. Noise reduction occurs because the noise riding along with the soft signals is simultaneously reduced by the same amount.

There is yet another noise-reduction technique, whose best-known examples are DNR and Carver's "autocorrelator." Unlike the companding systems, these do not require previous encoding of the signal for noise reduction to take place. Briefly, these systems operate by assuming that random, high-frequency, and very low-level signals are *noise*, not music. A carefully calculated and timed high-frequency cut is introduced when such signals are present in the absence of higher-level music signals. The high-frequency cut is switched off in the presence of a wide-range music signal, since the ear's psychoacoustic "masking" processes

simply make it unnecessary.

The effectiveness of these one-step systems depends very much on the type of program material being handled and on its noise level. To my ears, the Carver system, which is somewhat more sophisticated than DNR, can subjectively do as well as the Dolby B system—and without the need for previous encoding of the music.

Absolute Acoustic Phase

I own an audiophile album whose liner notes recommend that "for optimum transient response and spatial clarity," the polarity of both channels of the playback equipment be reversed at the speaker terminals by connecting the + terminals on the amplifier to the - terminals on the speaker, and vice versa. Does this make sense?

Arnold Goldberg
Elmsford, N.Y.

Not much. I suspect that the record producers were trying to achieve correct "absolute phase" in response to the discovery that the human ear is sensitive to the absolute (as opposed to the relative) phase of special test signals heard with earphones under laboratory test conditions. If absolute phase were to be achieved in your listening room, that would mean the same positive and negative pressure in the acoustic wave produced during the origi-

nal sonic event would be reproduced by the speakers. In other words, a sound impulse that pushed a microphone's diaphragm inward would cause a speaker cone to move outward, thus passing on the original polarity of the pressure wave.

Although I have no philosophical objection to the absolute-phase concept, its practical realization presents difficulties. The electrical waveform may be inverted almost every time it goes through an amplifying stage. Assuming there isn't any nonlinear phase shift somewhere between the recording microphones and your speakers, there is, at best, a 50-50 chance that the signal coming out of your speakers has the same absolute phase as the signal that impinged on the studio microphones. It seems nonsensical for anyone to suggest that changing the phasing of your speakers would automatically achieve absolute phase with the recording microphones. For that, the record producers would need to know the polarities of your phono cartridge, amp, and speakers, and whether you hooked them all up without flipping the phase anywhere in between.

In the past decade, I've learned there is no claim, however technically absurd, that won't find supporters among fringe-area audiophiles and other true believers. If I were to suggest, say, that everyone's audio system would sound better if speaker leads were arranged in a north-south direction

so as to avoid the interfering geomagnetic lines of force that occur with east-west alignments, I'm certain I would be applauded by the hundreds of listeners who rearranged their cables and heard greater depth and openness from their systems. Remember, you read it here first!

Taped Improvement

Can you explain why music taped off the radio sounds so much better in playback than the original broadcast?

Roy Ashby
Mount Dora, Fla.

Ideally, any tape recording should sound identical to the original, neither better nor worse. Although I'm not sure what you mean by "better," I suspect you are reacting to stronger high frequencies on your tapes compared to those in the original broadcast. The high-frequency boost comes about through misadjustment of your recorder's bias or equalization or the use of tapes with built-in high-frequency boost. In any case, if your tapes sound better—enjoy! You can also try some amplifier treble-control boost when listening to FM, which may make the original broadcasts sound as good as your tapes. □

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362228. George Michael—Faith. (Columbia)



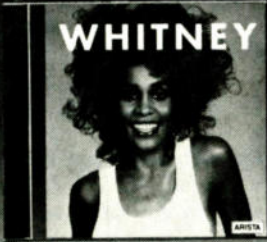
564695. Wynton Marsalis—Baroque Music For Trumpets. (CBS Masterworks)



365443. Various Artists—Good Morning Vietnam. (A&M)



361402. Tiffany. (MCA)



356154. Whitney Houston—Whitney. (Arista)

A Sound Investment



365494. George Harrison—Cloud Nine. (Dark Horse)



36716. Robert Plant—Now and Zen. (Es Paranza)



365119. James Taylor—Never Die Young. (Columbia)



364018. Foreigner—Inside Information. (Atlantic)

354449. U2—The Joshua Tree. (Island)

336396-396390. Billy Joel's Greatest Hits, Vol. 1 & 2. (Columbia)

339226. Gershwin: Rhapsody in Blue; more. Thomas, Los Angeles Phil. (Digital—CBS Masterworks)

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

343665. Debussy: La Mer; Nocturnes—Michael Tilson Thomas. (Digital—CBS Masterworks)

343715. Vivaldi: Four Seasons—Maazel cond. (Digital—CBS Masterworks)

344184. Copland: Billy The Kid/Rodeo Ballets—Slatkin, St. Louis Sym. (Digital—Angel)

344622. Anita Baker—Rapture. (Elektra)

345199. Beethoven: Overtures—Bavarian Radio Orch., C. Davis (Digital—CBS Masterworks)

346544. Kenny G—Duotones. (Arista)

346957. Steve Winwood—Back in The High Life. (Island)

347492. Glenn Miller Orchestra—In The Digital Mood. (Digital—GRP)

347567. Gershwin's Song Book & Other Music For Piano Solo—Leonard Pennario. (Angel)

348318. The Police—Every Breath You Take—The Singles. (A&M)

348458. Dvorak: Cello Concerto—Yo-Yo Ma; Maazel, Berlin Philhar. (Digital—CBS Masterworks)

354902. Fleetwood Mac—Tango In The Night. (Warner Bros.)

355164. Vladimir Horowitz Plays Favorite Encores. (CBS Masterworks)

355172. Ravel: Rapsodie Valse/Pavane/Alborado, etc.—Previn, Royal Phil. (Digital—Angel)

348649. Pachelbel Canon & Other Digital Delights—Davis, Toronto Chamber Orch. (Digital—Fantasy)

348987-398982. Linda Ronstadt—'Round Midnight. (Asylum)

349134-399139. Beethoven: Sonatas Piano & Violin, Vol. 2—Stern, Istomin (Digital—CBS Masterworks)

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

350587. Kathleen Battle Sings Mozart. (Angel)

352534. Holst: Planets—A. Davis, Toronto Symph. (Digital—Angel)

353771. Balling/Rampal: Suite #2 for Flute & Jazz Piano Trio. (Digital—CBS)

354514. Jody Watley. (MCA)

354951. Mozart: Flute Quartets—Rampal, Stern, Accardo, Rostropovich (Digital—CBS Masterworks)

354985. Billie Holiday—From The Original Decca Masters. (Digitally Remastered—MCA)

351115-395111. Prince—Sign 'O' The Times. (Paisley Park)

347955. Huey Lewis & The News—Faret (Chrysalis)

355362. Whitesnake. (Geffen)

355578. Hanson: Symphony No. 2 ("Romantic"), Barber: Violin Concerto. Ovesa, Slatkin, St. Louis Sym. (Digital Angel)

356279. Gloria Estefan And Miami Sound Machine—Let It Loose. (Epic)

356329. Randy Travis—Always & Forever. (Warner Bros.)

356667. Heart—Bad Animal's. (Capitol)

357640. Wynton Marsalis—Standard Time. (Columbia)

356501. Benson/Klugh—Collaboration. (Warner Bros.)

357087. Grateful Dead—In The Dark. (Arista)

357350. Duke Ellington Orchestra—Digital Duke. (Digital—GRP)

357368. Hirasmo—Go. (Epic)

357657. Beethoven: Piano Concerto No. 5—Murray Perahia. (Digital—CBS Masterworks)

365825. Billy Ocean—Tear Down These Walls. (Live/Arista)

357871. Tchaikovsky: Waltzes—S. Comission and Houston Symphony (Digital—Pro Arte)

357889. Copland: Billy The Kid; Appalachian Spring; etc.—Bernstein, NY Phil. (Digitally Remastered—CBS Masterworks)

358127. Kranos Quartet—White Man Sleeps. Volans; Ives; Bartok; etc. (Digital—Nonesuch)

359927. Debbie Gibson—Out of the Blue. (Atlantic)

360016. Spyra Gyra—Stories Without Words. (Digital—MCA)

361022. Tchaikovsky: Symphony No. 6—Claudio Abbado, Chicago Symph. Orch. (Digital—CBS Masterworks)

361048. Dione Schuur and the Count Basie Orchestra. (Digital—GRP)

361139. R.E.M.—Document. (I.R.S.)

361147. Rodgers And Hammerstein's Carousel. Barbara Cook; Samuel Ramey. (Digital—MCA Classics)

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256560. Cat Stevens Greatest Hits. (Columbia)

260638. Chicago's Greatest Hits. (Columbia)

269365. The Band—The Best Of The Band. (Capitol)

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292284. James Taylor—Sweet Baby James. (Warner Bros.)

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359695. Sarah Vaughn—Brazilian Romance with Milton Nascimento. (CBMA)

359711. Brahms: Piano Quartet, Op. 25—Murray Perahia, Members Of The Amadeus Quartet. (Digital—CBS Masterworks)

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Test Drive: MB Quart Speakers

By Christopher J. Esse

After two decades of making transducers—in this case, speakers, headphones, and microphones—Germany's MB Quart Electronics (née Peerless MB) is just now entering the North American market for home and car speakers. Why so late? Well, until recently, MB Quart sold only "raw" drivers to other noteworthy European and North American companies for use in their finished products. But after finding success selling its own brand-name products in Western Europe for the past five years, MB Quart has decided to bring them stateside. (We reviewed a Quart home loudspeaker in last month's issue.)

On the cover of its car-speaker brochure is a photo of a Mercedes-Benz, doors open to reveal neatly installed MB Quart speakers. Hmm . . . A few weeks after receiving the brochure, I was asked whether I would like a "car" for reviewing the company's speakers. "Ja!" sprach I, wondering which Mercedes model I'd get and planning to once again thank my boss for this job. "1987 Toyota Camry," said Quart's representative. "It's the sales manager's personal car."

Actually, the "Family Camry" is no mere grocery cart: Beneath its responsible-looking frame lies a detuned version of Toyota's free-revving 16-valve four-cylinder engine. And Camrys are not the type to draw attention in airport parking lots, important considering what MB Quart had installed in this one. Up front were two Alpine head units—the 7385 autoreverse cassette/tuner (about \$630) and the 5902 Compact Disc player (\$600)—stacked in place of the Camry's two-space factory radio.

Supplying punch for the front channels was the Precision Power 4200M (\$475), a four-way amp rated at 50 watts a side; the back channels were driven by Precision's 2075M (\$450), a 75-watt stereo unit.

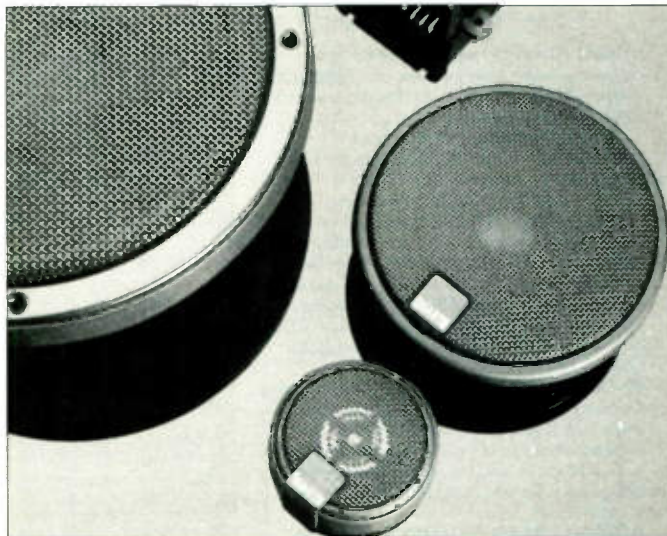
Now for the Quart speakers. Behind the backseat—and mounted in a specially constructed, dual-chamber, sealed wooden enclosure—was a pair of forward-firing QM-200TC 8-inch subwoofers (\$254), driven by the Precision 2075M. (Both amps were se-

cured to the top of the woofer box.) On the rear deck was a pair of QM-130K full-range two-way speakers (\$179) comprising a 5/4-inch woofer and a 1/4-inch titanium-dome tweeter. These ran off the back channels of the 4200M and could be balanced with the level of the subwoofers by an Alpine 4067 dual-amp balancer (\$50) that took the place of the Camry's cigarette lighter. Powered by the 4200M's front channels was a pair of QM-19HC titanium-dome tweeters (\$90) and two QM-100MC four-inch midrange cone drivers (\$120). The tweeters were mounted in the forward area of each front-door panel, just below the window ledge; the mids occupied the Camry's factory-speaker holes on the underside of the dashboard. The tweeters, mids, and subwoofers are sold as a packaged system.

The black mounting rings and grilles on all of Quart's car speakers can be spray-painted to match (or contrast with) an interior's dominant color. (They were not painted in the Camry.) The QM-19HC tweeter, which can be surface- or flush-mounted, has a mounting depth of 3/4 inch. The QM-100HC midrange and QM-130K two-way have slim mounting depths of 1 1/4 and 2 inches, respectively. And you'll be happy to know that the subs, with a mounting depth of only 2 1/4 inches, may fit in some door or side panels as well as on a rear deck.

The supplied crossover for the component tweeters—at 3.5 kHz with a slope of 12 dB per octave—is identical to that for the tweeter in the two-way system on the back shelf. The subwoofer's crossover initiates a 12-dB-per-octave rolloff at 300 Hz, a frequency higher than is typical for dedicated bass drivers.

As installed, the system uses two faders. That on the Alpine CD player balances the level between the subwoofers and all other speakers combined; the add-on dual-amp balancer makes adjustments just between the full-range drivers and the subwoofers. The system was installed at Rich's Car Tunes in Watertown, Massachusetts. In addition to the cleverness of installing the auxiliary fader in place of the cigarette lighter, there



MB Quart's three-way component system with 8-inch subwoofer was assigned a model name (QM-332CS) just in time for this caption.

was another stealthy touch: The front panel of the Camry's factory radio was retained as a removable cover to conceal the Alpine units, which were recessed to accommodate the ingenuity. The only drawback is that the head units are a bit harder to operate in this position, but that's a small price to pay to avoid a *large* price to pay.

After testing the Camry's red-line and maximum cornering grip (which I like to do with all sales managers' cars), I hustled the vehicle through a sonic test course, which in this case didn't lead anywhere in particular. Come to think of it, that's probably the best way to settle back and enjoy the sound. Overall, the Quart's performance was impressive on all sorts of music. The tweeters had an amazingly extended response, all the more detectable because of their high, unobstructed location. At first, I thought they sounded a bit too forward, but with time I came to enjoy them for their lack of harshness or brittleness. Still, if I had a choice, I might consider using a crossover that can attenuate the tweeter's level (although it's quite likely that positioning the tweeters more off-axis of the listeners would achieve the same end).

Midrange sounds, which can be the first clue to a bad car system, were smooth and inoffensive. I mean that as high praise, because there's nothing more irritating than too much midrange. Vocals sounded natural. My only significant complaint is with the subwoofers. They reached deep enough, for sure: The cannon shots in the *1812 Overture* (so sue me for triteness) rocked a Lincoln

Town Car that had docked beside me. But the bass was not particularly tight. This could be caused by a combination of three factors: the level of the subwoofers being set too high, the rather high 300-Hz crossover, and muzzling by the backseat. Again, this could be alleviated by replacing the supplied crossover with one having a lower cutoff frequency (say, 100 Hz) and a level control. (Note that the sub's crossover *is* a separate item, not integral as stated in the product brochure.)

I was all the more impressed by the Quart's sound because the system included no electronic equalization (and I left all tone controls centered). Perhaps the aforementioned lack of tightness in the bass was caused partly by the Camry's acoustics, in which case fiddling with the lower bands of an equalizer would help. But I wouldn't dare to have messed with any other EQ adjustments, as there were no other apparent acoustical contributions from the car's interior.

In addition to the speakers in the Camry, MB Quart's current line includes two coaxial models, four component systems, and a small replacement coaxial speaker for 200- and 300-series Mercedes cars. The market for component speakers seems to be growing, so the company's timing is good. What I heard certainly qualifies MB Quart for serious consideration. □

MB Quart Electronics, U.S.A., Inc., Dept. HF, 25 Walpole Park South, Walpole, Mass. 02081.

Supporting Cast

The Alpine and Precision Power components in the Toyota Camry used for my test drive deserve some credit for the level of performance achieved by the Quart speakers. Alpine's 7385 autoreverse cassette/tuner includes full-logic tape controls, Dolby B and C noise reduction, automatic tape-type detection, and wide-ranging bass (± 18 dB at 30 Hz) and treble (± 15 dB at 20 kHz) controls. All of the controls are laid out and illuminated (at night) in Alpine's typically straightforward and informative fashion. Only the tiny tone-control sliders can be faulted, especially since they cover such a wide boost/cut range. By the way, the 7385 is a slide-out, antitheft model, although this installation feature was not employed in the Camry.

One of the 7385's two pairs of preamp outputs was connected to Alpine's 5902 CD player, with the latter's operation taking priority. The 5902 features 20-track programming, seek and scan, three-way repeat, and an automatic return-to-first-track function; it is just now being phased out and replaced by the 5905, a removable unit with additional features.

In my listening tests, the 5902 never skipped or otherwise misbehaved, and the sound was, well, CD quality. I didn't use the 7385 as extensively, but its tape section performed very smoothly and quietly. The sound from a Dolby C metal tape was beyond reproach.

On that tape were the cannon blasts of the over-

ture (recorded from the CD). Surprisingly, these brutal peaks came through the Camry's system more cleanly than on my home system. Part of the credit here must go to the Precision Power amps. Precision



Alpine's 7385 autoreverse cassette/tuner features a removable chassis and two sets of preamp outputs.

designs and manufactures its products—which include amps, preamps, crossovers, and related accessories—in Scottsdale, Arizona. The stereo 2075M can be bridged to mono; the four-way, 50-watt 4200M can be bridged to stereo. Both deliver significantly more power when bridged, and both are said to operate safely into a 2-ohm load. Precision Power says its amps are "built to last and built to blast." I can readily vouch for the latter point and add to it, "Very cleanly."

*Alpine Electronics of America, 19145 Gramercy Pl., Torrance, Calif. 90501.
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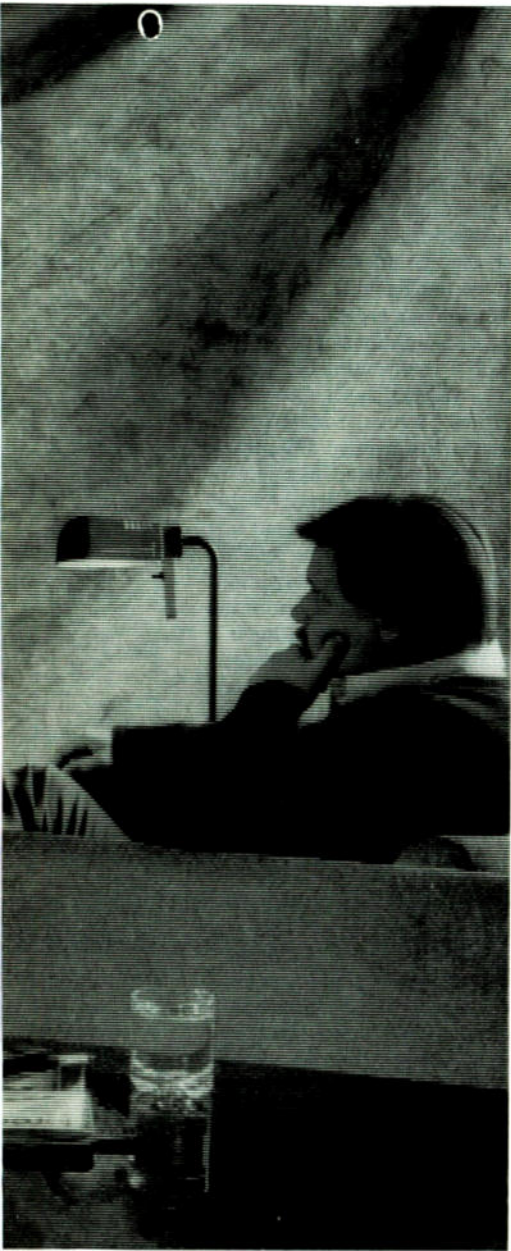
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STEREO REVIEW

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STEREO REVIEW

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The Story of S, or Chroma Phobia

By David Ranada

Many purchasers and would-be purchasers of Super VHS camcorders and VCRs, as well as of recent high-resolution video monitors, are puzzled and confused by the presence on these units of a small, multipin connector jack unlike anything previously seen in home video or audio. Their confusion is compounded if they have heard the absolutely untrue story that you cannot get any benefit from the S-VHS system without a monitor having such an S connector. Let's set things straight right here.

- Your monitor need not have one of these S connectors in order to obtain visible benefits from S-VHS machines.
- Using an S-connector hookup between an S-VHS VCR and a monitor will result in visible—but only minor—improvements to the picture.

If S connectors are indeed no big deal, why were they introduced? To eliminate a couple of the fundamental problems with the NTSC television system used in the U.S. These faults are inherent in the system and its most common embodiments. Understanding them requires a quick review of how color is encoded in a video signal.

The NTSC system was designed to be compatible with the thousands of black-and-white televisions in use at the time of its introduction (the late '50s). That is, not only did the new color sets have to be able to receive b&w transmissions correctly, but b&w sets had to be able to receive color telecasts (in b&w, of course) with no highly visible picture defects caused by the addition of color to the broadcast TV signal.

The system that was approved by the National Television System Committee (hence NTSC) encodes color as a separate signal, called the chrominance or chroma signal (abbreviated C), from the b&w portion of the picture, called the luminance signal (abbreviated Y, for some reason). You can think of the chrominance signal as that which tells a color monitor precisely what color to display at any instant as it traces out a picture that would otherwise appear in b&w on the screen. When added together, Y and C form a composite-video signal.

Devising a compatible color system with two signals (Y and C) fitting in the frequency space formerly occupied by only one (Y) requires a trick called frequency interleaving. It turns out that the luminance signal does not have a continuous spectrum. Luminance frequencies come in clumps separated in frequency, much like the white keys of a piano. The sleight of hand performed by NTSC video is the interleaving of the chroma frequencies (which also have a discontinuous spectrum) into the gaps of the luminance spectrum, just as the black keys fill in the whole-tone steps between the white keys of a piano.

The problem with this "video keyboard" analogy is that a "clump" of video frequencies is precisely that—a collection of signals close in frequency, not like the relatively pure tone of a piano key. If the picture were com-

posed only of either vertical or horizontal stripes, then the frequency interleaving would have no visible artifacts if decoded properly. But images with any diagonal components in them at all—and that includes most images—produce some overlap between the Y and C spectra.

This overlap causes confusion in a typical monitor and results in two of the classic limitations of NTSC video: cross-luminance (in which C information is interpreted as Y) and cross-color (Y is decoded as C). Cross-luminance is the cause of "dot crawl," a regular pattern of tiny dots moving up the border between two different colors. Cross-color manifests itself as a rainbowlike pattern over the parts of the image containing fine detail on the diagonal. This is why you are cautioned not to wear finely striped or patterned clothing when appearing on TV.

While these limitations used to be of relatively minor importance to the home viewer, the increased resolution provided by the S-VHS system and the proliferation of high-resolution monitors make them more prominent. But avoidance of a composite-video signal—by maintaining Y and C as separate signals with S-connector hookups—completely sidesteps cross-color and cross-luminance effects. Spectral overlap still occurs, but there is no possibility of the chrominance signal being mistaken for the luminance signal, or vice versa. (Laser videodiscs—and TV broadcasts—carry composite-video signals, so S-connector hookups will not be beneficial with them.)

Although cross-luminance and cross-color are potential problems when operating S-VHS machines with standard composite-input monitors or RF-input televisions, I have found these effects to be exaggerated in importance by some of those trying to promote the S-VHS system. My home monitor is a high-resolution model, but it does not have an S-connector input. Using it with an S-VHS deck, I have only rarely noticed any cross-color effects, principally because few of the images that could produce the effect are on the screen long enough for me to notice it. And cross-luminance problems have been visible only when the image is relatively stable, as in a still frame or a test pattern.

S connectors do seem to have a decided benefit in S-VHS deck-to-deck dubbing, where the separation of luminance and chrominance signals considerably simplifies the record and playback circuitry and provides less of an opportunity for picture degradation. But defects remaining in NTSC (such as interline flicker and limited Y and C resolution) and in the S-VHS system (less-than-optimum video signal-to-noise ratios) are more visible than cross-color and cross-luminance effects. Put positively, the improvements in picture quality over normal VHS afforded by the S-VHS system, especially in luminance resolution, far outweigh the less-than-ideal image quality of a non-S-connector hookup. You'll see an improvement, S connector or not. □



A Matter of Squealing Tape

By Robert Long

In December 1986, this column mentioned the pesky problem of squealing tape, and I wrote that it was a problem I'd dearly love to solve. The resulting correspondence forwarded to me has only deepened the mystery. Some readers assured me that the problem is specific to the tape, others that it is a property of the deck in which the tape is used. I tended to attribute it to the two in symbiosis. Some readers seemed to think squealing occurred only with the emergence of cassette decks; others dismissed the problem as essentially obsolete, along with the open-reel recorders on which they experienced it.

So, while I'm grateful to those who took the time to write, it appears that we're not much closer to a solution. But because some of the touted "solutions" could do more harm than good, I figure it's time to address the issue once again.

The cause of squealing tapes obviously is mechanical. You can still hear it—usually very clearly—even with the speakers turned off. However, if you copy the tape while it is squealing, the squeal will be audible when you play back the copy, but probably not when the copy is playing with the monitor off. This is because the rapid alternation between sticking and slipping in the original tape not only causes an audible acoustic oscillation, but also modulates the signal as it is read off the tape by the playback head. And since that squeal-modulated version of the signal is transferred to the copy, the squeal is perpetuated on it as well.

One aspect of the problem that I hadn't previously considered was pointed out by Gary Micanek of Manchester, Missouri. He writes that, in his experience, some tapes only squeal after they're three years old. Indeed, the physical properties of the tape do change with time. Both the binder holding the magnetic particles on the plastic backing and its lubricant can be somewhat unstable in long-term storage. This is the "secret brew" area the major companies claim to have as an important edge over the less sophisticated also-rans.

One reader who appears to think squealing is proprietary to cassettes is Robert Stalker of San Diego, who makes the interesting point that supply hubs often heat up because of friction. This, he opines, is the seat of the problem. He goes on to say that heavy, screw-closed shells with free-running, lubricated slip sheets are the least likely to squeal, while the "best" decks are most prone to it.

There may be some truth in Mr. Stalker's "theories" (his word). One tape manufacturer has admitted to me that, some years ago, one batch of its product consistently caused squealing when used on dual-capstan decks—which normally would be considered "best" in tape handling. And readers' letters that mention brands consistently recount problems with budget tapes (which tend to have flimsy, imprecisely fitted and welded shells) used on

premium decks. Many readers also have experienced the same effect with premium tapes used on budget decks.

As far as I can recall, nobody has complained to me of premium tapes on premium decks, so that would appear to be a relatively safe, though possibly pricey, combination. Nor has anyone complained about budget tapes on a budget deck, but I suppose that's because users of that pairing are unlikely to read HIGH FIDELITY. If squealing arises from shell design, premium tapes should be getting significantly better in this regard because of the interest manufacturers have focused on the finer points of shell fabrication.

That doesn't help you play old tapes, however. Although a thorough cleaning of the deck has been known to help, I certainly can't recommend any of the lubricants that have been suggested as fixes, even though their advocates claim they work. Among the suggestions made in recent letters are "Dry Powdered Lubricating Graphite bought at Sears in a handy puffer dispenser," WD-40, and even baby powder. Some are to be applied to the hub or slip sheet (but how, short of disassembling the shell?), some directly to the tape. Some correspondents plugged a product without suggesting how it should be used. In one letter, a reader suggested running all tapes through a silicone "bath," and one of the current correspondents said he tried applying a lubricant to the tape head without any positive results. Any of these techniques is very likely to do a lot of harm—to the tape, to the deck, to the heads, or to some combination thereof. Personally, I wouldn't touch any of them.

Another suggestion involved storing the tape with a source of moisture to keep it "saturated." Though at first glance this looks less harmful than the previous techniques, TDK assures me that it will be counterproductive, because hydrolysis caused by the moisture also can harm the tape coating and might even *cause* squealing. It seems you can't win.

My best advice is that you try, whenever possible, to stick with major brands in both your tape and your deck. If you get a tape that squeals, avoid that batch (as indicated by those mysterious code numbers some brands print on their shells) but not necessarily the brand. To play the tape—and, perhaps, to recover its signals by copying—try other decks (with respect to Mr. Micanek, who finds that if a tape squeals on one deck, it will squeal on all).

If you can't find any tape deck that will work, then I would try transferring the tape to a new shell of different design (empty ones are sold specifically to repair damaged tapes) before trying a lubricant. Only if you have many tapes to treat—and will be copying them from a deck you can afford to ruin and plan never to use for any other purpose—would the extreme unction of a strange lubricant seem like a reasonable choice. □



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

Test Reports

Early on, Compact Disc changers were viewed with a bit of skepticism, at least by some audio pundits. First, there was concern that incompatible multidisc cartridges would cause hesitation among buyers. Once the word "incompatible" is attached to a product—in any context—thoughts turn to Beta vs. VHS, Apple vs. IBM, and Holmes vs. Tyson. But for most purposes, a CD changer is compatible as long as it plays CDs; it doesn't matter what sort of cartridge they are loaded

converters (DACs) with four-times-oversampling digital filters. And in three of the models—the CDP-C50, CDP-C70, and CDP-C7ESD—a rotating five-disc tray serves in place of a removable multidisc cartridge. (A fourth model, the CDP-C100, uses a 10-disc cartridge and replaces the CDP-C10 we reviewed in January 1987.)

We chose to test the CDP-C70, which differs from the C50 only in its additional programming features (the C7ESD is essentially the C70 with a digital output

Sony CDP-C70 Compact Disc Changer



DAVID WAGNER

into. A second concern—this one about audio performance—may have originated in the minds of those who have had unsavory experiences with LP changers. But the compromises involved in making a turntable that plays a stack of LPs don't apply to CD changers, because the CDs aren't stacked and a laser replaces the fickle tonearm/cartridge assembly.

Sony's latest CD changers should remove any audiophile's lingering doubts about the appropriateness of the product. All four contain premium decoding circuitry: dual 16-bit digital-to-analog

added). In size and appearance, it could be mistaken for a conventional player. But when you push OPEN/CLOSE on the C70's front panel, out slides a drawer nearly as wide as the player itself. Into its tray (or "carousel," as Sony calls it), you can place as many as five CDs one at a time, pressing DISC SKIP after each to advance to the next disc position. Whenever the tray emerges, the last disc cued will be at hand. By the way, the tray accepts the new 3-inch CDs without the need for a perimeter adapter.

Programming features abound. In a

Dimensions: 17 by 4½ inches (front); 15¼ inches deep plus clearance for connections.

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

Price: \$500.

Manufacturer: Sony Corp., Japan.

U.S. Distributor: Sony Corporation of America, Sony Dr., Park Ridge, N.J. 07656.

Test Reports

All data were obtained using the CBS CD-1, Sony YEDS-7, Philips 410 055-2, and Philips 410 056-2 test discs

group at the right end of the front panel are two sets of numbered keys for directly choosing any track on any disc. The only unusual aspect is the +10 key, which you press the appropriate number of times to select the tens digit of a track. However, to get to, say, Track 30, you press +10 twice and then 10.

Above the numbered keys is a row of buttons with related functions. The first is PROGRAM, which enables you to pro-

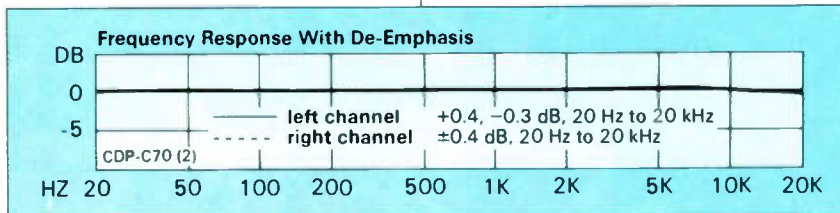
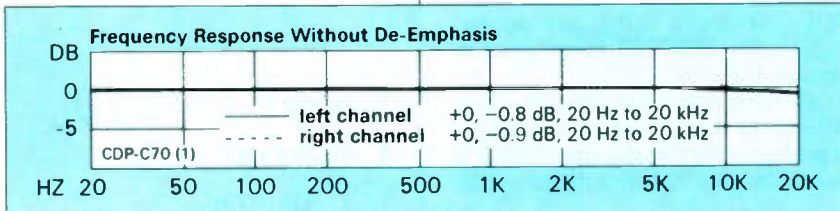
vacant. When you first fire up the machine, the display briefly shows the number of tracks and the total time on the current disc. During play, you can switch the display from time into the track to time remaining in it or on the entire disc. You can also display the disc's assigned name (more on this later).

Beneath the indicators for track, program-step, and time is a numbered scale showing all the tracks on the current disc (if there are more than 20, the word "over" appears). This display is always on; as each track is being played, its tiny number disappears. During programming, the numbers appear as each track is entered and vanish when each is played (or if you press CLEAR to make a change). To review your program, press CHECK repeatedly, and you'll be shown the tracks in the order entered. Suffice it to say that you can call up more information than you'll probably ever need.

But there is yet another layer of features, called Custom File, that is particularly suitable for a CD changer. In the C70, Custom File consists of two functions: Program Bank and Disc Memo. The first is similar to Philips's Favorite Track Selection—the player will remember a programmed sequence for a particular disc and will recall that sequence whenever the disc is played in the Program Bank mode. This works for a total of 226 CDs, each programmed for as many as 20 selections. Disc Memo stores a ten-character name for any disc; the name appears when the disc is selected for play. To program a memo, you use the track-skip buttons to scroll through the alphabet and a series of numbers and symbols. Although not everyone will feel the need to take advantage of the Custom File features, they don't get in the way of straightforward operation.

All of the C70's features worked as promised, although you will certainly need to read the owner's manual, which explains things fairly well. However, the programming buttons on the unit's front panel must at least equal the record for minuteness. Thankfully, you can operate all of the player's functions from the remote control, including the motorized volume control for the headphone output (which also affects the level of the variable line output, handy for non-removable stereo systems).

On the test bench, Diversified Science Laboratories found frequency response virtually ruler-flat to around 10 kHz; beyond that, however, response (without de-emphasis) gradually rolls off and is down more than 1/2 dB at 16 kHz and nearly 1 dB at 20 kHz. In this era of ultraflat CD-player response curves,



Channel Separation (at 1 kHz)	91 1/4 dB
Channel Balance (at 1 kHz)	± 0.1 dB
S/N Ratio (re 0 dB; A-weighted)	
without de-emphasis	100 1/4 dB
with de-emphasis	104 dB
Harmonic Distortion (THD+N; 40 Hz to 20 kHz)	
at 0 dB	≤ 0.41%
at -24 dB	≤ 0.41%
IM Distortion (70-Hz difference; 300 Hz to 20 kHz)	
0 to -30 dB	≤ 0.022%
Linearity (at 1 kHz; without dither)	
0 to -50 dB	no measurable error
at -60 dB	-0.4 dB
at -70 dB	-0.3 dB
at -80 dB	±0.4 dB
at -90 dB	-0.8 dB
Linearity (at 1 kHz; with dither)	
at -70 dB	-0.4 dB
at -80 dB	-0.3 dB
-90 to -100 dB	-2.8 dB
Tracking & Error Correction	
maximum signal-layer gap	> 900 μm
maximum surface obstruction	> 800 μm
simulated-fingerprint test	pass
Maximum Output Level	
line output	2.03 volts
headphone output	4.55 volts
Output Impedance	
line output	≤ 1.980 ohms
headphone output	250 ohms

gram a sequence of as many as 32 steps from among all the discs or 20 from just one. A step can be one track, an entire CD (if you're working with all the discs), or a pause inserted between two programmed tracks to facilitate tape dubbing. A sample five-step program could be: all of Disc 3, Tracks 5 and 2 from Disc 1, a pause so you can flip the tape, and then all of Disc 5.

Next is SHUFFLE, which mixes up the order of play at random from among all discs or from just one chosen disc. In the all-discs mode, the shuffling always moves to a different disc after playing a track. In the single-disc mode, you can delete unwanted tracks from the shuffle routine: Simply select SHUFFLE, press the buttons of the tracks you want removed, and press the play button. Finally, CONTINUE chooses the conditions in which the first two functions operate: all discs, one disc, or one track. That third condition applies only when using the repeat function. However, REPEAT works in all playing modes, including SHUFFLE; neither A-B segment repeat nor cueing by index points is available.

The five discs are represented on the fluorescent display panel as the numbers 1 through 5. A red circle around the number indicates when a disc occupies that position; the number for the disc currently cued is underscored. You can therefore tell at a glance which disc you're on and which positions, if any, are

such a slip may raise eyebrows. But even if you could hear it (and I couldn't), you might find its effect desirable. In all other respects, the C70's data represents fine performance even in comparison to more costly single-disc models. In particular, linearity (a comparison of recorded level vs. output level), signal-to-noise, and distortion figures are all beyond reproach. The Sony had no problems handling the black dots, fingerprint, and signal-layer-interruption tracks on the Philips tracking and error-correction test disc. Likewise, the C70 never missed a beat during normal play, although it was quite easy to induce a skip by rapping the outside of the player.

In our review of Sony's first home CD changer, we were confounded by its limited programming capacity and somewhat disappointed by its slow disc-changing and cueing times. Both problems have been solved in the C70. It nev-

er took more than six seconds to cue any track on any disc (which includes starting with the tray extended). This quickness makes the Shuffle feature very effective. Likewise, audible cueing is fast and accurate at one well-chosen speed.

After using the CDP-C70, I can't think of any reason to prefer the cartridge-loading format other than extra disc capacity or the desire to swap magazines with a compatible car CD changer. The carousel design is inherently less complicated, both operationally and mechanically. Of course, Sony is committed to cartridge players as well, but I doubt whether any could ever match the C70's disc-changing speed. In any case, perhaps the most important question is this: Do you lose anything by opting for a CD changer over a conventional player in the same price range? In the case of the CDP-C70, the answer is no.

Christopher J. Esse

If you think quality playback equipment for LPs is pricing itself out of the market just when Compact Discs have been making a bid to replace vinyl records, Shure would like you to think again. The VST (V-15 Series Technology) pickups are designed to embody the company's most advanced fixed-coil technology at affordable prices. The fanciest is the VST-V (\$200), which features the Micro-Ridge stylus of the premium V-15 Type V-MR. For half the price, you can buy the VST-III (or, for P-Mount plug-in arms, the VST-IIIP) with the more standard Hyperelliptical multiradial stylus. All three models are available through the company's limited-distribution Ultra dealer network.

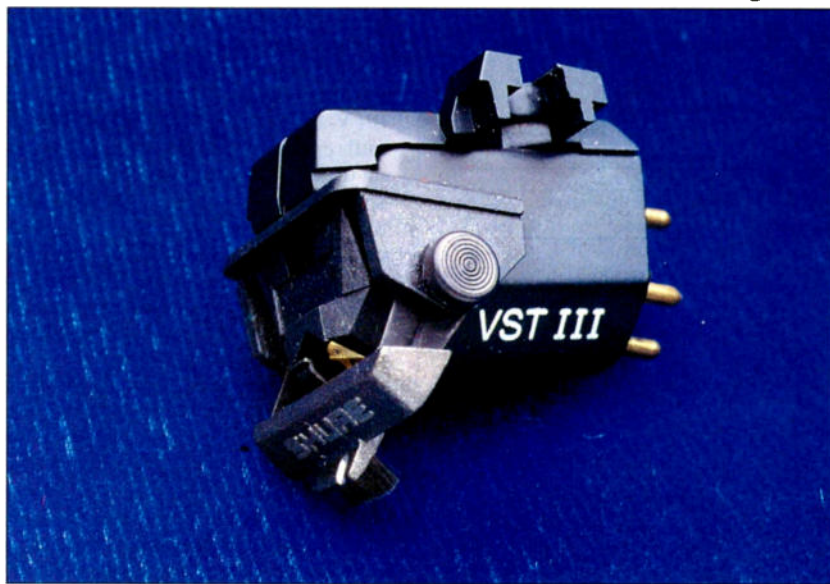
The V-15 Series has been the top of the Shure line for more than a generation and has featured some of the most remarkable engineering innovations ever developed for mass-produced cartridges. Among them is the Dynamic Stabilizer common to all of their recent models, including VST, for use in standard arms. At first glance, it looks like a stylus guard. But instead of coming off after you mount the cartridge, it simply swings out of the way so that a tiny conductive brush on its outer edge rides in the grooves near the stylus, sweeping away loose dust and the static electricity that holds dust to the disc.

This function is welcome in itself, but the assembly does more. Because of damping in its hinge, the Dynamic Stabilizer acts as a "shock absorber" (Shure's term) when the pickup encounters warps. This markedly controls the

cantilever oscillations that otherwise tend to introduce "warp wow" (as the stylus tip scrubs back and forth), potentially troublesome infrasonic signals, or even outright mistracking.

Another element adopted from the

Shure VST-III Phono Cartridge



DAVID WAGNER

V-15 Series is the Microwall/Be tapered beryllium cantilever (or "shank") tube, which Shure says contributes to "the lowest-known effective tip mass." The design also incorporates Side-Guard, intended to protect the cantilever when it is subject to side thrust (all too often the case with hand cueing).

Much of this will be old hat if you're

Price: \$100.

Warranty: "Full," one year parts and labor.

Manufacturer: Shure Brothers, Inc., 222 Hartrey Ave., Evanston, Ill. 60202.

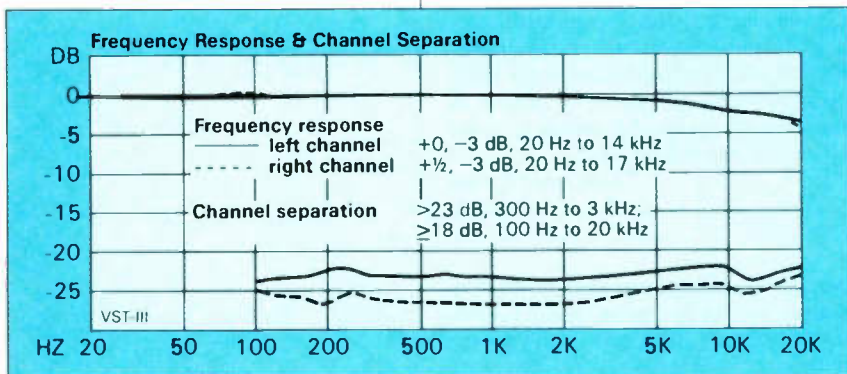
familiar with Shure cartridges, and the VST-III behaves very much like past models—which is no faint praise. As with other Dynamic Stabilizer models, you must allow for the weight and drag of the damper when you counterbalance the arm and set vertical tracking force (VTF) and antiskating. However, all of that is covered in the user's-guide folder that comes with the cartridge. The net VTF used for both Diversified Science Laboratories' bench tests and my listening tests, for example, was 1½ grams; following the instructions, this meant setting the arm calibration for 1¾ grams to

difference with 250 picofarads). Using capacitances in this range, I can't honestly say I could hear a difference between the available options, suggesting that the VST-III isn't particularly sensitive to loading. With capacitance in the 500-picofarad range, the top sounded a little hotter. (A different test disc, like the CBS record that was once our reference standard, might give the treble in the graph a lift.) Particularly if you're used to moving-coil models (which typically are rather peaky at the top end), you may find this one a little lacking in zing; I thought it perhaps just slightly mellow but not objectionably so. But this is an area where there's room for legitimate differences in taste and of opinion, as well as in measurable performance.

DSL's tests showed unusually low distortion for a phono cartridge. (In theory, even lower distortion should be available with the premium Micro-Ridge stylus shape of the VST-V.) And the compliance and arm-matching data indicate that this model should be a good match for most modern arms. Channel balance isn't spot-on, but it's entirely acceptable.

In a nutshell, the VST-III gives you most of what we've been enthusiastic about in Shure's recent V-15 pickups at a price that harks back to an earlier era. (The prestabilizer V-15 Type III, which we tested in 1973, was the last to list for less than \$100.) There is no doubt that it is a good deal.

Robert Long



Sensitivity (at 1 kHz)	0.86 mV/cm/sec
Channel Balance	+0.7 dB
Vertical Tracking Angle	≈ 30°
Max. Tracking Level (re RIAA 0 VU; 1.25 grams)	
lateral	≥ +18 dB
vertical	≥ +12 dB
Dynamic Compliance (vertical)	
	≈ 20 × 10 ⁻⁶ cm/dyne
Recommended Effective Tonearm Mass	
optimum	≈ 6 grams
acceptable	≈ 2 to ≈ 13 grams
Weight	6.5 grams

compensate for the stabilizer's ½ gram, which may be dead weight during arm balancing but is self-supporting when riding on a record.

The first test I ran aimed to upset the stabilizer with warped records. As with the V-15s I've tested, the VST-III proved unflappable by any degree of warp short of that suggesting outright abuse. On some of these warps, a stalking-horse model produced noticeable wow or, occasionally, odd thumps or even mistracking. Not the Shure. The stabilizer really does supply unequivocal, audible improvement in handling this all-too-familiar failing of vinyl LPs.

This property gives the model an inherent advantage over its competitors. And even if one ignores that factor, the sound is excellent—comparable to that of many top models, including Shure's own. Devotees of certain limited-production models (typically, at much higher prices) may not be satisfied with the VST-III, but unless they've found some miraculous way of selecting and storing their LPs, the Shure's ability to ignore warps may count for more than that ineffable something that makes another model seem more desirable.

Frequency response, as measured by the lab with the JVC test disc, shows a gradual treble rolloff with the recommended loading of 48,000 ohms shunted by 200–300 picofarads (DSL split the

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

As you may know, Revox equipment—although lavishly high-tech (and correspondingly costly)—actually is the low end of a line that also comprises Studer professional gear, which is even more high-tech (and costly). Willi Studer—the company's founder and, in a very real sense, its leader—has never shown any interest in producing mass-market components. In fact, the individuality of Revox products may seem downright eccentric and opaque the first time you encounter them. But spend some time with a model like the B-250, and the utter logic of its design is sure to win your admiration.

The front panel can be viewed as four quadrants, clockwise from the upper left: the selector buttons, the volume and on/standby power switch, the more esoteric controls (including those for programming the main controls), and the display. Between the last two is a headphone output. So far, everything is quite simple, and some users may see no need to fuss with the esoteric group, which is protected behind a latching smoked-acrylic door. You can adjust volume up or down in slow or rapid increments (depending on which end of the buttons you press), and you can select and record any source (tuner, CD, phono, aux, or either of two tape decks). Switching logic prevents a deck from feeding itself. Selecting Tape 1 as the source, for instance, automatically kills the recording feed to Tape 1, though not to Tape 2.

At the right end of the selector array is a button marked “-20 dB.” “Aha!” you say, “a so-called mute function.” Well, yes and no. Press the button, and the level drops by 20 dB. Press it again, and level drops by another 20 dB—and so on until attenuation is infinite. To return to listening level, you must use the volume-increase button. So the “mute” could well be called a panic button. If you make a mistake with levels or termination that endanger your speakers, this is the fastest escape short of turning off the power. And when you correct the problem—or finish your phone call—the level returns gracefully.

Next to the attenuation button is one unmarked at the top (where the aforementioned selector designations appear) but labeled “video” at the bottom. It is for use with an optional B-200 Controller (scheduled for production later this year) that can be hooked to a special socket on the back of the B-250. Both can be operated from the optional B-208 infrared remote control (which also handles the B-260 tuner) for a full, wireless-remote audio-video system. You will find other video designations below the

selector buttons. When the B-200 is added and VIDEO pressed, TUNER becomes the selector for TV, TAPE 1 and 2 for VCR 1 and 2, and CD for Laserdisc. Without the B-200, the B-250 is a straight audio amplifier that can be used with or without the B-208 remote.

But the fun really begins when you start to consider the features behind the acrylic door. To help you follow the logic of these controls, the subpanel includes its own readout display, which automatically goes dark when the door is closed.

Like past Revox models, the B-250 has a programmable-gain feature that

Revox B-250 Integrated Amplifier



DAVID WAGNER

enables you to adjust the sensitivity of each input individually, choose the default turn-on volume setting, and set the maximum volume level of each output. If more than one output is in use, the maximum level that applies is chosen automatically according to a fairly complex system of priorities. The maximum-level adjustment also serves to calibrate the loudness-compensation circuit. If you get these parameters too far out of whack, the sensitivity and level adjustments both have “return” modes so you can start over from the factory settings. And since Revox uses a nonvolatile memory, you don't have to reprogram even after a long power outage.

In addition to the inputs and outputs already discussed, there are supplementary tape recording-out and monitor-in

Dimensions: 17¼ by 4¼ inches (front panel), 13 inches deep plus clearance for connections

AC Convenience Outlets: None.

Price: \$2,000, optional moving-coil head amp, \$295, optional B-208 wireless remote control, \$160

Warranty: Limited, two years parts and labor

Manufacturer: Studer Revox GmbH, West Germany

U.S. Distributor: Studer Revox America, Inc., 1425 Elm Hill Pike, Nashville, Tenn. 37210

connections and a set of preamp-out and main-in jacks. These give you additional options for patching in signal processors or extra recording equipment, but they don't include the feedback-preventing logic of the regular tape connections, which might inhibit some complex lash-ups. These connections are also handled from buttons on the protected panel, including one to separate preamp and amp (for, say, insertion of a signal processor) and one to turn the pre-out connections on and off (for powering remote speakers or adding a separately powered sub-

woofer). Also here are treble and bass controls, tone-control defeat, the loudness-compensation button, and the channel-balance controls.

After all that, it is almost anticlimactic to discuss performance, which is so uniformly, boringly good that you need not give it another thought. The version of the B-250 we tested will handle fixed-coil cartridges or compatible high-output moving-coil models. (We didn't test the optional, retrofittable head amp for low-output moving-coil pickups.) Diversified Science Laboratories' measurements show that the phono input capacitances (switchable at the back panel) are a hair higher than the 50, 150, and 450 picofarads at which they're rated, but this should be of no practical importance.

The phono section includes a fixed infrasonic filter. Except for a tiny rolloff (0.1 dB) at 20 kHz, phono response is very flat down to 100 Hz, where the filter begins to take effect. Response is down 1 dB at 36 Hz and 2% dB at 20 Hz, which should be totally inaudible on most program material. In the center of the warp region (at 5 Hz), attenuation is 13% dB, indicating a relatively gentle filter slope.

The tone controls are extremely well behaved, with consistent increments for each control tap and frequency ranges that don't shift with level or overlap significantly in the 1-kHz area. Total range of each control is about ± 11 dB. In the bass, the maximum effect occurs just above 40 Hz and, in the treble, at just below 15 kHz.

The loudness compensation follows current thinking by altering the bass only. DSL tested the feature over a 40-

dB range. At all levels, response from 1 kHz up remained flat; bass boost relative to the treble increased from 0 at the maximum level setting to a peak of just over 11 dB at the minimum level, with the maximum effect centered at about 45 Hz. The volume controls, too, are exceptionally regular in response: very close to 1 dB per step for the slow-adjustment option and 2 dB for the fast option.

Revox rates the power section at both 8 and 4 ohms, and both specs prove quite conservative. Furthermore, the amp seems unfazed by dropping impedance and has more than average headroom. As a result, the lab was able to crank out the equivalent of 380 watts per channel on pulsed waveforms (intended to simulate music) into a 2-ohm load. That's impressive for a "100-watt" (FTC) amp (although the dBW figures remind us that this is only about 6 dB above the rating).

Distortion tops our 0.01-percent reporting threshold only at rated power—and even then only at 20 Hz, suggesting that the power supply, rather than the amp itself, may be the source of the rise. But the figure is so far below audibility as to make the point unimportant. Output impedance rises faster with frequency than it does in some other amps, so the damping factor (though excellent in the bass, where it is traditionally measured) is relatively low at high frequencies, which could conceivably make an audible difference with some speakers.

On our test speakers, the sound is very clean—so clean that it's difficult to focus on for evaluation. I kept finding myself enjoying the music rather than analyzing the sound as such, which I guess is as it should be. The control scheme may take a little getting used to, but it becomes largely intuitive in a surprisingly short period of time. And the more I consider the way the B-250's options are designed (and how rule-of-thumb competing products can be in such matters), the more I respect the canny thought that went into this exceptional product.

Robert Long

REPORT POLICY

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



Rated Power

8 ohms	20.0 dBW (100 watts)/channel
4 ohms	21.8 dBW (150 watts)/channel

Output at Clipping (at 1 kHz; both channels driven)

8-ohm load	21.3 dBW (135 watts)/channel
4-ohm load	23.1 dBW (205 watts)/channel

Dynamic Power (at 1 kHz)

8-ohm load	22.0 dBW
4-ohm load	24.5 dBW
2-ohm load	25.8 dBW

Dynamic Headroom (re rated power)

8-ohm load	+2.0 dB
4-ohm load	+2.7 dB

Harmonic Distortion (THD; 20 Hz to 20 kHz)

at 20 dBW (100 watts)	$\leq 0.23\%$
at 0 dBW (1 watt)	$< 0.01\%$

Frequency Response

	+0.2% dB, 11 Hz to 36.4 kHz
	+0.2% dB, < 10 Hz to 277 kHz

Sensitivity & Noise (re 0 dBW; A-weighting)

	sensitivity	S/N ratio
aux input	25 mV	96 dB
phono input	0.26 mV	75.3/4 dB
Phono Overload (1-kHz clipping)	220 mV	

Input Impedance

aux input	47k ohms
phono input	50k ohms, 90/190/460 pF

Output Impedance (to tape)

	500 ohms
--	----------

Damping Factor (at 50 Hz; re 8 ohms)

	200
--	-----

Channel Separation (at 1 kHz)

	100 dB
--	--------

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Yamaha's DSP-3000 and DSR-100

The Yamaha DSP-1 Digital Sound Field Processor—the predecessor to the DSP-3000—was the first home product to give listeners virtually complete control over perceived auditory space. Performing that task with innovative digital signal-processing techniques, it produced a sound quality unprecedented for home ambience-control devices. For those reasons, HIGH FIDELITY gave the DSP-1 its first-ever Product of the Year award in December 1986.

I fully expected other leading manufacturers in consumer digital audio to take up the challenge and produce devices that at least attempted to match Yamaha's stunning achievement. But the DSP-1 still has no direct competition: Even the brand new DSP-3000 is basically an upgrade and extension of the DSP-1's circuitry and sound. Besides, the \$1,899 DSP-3000 cannot be considered competition for the \$949 DSP-1. As if having cornered the market weren't enough, Yamaha has also introduced the DSR-100PRO, an accessory to the DSP units. As a Dolby Pro Logic surround-sound decoder, the DSR-100PRO performs one of the few sound-field functions not already covered by the DSP-1 or DSP-3000, since both DSP units have only a "passive" (non-logic-steered) Dolby Surround decoder mode.

For a more complete description of the DSP-3000's operating principles, I refer you to our review of the now classic DSP-1 [September 1986]. A quick-and-dirty summary goes like this: The DSP-3000 enhances two-channel stereo listening by introducing into the listening room—via either two or (preferably) four additional loudspeakers—the early reflections and subsequent reverberation of a variety of real music-performance environments. One extra speaker pair is placed behind the listener and the other (if the full-blown system is used) in front, farther away than the main stereo speakers and with a wider spacing. The sonic result is as if the walls and ceiling of the home listening room had vanished and were replaced by the more distant confines of a concert hall, cathedral, jazz club, movie theater, or stadium.

The very individual characteristics of the early reflections and reverb—modeled after and, in many cases, taken from, actual concert halls, jazz clubs, and the like—are stored in the DSP-3000's permanent digital memory. A high-speed, high-precision microcomputer takes the incoming



PHOTOGRAPHY BY DAVID A. WAGNER

On the left are Yamaha's DSP-3000 Digital Sound Field processor and its wireless remote control. Most DSP-3000 functions are performable only with the remote. At right are the DSR-100PRO Dolby Pro Logic surround-sound decoder with its handset. In this case, the remote duplicates all the primary front-panel functions, including switching the back-channel delay between 20 and 30 milliseconds and controlling system-wide volume.



sound, which has been digitized by the unit's analog-to-digital converters (ADCs), and mathematically applies the reflections and reverb to the signals. The reconverted analog outputs, which are at all times separate from the unprocessed main signal, are sent to the front and back "effect" speakers. If necessary, the front-effect signals can be mixed into the main speaker outputs, enabling use of the system without separate front effect speakers (and limiting the setup to four speakers).

Yamaha has almost completely eliminated the DSP-1's few troublesome characteristics while adding several truly useful features. The most important advances in the DSP-3000 are its level-setting and volume-control features, which address the primary problem with the DSP-1: the inability of the user to control system-wide volume levels and balances with the DSP-1's remote control. In particular, balances between the main and processed sounds—and among front, back, and main speakers—are extremely important for full en-

Output at Clipping (at 1 kHz)

main channels	2.2 volts
center channel	1.4 volts
surround channels	2.4 volts
Maximum Input Level (at 1 kHz)	2.6 volts

S/N Ratio (re 0.5 volt; A-weighted)

main channels	105 3/4 dB
center channel	102 3/4 dB
surround channels	82 3/4 dB

Distortion (THD; 20 Hz to 20 kHz; 2-volt input)

main channels	< 0.01%
surround channels	≤ 0.018%*

Frequency Response

main channels	+0, -1/4 dB, 20 Hz to 28.3 kHz
	+0, -3 dB, 20 Hz to 103 kHz
center channel	+0, -3 dB, 20 Hz to 5.5 kHz**
surround channels	+0, -3 dB, 20 Hz to 7 kHz

Channel Separation (at 1 kHz; main channels)

	100 1/2 dB
Input Impedance	51k ohms

Output Impedance

main channels	970 ohms
center channel	1,850 ohms
surround channels	970 ohms

*With 1-volt input

**At 5-kHz cutoff setting

PRO Digital Surround Processors



joyment of these devices. The line between too much and too little processing is easily crossed, and each recording places that line differently.

In contrast to the DSP-1, the DSP-3000 lets you control nearly everything. Toward this end, the 3000 includes a master volume control (a six-channel motorized potentiometer) that affects all the 3000's outputs, including the unprocessed main-channel signals; an analog-input level-preset adjustment for obtaining mini-

CD player, DAT machine, or other digital audio component equipped to feed a standard Sony/Philips digital bit stream. Switching to this input eliminates the digital-to-analog-to-digital conversion cycle that would otherwise be required to process audio from digital sources. Digital reverb works best on tape or digital source material because any clicks or pops on an LP are reverberated along with the music (the "gunshots in the cathedral" effect).

The left and right channels of the 3000's two analog inputs are converted into digital form by separate 16-bit ADCs operating with a sampling rate of 48 kHz (the DSP-1's inputs were mixed to mono before its 44.1-kHz analog-to-digital conversion). All processing in the 3000, therefore, takes place in stereo. If the direct-digital input is used, the main-channel outputs are driven by a Yamaha Hi-Bit quasi-18-bit DAC. The effects channels use normal 16-bit converters. Every converter receives data from a four-times-oversampling digital filter.

As if six separate outputs weren't enough, the DSP-3000 has four outputs for "center auxiliary" speakers. The manual says that "in particularly large rooms, you might want to add auxiliary speakers to 'fill in' the overall sound field and reinforce the low-mid frequencies." Signals for these outputs are derived by the simple mixing of two of the 3000's normal outputs, with the speakers driven from these auxiliary outputs placed midway between the appropriate normal speakers (front aux between the two main speakers, left aux between the front-left and back-left effect speakers, etc.). Each output has a low-pass filter with a corner frequency that is switchable among 80 Hz, 150 Hz, and 5 kHz.

Finally, the last major operational feature new to the DSP-3000 is its video loop, which enables your home system's composite video signal (from videodisc player or VCR, for example) to pass through the 3000 and provides video input and output jacks for that purpose. (Sorry, no S connections for S-VHS or ED Beta VCRs.) After the signal enters the 3000, the unit superimposes on it the names and settings of the various adjustable parameters of each sound-field mode. The amount of data displayed is controlled by the user.

Yamaha provides 19 new sound-field programs with the 3000, some of the most



imum noise and maximum dynamic range from the 3000's ADCs; and an internal random-noise generator to help set balances. Except for the volume adjustment (duplicated by a front-panel rocker switch), all of these functions as well as most of the other DSP-3000 controls are available only through the remote handset. The 3000's ability to properly balance levels and power-amplifier gains will not bring on the setup problems that could, in some cases, leave the impression that the earlier model's processed outputs are unduly noisy. Special instructions are given for level adjustment should your power amplifiers not have input-level controls. But using the 3000 with such amplifiers is still not as convenient as it should be. Some sort of effect-output level-trim control should have been provided on each processed output.

Other features of the 3000 are aimed at increased signal purity. The most important is the back-panel direct-digital input (a pin jack) that receives an output from a

Unless otherwise indicated, all measurements were made with the Pro Logic on, the DSP interface off, and the surround-channel delay set for 20 milliseconds.

Output at Clipping (at 1 kHz)

main channels	3.0 volts
center channel	3.0 volts
surround channel	2.9 volts
Maximum Input Level (at 1 kHz)	3.3 volts

S/N Ratio (re 0.5 volt; A-weighted)

main channels	84 1/2 dB
center channel	84 3/4 dB
surround channel	87 dB

Distortion (THD; 20 Hz to 20 kHz; 2-volt input)

main channels	≤ 0.32%
surround channel	≤ 9.1%

Frequency Response

main channels	+0, -1/2 dB, 20 Hz to 20 kHz
center channel	+0, -1 dB, 210 Hz to 20 kHz
	+0, -3 dB, 110 Hz to 20 kHz
surround channel	+0, -1 dB, 110 Hz to 5 kHz
	+0, -3 dB, 50 Hz to 6.5 kHz

Input Impedance	52k ohms
-----------------	----------

Output Impedance

main channels	930 ohms
center channel	980 ohms
surround channel	980 ohms
subwoofer output	3,800 ohms

SPECIAL
TEST REPORT

Yamaha's DSP-3000 and DSR-100PRO Digital Surround Processors

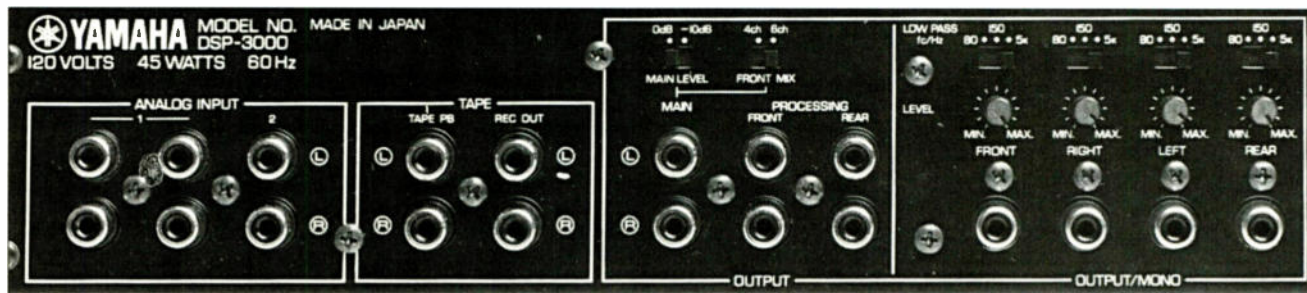
interesting being programmed early-echo patterns from various (sometimes unnamed) music venues in the U.S. I do know that one of the new concert-hall settings is of the Brooklyn Academy of Music and that the disco program preserves the ambience, if not the mood, of the recently closed Saint disco in New York. From the same city come the acoustics of the Village Gate and the Village Vanguard, both famous jazz clubs. The stadium setting has been changed to reflect (pun intended) the acoustics of Anaheim Stadium. However, the concert halls and opera houses most famed for their acoustics have still eluded the Yamaha sound-field patrol.

wide—and educational—latitude of sonic flexibility. It takes only a little experimentation to find at least one, and perhaps many, settings that will greatly enhance the realism or vividness of *any* recording.

Playing with the DSP-3000's sound fields was a greater pleasure than with the DSP-1. For one, the factory settings are more natural and less aggressive than those of the earlier model. Since there are more of them, I was more likely to find a factory setting appropriate to the recorded material without having to adjust any sound-field parameters. Also, the remote control of system levels and balances encouraged multiple and rapid changes in

ambience-extraction circuits, nor is its 20-or-30-millisecond back-channel delay continuously adjustable. Although the 100 can be used independently, it has been designed to operate in conjunction with one of the Yamaha DSP units and, therefore, hardly needs any such enhancements.

When used with a DSP model, the 100 is connected between the main and effects outputs of the DSP unit and the system amplifiers. This setup feeds the 100's main input with an unprocessed stereo signal identical to that being fed to the DSP device. Buttons on the front panel and the 100's own remote control will, if desired, enable the DSP's outputs to pass through



The DSP-3000's back panel has four auxiliary speaker outputs and their associated filter switches and level controls (at right).

There are also four movie-theater settings meant to provide an appropriate acoustical environment for action/adventure films, "standard" movies, musicals, and "old monaural movies." Perhaps to make room for the new sound-field programs in the 3000's digital memory, the many special effects for music production (phasing, flanging, pitch-shifting, etc.) that were included in the DSP-1 have, unfortunately, been eliminated.

As in the DSP-1, each sound-field program has various parameters that are adjustable by the remote control. Altered settings can be saved in as many as 20 user-program memory slots, and each can be given a name for display on the front-panel LCD or the monitor screen. Experimentation with the settings should be required training for anyone who professes to know anything about concert-hall acoustics (that especially goes for record and concert reviewers). The ability to independently adjust such factors as the time gap between the main sound and the first reflections, the spacing and rate of decay of the early reflections, the reverberation times for high and low frequencies, and the overall reverberation level provides a

parameter settings. All this was immensely aided by the front-panel display (brighter and larger than on the DSP-1) and especially by the on-screen video read-out.

Sonically, it's hard to imagine any device that could produce such an immediate and vivid increase in sonic realism—other than the DSP-1, that is. Nor can I imagine anyone voicing serious complaints about any of the DSP-3000's lab measurements (those shown are for its Dolby Surround mode). I certainly don't have any. I used the DSP-3000 primarily in its six-channel mode, but flipping the back-panel switch to four-channel operation produced only a minimal decrease in apparent spaciousness. If you can afford the expense and space, go for six-speaker operation; if that's not possible, four speakers are still quite an incredible improvement over normal stereo.

Compared to the DSP-3000, the DSR-100PRO is a paragon of operational and electronic simplicity: It is a Dolby Pro Logic surround-sound decoder, period. Unlike other components designed as Dolby Surround decoders, it contains no stereo-synthesis, artificial-reverb, or am-

unaltered, except for going through the 100's volume control (another multiple-section motorized potentiometer). This is one of the 100's two bypass modes: It can also deliver simple two-speaker stereo if, for some reason, you feel the need to go back to a mode that sounds decidedly flat after hearing DSP enhancement. The 100's third mode—and my favorite—is plain Pro Logic decoding, which enables you to hear surround-sound effects as the movie-sound engineers heard them in the mixdown studio. The fourth and last 100 mode lets you go all out: It combines the DSP outputs with Pro Logic decoding, with the back channels from the decoding mixed in with the DSP back effects.



The DSP-3000's large, bright LCD readout

Yamaha's promotional literature for the DSR-100PRO extolls this last DSP/DSR mode as a decided plus. For three reasons, I consider it only a mild bonus. First, in order to effectively enhance the ambient sound of a movie soundtrack, the reverb settings of the DSP unit would have to change virtually with each shot in the movie. Unless you only watch one-scene films like *My Dinner with Andre*, this is absolutely impractical. Second, as mentioned above, the DSP units have movie-theater settings that effectively imitate the sound of a movie heard in various-size movie houses. If I wanted that degree of realism, I'd stick chewing gum under my

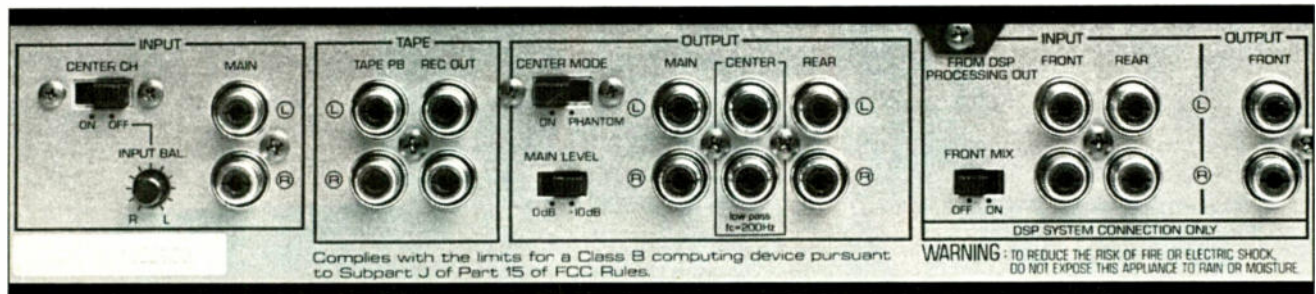
frequency responses of the 100's various outputs in the Pro Logic mode adhere to Dolby Lab specs, the noise levels are low, and the logic steering on various critical videodisc passages operates properly. However, the distortion of surround outputs, while probably totally inaudible with typical program material, is higher than I'd like to see. The two bypass modes are appropriately neutral.

If you want to have Dolby Pro Logic surround-sound decoding in your system—the added degree of image accuracy and stability it provides over a passive Dolby Surround decoder *is* desirable—as well as the extraordinary spatial qualities

essary, can be your monitor's built-in speaker). If used, the 100's subwoofer output would add yet another speaker and amplifier channel to the bill. Heaven help you if you feel the need to also make use of the DSP-3000's four auxiliary outputs!

Using these signal-processing components clearly requires commitment not only to the hardware but to the passions of intense listening as well. The sonic rewards of using a Yamaha DSP device, however, are fully worth the cost, trouble, and effort. You cannot buy an equivalent leap in sonic realism for the price of the DSP-1 and its extra amps and speakers.

Assessing the place of the twice-as-



On the right side of the DSR-100PRO's back panel are the connections for hooking in the effects outputs of a Yamaha DSP unit.

armrests, warm up a batch of stale pre-popped popcorn, and sit in front of someone who's talking loudly and smoking who knows what. I consider the acoustics of even the best movie theaters a hindrance rather than a help to hearing the soundtrack, so I prefer an unreverberated presentation of movie sound. Finally, even if I did want that "you are there" feeling, the signal path of a DSP/DSR hookup mixes in the DSR processing after the sound has already been reverberated by the DSP unit. In theory, the DSR-decoded outputs should be fed to the DSP device to get correct theatrical ambience, but in this case, that isn't possible, since the DSP units have only two-channel inputs.

That being said, the DSR-100PRO is a good Pro Logic decoder. It does indeed enhance a Dolby Surround soundtrack's directional effects and promotes proper placement of dialogue and sound effects in the overall sonic image. Particularly noticeable in direct comparison to the DSP units' passive Dolby Surround decoding is the 100's ability to keep front-channel material up front, without the leakage to the back produced by decoders without sound-steering logic. The measured fre-

quency responses of the 100's various outputs in the Pro Logic mode adhere to Dolby Lab specs, the noise levels are low, and the logic steering on various critical videodisc passages operates properly. However, the distortion of surround outputs, while probably totally inaudible with typical program material, is higher than I'd like to see. The two bypass modes are appropriately neutral. If you want to have Dolby Pro Logic surround-sound decoding in your system—the added degree of image accuracy and stability it provides over a passive Dolby Surround decoder *is* desirable—as well as the extraordinary spatial qualities

imparted to normal stereo music listening by the Yamaha DSP-1 or DSP-3000, then the DSR-100PRO is probably your best bet, whether you listen in combined DSP/DSR mode or not. The 100 supplies the necessary connector and bypass-switching arrangements for separate and combined operation that would be difficult to come by with any other component, let alone any attempt to rig something by hand. As it is, connecting the two units into an existing stereo system, gathering the necessary number of speakers and amplifiers, finding acoustically suitable locations for everything, and then hooking the system up is not a task to be undertaken by the faint-of-heart or weak-of-wallet.

For best performance in normal listening rooms, the DSP-3000 (or DSP-1) should be operated with six speakers (two main, two front-effect, and two back-effect), although four-speaker operation (two main/front-effect, two back-effect) is only a slight step down in ambient effectiveness. For greatest accuracy in Pro Logic decoding with the DSR-100PRO, another speaker should be added (the center-front, or dialogue, unit, which, if nec-

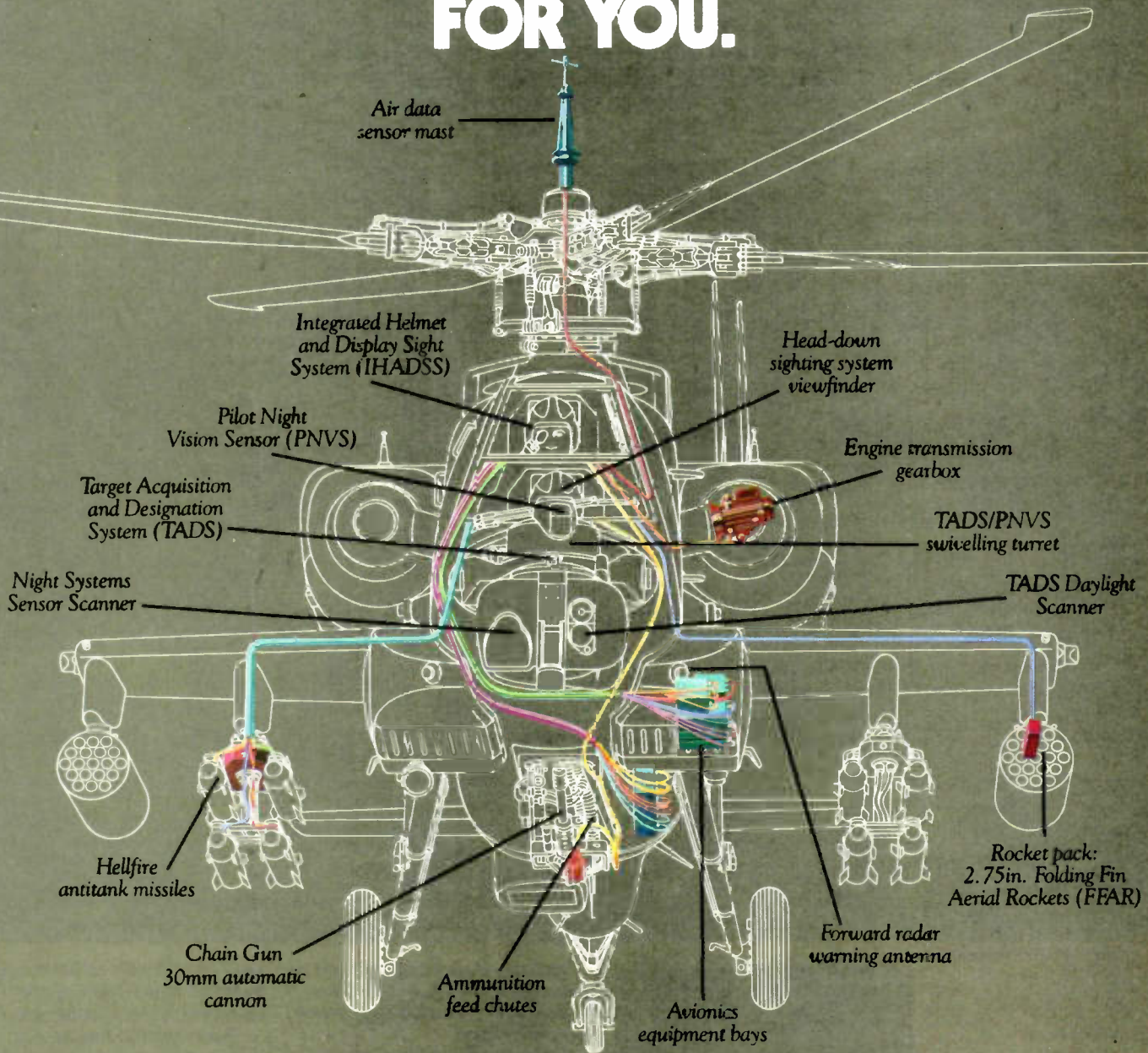
essary, can be your monitor's built-in speaker). If used, the 100's subwoofer output would add yet another speaker and amplifier channel to the bill. Heaven help you if you feel the need to also make use of the DSP-3000's four auxiliary outputs! Using these signal-processing components clearly requires commitment not only to the hardware but to the passions of intense listening as well. The sonic rewards of using a Yamaha DSP device, however, are fully worth the cost, trouble, and effort. You cannot buy an equivalent leap in sonic realism for the price of the DSP-1 and its extra amps and speakers.

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Sounding Off



*An Interview
With Manfred Breunig
Of Magnum Dynalab
By Gordon Brockhouse*

Manfred Breunig is trying to change attitudes toward FM radio. That's only fitting, inasmuch as he is vice-president of manufacturing for Magnum Dynalab Ltd. of Brampton, Ontario, a company specializing in FM receiving equipment. While Magnum Dynalab's \$429 FT-11 and \$649 FT-101 tuners both have digital displays, their totally analog designs make them unusual in today's market. While Breunig acknowledges that his tuners do not offer the convenience features of digital frequency-synthesis models, he says his approach gives the user more control over the tuner's operation. In addition to the two tuners, Magnum Dynalab still manufactures its first product, the Signal Sleuth, a tunable FM signal amplifier that sells for \$229.

The fifty-four-year-old designer emigrated to Canada from West Germany in 1953. Two years later, he opened a stereo sales and service outlet. In the mid-'60s, he began manufacturing equipment for his own operation and was soon building for other manufacturers as well. One day in 1976, when he had difficulty picking up Toronto radio stations while vacationing at his cottage in northern Ontario, he came up with the idea for the Sleuth. He moved into tuners almost by accident.

Breunig was soon also selling FM-tuner boards to some manufacturers, including Kinergetics and PS Audio. To demonstrate the Sleuth at the 1984 Summer Consumer Electronics Show, he decided to build a full-scale tuner around his board rather than use someone else's tuner. To his surprise, dealers loved the sound of the rough-hewn prototype and encouraged him to put it into production.

Six months later, the FT-101 was ready, offering features available on few other tuners of the era (such as a multipath meter). A low-price version, the FT-11, was introduced last year. Both have received glowing reviews.

GB: *How do your tuners differ from others, particularly those aimed at the mass market?*

MB: First of all, we're totally committed to analog tuning. Although digital tuners are quartz-controlled and are supposed to be 100-percent accurate, in practice things don't always

work perfectly.

The main thing is giving users control of the product. Being of a technical bent like many of our customers, I want to tune in the signal myself rather than let a machine do it. For example, our FT-101 indicates multipath so that you can "detune" slight-

ly and get rid of it. You can't do that with a digital tuner. Actually, some digital tuners do have a small fine-tuning knob. They're conceding our point.

GB: *Breaking down your basic tuner design into its major subsections, starting at the front end, can you*

explain how you go about things differently?

MB: The front end, which some people call a "tank" circuit, is where the RF signal is tuned. Essentially, it consists of a coil and a capacitor. Most tuners have a single adjustment—just a trimmer. The coil is wound and laid against the PC board. Then it's tweaked with a screwdriver or pair of pliers, and compressed or expanded so that it has approximately the desired inductance. That's a very iffy proposition. The coil can't be adjusted very precisely, and it can change value over time. One manufacturer shows that coil as a special feature in its literature. To me, that's baffling. We use a core inside the coil that lets us adjust it in infinitesimal steps. This gives us very precise tuning and uniform performance across the FM band. Other tuners have peaky RF response: They may be good at the low end of the dial but not so good at the high end, or vice versa.

We use varactor tuning, based on a special diode whose capacitance varies with an applied voltage, which itself is controlled by a variable resistor. It's very precise. Components are specially selected and matched. In early varactor tuners, there was great difficulty in matching components. But that problem has been overcome.

The front end also contains a three-stage RF amplifier very similar to the Sleuth circuitry. We have a dual-gated AGC [automatic gain control] system that's gated right at the antenna input, as well as at the IF stage. This makes it virtually impossible to overload the tuner and is especially important in crowded urban areas.

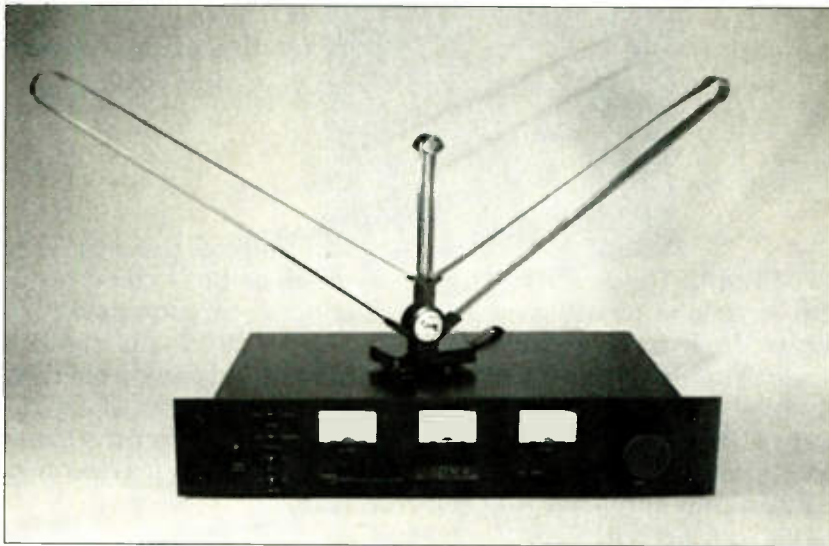
The next stage is the mixer. The IF frequency is generated by an oscillator and injected into the mixer. The IC that drives the IF demodulator has automatic nulling: If the detector is slightly off, it automatically tunes back to the lowest distortion point for the audio. It's a feature we don't really talk about in our literature, but it manifests itself in the tuner's audio performance. Not many tuners have this feature.

Next come the IF filters. We used

tuning the signal and adjusting the antenna.

The next stage is the detector, where the IF signal is changed to an audio signal. The more stages you have, the narrower the passband becomes and the greater the selectivity, but audio distortion may increase substantially. The FT-101 has wide/narrow IF-bandwidth selection. As our specs indicate, there's a slight increase in distortion in the narrow setting. It's a trade-off between selectivity and the lowest possible distortion.

When the composite signal is detected, we go into the multiplex chip. We use a European-designed multiplex chip. It's unique in that it has 114-kHz rejection. Most chips have only 19-, 38-, and 57-kHz rejection. But this chip goes one step further for an important reason: Sideband carriers on either side of the main carrier have been approved for



Magnum Dynalab's FT-101 FM-only tuner with supplied indoor antenna.

to use adjustable tuned IF circuits. But there were too many variables, and the coil was affected by environmental factors over time. With the advent of ceramic resonators, we were able to build a far more precise circuit. Of course, no adjustments were necessary—they have lower distortion and better phase linearity and produce better adjacent channel selectivity than tuned IF circuits.

Lastly, the multipath meter is still an unusual feature. The signal to drive the meter comes from between the IF stage and detector.

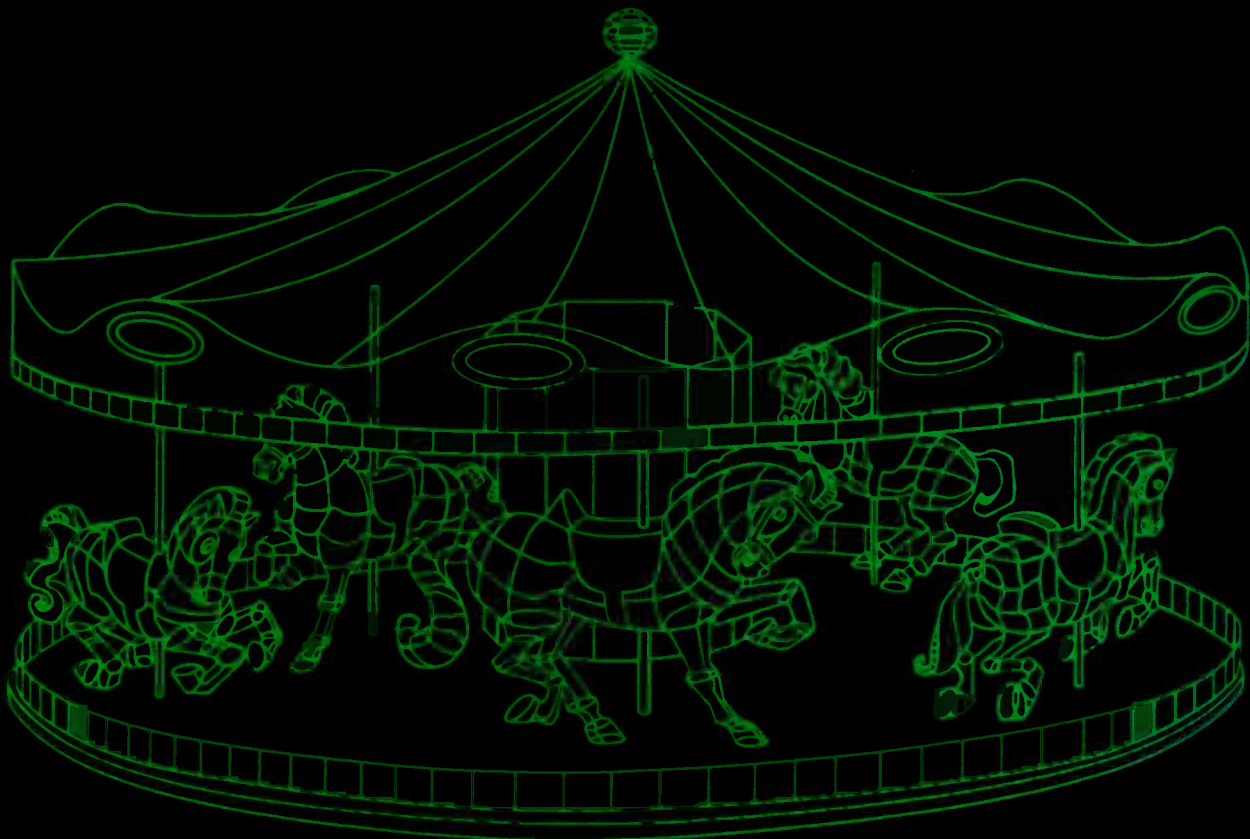
GB: *How is the multipath circuit able to distinguish between reflected and direct signals?*

MB: The false signal is a ghost, just like on TV. The circuitry is able to recognize the distorted part of the signal so that the user can isolate the problem and attempt to correct it by de-

specialized commercial-free background-music channels—elevator music. We want to get rid of all sub-carriers. If you don't, you can get birdies and whistles on stations that use sideband carriers. They may be inaudible during normal listening, but when you're taping, they can interact with the recorder's bias signal and cause all kinds of problems.

The multiplex chip we use has some adjustability so that we can optimize separation. Most chips are not adjustable. We can tweak individual units to get close to 60 dB of separation. The chip also does automatic stereo/mono blending. On a noisy signal, separation is slightly decreased to get a quieter signal.

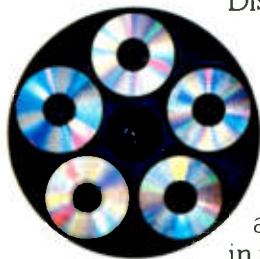
After the multiplex section come passive filters. In our opinion, passive filters are far superior to electronic filtering—whether using ICs or tran-



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sistors—because we don't add anything to the signal. Filtering is critical here, because we're dealing with audio signals now.

The filters are very sharp-skirted so that they're nearly flat at 16.5 kHz, and there's virtually no output at 19 kHz—it's about 60 dB down. That works in conjunction with the multiplex IC, which itself has 30 to 40 dB of subcarrier rejection. FM audio is limited to 17 kHz at the most, less than CD or LP, and about 30 Hz at the low end.

GB: *An advantage of digital tuners is convenience features. Is it possible to build some of these into an analog tuner? You do have presets on the FT-11.*

MB: Those presets are analog. We also have an optional preset module for the FT-101—it's wired into the tuner. An infrared remote can be a noise source. Sound is the most important factor in our product. If anything interferes with that, it gets thrown out.

GB: *If you could find a way to build a digital tuner with the sonic performance of your products plus a full slate of convenience features, would you?*

MB: Not at this stage.

GB: *Can an analogy be drawn between your company's support for analog tuners and the high-end community's enthusiasm for the vinyl LP? To some high-end enthusiasts, anything digital is a blasphemous innovation, and analog is sacred.*

MB: I would agree with that. When we first introduced the tuner, we stressed the fact that it's analog. Since then, the market has told us we're on the right track. Certainly, we would not change unless the market dictated, and there's no indication of that happening.

GB: *Did it ever occur to you to explore a digital tuner, or were you always committed to analog?*

MB: We were committed to analog from day one. The only digital aspect of our tuner is the frequency counter. In a preproduction model, we used a dial-drive system—it was strictly an analog tuner. But we also wanted a 100-percent calibrated tuner, and the

digital counter was the only concession we made. In retrospect, it was a good choice, and it does fulfill a function.

If a system is good, however modern it is, we'll accept it, but it's got to contribute to the product. For example, we use integrated circuits in the IF and multiplex sections. On an analog tuner, some high-end people only want to see transistors. We completely reject that, because ICs give the best results in that job.

GB: *What were the design criteria of the original tuner?*

MB: The basic idea was balance. By that, we mean all performance parameters are balanced. For example, we could increase selectivity by adding filters in the IF stage, but that would increase distortion. We think we've struck a good balance from the RF input to the audio output, leading to excellent sound. An FM tuner is intended to be a sound carrier. That's been forgotten by many.

GB: *What are the differences between the FT-11 and FT-101?*

MB: The primary difference is that a multipath meter is not included on the 11, and the circuitry that drives the meter has been eliminated. Also, the FT-11's IF bandwidth is not switchable; there's just the wide setting so that a strong adjacent channel can't be eliminated as easily. There's no direct output on the 11. The 11 also doesn't have remote capability, but it does have three presets. Other than that, it's basically the same RF stages and the same sonic characteristics.

GB: *What would you like to include in a no-holds-barred product that you haven't done on the FT-101?*

MB: We would use the same measuring stick. All specs would have to move up in unison. We wouldn't just increase sensitivity without improving adjacent-channel performance.

GB: *Is FM a fairly stable technology, or are significant changes on the horizon? Will developments like FMX and direct broadcast from satellite (DBS) change the market?*

MB: FMX is promising, provided it's promoted and gets backing from broadcasters. What comes first, the horse or the cart? I don't think DBS

will be a factor in the near future.

GB: *Do most audio enthusiasts appreciate FM as a good source of music?*

MB: Many use LP or CD as their primary programming sources and FM for background music. But I think awareness is growing. More and more listeners appreciate FM as a means of getting exposed to new music. However, we still need to educate the market.

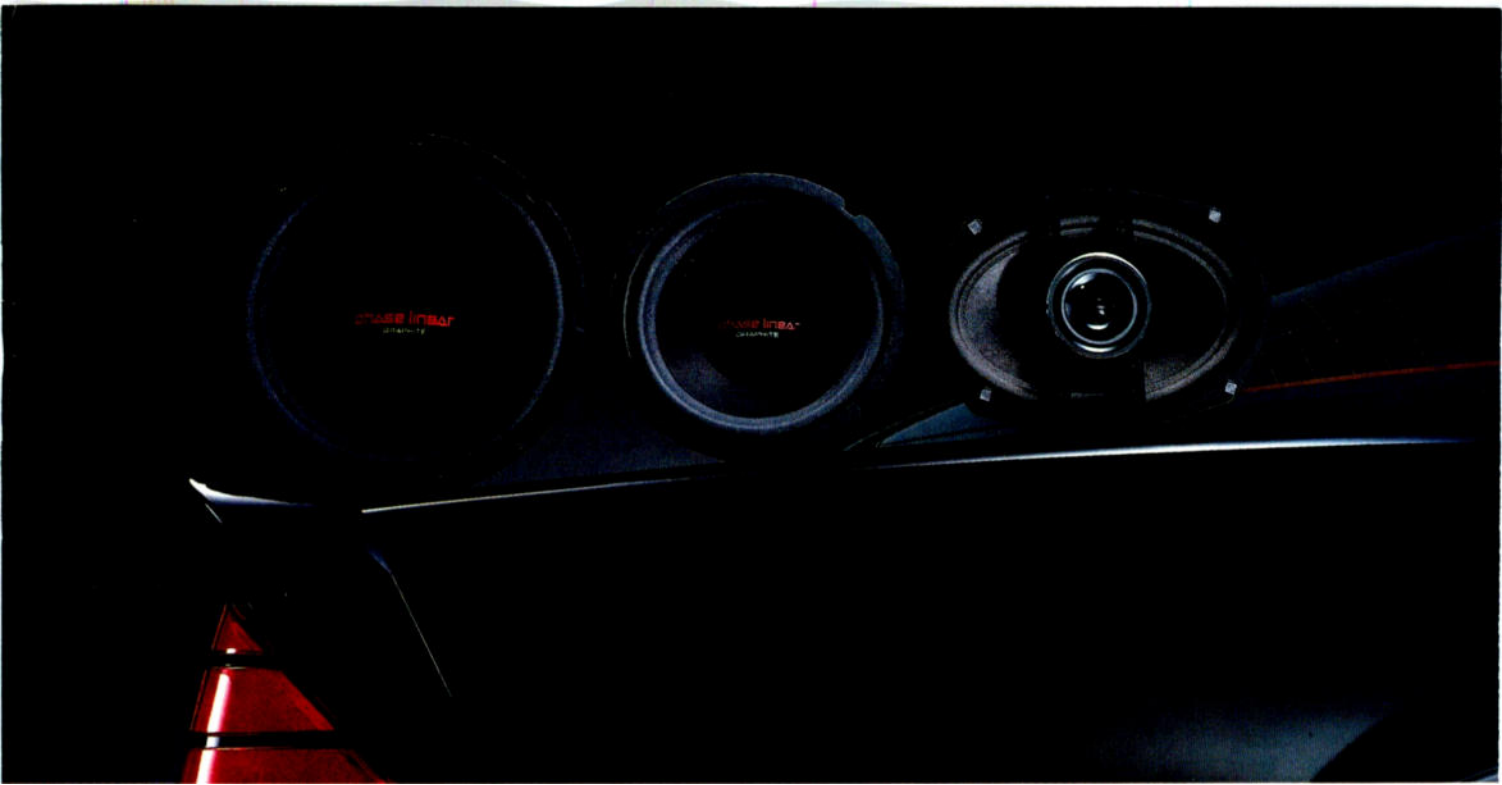
The stations themselves are part of the educational process. They've improved their signals quite substantially. Their programming is better, and so is their transmission quality. Many stations still pump out signals near 100-percent modulation to make them sound louder. Some stations also compress their signals so they can be received better by car and portable radios. These are mainly rock and country stations. But more and more stations are broadcasting high-quality signals without this kind of signal processing. Without trying to sound snobbish, better stations—predominantly classical—refrain from these practices.

More people are aware of the need for a better antenna. But we have a big job ahead of us, while most manufacturers put a 50-cent piece of wire with their tuners and hope for the best. We were forced to carry antennas. There was a vacuum in the market, and we had to address it for our customers so they could get the best out of their tuners. Now we include with our FT-101 a tunable folded dipole antenna to make people know what an antenna can do for them. Although it's an indoor type, it's a hell of a lot better than a cheap wire.

GB: *In the next five or ten years, will there be an improvement in the quality of sound that FM listeners get in their homes?*

MB: I would unequivocally say yes. Stations will improve their equipment and sources. CDs will have a great impact on FM. That's critical, since stations didn't really invest heavily in quality turntables and cartridges. □

Gordon Brockhouse has been an editor of Canadian audio and computer industry trade publications.



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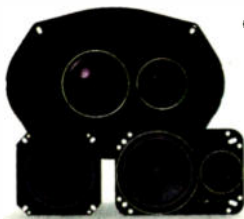
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Magneplan's Magneplanar MG-2.5/R is a flat-panel loudspeaker featuring two of the company's patented drivers—a true ribbon tweeter and a planar-magnetic woofer. The tweeter, which is crossed over at about 1 kHz, is 40 inches long, 1/4 inch wide, and less than two ten-thousandths of an inch thick. Because of its height and bipolar radiation pattern, the tweeter can provide a tall, deep stereo image, and its 2 1/2-ampere normal-blow fuse protects it from clipped amplifier signals. The rectangular bipolar woofer occupies an area of 606 square inches. Magneplan says the 2.5's frequency

response is within ± 3 dB from 37 Hz to well beyond the upper limit of human hearing.

According to Magneplan, the 2.5 presents a resistive 5-ohm load and should be driven by amplifiers rated between 50 and 200 watts per channel (into 8 ohms). (It would be wise to make sure your amplifier is rated for a 4-ohm load as well.) Though six feet high and nearly two feet wide, the 2.5 is a scant 1 1/2 inches deep. The solid-oak side rails are available finished or unfinished; grille fabrics come in white, black, or brown. Suggested retail price is \$1,550 per pair. *Magneplan, Inc., 1645 Ninth St., White Bear Lake, Minn. 55110.*

Roll Your Own

Audio Concepts offers speaker kits—with or without assembled cabinets and mounting hardware—ranging in price from \$120 to nearly \$2,000. The company also sells parts separately, including drivers, crossovers, and a variety of accessories (such as connectors and acoustic wall-covering panels). The drivers come from such notable manufacturers as MB Quart of West Germany, Seas of Norway, and Dynaudio of Denmark, in addition to those from a major U.S. supplier. To request a catalog, call (608) 781-2110, or write to Audio Concepts, 401 S. 4th St., La Crosse, Wis. 54601.

Alternatives

The availability of portable DAT recorders is still uncertain, although at this writing Casio's ultrasmall DA-1 (\$1,499) is apparently waiting at dockside for the okay to ship. The company's U.S. sales division has already taken dealer orders for the unit. Unfortunately, the threat of a lawsuit for copyright infringement—promised by the Recording Industry Association of America, which is apparently unhumbled by the dismissal of Copy Code as a deterrent to recording on DAT decks—has Casio and the entire Japanese industry in a quandary. In the meantime, Marantz is offering two analog stereo cassette decks for the roving recordist.

The PDM-430 (\$599), the top model, features DBX and Dolby B noise reduction, separate record and playback heads for off-the-tape monitoring, and a bias fine-tuning control. On-location amenities include a three-position microphone-level attenuator, a limiter switch to prevent overload, a built-in speaker with a selector for choosing either channel or both, and a shoulder strap and vinyl carrying case. A pair of illuminated VU meters is supplemented by a single peak-reading LED to aid in setting recording levels. Playback speed can be varied by ± 6 percent.

The PDM-430 can be powered by its supplied AC adapter or by three D-cells, the latter said to provide as much as 7 1/2 hours of continuous re-

ording time (battery level is shown on one of the VU meters). A rechargeable nicad battery pack and a car cigarette-lighter adapter are optional. The PDM-430's stablemate, the \$450 PDM-420, is a similar two-head model with Dolby B but without DBX. *Marantz, P.O. Box 2577, Chatsworth, Calif. 91313.*

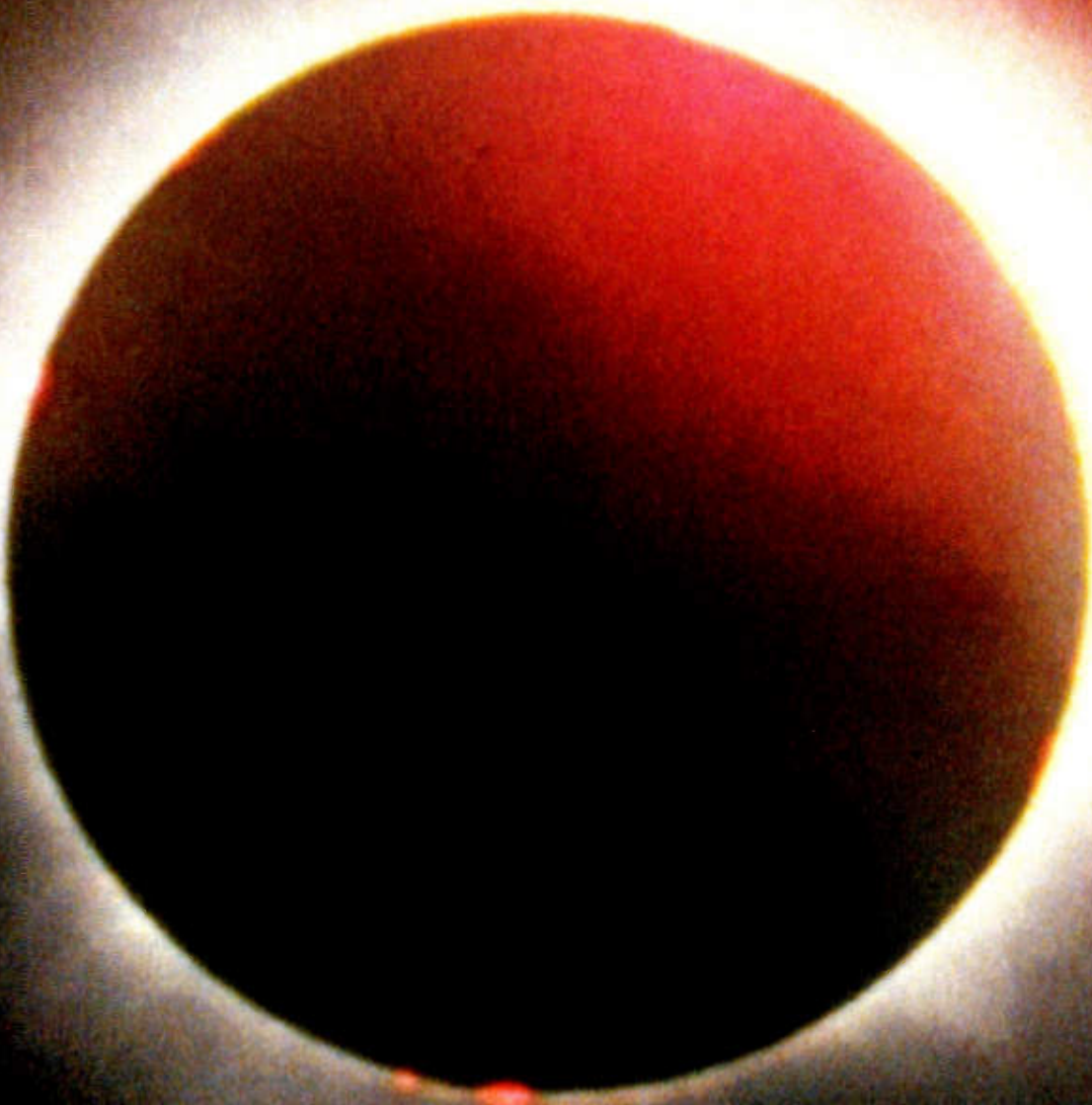
Made to Fit

Late last year, Denon introduced the high-bias (Type 2) HD-8, the world's first 100-minute blank audio cassette tape, followed shortly thereafter by a 75-minute version. The company notes that C-60s and C-90s are often too short for making dubs of Compact Discs. Now the company has improved its HDM metal-bias (Type 4) formulation and offers it in 75- and 100-minute lengths as well as in 60- and 90-minute versions. The use of finer metal particles and a new binder system is said to improve output level by 2 1/2 dB and reduce bias noise by 3 dB in comparison to the original HDM. Retail prices range from \$4.50 for the HDM-60 to \$5.99 for the HDM-100. *Denon America, 222 New Rd., Parsippany, N.J. 07054.* □



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Preserving Your Hearing



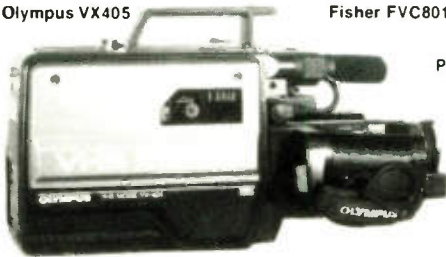
The commissioning of the following articles was stimulated by recent surveys showing that many recording-industry professionals have significant sound-induced hearing losses. These people generally listen at levels that, according to "Unsound Sound," are dangerously high. You can protect yourself by following the guidelines in "Hearing Protection."—DAVID RANADA



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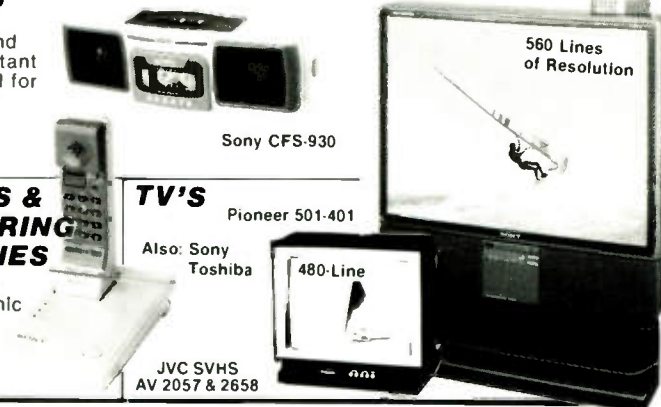
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Unsound Sound

Overexposure can impair your hearing. Here's how damage can occur and how to tell when you're at risk.



The acoustical environment of our industrialized society is filled with high-level sound sources. For years, industrial workers have been losing their hearing from overexposure to noise at the workplace. For nearly three decades, the entertainment sound environment has also been a major source of high-level sound. Recreational shooting, drag racing, off-road riding, and listening to amplified music are among the activities that have been consistently identified as containing sounds potentially hazardous to hearing.

Government regulations now seek to control worker exposure to noise, but there aren't any equivalent sweeping regulations governing nonoccupational or leisure-time overexposure to high-level sound. You should be aware not only of the permanent dam-

age that can be done to your hearing by sources of high-level sound, but also of the common warning signs of hearing damage. You'll then be able to conserve your hearing and fully enjoy a high-quality audio system.

Located on either side of our head is a remarkable sound receiver with dazzling capabilities—the ear (Fig. 1). It can handle four energy forms and make three transductions extremely rapidly and with amazingly little transmission loss. First, acoustical energy strikes the eardrum and is transformed into mechanical energy to be carried across the bones of the middle ear (the ossicles). The mechanical energy then becomes hydrodynamic motion at the footplate of the stapes (the stirrup-shaped bone connected to the snail-shaped cochlea), and the final transduction is to an

ILLUSTRATION BY SHELLEY DANIELS
PHOTOGRAPH BY DAVID A. WAGNER



Unsound Sound

electrochemical event (a nerve impulse) inside the cochlea.

The pinna—that flap of skin and cartilage on either side of the head—serves some very useful functions, too. To some extent, its shape helps “focus” hearing toward the front by altering the “frequency response” of the ear system according to the direction of the arriving sound. Likewise, entrance to the ear canal is irregularly shaped and produces similar effects. The construction of the outer ear thus plays a significant role in our ability to localize the source of sound. The external ear (that portion of the ear up to the eardrum) also acts as a resonator tuned to frequencies in the vicinity of 3.5 kHz. It provides a resonant peak at the eardrum of about 10 dB for frequencies in this region.

The middle ear can be seen as a mechanical impedance-matching transformer that efficiently couples eardrum motion to the fluids in the cochlea. Airborne sound alone is woefully inadequate to do this: A direct stimulation of the cochlea by sound would result in a transmission loss of about 30 to 35 dB. But the eardrum’s area is effectively 14 times greater than that of the footplate of the stapes, so there is approximately 23 dB of mechanical

no known methods of regenerating these sensory cells, the loss is irreversible once they are destroyed by sonic overexposure. The use of hearing aids can restore some semblance of normal hearing, but preservation of the hearing mechanism itself is by far the best strategy.

Figure 2 contains before and after photomicrographs showing the destruction of hearing cells caused by overexposure to sound. In the postexposure photomicrograph, note how some of the cells have collapsed (the regularity of the cell pattern is disrupted) while adjacent ones appear to remain whole. This is one of the saving graces of noise-induced hearing impairment: Seldom are all of the sensory cells of the ear destroyed by noise exposure. This built-in redundancy of function, together with the acoustical redundancy of many sounds to which we wish to pay attention, permits the loss of some sensory cells without a total loss of hearing ability. Lest you consider this redundancy a license to overexpose yourself to loud sounds, remember that the ear’s performance is degraded even when only a relatively small number of cells is lost.

Problems attributable to noise-induced permanent hearing

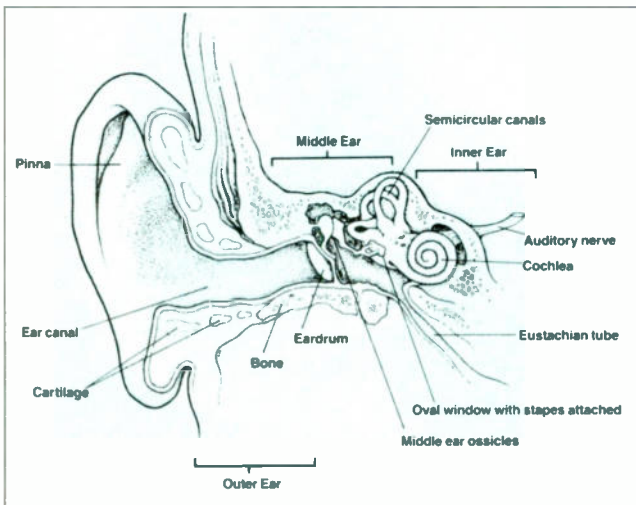


Fig. 1: Sound transduction takes place in the spiral cochlea.

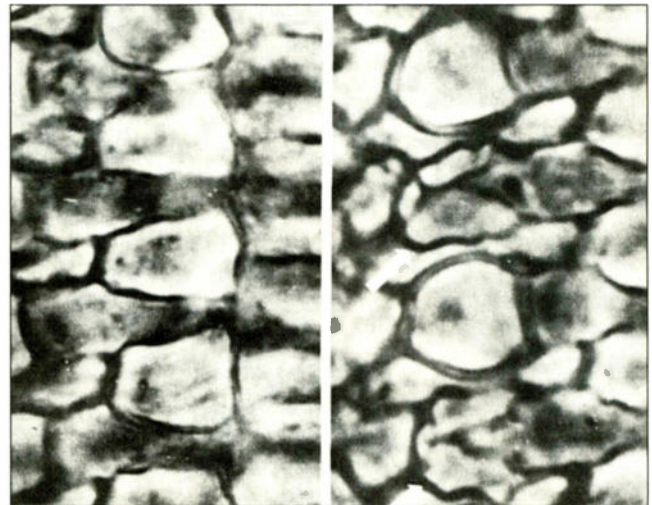


Fig. 2: Normal hair cells (left) and collapsed hair cells (arrows at right)

amplification from this area ratio alone. Add the roughly 2-dB advantage given by the lever action of the three middle-ear bones, and the loss from the air-to-fluid impedance mismatch is counter-balanced quite adequately.

The inner ear functions as a mechanical real-time spectrum analyzer and provides the brain with information about the frequency content of a sound. Inside the cochlea, the various frequency components of a sound selectively vibrate different locations along the basilar membrane (inside the spiral-shaped cochlea), on which are located the approximately 16,000 tiny sensory hair cells. The frequencies making up a complex sound each stimulate different sets of these receptors, thus creating nerve impulses “encoded” for frequency. Amplitude is represented by the magnitude of the displacement of the basilar membrane. Loud sounds increase the rate of firing of the hair cells and the number of sensory cells stimulated. Transduced sound signals are sent from the inner ear to the brain through a complex network of about 30,000 nerve fibers. Each fiber leaving the cochlea is estimated to have the capability of stimulating as many as 618,000 cells in the brain’s cortex. The fiber next to it has the same number of potential connections, but with a different pattern.

Permanent sound-induced damage to the ear stems from injury to the tiny hair cells that initiate nerve impulses. Since there are

damage manifest themselves in an impaired ability to hear soft or whispered speech; trouble with hearing certain voices, especially those of women or children (whose harmonics fall into the most easily damaged frequency region); difficulty hearing normal speech from a distance greater than 10 or 15 feet; or problems hearing conversation when it is embedded in a matrix of background noise. Continuous overexposure by young persons can not only damage hearing but can even disqualify them from certain occupations. For example, pilots, professional musicians, and trial lawyers—not to mention audio editors—all rely heavily upon their hearing for adequate work performance.

Potentially permanent harm can be caused when the ear’s dynamic range is exceeded. Damage from noise exposure has two primary forms: The ear and hearing can be directly affected, and other physiological effects can be triggered.

Two types of hearing changes can be induced by high-level sound. If hearing ability is reduced for a period after exposure but returns within a recovery period (usually several hours), the condition is termed a temporary hearing-threshold shift (TTS). If recovery is not complete after a period of about 7 to 14 days, a permanent threshold shift (PTS) has occurred. The goal of those of us involved with hearing conservation is to help people avoid the PTS component of noise-induced hearing changes.

How much sound is too much? It's not possible to predict how much hearing a person could lose when encountering a hazardous sound. But we do know there is a trade-off between the amplitude of the sound and the duration of exposure: Increasing one while decreasing the other keeps the potential danger more or less constant. The spectrum of the sound further complicates matters. Because the ear is tuned to maximize sounds in the low treble and upper midrange, for example, those frequencies are somewhat more dangerous to the hearing mechanism than are equally loud (when measured) sounds in other frequency regions.

Is there a sound level that will cause damage in the inner ear regardless of the length of exposure? There probably is, but that level has yet to be established. Most researchers investigating so-called "damage-risk criteria" suggest that single, even brief, exposure to sounds in excess of 160 dB SPL will probably cause some permanent hair-cell injury. This is the level of sound emitted by high-velocity rifles and even by nearby cap pistols.

Since most sound exposure does not approach such levels, the length of time one experiences the sound must also be taken into

Measuring Sound Level

The table in the right column shows the approximate levels of common sounds, ranging from the threshold of hearing (at which the sound of individual air molecules hitting the eardrum can be sensed) to the dangerous levels produced by firearms (both real and toy). All figures, except those for gunshots, are in A-weighted decibels (dBA) of sound pressure level (SPL).

The frequency span emphasized by A-weighting—basically, sounds between about 1 kHz and 4 kHz—is both the range to which the ear is most sensitive and the hearing range most easily damaged by sound overexposure. (Strictly speaking, A-weighting is less an emphasis than it is a 3-dB-per-octave rolloff of frequencies below 1 kHz.) The A-weighting curve is thus appropriate for both audio-equipment and sound-level measurements. Most sound-level figures you might encounter are in dBA, whether or not A-weighting is specified. In audio testing, A-weighting is commonly used in signal-to-noise ratio measurements to give some indication of the true audibility of equipment noise. *D.M.L.*

account when assessing risk. Generally, the longer you hear a given sound level, the greater the potential for injury to the hearing mechanism. The Department of Labor—specifically the Occupational Safety and Health Administration (OSHA)—administers a series of criteria (enacted by Congress in 1970) for industrial-worker sound exposure. Exposure conditions allowed under OSHA regulations are based on "socioeconomic" decisions and are thus not fully protective of all members of the work force. OSHA permits exposure to 90 dBA sound for eight hours, but reduces the allowable exposure duration by half with each 5-dBA increase in the sound level. For example, a worker in a 95-dBA work environment is not supposed to have more than four hours of continuous exposure; in 100-dBA sound, allowable exposure is reduced to two hours. Realizing that not all personnel will be protected by these guidelines, OSHA defined the "action level" for hearing-conservation activities (wearing hearing protection, taking rest periods, etc.) as exposure to 85 dBA sound for eight hours. (For the levels of common sound sources and an explanation of the dBA, see "Measuring Sound Level," above.)

A great deal of controversy exists over the ways noise overexposure influences body processes other than hearing. Careful research has both supported and debunked some claims for physio-

(Continued on page 48)

0—	Threshold of audibility (Brownian noise)
10—	Barely detectable
20—	Very faint whisper (20)
30—	Audible whisper (30)
40—	Quiet office (40)
	Quiet residence (45)
50—	Light traffic (50)
	Average office (50)
	Large transformer (53)
60—	Conversation (60)
	Air conditioner (60)
65—	Annoying
70—	Near freeway (64)
	Fairly loud speech (70)
	Television audio (70)
	Noisy restaurant (70)
	Vacuum cleaner (74)
	Dishwasher (75)
	Living-room music (76)
	Inside auto at 65 mph (77)
	Clothes washer (78)
80—	Intolerable for telephone use
	Loud singing (80)
	Garbage disposal (80)
	Diesel train (83)
85—	Ear damage possible
	Diesel truck (84)
	Food blender (88)
	Prop flyover at 1,000 ft. (88)
90—	Speech interference
	Motorcycle at 25 ft. (90)
	Loud shout (90)
	Subway (90)
	Cockpit, light plane (90)
	Rock drill (92)
	Compressor (94)
	Loud subway (95)
	Power mower (96)
100—	Very loud
	Police siren at 100 ft. (100)
	Snowmobile (100)
	Loud outboard (102)
	Jet flyover at 1,000 ft. (103)
	Loud motorcycle (105)
	Loud mower (105)
110—	
115—	Maximum under federal law
	Riveter (110)
	Diesel truck accelerating (114)
	Chain saw (118)
	Rock music (120)
120—	Discomfort threshold
	Turbine generator (120)
	Thunderclap (120)
	Air-raid siren (135)
130—	
	Jet at 10 ft. (140)
140—	Pain threshold
	.22-caliber rifle (140)
150—	
	Jet, nearby (150)
160—	
	Shotgun (158)*
	M-1 rifle (161)*
	Toy cap pistol (163)*
170—	
180—	
190—	
	Apollo lift-off, close (188)
	Theoretic maximum for pure tones (194)*

*The gunshot measurements and theoretic maximum are not expressed in A-weighted values.

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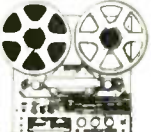
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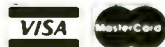
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(Continued from page 45)

logical responses to noise. For example, the dire warnings that noise can kill us or drive us crazy are overstated. But the cardiovascular system does seem to be susceptible to change as a result of high-level sound exposure (see Fig. 3, which shows sound-induced changes in blood capillary structure impeding the flow of red blood cells). During chronic exposure to sound, the body can react to this stress by constricting the vascular channels. Some studies have noted elevated blood pressure in lab animals during

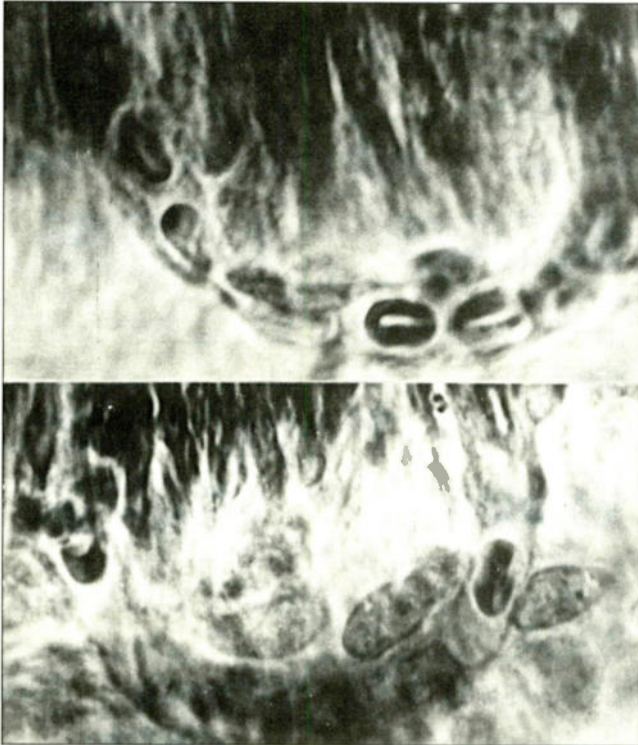


Fig. 3: Capillary damage (below) impeding the flow of blood cells (ovals)

chronic noise exposure. Other research has shown that "conditioned" blood-pressure changes can be induced even by the *threat* of exposure to noise.

High-level sound can startle, and it can degrade the quality of sleep. Too much noise may cause oversensitivity to other irritants and might cause tightening of the musculature and various other body changes. And well-controlled studies have shown certain noise conditions decrease worker productivity, increase absenteeism, and degrade product quality in manufacturing facilities. In short, high-level sound is hazardous.

We can't carry sound-level meters or noise-exposure dosimeters everywhere we go. So how do you tell when you're receiving too much noise for good hearing health? There are three simple warning signals to keep in mind. Unfortunately, two of them are useful only after you have been exposed to high-level sound.

- If, in a noisy environment, you cannot converse with others within three feet of you without having to yell, the exposure is potentially hazardous to your hearing. Discos and rock concerts definitely fall into the loud-environment category. Also, if someone has to yell at you in order to be understood while you are listening to music via hear-through headphones, the music may be too loud (see "Headphone Hearing," above).
- If your ears "ring" after exposure to high-level sound, it is likely that you have been overexposed. This ringing in the head, called

Headphone Hearing

Many of us hailed the introduction of personal listening devices such as the Sony Walkman as a valuable alternative to the boom box. If nothing else, headphone-listening devices have reduced the amount of noise pollution. However, two important cautions should be noted for those who use them.

First, the direct coupling of the headphones to the ears enables very efficient delivery of sound; even low-price, low-quality units can produce sound levels at the ear in excess of 110 dBA. Long-term, repeated use of headphone devices at high output levels can cause hearing damage. And since such units are truly personal, you rarely will have the helpful warning mechanism of somebody telling you to "turn it down!"

Second, there is a safety problem involved with portable headphone listening. Even at sensible listening levels, personal listening devices tend to mask sounds in the environment. In effect, the device renders a user functionally deaf to warning sounds. It is therefore not wise to use headphone devices when operating any type of vehicle or even when you are mixing it up in traffic as a pedestrian or jogger. Fatal accidents have been known to occur when people wearing headsets have walked in front of oncoming trains. In at least one case, a headphone-wearing jogger was seriously injured when she turned abruptly in front of a moving pickup truck. The headphone probably prevented her from hearing the approaching vehicle. In such situations, even careful drivers are put at risk in their attempts to avoid headphone encounters.

Deaf drivers usually have very good safety records because they have learned to rely on visual information only. But persons with normal hearing whose headphones temporarily "deafen" them to warning sounds do not exercise the visual vigilance of the deaf. Therefore, they can be at increased risk for accidents.

Personal listening devices are a marvelous development for our listening enjoyment. But be sure to use the portable systems *intelligently* by heeding the warning signs of sound overexposure and by making sure you can hear sounds necessary for the operation of powered equipment or the safe negotiation of traffic. *D.M.L.*

tinnitus, is often triggered or exacerbated by too much high-intensity sound. The inner ear has no pain receptors (the well-known "threshold of pain" for hearing stems from sensors in the eardrum), and some consider the onset of tinnitus the inner ear's way of saying "ouch."

- If, after exposure to high-level sound, your hearing seems "dulled"—as if your head were in a barrel—you probably are experiencing a temporary threshold shift. In all likelihood, your hearing will recover. However, repeated similar exposures can result in only partial recovery and therefore may trigger the onset of a permanent loss of hearing ability.

Knowing these three guidelines puts you well along the path of better hearing conservation. After all, you wouldn't think of owning a valuable high fidelity system without some form of theft or fire insurance to go along with it. Audio equipment, however, can be replaced if lost or damaged; your intricate, sophisticated—and priceless—hearing equipment cannot. So ensure your hearing health by remembering the danger signs of sound overexposure, avoiding high-level sounds, and wearing hearing protection devices when necessary. □

For 25 years, David M. Lipscomb was a professor at the University of Tennessee and served primarily as director of its Noise Research Lab. He is now a private consultant.

Hearing
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Hearing Protection



Hearing is clearly one of our most important senses, especially for music lovers and audiophiles. Relatively moderate changes in our hearing can effect aural perceptions as well as the enjoyment we derive from the aesthetic and hobbyist aspects of sound reproduction. We must therefore take special care in the protection of the ultimate link in the audio chain—our ears.

Hearing protection can often be achieved through common-sense actions to either decrease the level or the duration of our exposure to noise (i.e., by reducing the cumulative noise dose). For example, excessively loud sound from our audio systems is something we can control. At other times, either because of occupational exposures (noisy jobs) or recreational activities (such as shooting, woodworking, snowmobiling, flying light aircraft, attending concerts and public events), the only practical choice may be the use of personal hearing-protection devices (HPDs).

Hearing conservationists recommend that HPDs be worn whenever you will be exposed to sound levels that regularly exceed 85 dBA for ex-

tended periods (see the preceding article for more on hearing damage and the dBA). Such noise levels are present if you feel the need to shout in order to be understood by a normal-hearing person who is only about three feet away. Alternatively, you can purchase your own sound-level meter (the Radio Shack 33-2050 is an excellent buy), take some measurements, and learn the useful art of judging sound levels for yourself.

Today, there are more than 125 different models of hearing protectors available in North America in a wide variety of styles and prices. An understanding of how they work, coupled with a discussion of their principal attributes, will help you select the best ones for your needs.

When wearing an HPD, there are four main sound pathways to the inner ear (see Figs. 1 and 2). Depending on its operating principle and design, an HPD interacts with each path differently. Pathway 1—air leaks—is the one over which the wearer can exert significant control. For maximum protection, the HPD must make a virtually airtight seal either in or at the entrance to the ear canal. For ear-



Hearing Protection

muffs, the seal is against the circumaural regions of the head. Air leaks typically can degrade HPD attenuation by 5 to 15 dB or more over a broad frequency range.

Pathway 2, which controls low- and middle-frequency attenuation, stems from vibration of the HPD itself. For earplugs, this is a pistonlike motion within the ear canal; for earmuffs, it is a pumping of the cup against the side of the head.

In the upper frequencies, noise reduction is primarily influenced by pathway 3: sound passing through the material of the plug or through the cup and cushion of the earmuff.

Pathway 4 is caused by bone and tissue conduction of acoustic energy that bypasses the hearing protector. HPDs can keep sound from entering the ear canal but have little or no effect on sound that impinges on the remainder of the skull or body. The fourth pathway thus establishes an absolute limit on hearing-protector attenuation of about 50 dB at most frequencies (as shown

by the bottom heavy curve in Figure 3).

Blocking (or occluding) the ear with an HPD increases the relative efficiency of bone-conducted sound at frequencies below 2 kHz. Called the occlusion effect, this causes a change in the perception of your own voice and other body sounds (breathing, chewing) while you are wearing an HPD. To demonstrate it, plug your ears with your fingers as you read this sentence aloud and note the added fullness or resonant bassiness in the sound of your voice. The occlusion effect is at its most extreme when you cover the ear canal at its entrance. It diminishes as your fingers (or earplugs) are inserted more deeply or when earmuffs with large-volume earcups are used.

HEARING-PROTECTOR TYPES

Hearing protectors, such as those shown in Fig. 4, can be divided into three categories: earplugs that fit into the ear canal, earmuffs that fit over and around the ears to seal against the side of the head, and canal caps or semi-aural devices ("pods" or tips attached to a lightweight head/neckband) that cover and seal the entrance to the ear canal.

Earplugs can be of the formable, premolded, or custom-molded varieties. One of the best—and most popular—all-around choices for comfort and attenuation is the foam type of formable earplug. These plugs are rolled and compressed into tiny crease-free cylinders, which, once inserted into the ear canals, slowly expand to provide a custom fit. Usually, the fiberglass, wax, and puttylike formable plugs are less satisfactory because of their lower noise-reduction capabilities, messiness, or poor retention in the ear canal.

Premolded earplugs are an alternative, but for most people they tend to be less comfortable and less protective than foam earplugs, although they are quicker and easier to insert. Custom-molded earplugs are a third option, but they usually provide less protection. And because they require individual ear impressions made by a professional, they can be expensive.

Canal caps are ideal for intermittent exposure because they can be easily worn around the neck when not in use. They are usually uncomfortable when worn for extended periods and offer less protection than either earplugs or earmuffs.

Although earmuffs are easier to put on and take off than earplugs, care must still be observed in their use. Be sure the earmuff cups fully enclose the ears so the cushions can seal well against the head. Foam cushions are lighter and are as protective and comfortable as the more expensive liquid-filled versions; therefore, they represent a better buy. Smaller, lighter, and less expensive earmuff models provide sufficient protection in most situations, but earmuffs with large-volume cups will be required for highest attenuation at the lower and middle frequencies.

HEARING-PROTECTOR SELECTION

Many objects can and have been used to acoustically plug the ear, including fingers, gum, cigarette butts, Kleenex, and gun shells. However, you should restrict yourself to devices specifically designed for hearing protection. One exception is cotton balls. Although not normally considered an HPD, they can provide modest attenuation that might be suitable when walking through noisy urban centers or attending a public event that is only marginally too loud for enjoyment or safety. In order to provide as much attenuation as shown in Fig. 3, the cotton must be twisted into a cone prior to insertion and then firmly packed into the canal with the little finger—a tedious and perhaps inconvenient procedure.

If your main concern is high attenuation—which is necessary for sustained or regular exposures to sound levels of 95 to 100

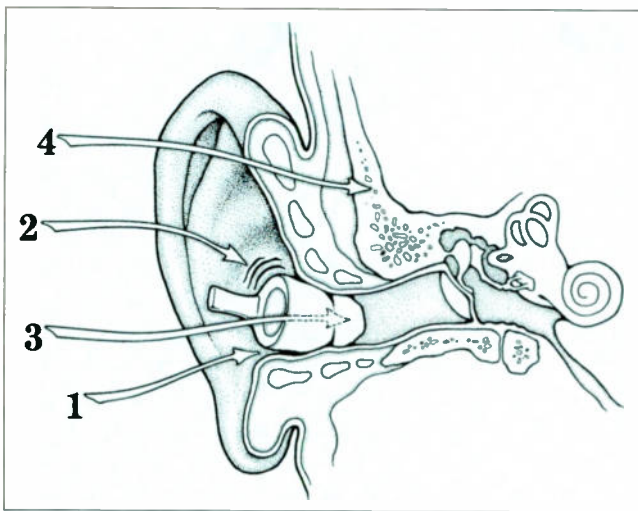


Fig. 1: Sound-leakage pathways when earplugs are worn

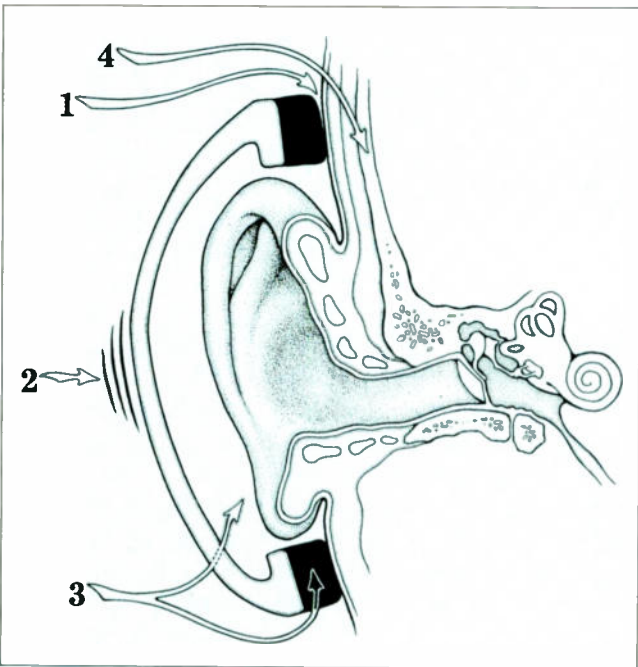


Fig. 2: Sound-leakage paths when a circumaural earmuff is used

dBa or more—then you should select foam earplugs or earmuffs. These devices tend to provide the highest attenuation. Earmuffs usually give relatively poor protection against primarily low-frequency noises (below 500 Hz), so earplugs are preferred for protection in this frequency region. But for noises peaking in the 1-kHz region, earmuffs are normally the most protective device.

If absolute maximum protection is required, the combined use of foam earplugs and earmuffs is advisable. Although their cumulative attenuation is not the algebraic sum of the individual attenuations of each device when worn separately, the additional protection can be as much as 15 dB at some frequencies. A reasonable estimate of the average increase in attenuation across the audio range is about 5 to 10 dB compared to either device used alone.

Recreational users of hearing protection will most often base their selection upon comfort, convenience, and suitability for the occasion. Since many recreational exposures are neither as loud

be continually removed and replaced (such as while working in the shop or on home projects). Because of recurring problems with excessive ear wax, some wearers should not use earplugs. Others simply can never learn to tolerate one type or another of HPD and must experiment to find what works for them.

It takes time to get used to the feel and "sound" of any hearing protectors. But you must give them (and your ears) a chance. If you have to wear them for extended durations, begin by trying them for short periods and gradually increasing your wearing time over four or five sessions.

Earplugs will always feel tight at first, and the pressure they exert may be difficult to ignore. After all, you've probably never placed anything like them in your ears before. When using premolded earplugs that come in multiple sizes, be sure to strike the proper compromise: they should be large enough to seal the ear and effectively attenuate sound, but not so big as to unduly

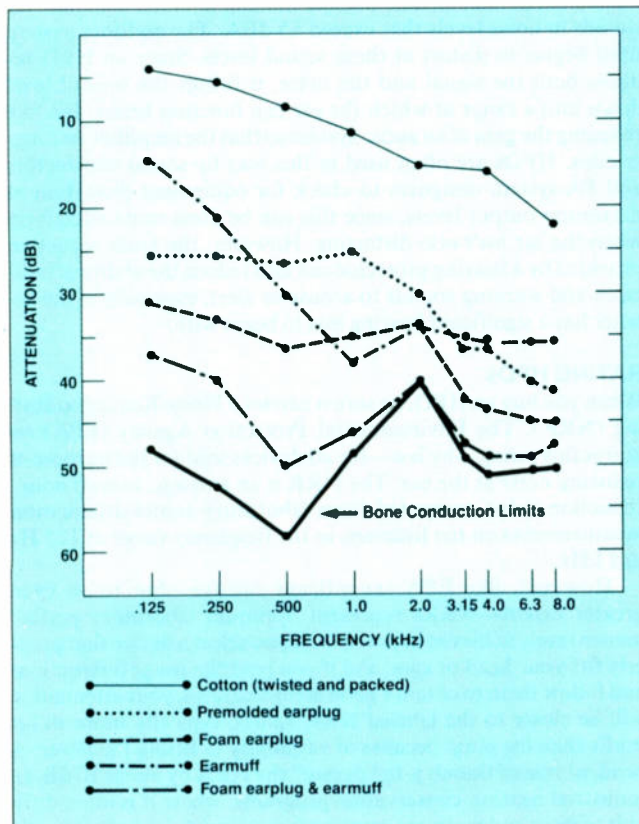


Fig. 3: Comparison of the attenuation provided by various HPDs

(with the obvious exception of gunfire) nor as regular and protracted as industrial/occupational ones, criteria other than maximum attenuation are usually the primary concern.

For example, the wearing of earmuffs at an excessively loud rock concert—or when you wish to sit nearer to the performers than sound levels might normally permit—would cause most people (and their dates) to feel self-conscious. Unobtrusive, well-fitted earplugs can neatly do the job and are easier to transport. Earplugs are also preferable for reducing annoying noise while sleeping or traveling and when working in hot, humid environments (mowing the lawn on a blistering summer day, for example). When the weather is cold, however, earmuffs help keep the ears warm as well as provide hearing protection, and either earmuffs or canal caps are a natural choice when the HPD must



Fig. 4: Clockwise from the ear—an earmuff, canal caps (on U-shaped band), premolded earplugs, custom-molded earplugs, another type of premolded earplug, and formable-foam earplugs

stretch the canal and thereby cause discomfort.

Earplugs can best be inserted as follows: While reaching over and behind the head with the hand opposite the ear being fitted, pull the pinna outward and upward. This straightens and enlarges the ear canal to ease insertion. Then insert the plug using the other hand. The fit of premolded earplugs can be checked by gently pulling on the plugs to pump them in and out of the ear canal. You should feel the pressure changes in your ears indicating a proper acoustic/pneumatic seal. Earplug fit can also be tested by pressing firmly cupped hands over your ears while listening to a steady noise. With properly fitted plugs, the noise levels should be approximately the same whether or not the ears are covered.

Another listening test for hearing-protector fit, and one that works for both plugs and muffs, employs the occlusion effect. If you don't hear a change in your voice after putting the HPD in (or on), or if the change isn't equal through both ears, you haven't obtained a proper fit and acoustical seal in either or both ears. Humming to yourself is a good way to generate a variable-frequency sound to test this effect.

A final earplug-fit test, suitable only for foam earplugs, is to withdraw them one at a time after having let them expand in the ears for a minute or so. If they were well fitted, the plugs should appear free of creases and wrinkles, and the still partially com-



Hearing Protection

pressed portion of the plugs will indicate that at least one half of the plug length extended beyond the entrance of the ear canal and formed a seal within the canal itself.

When fitting earmuffs, adjust the headband so that the cushions exert an even amount of pressure around the ears. Pull hair back and out from beneath the earmuffs to make the cushions seal directly against the flesh. Eyeglass temples should fit close to the head and be as thin as possible in order to reduce their effect on attenuation.

And, finally, all hearing protectors need to be periodically checked to make sure their resilient parts are still soft and capable of sealing well in or around the ear.

Referring again to Fig. 3, observe that a typical earmuff atten-

uation increases with rising frequency, providing as much as 25 dB more attenuation at 4 kHz than at 125 Hz. Thus, earmuffs always sound "muffled," as if both the treble and volume controls were turned down rather than just the volume. Some earplugs have a less severe muffling effect because, when well fitted, their attenuation curves are flatter.

To overcome the muffling effect and to improve the ability to hear important sounds in high background noise—especially for those with pre-existing hearing loss—flat or "natural-sounding" hearing protectors are now being investigated. At least one manufacturer (E-A-R Division) has introduced an earmuff to provide a more natural sound quality. It incorporates a special passive acoustical bypass assembly and an internally tuned network. Other good-sounding products are in the offing, as manufacturers begin to more carefully consider this important characteristic.

Besides protecting hearing, earmuffs and earplugs will help those with normal or near-normal hearing to better discriminate sounds in noise levels that exceed 85 dBA. The auditory system itself begins to distort at those sound levels. Since an HPD reduces both the signal and the noise, it brings the overall level down into a range at which the ear can function better. It's like reducing the gain of an audio system so that the amplifier no longer clips. HPDs are often used in this way by sound contractors and PA-system designers to check for equipment distortion at maximum output levels, since this can be done more effectively when the ear isn't also distorting. However, the noise reduction provided by a hearing protector can also reduce the ability of indicator and warning sounds to arouse or alert, especially if the listener has a significant hearing loss to begin with.

RATING HPDs

When you buy an HPD, be sure it carries a Noise Reduction Rating (NRR). The Environmental Protection Agency (EPA) requires this rating—by law—for all devices sold for the purpose of reducing noise at the ear. The NRR is an average, overall noise-reduction value computed from laboratory sound-attenuation measurements on ten listeners, in the frequency range of 125 Hz to 8 kHz.

However, like EPA car-mileage ratings—but to an even greater extent—NRRs represent optimum laboratory performance rarely achieved in practice. If you select a device that properly fits your head or ears, and if you read the usage instructions and follow them to obtain a good acoustical seal, your attenuation will be closer to the labeled NRR values, typically more so for muffs than for plugs because of variability in fitting the latter. A prudent rule of thumb is to "derate" the NRR by about 10 dB. In industrial hearing-conservation programs, where it is often difficult to train and motivate employees to properly and consistently wear HPDs, a 50-percent derating normally is recommended.

All told, a wide variety of relatively inexpensive hearing protectors are available to safely, comfortably, and effectively protect your ears from noise damage and your psyche from noise annoyance—wherever and whenever you travel, work, relax, or play. Give hearing protectors a chance to make your life more pleasant; they'll also protect the most important and irreplaceable element in your audio system—your hearing—for a lifetime of quality listening. □

Elliott H. Berger is manager of acoustical engineering for E-A-R Division, Cabot Corp., one of the world's leading manufacturers of hearing-protection devices (HPDs) and noise-control products. There, he supervises and conducts research on HPDs as well as on hearing mechanics and industrial noise-induced hearing loss.

For Further Information

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AGENCIES:

American Speech Language and Hearing Association, 10801 Rockville Pike, Rockville, Md. 20852, (301) 897-5700.

Better Hearing Institute, 5021B Backlick Rd., Annandale, Va. 22003, (703) 642-0580.

Big Screechers, c/o Council on the Environment of New York City, 51 Chambers St., New York, N.Y. 10007, (212) 566-0990.

National Hearing Conservation Association, 900 Des Moines St., Suite 200, Des Moines, Iowa 50309, (515) 266-2189.

SELECTED MAJOR HPD MANUFACTURERS:

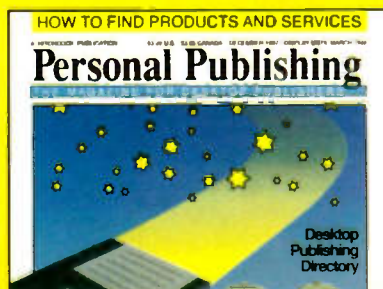
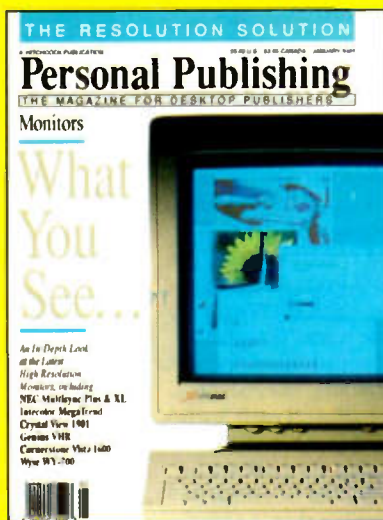
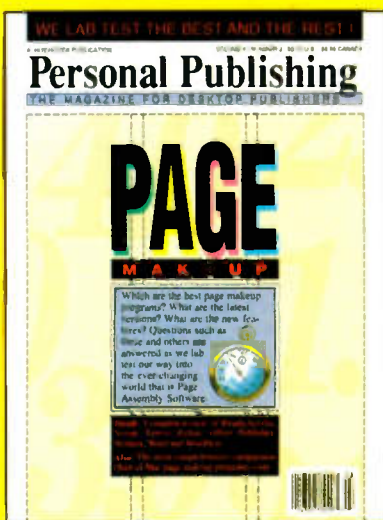
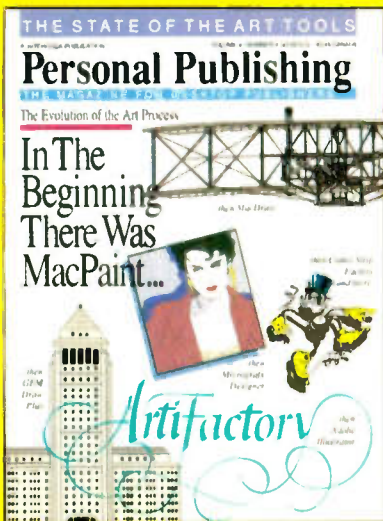
American Optical Corp., Safety Products Division, Southbridge, Mass. 01550, (617) 765-9711.

Bilsom International, Inc., 11800 Sunrise Valley Dr., Reston, Va. 22091, (703) 620-3950.

David Clark Company, Inc., 360 Franklin St., Worcester, Mass. 01604, (617) 756-6216.

E-A-R Division, Cabot Corp., 7911 Zionsville Rd., P.O. Box 68898, Indianapolis, Ind. 46268, (317) 872-1111.

Mine Safety Appliances Co., 600 Penn Center Blvd., Pittsburgh, Pa. 15235, (412) 273-5000.



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Edited by Ted Libbey
and Ken Richardson

Golden Ears

The issue of hearing loss is such a pervasive one that when I was asked to devote a column to it, I hardly knew where to begin. Should I remind readers of the significant, well-documented effects that hearing loss had on Beethoven or examine the cases of Smetana and Vaughan Williams? Should I attempt to account for the perhaps more subtle effects that hearing loss has had on some performers, especially late in their careers? Would I be able, or qualified, to draw distinctions between neurological and physical causes and between nerve deafness, tinnitus, and the inevitable loss we all endure, which varies substantially from person to person?

In the end, I opted for the coward's way out. I chose as my example . . . myself. My hearing is excellent, well above average when it comes to sensitivity to extremely high frequencies, which is important in the field of music. Since I was a child, I have always been able to hear such things as sonic alarm systems, television squeal, and fluorescent lights. But in the spring of 1982, while I was a music critic for *The New York Times*, I happened to stop into a 7-Eleven one afternoon and noticed that, in my right ear, I wasn't able to hear the emission from a sonic alarm device as well as I could in my left. I didn't think much about it until a few months later, when I went for a routine physical and my doctor informed me I had an almost complete blockage in my right ear. He whipped out a syringe and shot warm water into my ear for about two minutes, creating a roar like Niagara Falls and giving me a first-rate, and fortunately temporary, case of seasickness as well. With a sudden swoosh, out popped a plug of ear wax the size of a grape. I had been reviewing concerts with that thing in my ear.

My initial reaction was delight in being able to hear all sorts of reflected sound that I had been missing—my off-axis hearing was back to what it should be. My second reaction, however, was a disturbing realization that I had not been *aware* I was missing anything, except for that one unusual time. I realized that my experience must be a fairly typical one, and I started to worry for my colleagues in the profession, all of whom, like me, think they have golden ears. It was a sobering thought to realize how precarious our hold is on many of the things we take for granted.

I now periodically have my ears checked for blockage. While listening to a concert or recording, I constantly clear my eustachian tubes, which also have a tendency to block. But I know that my acuity is diminishing as a natural result of age and environment. And I wonder how I will deal with the loss if it should ever deprive me of the ability to hear music. There are more important things in life, I know, but not many.

Ted Libbey

Heed the Noise

I could blame the Electric Light Orchestra. More accurately, I could blame ELO's sound technicians. More honestly, I have no one but myself to blame—for losing it at the age of nineteen.

Well, not all of it. But at a specific point in an ELO concert I attended in 1975, the bothersome sound—not so much *loud* as *piercing*—reached a level where my ears responded, "Enough! Partial shutdown!" Since then, my ears haven't been what they were back in the days of, as Casey Kasem would call it, my pre-rock era. To be sure, the cumulative effect of 20 years of concertgoing is likely more responsible for my slight but noticeable hearing loss than any single incident—not to mention the fact that my father, whose singing quartet rarely approached the decibel level of Van Halen, is wearing a hearing aid at the young age of sixty. But when I remember the near pain of the ELO concert, I know that the proper response should have been to say to myself, "Enough! Total walkout!"

Which, I dare say, would have been the proper response of Linda Duke, Victor Salas, and an unspecified Florida woman, who are suing, respectively, David Lee Roth, Neil Young, and Mötley Crüe, claiming irreparable ear damage from the noise of concerts they attended. It's no great secret that rock concerts are often too loud, and it seems to me that any such suit against musicians has as much chance of success as the suits against cigarette makers. Then again, cigarette packs do have clear warnings; no such lines appear on concert tickets. Then *again*, in whose opinion is "too loud" too hazardous? According to a ten-year investigation concluded recently by audiologist Henk Lindeman of the Dutch national research institute TNO, "loud music has no significant long-term effect on the hearing of youngsters," which contradicts the findings of American research in the '70s as well as a statement in this issue's "Unsound Sound."

But let's use some common sense—and there's plenty of it in "Unsound Sound," where one learns that the Occupational Safety and Health Administration "permits exposure to 90 dBA sound for eight hours, but reduces the allowable exposure duration by half with each 5-dBA increase in the sound level." Applying that equation to the rock concertgoer, one discovers that the peak sound level of a typical show—120 dBA—should be tolerated for no more than 7½ minutes. Remember that the next time you're sitting in the tenth row of your local arena or standing near the P.A. system in your local club.

Rock fans don't like being told about hearing loss any more than cigarette fans like being told about cancer. But it's a wise smoker who cuts down or quits. And it's a wise listener who wears earplugs when necessary or simply leaves the hall.

Ken Richardson

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TAKING GERSHWIN SERIOUSLY



HIGH FIDELITY ARCHIVES

At long last, George Gershwin is in. Not that he was ever unpopular. Far from it. *Rhapsody in Blue* and *An American in Paris* will remain hot tickets as long as orchestras have to pay their bills. But the days when classical musicians had to apologize for performing Gershwin's music are over. The Glyndebourne and Metropolitan Opera productions of *Porgy and Bess* probably signaled the beginning of a new era in Gershwin appreciation, and the current crop of new Gershwin recordings speaks just as eloquently of a revolution in taste. It is now permissible to take George Gershwin seriously—and about time, too.

Taking Gershwin seriously, of course, means taking the trouble to give stylistically sympathetic and texturally authentic performances of his music. Overly jazzy interpretations sound self-conscious and

mannered, overly straight ones awkward. Moreover, most of Gershwin's concert works have been performed for decades in hopelessly corrupt editions. Meticulous, scholarly restoration is a must.

That the results can be worth the effort is proved by an extraordinary new recording of *Of Thee I Sing* and *Let 'em Eat Cake*, the satirical operettas that teamed George and Ira Gershwin with playwrights George S. Kaufman and Morrie Ryskind. Last year, Michael Tilson Thomas led the Orchestra of St. Luke's and a crack group of New York singers in a marathon live performance of both scores. CBS promptly swept Thomas and his ensemble into the studio to record them, and the result has now been released as a two-CD set (playing times: *Of Thee I Sing*, 69:00; *Let 'em Eat Cake*, 74:29). Everything about these performances is a de-

light, from Thomas's superlative conducting to the crisp and lively singing of the New York Choral Artists, who have a lot to do in both shows and who do it with panache. The original orchestrations for *Of Thee I Sing* (by Gershwin, Robert Russell Bennett, and Bill Daly) have been rediscovered and are heard on this recording. *Let 'em Eat Cake*'s orchestrations have not survived, but plausible substitutes were crafted by Russell Warner.

Mostly authentic orchestrations by various hands are also used on *Kiri Sings Gershwin*, but the results are not nearly as satisfying (playing time: 46:11). The conducting of John McGlinn and the playing of the New Princess Theater Orchestra, a pickup group of New York musicians, are certainly good enough, if rather on the tame side. Dame Kiri Te Kanawa, on the other hand, has no business singing this

HIS MUSIC IS *AV*, BY GEORGE, AND IT'S BEING RECORDED LIKE NEVER BEFORE

music. An impossibly dull substitute for Ethel Merman on "I Got Rhythm," she is in her element only on "Summertime." The rest of the album consists of melodies that lie too low for her operatic soprano and lyrics that come out sounding as though she had learned them phonetically. The recording itself is bad: Te Kanawa's voice, dripping with artificial echo, seems to have been taped in a sound-proof booth and dubbed in after the fact.

What about John McGlinn's companion album of Gershwin overtures? The playing, again, is perfectly fine, and the period scoring is a joy to hear, but one suspects that the rather straight, monotonously bouncy interpretations of these curtain raisers are somewhat less than idiomatic (playing time: 42:06). (The pit orchestra for *Girl Crazy*, for instance, included Benny Goodman, Gene Krupa, and Tommy Dorsey, whose playing was surely a bit more exciting than that of the New Princess Theater Orchestra.) Comparing Thomas's *Of Thee I Sing* overture with McGlinn's provides an object lesson in the difference between solid workmanship and conducting on the genius level. McGlinn's performance is pleasant, Thomas's electric.

For a *real* taste of authentic Gershwin style, turn to *Levant Plays Gershwin*, a CBS reissue of Oscar Levant's 78 rpm recordings of the complete works for piano and orchestra (playing time: 72:08). Levant's playing is technically uneven, especially in the 1949 recording of the *Preludes for Piano* that fills out the disc. For the most part, though, his direct, unmannered approach is strongly reminiscent of Gershwin's own clean style and is refreshingly free of the "jazzy" encrustations of, say, a Leonard Bernstein. André Kostelanetz and Morton Gould, who conduct three of the four works on the disc, knew exactly how this kind of music should go, though Eugene Ormandy and the Philadelphia Orchestra are pretty much at sea in the later version of *Rhapsody in Blue* for full orchestra. (Gershwin's original, unrevised orchestrations are used in the other works.) Leroy Parkins's 78 transfers are as good as could be expected, given the arthritic sound of the source material. The liner notes are disgracefully inadequate. Still, for those who know Levant only as the second banana to Gene Kelly in *An American in Paris*, this disc will serve as a real ear-opener.

Thanks to *Levant Plays Gershwin* and Leonard Slatkin's excellent new recording of the orchestral music without piano for

Angel, collectors can now own all of Gershwin's "serious" music on two CDs. Slatkin's album, the latest installment in his Angel series of modern American music with the St. Louis Symphony (playing time: 60:34), includes a particularly fine performance of *Catfish Row*, Gershwin's own orchestral suite from *Porgy and Bess*. As for *An American in Paris*, there are better recorded performances to be had, but this one will do quite nicely. (Nat Shilkret's 1929 Victor recording with Gershwin at the celesta, currently available on Victrola AVM1-1740, is indispensable. You can even hear the actual taxi horns Gershwin brought back from Paris.)

Andrew Litton's new recording of *Rhapsody in Blue* with the Royal Philharmonic is very good (playing time: 56:59). The British musicians tear into Ferde Grofé's original small-band instrumentation with unfettered gusto, and Litton's piano playing is thoroughly engaging. The remainder of the disc, however, is given over to the first recorded performance of *Who Cares?*, a 1970 suite for orchestra flossily arranged by Hershy Kay and based on the songs Gershwin arranged for solo piano and published as *George Gershwin's Song-book* in 1932. *Who Cares?* was used as accompaniment for George Balanchine's extraordinary Gershwin ballet of the same name. If you know the ballet, Litton's performance may be a nostalgic souvenir of one of Balanchine's most striking creations. On its own, though, it's of no particular interest.

Finally, the complete *Song-book* can be heard in a vigorous, stylistically sure 1973 performance by William Bolcom on a Nonesuch CD reissue; it also includes ten Gershwin songs performed by Bolcom and Joan Morris on the couple's Gershwin recital disc (Nonesuch 71358) together with seven of Gershwin's other published piano solos. Though it would have been better to drop the shorter solo pieces and include the four missing songs from the recital disc instead, this remains an essential collection (playing time: 70:30). Nobody in the world sings American popular song as persuasively as Morris, while Bolcom could be Gershwin himself at the piano. (Why couldn't it have been Morris, and not Dame Kiri, who recorded these songs in their original orchestrations?) Sad to say, the first pressings of this CD appear to have been defective. Two review copies and five store copies purchased in the New York area were all but unplayable. A new pressing is in the works, but listen before buying if at all possible. *Terry Teachout*



PHIL GRAY

Cables: immaculate jazz-piano versions

George Gershwin was not a jazz musician, but we might say that he has been the cause of jazz in others. His "I Got Rhythm" has been recorded more than any jazz song, if we count the innumerable times its chord changes have been the basis of new improvisations, and his "Embraceable You" has been played by everyone from Eddie Condon to Ornette Coleman. Gershwin knew something about ragtime and early jazz, but he never quite mastered the rhythms. In the preface to his 1932 *Song-book*, he theorized provocatively: "The rhythms of American popular music are more or less brittle; they should be made to snap, and at times to cackle. The more sharply the music is played, the more effective it sounds." No one made popular songs snap or even cackle better than Gershwin, and yet what better way to distinguish his music from jazz than to say it is the role of the jazz player to see that his rhythms are supple and flexible—anything but brittle. Nevertheless, jazz musicians have taken to Gershwin's songs because of their sophisticated melodies and catchy lyrics, because of the challenging and intelligent flow of their harmonies—and because of their fascinating rhythms.

Listening to the five LPs of *The Gershwin Collection*, loosely called "an historical treasury," one is immediately struck by the almost infinite variety of musical approaches to Gershwin material. Most of the selections are vocal performances of standards, but the set also includes the Concerto in F, with pianist/conductor André Previn and the London Symphony Orchestra, marred only by the curiously tentative playing of the slow trumpet theme in the second movement; a surprisingly lifeless version of *An American in Paris*, with Leonard Bernstein and the New York Philharmonic; and the 1927 recording of *Rhapsody in Blue* that has Gershwin at the piano and Nathaniel Shilkret in front of the Paul Whiteman Concert Orchestra. This truly historical *Rhapsody*, with its wildly cackling clarinet opening and the rudely stated trumpet

TAKING GERSHWIN SERIOUSLY

parts that follow, does teach us something about the way this piece should be played.

The four other records of *The Gershwin Collection* seem to have been assembled with the idea of including as many famous names as possible. Why else would we find the vigorous brassiness of the ultimate Broadway singer, Ethel Merman, here doing "I Got Rhythm," beside the rather sad performance of "That Certain Feeling" by Bob Hope? We find the sublime moodiness of Billie Holiday's "Summertime" and the elegant verve of Fred Astaire's "I've Got Beginner's Luck" but also a deadly "Someone to Watch Over Me" by Willie Nelson, a mannered "I Loves You, Porgy" by Diana Ross (why not Nina Simone?), and the foolish fluff of Roger Williams's piano on, of all pieces, "Bess, You Is My Woman Now." Sammy Davis, Jr., was an appropriately sleazy Sportin' Life in the film of *Porgy and Bess*, but he uses the same hip mannerisms on Porgy's "I Got Plenty o' Nuthin'," ignoring the dramatic situation of this key number.

To be sure, there are some brilliant performances among the 50 songs here, including Art Tatum's "Liza (All the Clouds Will Roll Away)" and John W. Bubble's exquisite "There's a Boat Dat's Leavin' Soon for New York." Other selections are pleasing and instructive, ranging

from Peggy Lee's "How Long Has This Been Going On?" to Artie Shaw's "I Was Doing All Right" to Johnny Mathis's "Embraceable You." But I question the documentary zeal of compiler and producer Paul Tannen, who neglects to mention the recording dates of all but a few of these numbers, who mistakenly tells us that Oscar Peterson's "A Foggy Day" features guitarist Barney Kessel when it actually was made with bass and drums years after the Kessel date. We are left with an impression of sheer randomness, the kind of dizzying feeling that comes with going from the Boston Pops to Billie Holiday.

Acoustic guitarists John Holmquist and Daniel Estrem should have listened to the raucous 1927 *Rhapsody in Blue* before they made *Gershwin by Guitar*, with its mildly perky versions of 21 songs. The best thing about this disc is that it confronts some unfamiliar material ("Three-Quarter Blues," "Sweet and Low Down") along with the well known ("A Foggy Day," "The Man I Love"). In the end, however, the guitarists miss the pathos of Gershwin—as well as the submerged drama of a piece like *Prelude No. 2*.

The adaptation of *Porgy and Bess* by the Jim Cullum Jazz Band is much more ambitious than this group's usual Dixieland work, but the recording is only inter-

JAZZ

VARIOUS ARTISTS:
The Gershwin Collection.
 Paul Tannen, prod. Teledisc U.S.A.
 ⊕ TD 10 (5). ⊞ (3). ⊙ (3). (Available by mail order from Teledisc U.S.A., 6 Commercial St., Hicksville, N.Y. 11801.)

JOHN HOLMQUIST/DANIEL ESTREM:
Gershwin by Guitar.
 Daniel Estrem, prod. Pro Jazz CDJ
 ⊕ 607. ⊞

JIM CULLUM JAZZ BAND:
Porgy and Bess.
 Jim Cullum, prod. CBS MK 42517.
 ⊕ ⊙ ⊞

ADAM MAKOWICZ: Naughty Baby.
 Edith Kiggen, prod. Novus 3022-2.
 ⊕ ⊙ ⊞

GEORGE CABLES: By George.
 George Cables, prod. Contemporary
 ⊕ C 14030. ⊞ ⊙

mittently effective. I am put off by the thin-toned clarinet stating the theme of "Summertime" and disappointed by the lethargic performance that follows: When cornetist Cullum enters boldly in the last chorus, he pulls back immediately, as if afraid of committing himself. Also, the "Buzzard Song" nags rather than threatens. For fans of traditional jazz only.

Two jazz pianists have made wonderful, though quite different, recordings of Gershwin material. Adam Makowicz was something of an avant-garde performer in his native Poland: I have a record on which he seems to be improvising freely on synthesizers. When he emigrated to this country, he began playing standards in an exotic, Art Tatum-esque style, apparently designed to show off his technique. *Naughty Baby* finds him in a trio with bassist Charlie Haden and drummer Al Foster; on six of the 11 pieces, they are joined by a second bassist, Dave Holland. The collaborations include some stunning pianistics, but mostly we find a mature Makowicz inside of some intriguing arrangements. *Rhapsody in Blue* starts with one bassist playing the blues theme from the middle of the piece; then Makowicz goes back to the initial theme, on which he improvises. Haden, who has never played an unnecessary note, enlightens the pianist throughout. As a result, we learn that Makowicz can be a skillful ensemble player.

George Cables, who has performed with Sonny Rollins and Art Pepper, is one of today's great jazz pianists—swinging, lyrical, but also tough and inventive. On four of *By George's* six tracks, he is accompanied by bassist John Heard and drummer Ralph Penland. With its warmly concentrated versions of "Bess, You Is My Woman Now" and the solo piano "Embraceable You," this album should be heard by all fans of modern jazz and of George Gershwin. *Michael Ullman*

CLASSICAL

GERSHWIN: Of Thee I Sing; Let 'em Eat Cake.

McGovern, Kert, Gilford, Garrison,
 ⊕ O'Hara; New York Choral Artists, Orchestra of St. Luke's, Thomas. Steven Epstein, prod. CBS Masterworks M2K 42522 (D). ⊙ ⊞

GERSHWIN: Songs (15).

Te Kanawa; Foursome*, New York
 ⊕ Choral Artists†, New Princess Theater Orchestra, McGlenn. John Fraser, prod. Angel EMI CDC 47454 (D). ⊙ ⊞

Somebody Loves Me; Boy Wanted; Things Are Looking Up; Love Walked In; Love Is Here to Stay; Someone to Watch Over Me; But Not for Me; Summertime†; The Man I Love; Soon; Meadow Serenade; Nice Work If You Can Get It†; By Strauss; Embraceable You; I Got Rhythm*.

GERSHWIN: Overtures (5); Excerpts from "A Damsel in Distress" (2).

New Princess Theater Orchestra,
 ⊕ McGlenn. John Fraser, prod. Angel EMI CDC 47977 (D). ⊙ ⊞
 Overtures: Girl Crazy; Of Thee I Sing; Tip-toes; Oh, Kay!; Primrose. Excerpts: "A Damsel in Distress" Suite; Stiff Upper Lip.

GERSHWIN: Complete Works for Piano and Orchestra (4); Preludes for Piano.

Levant; Philadelphia Orchestra, Ormandy*; Orchestra. Gould†; New York Philharmonic, Kostelanetz††. Goddard Lieberson, Richard Gilbert, and Howard Scott, prods. CBS Masterworks MK 42514 (A). ⊙ ⊞

Complete Works for Piano and Orchestra: *Rhapsody in Blue* (second version, orch. Grofé)*; *Second Rhapsody for Piano and Orchestra*†; *Concerto in F*††; "I Got Rhythm" Variations†.

GERSHWIN: Orchestral Works (4).

St. Louis Symphony Orchestra, Slatkin.
 ⊕ Joanna Nickrenz, prod. Angel EMI CDC 49278 (D). ⊙ ⊞
Catfish Row; Lullaby (orch.); *Cuban Overture; An American in Paris*.

GERSHWIN: Rhapsody in Blue (first version, orch. Grofé); Selections from "George Gershwin's Song-book" (4).

GERSHWIN/KAY: Who Cares?

Litton; Royal Philharmonic Orchestra,
 ⊕ Litton. RPO/MCA Classics MCAD 6216 (D). ⊙ ⊞

Selections from "George Gershwin's Song-book": *Swanee; Nobody But You; Do It Again; Clap Yo' Hands*.

GERSHWIN: Works for Piano; Songs (10)*.

Morris*, Bolcom. Marc Aubort and Joanna Nickrenz, prods. Nonesuch 79151 (A).

Works for Piano: "George Gershwin's Song-book"; *Rialto Ripples; Preludes for Piano; Impromptu in Two Keys; Three-Quarter Blues; Merry Andrew; Piano Playin' Jazzbo Brown; Promenade*.

Songs: *I'll Build a Stairway to Paradise; How Long Has This Been Going On?; By Strauss; Someone to Watch Over Me; Nice Work If You Can Get It; The Man I Love; Just Another Rhumba; Isn't It a Pity?; They All Laughed; Love Is Here to Stay*.

By Robert E. Benson, Thomas L. Dixon, David Hurwitz, Paul Moor, Robert R. Reilly, Terry Teachout, and James Wierzbicki

 **STRAUSS "DIE FLEDERMAUS":
VIENNA, KARAJAN**

This CD reissue of the superlative 1960 Vienna *Fledermaus* is a treasure. The performance is excellent, with a strong cast headed by Hilde Gueden's assured Rosalinde. When this recording was originally released, some critics questioned Regina Resnik's effectiveness as Orlofsky, but I find her consistently interesting and successful in this role. Luxuriant support is provided throughout by the Vienna Philharmonic under Herbert von Karajan's sensitive direction.

A distinct advantage to this disc is its inclusion of a gala sequence in the second-act ball scene. The galaxy of visiting stars is remarkable, with cameo performances (often in repertory not usually associated with their talents) by Renata Tebaldi, Fernando Corena, Birgit Nilsson, Mario Del Monaco, Teresa Berganza, Joan Sutherland, Jussi Björling, Leontyne Price, Giulietta Simionato, Ettore Bastianini, and Ljuba Welitsch. The 32-minute sequence is a delightful diversion, although it rules out including the seven-minute ballet from the same act. The sound quality on this set belies the performance's age. Further benefits include 34 index references, a 274-page booklet with complete libretto, and near-maximum playing time on both discs. This handsome, historic set well deserves its gold packaging. Playing time: 138:48. (London 421 046-2.) *R.E.B.*

 **MOZART WIND SERENADE:
ORPHEUS**

The Orpheus Chamber Orchestra is an ensemble of New York free-lancers famous worldwide not so much because it works exclusively without a conductor but simply because it is extremely good at just about everything it does. Previous releases, including a new series of recordings for Deutsche Grammophon, have focused attention on the group's string players; now, in Mozart's Serenade in B flat, K. 361, the winds get a chance to shine. The recorded sound is excellent. More important, it's a sterling performance, one of those all-too-rare readings in which technical perfection and an absolute "rightness" of interpretation are balanced by an overall approach so apparently easygoing it seems almost casual. If you measure music in terms of time, you'll get more for

your money with Philips's recent CD reissue of this work as recorded in the late 1960s by Edo de Waart and the Netherlands Wind Ensemble, coupled with the Serenade in E flat, K. 375 ["The CD Spread," May]. If you measure music in terms of energy and panache, the Orpheus recording offers the best buy. Playing time: 50:52. (Deutsche Grammophon 423 061-2.) *J.W.*

 **SCHUBERT PIANO WORKS:
ARTUR, KARL ULRICH SCHNABEL**

It seems incredible today, but until Artur Schnabel's musicological excavation early in this century, even the greatest piano sonatas by Schubert had lapsed into almost total oblivion. No doubt their length had something to do with it; the B flat Sonata, D. 960 (the last and probably the best—Schubert at his greatest) in this performance takes 36:27, even though Schnabel—amazingly, and no doubt because of timing restraints—decided not to repeat the first section of the opening movement. He recorded it in London in 1939, at the age of fifty-seven. For present-day ears, he provides a number of surprises, particularly a rhythmic flexibility and even impulsiveness bordering at some points on the impetuous. During the course of the first two long movements, he sets a variety of quite distinct tempos, as the fancy strikes him. And at that melting D major passage (104 measures into the last movement), he inexplicably eschews a singing legato in the melody in favor of semidetached quarter notes. For overall style and elegance, though, he plays a fascinating performance, one of unique documentary value.

With the exception of the little March in E, D. 606, the remaining tidbits (which enlist the partnership of Schnabel's son) come from the 32 works Schubert wrote for four hands at one piano—echoes of those distant, gracious, pre-electronic days when cultivated people made their own *Hausmusik*. Playing time: 68:37. (Arabesque Z 6575.) *P.M.*

 **PROKOFIEV, POULENC
PIANO CONCERTOS: OUSSET**

This 1983 release of piano concertos by Prokofiev and Poulenc was easy to miss on its first appearance, as neither Cécile Ousset nor conductor Rudolf Barshai was getting much attention at the time. The CD

reissue trend allows redress of that situation. The performances, with accompaniment from the Bournemouth Symphony Orchestra, are quite fine, and the recording excellent. Prokofiev's evergreen Third Concerto receives a thoughtful reading, a little slower than usual but with plenty of bravura. The Poulenc Concerto is a gem, with an especially delightful assortment of tunes (including "Swanee River") that stick obstinately in one's memory. The slow movement could have come straight out of a Hollywood romance. If the coupling appeals to you, this deserves a listen. Playing time: 50:45. (Angel EMI CDC 47224.) *D.H.*

 **MOERAN WORKS:
BOURNEMOUTH, DEL MAR**

Anyone faintly attracted to the English pastoral school will want to have this Chandos disc, which contains E. J. Moeran's Cello Concerto and *Sinfonietta*. The Cello Concerto (1945) is a richly Romantic, highly lyrical, darkly hued work that benefits greatly from deeper acquaintance. The *Sinfonietta* (1944) is a more extrovert, celebratory piece, which many consider to be Moeran's masterpiece. It is built on a larger scale than its title implies and proves to be immediately appealing. Both works are further evidence of the full-scale musical renaissance England has enjoyed in this century. The performances by the Bournemouth Sinfonietta under Norman Del Mar are excellent, and cellist Raphael Wallfisch brings to the autumnal concerto a rich, full tone that is quite expressive. The digital sound is very good. Playing time: 52:18. (Chandos CHAN 8456. Distributed by Harmonia Mundi, U.S.A.) *R.R.R.*

 **AMERICAN CHORAL MUSIC:
CORYDON SINGERS**

Matthew Best's Corydon Singers offer a mixed bag of American music on their latest release. Aaron Copland's lovely *In the Beginning* and a group of his early motets are a welcome addition to the CD catalog, but Leonard Bernstein's *Chichester Psalms* is heard in an ineffective arrangement by the composer for harp, organ, and percussion. (Bernstein's second recording of the *original* version is available on Deutsche Grammophon 415 965-2.) The filler is Samuel Barber's *Agnus Dei*, a campy ar-

rangement of his *Adagio for Strings* that is utterly unsuited to the chaste-sounding Corydon Singers. They should have done Barber's *Reincarnation* instead. Dominic Martelli is the first-rate boy soprano soloist in the Bernstein. Worth buying for the Copland. Playing time: 54:00. (Hyperion CDA 66219. Distributed by Harmonia Mundi, U.S.A.) T.T.

SAINT-SAËNS, DUKAS WORKS: BERLIN, LEVINE

James Levine's rather relaxed account of Saint-Saëns's mighty *Organ* Symphony loses momentum in the final two movements, and the work's big climaxes lack the impact the Berlin Philharmonic could have produced. Still, this must be counted among the finest recordings of this popular work, and sonically, it is one of Deutsche Grammophon's best with this ensemble. Balances are fine, the overall effect impressive. The organ part—played here by Simon Preston—is admittedly minor, yet that does not excuse the instrument's decidedly tinny sound in the third movement. I would have preferred a more massive sound (though not the bagpipelike, reedy organ tone heard in Herbert von Karajan's 1982 DG recording with the same orchestra).

Dukas's delightful *The Sorcerer's Apprentice* is superbly played here, but the recording is marred by Levine's offensive grunts and exhortations to the orchestra, which are heard on a number of occasions, particularly at 6:00 and 8:00 into the performance. I don't mind a conductor who, when carried away by incandescent music-making, is momentarily audible. But the repeated obtrusive sounds Levine makes on this disc are as annoying and unnecessary as Glenn Gould's humming and "singing." Total timing for this premium-price CD is regrettably substandard. Playing time: 47:05. (Deutsche Grammophon 419 617-2.) R.E.B.

RACHMANINOFF CONCERTOS: GIESEKING, MENGELBERG

This historic reissue offers many attractions for the curious buyer. It boasts surprisingly immediate sound, considering that the source material was broadcasts from the early 1940s. It also features the great Willem Mengelberg and his magnificent Concertgebouw Orchestra in performances of the Second and Third Piano Concertos that could have been bettered only in Philadelphia—in other words, performances of most remarkable warmth, interpretive insight, and occasional individualistic oddities, all in service to this beloved composer. So far so good.

However, all these virtues are linked—no, shackled—to interpretations by Walter Gieseking (justly remembered in certain repertoire) that are either superficial

in the extreme (the Second Concerto) or so absurdly misconceived (the Third) as to defeat any effort to find redeeming features. How times have changed. If any soloist today permitted himself such technical imperfections as Gieseking did on these occasions, his career would never last, to say nothing of his posthumous reputation. For Mengelberg, Rachmaninoff, or Gieseking fanatics only; all others—beware! Playing time: 70:12. (Music and Arts Programs of America CD 250. P.O. Box 771, Berkeley, Calif. 97401.) T.L.D.

COPLAND ORCHESTRAL WORKS: PACIFIC, CLARK

Orange County lies just south of Los Angeles. Many of its residents have pots of money, and politically—well, they named the county airport after John Wayne. However, they also enthusiastically support the arts, and in recent years they opened an architecturally handsome performing arts center almost any city in the country might envy. The Pacific Symphony Orchestra, recorded here, grew out of that project. The people of Orange County deserve sincere congratulations.

The full orchestra, under gifted young conductor Keith Clark, opens this disc with a rousing reading of Copland's charming, neglected *An Outdoor Overture*. Then 13 of the group's top players join together in the original version of *Appalachian Spring*, Copland's most popular work. The chamber-music transparency exposes the participants to pitiless scrutiny, but they pass muster brilliantly. I wish Clark had made more of that sudden, swelling, rapturous *cri du coeur* 19:13 into the work, just before the statement of the Shaker tune. Otherwise, though, he conducts an excellent realization of this endearing music.

Marni Nixon brings a beautiful voice and good diction to *Poems of Emily Dickinson*, Copland's orchestration of eight of his 12 Dickinson songs for voice and piano. They're wonderful poems all, particularly the last one, "The Chariot," of which Allen Tate wrote, "If the word 'great' means anything in poetry, this is one of the greatest in the English language." Playing time: 57:40. (Reference RR-22CD. Box 77225X, San Francisco, Calif. 94107.) P.M.

BRAHMS, COPLAND SONGS: PARKER, HUCKABY

Like Jessye Norman, William Parker studied in Paris with Pierre Bernac, and he has demonstrated his affinity for French music in his contributions to the five-LP set of Francis Poulenc's complete songs (French EMI 2 C 165-16231/5). He uses his fine lyric baritone to good effect in this sampling from two quite disparate areas of the repertoire: eight Brahms songs and

eight songs gathered from Copland's two sets of *Old American Songs*.

One cannot question Parker's evident thoughtfulness in the music he chooses, but this program gives rise to the nagging feeling that he pays rather too much attention to the undeniable beauty of his voice and too little, comparatively speaking, to what it transmits to the auditor; that is, he tends to regard the music as subservient to his voice, instead of the other way around. This element of vocal narcissism results in a certain degree of monotony (due to Parker's lack of variety of timbre) and a tendency toward sluggishness. In "I Bought Me a Cat," for instance, where Copland wanted it sung at 96 beats to the minute, Parker slows it all the way down to 80, much to that charming song's detriment.

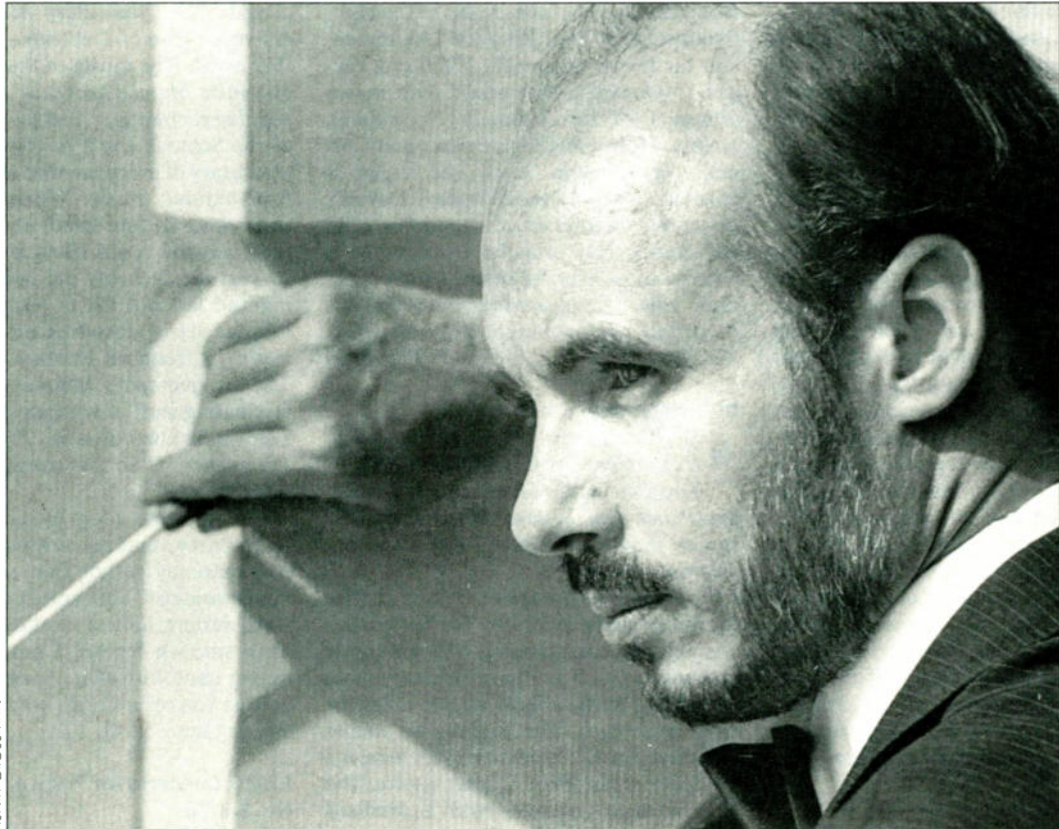
Philip Lieson Miller, who wrote the accompanying notes, provides abundant musicological anecdote and trivia but gives us scarcely even a hint of the literary content of the Brahms songs—and there are no texts whatsoever. This conforms with the regrettable American attitude that as long as the singer uses a foreign language, the poetry has no import. William Huckaby provides deft but almost excessively discreet accompaniments. Playing time: 48:13. (Centaur CRC 2022. Distributed by Harmonia Mundi, U.S.A.) P.M.

RAVEL TWO-PIANO MUSIC: LAREDO, ROUVIER

When it comes to sheer sound, you can hardly beat Denon. When it comes to musical *savoir-faire*, though, this label has frequently left me with the uneasy impression that its artistic directors have to yield to its merchandisers. For my taste, no composer in history has matched Ravel's genius for orchestration. Of all his compositions, probably none depends on that orchestral witchery to the degree *Boléro* does, since it repeats the same material over and over, and over yet again. Why, then, record it on two pianos, even when played to perfection? Well, the name *Boléro* sells—and Denon has emblazoned that name all over this release, which features duo-pianists Ruth Laredo and Jacques Rouvier.

The other offerings here have vastly more merit. I have never heard the original (one-piano, four-hand) version of Ravel's *Ma Mère l'oye* suite done better, and the *Sites auriculaires* rarely get heard. (Ravel subsequently incorporated the first, "Habanera," into his *Rapsodie espagnole*.) You also won't soon again encounter the laconic (1:37) but atmospheric *Frontispice*, which he whimsically composed for five hands at one piano. This performance of the two-piano version of *La Valse* ranks with the breathtaking reading by Martha Argerich and Nelson Freire; at times, it even tops it. Playing time: 44:37. (Denon C37-7907.) P.M.

Glass Steps Closer To CONVENTION



HENRY GROSSMAN

Dennis Russell Davies, who conducted the premiere of *Akhnaten*, leads a propulsive performance of Glass's vibrant opera.

GLASS: *Akhnaten*.

Various artists; Stuttgart State Opera Orchestra and Chorus, Davies. Kurt Munkacsi and Michael Riesman, prods. CBS Masterworks M2K 42457 (D, 2). © (3). □ (3).

Akhnaten (1983) is the third of Philip Glass's large-scale theatrical pieces about men whose ideas have changed the course of history. Although Glass conceived his portrait of the 14th-century B.C. Egyptian pharaoh as the concluding work of an operatic trilogy, the idea of the trilogy itself did not arise until after the second work in the series—*Satyagraha* (1980), based on the life of Mohandas Gandhi—was being readied for its second production. Not surprisingly, *Akhnaten* has more in common with *Satyagraha*, both structurally and musically, than with the first work in the trilogy, *Einstein on the Beach* (1976).

Einstein is a pivotal work in Glass's catalog, one of the last pieces to which the tag "minimalist" can properly be applied. In the traditional sense of the word, it is hardly an opera at all, but rather a plotless string of tableaux in which Glass's repetitive, static music plays a role arguably secondary to the stage imagery concocted by designer Robert Wilson. Its characters do not sing, and its singers (a mixed chamber chorus plus soprano and tenor soloists) do little more than augment (with occasional chanted numbers and solfège syllables) the spoken texts and the glittery instrumental accompaniment provided by the highly amplified Philip Glass Ensemble.

In comparison, *Satyagraha* and *Akhnaten* seem almost conventional. Each is divided into three acts whose scenes are more or less logically connected; each is written for more or less standard orchestra

and voices; and, perhaps most significant, each features climaxes arrived at by means of dynamic harmonic patterns and uninhibitedly lyrical vocal lines.

Of the two "real" operas, *Akhnaten* is the more colorfully scored. *Satyagraha* calls for full string orchestra and triple woodwinds. *Akhnaten* employs not only woodwinds but also brass and percussion. (Since the pit of the Stuttgart Playhouse, in which *Akhnaten* was first performed, was relatively small, Glass dispensed with the violins in order to have room for the percussion and winds.) The result, the composer writes in his new book *Music by Philip Glass*, was a "low, dark sound that came to characterize the piece and the subject very well." But it is a low, dark sound often illuminated brilliantly by fanfares and tattoos in the opera's various ceremonial or festive scenes. The voices, too, serve

to offset the pervasive low, dark qualities of the backdrop sonority; whereas the main character in *Satyagraha* is portrayed by a tenor, the title role in *Akhnaten* is assigned to a countertenor who, in ensembles more often than not, works with a soprano (Queen Tye, Akhnaten's mother) and a mezzo-soprano (Nefertiti, Akhnaten's wife).

Another important difference between *Akhnaten* and *Satyagraha* has to do with the operas' dramatic flow. In interviews, Glass has said that his operas are not simply stories set to music and that they do not move linearly through time the way most operas do. The statement certainly applies to *Einstein*, with its surrealist, non-narrative scenes. It applies as well to *Satyagraha*, whose progression of scenes moves both forward and backward in time. But *The Juniper Tree*, the setting of a Grimm brothers fairy tale that Glass undertook in 1984 in collaboration with composer Robert Moran, is very much a story set to music. To a certain extent, so is *Akhnaten*. Although most of the relevant details of the pharaoh's career are to be found not in the opera itself but in the program notes, the scenes are self-explanatory; they have far more action and narrative content than those of *Satyagraha*, and they do follow one another in chronological order.

Einstein on the Beach—the work of Robert Wilson as much as it is of Philip Glass—needs to be seen in order to be experienced. The other two operas in the trilogy, especially *Akhnaten*, communicate quite well when one is exposed only to their music. Even without libretto in hand, the listener gets a sense of the spirit of the person whose "episodic-symbolic portrait" is being painted over the course of three acts. With the sung text in hand—*Satyagraha* in Sanskrit, *Akhnaten* in Egyptian, Hebrew, Akkadian, and whatever language is spoken by the audience—the listener gets a sense of Glass's ability to write vocal lines that are quite expressive.

The vernacular language on the new CBS recording of *Akhnaten* is English, even though the cast is largely the same as the one that gave the premiere in Stuttgart in March 1984. Unlike CBS's 1985 recording of *Satyagraha*, which was done piecemeal with layer upon layer of overdubbing, this was made without fancy studio techniques. (The program booklet gives credit for "additional recording" to the

Living Room Studio in New York, but presumably that refers only to the work done with narrator David Warrilow.) From the chants of the chorus to the high-flying solos of Paul Esswood (Akhnaten) and his fellow principals—Milagro Vargas (Nefertiti), Melinda Liebermann (Queen Tye), Tero Hannula (Horemhab), Helmut Holzapfel (High Priest), and Cornelius Hauptmann (Aye)—the singing is glorious. Under Dennis Russell Davies's direction, the orchestral support is solid and consistently propulsive. *Akhnaten* is Glass's most vibrant opera to date; the same adjective, in a word, describes this recorded performance. Playing time: 128:37. *James Wierzbicki*

DEBUSSY: Works for Piano Duo.

● *Helffer, Austbö. Pierre Studer, prod. Harmonia Mundi HMC 90957 (A).*

Two Pianos: En blanc et noir; Lindaraja. Piano, Four Hands: Marche écossaise sur un thème populaire; Petite suite; Six épigraphes antiques.

I have admired the art of Claude Helffer for many years, primarily for his fearless and reliable championing of avant-garde composers (such as Pierre Boulez) whose forbidding music almost no one takes the trouble to learn. The Norwegian pianist Håkon Austbö, who joins Helffer here, is a graduate of the Paris Conservatoire who engaged in postgraduate study at Juilliard and has a number of competition prizes to his credit.

Nowadays, you have to resort almost entirely to recordings in order to hear such works as *En blanc et noir*, that moody, rather somber work Debussy wrote under

the crushing impact of World War I. Its extraordinary second movement, with its sardonic quotation from Martin Luther's chorale "Ein feste Burg ist unser Gott," conveys some of Debussy's horror over that event. The music of the jolly, idiomatic little *Marche écossaise sur un thème populaire*, commissioned by a descendant of the Scottish Earls of Ross, belongs in the library of everyone who enjoys playing four-handed music. When it comes to composing for four hands at one piano, almost anyone could learn from what the 27-year-old Debussy did with his charming and fanciful *Petite suite*—which his misguided friend André Caplet, by orchestrating it, reduced to mere salon music. The *Six épigraphes antiques* contain some fascinating stuff, if you can overlook such sappy individual titles as "Pour que la nuit soit propice" ("So that the night be propitious").

These artists adopt Boulez's approach to Debussy, tending toward clarity and transparency rather than conventional "impressionist" atmosphere, and more toward austere, almost sanitary detachment than smooth legato. I personally take strong issue with that approach, but here at least you certainly do hear all the detail. Playing time: 52:41. *Paul Moor*

LISZT: Concerto for Piano and Orchestra No. 2, in A.

PROKOFIEV: Concerto for Piano and Orchestra No. 3, in C, Op. 26.

● *Vakarelis; Royal Philharmonic Orchestra, Rowicki. Brian B. Culverhouse, prod. RPO/MCA Classics MCAD 6204 (D).* □ □

Record labels sometimes move in strange and mysterious ways. Here we have an interesting release featuring two artists whose names are hardly household words in this country, yet the accompanying leaflet tells us nothing about either of them.

By coincidence, Janis Vakarelis recently came to my attention through his excellent recording (with Sicilian violinist Aurelio Pérez for France's Ophélie label) of sonatas by Francis Poulenc and Henri Sauguet. Thanks to that leaflet, I know that Vakarelis (b. 1950) comes from Salonika, studied with Bruno-Leonardo Gelber and Nikita Magaloff, and made quite an impression in London with his Royal Philharmonic debut under Vladimir Ashkenazy. Witold Rowicki I know from numerous performances with Poland's Na-

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|----------------|-----------------|
| Ⓢ LP | Ⓜ Videocassette |
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RECORDING INFORMATION

(A) Analog original (D) Digital original

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

tional Philharmonic Orchestra, which he ably headed for many years.

Vakarelis has an imposing technique, but he inclines rather unexpectedly toward almost contemplative tempos even in the fast sections, which here border on the leisurely. One can almost imagine him smiling and saying something like, "Hey, have you ever heard *this* detail?" In many instances, in spite of the music's great familiarity, I hadn't. He and his colleagues provide creditable performances of both works, and the unusual—and probably unique—coupling of them makes this a noteworthy release. Playing time: 52:28.

Paul Moor

MAHLER: Symphony No. 2, in C minor ("Resurrection").

Augér, Baker; City of Birmingham Symphony Orchestra and Chorus, Rattle. David R. Murray, prod. Angel EMI CDCB 47962 (D, 2).

MAHLER: Symphony No. 2, in C minor ("Resurrection").

Te Kanawa, Horne; Tanglewood Festival Chorus, Boston Symphony Orchestra, Ozawa. Wilhelm Hellweg, prod. Philips 420 824-2 (D, 2). □ □ □

In one of the most obvious displays of British chauvinism to recently appear in print, Michael Kennedy, writing in the October 1987 *Gramophone*, hailed Simon Rattle's new Mahler Second as an instance of "conducting akin to genius" that is "in a spiritual class of its own, a Mahlerian Testament." The City of Birmingham Symphony Orchestra received equally fulsome praise. "Could anyone," wrote Kennedy, "coming upon this recording unawares, be blamed for identifying these players as belonging to Vienna, Berlin, or Chicago?"

Seiji Ozawa's recording of the same work, reviewed in the December '87 *Gramophone* in tandem with the Compact Disc release of Rattle's account, received short shrift as Kennedy continued his earlier rave. Nationalistic propaganda aside, Rattle's account of the Second is so bad that it's practically a joke, while Ozawa's thoroughly musical effort, although not a great performance, at least commands respect.

Kennedy's initial review went so far as to compare Rattle's performance to the legendary accounts by Bruno Walter and Otto Klemperer. Nonsense. Walter's tendency to underplay Mahlerian angst in exchange for an effortless, organic flow finds a perfect counterpart in Ozawa's musicianly, superbly integrated interpretation, which also merits attention for the unfailingly beautiful playing of the Boston Symphony. Klemperer's stoicism and spiritual strength remain unique, and Rattle offers nothing even remotely comparable in his view of the symphony. His few isolated ideas, when not contradictory to Mahler's

clear intentions, fail to add up to a convincing whole, and his orchestra sounds like the cautious, provincial group it is. To rank it with Boston—let alone Chicago, Berlin, or Vienna—is simply critical malpractice.

The Second Symphony's opening bars immediately shed light on the differences between the Boston and Birmingham per-



Seiji Ozawa: a Second that commands respect

formances. Rattle's basses are overprominent, and he distorts the rhythm of the uprushing phrases in what will become an annoying mannerism as the movement proceeds. Ozawa's strings sound more natural, play with a far more focused tone, and convey urgency without disfiguring the music. As the march moves toward its first climax, the Birmingham violins' sloppy legato passages sap the music of its rhythmic force, while the acid tone of the stopped horns fails to cut through the texture as it should. The Boston players have no such difficulties.

In the reflective passages that follow, the Rattle account achieves tranquility through clever microphone placement rather than subtle shaping of dynamics. Horns in a concert hall could never sound as distant as these do. The passage marked *Schnell*, with its two gong crashes, finds Rattle ignoring the tempo indication entirely; to make matters worse, his strings fall apart trying to copy the mannered phrasing of the opening, and the timpani solo is out of tune. Later, at the movement's climax, Rattle's exaggerated pauses (admittedly a feature of several other performances as well) halt the forward momentum. While the Bostonians make a terrifying moment here out of the strings' "struck with the bow" episode, the

Birmingham strings are practically inaudible in the passage.

Later on, after a perfectly managed return to tempo primo, the Boston orchestra begins the movement's recapitulation with a whiplash of strings; Rattle's players have to cope with his distortions of the line yet again. At the movement's very end, Ozawa returns to tempo primo (as Mahler demands), while Rattle takes the passage at a perverse speed unrelated to anything that has gone before and permits a mere six horns to utterly overbalance the strings and winds.

Rattle's second movement suffers from the listlessness of the Birmingham strings; grace notes have no snap compared to what is achieved by Ozawa's charming and elegant Bostonians. The scherzo reintroduces Birmingham's haphazardly tuned timpani and continues with some of the most characterless wind playing imaginable. What happened to Mahler's "with parody" writing for the E flat clarinet? Why is the all-important bass drum and rute part submerged? The orchestral balance after the trio section is absurd, with the fortissimo entrance of the basses miraculously overshadowed by two bassoons. As on other occasions in the performance, the climax misfires, and the subsequent drum solo sounds louder than the previous outburst for full orchestra.

In the finale, both conductors get off to a good start: Rattle makes more of the great percussion crescendo (roughly ten minutes into the movement) than Ozawa does, but the phlegmatic entrances of the Birmingham brass effectively vitiate any accumulated tension. Indeed, the Birmingham players lack the tonal richness and strength essential to this movement. The trumpets plod through the solo in the great "dead march," while their Boston counterparts phrase with true parade-ground zest to a hefty string accompaniment—one of the highlights of Ozawa's performance. The great disintegration that follows prompts Rattle to excessive haste, while in the succeeding section, EMI's balance robs his offstage instruments of all tangibility. Once again, Rattle rushes the gathering climax, leaving no room for Mahler's accelerando. Ozawa gauges the passage perfectly, as he does the offstage cadenza that introduces the chorus.

It might not occur to a British critic that an American chorus could outsing an English one, but that is clearly the case here. There is a notable richness to the Tanglewood basses. The Americans are also superior in their enunciation of the text; compared to them, the Birmingham singers are an amorphous sonic blob. In this intensely quiet music, the EMI recording contains an audible edit at the choral entrance, where a sudden buzz in-

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trudes into the right channel. At the final peroration, Rattle's singers are lost in all the noise. The organ, dubbed in separately, is inaudible (save for the pedal notes) and sounds as if it had been built by Maytag. Rattle's horns actually expire in the final bars. Ozawa's chorus sings with splendid confidence and power in the closing pages, and the Symphony Hall organ lends added weight without wrecking the aural perspective. Ozawa's rapid tempo in the work's closing pages disturbs me less than it did when I heard his live performance at Carnegie Hall, and it makes sense in terms of the long-term symphonic argument.

Acquaintances at record stores tell me that Rattle's recording is in demand and selling briskly, thanks to Kennedy's review. Commercialism has been well served. As for the listening public, to say nothing of EMI's artistic integrity—that's another matter entirely. Speaking of integrity, why isn't the Klemperer account on CD? Playing time: 85:46 (Angel EMI CDCB 47962). Playing time: 79:59 (Philips 420 824-2).

David Hurwitz

MOZART: Concertos for Piano and Orchestra: No. 20, in D minor, K. 466; No. 21, in C, K. 467.

● *Bilson; English Baroque Soloists, Gardiner. Andreas Holschneider, prod. Archiv 419 609-2 (D).* Ⓢ

I will not attempt to hide my frustration with this release, part of the ongoing cycle pairing fortepianist Malcolm Bilson with John Eliot Gardiner and the English Baroque Soloists. With these two weighty concertos, Bilson and Gardiner had a splendid opportunity to prove the efficacy of early instruments in this repertory and to demonstrate their appeal to a wide audience. Unfortunately, thanks largely to the engineering, that opportunity has been missed. Although these are masterful performances, the fortepiano all too frequently disappears behind a veil of orchestral sound, which undercuts the power of the readings.

On the whole, Bilson's instrument fares better in the D minor Concerto, where it keeps its head above water until the third movement. This is a dynamo of a performance, with an opening movement that is intense and muscular in a fashion that recalls Szell's way with the music. Gardiner evokes a feeling of potency and grandeur from the orchestra that belies its small size, while the greater transparency of the gut strings enables the inner parts to be heard with ease. Bilson, too, is in fine form, matching the orchestra in the strength of his declamation yet playing with tenderness when called for. There is a fine sense of dialogue between conductor and soloist and a truly natural feeling of interplay between piano and winds.

In the C major Concerto, balance prob-

lems often intrude on an otherwise excellent performance. The interpretation is elegant and relaxed, but there is still plenty of tautness and buoyancy in Gardiner's conducting. Bilson's response to the music is invariably affectionate and never brittle, although one wishes for more legato from him in the famous Andante. On interpretive points, this recording rightfully goes near the top of the list, but its sonics keep it out of the No. 1 slot. Playing time: 57:38.

Christopher Rothko

RACHMANINOFF: Concerto for Piano and Orchestra No. 1, in F sharp minor, Op. 1; Concerto for Piano and Orchestra No. 4, in G minor, Op. 40; "Rhapsody on a Theme of Paganini," Op. 43.

● *Rachmaninoff; Philadelphia Orchestra, Stokowski. John Pfeiffer, prod. RCA 6659-2 (A).*

RACHMANINOFF: Concertos for Piano and Orchestra: No. 2, in C minor, Op. 18; No. 3, in D minor, Op. 30.

● *Rachmaninoff; Philadelphia Orchestra, Ormandy. John Pfeiffer, prod. RCA 5997-2 (A).*

This has been a banner season for reissues of historic piano recordings. Recent months have seen the beginnings of a cycle devoted to the great Benno Moiseiwitsch (Rachmaninoff's friend and greatest rival, according to Rachmaninoff's own testimony) and the release of an LP featuring Eileen Joyce (known for her work on British movie soundtracks of the 1940s). In addition, Rachmaninoff's own performances of his four piano concertos and the *Rhapsody on a Theme of Paganini* have been reissued on Compact Disc by RCA. While no one could claim that these performances, recorded between 1929 and 1941, were examples of state-of-the-art sound, they have been restored as well as is possible, thanks to the genius of engineer Ward Marston. A spot check of mint copies of the original 78s shows how effective the CD medium has been in accomplishing the transfer of history.

These performances offer much more than casual enjoyment or an illustration of successful technology, though. They preach an intensely forceful sermon as to how these works must be played if they are to be kept from sounding like Slavic Muzak. The drama, tenderness, architectural strength, masculinity, and overwhelming sweep of Rachmaninoff the pianist still enable these works beyond the capacities of all but a handful of artists. Many have tried (there have been at least 60 commercial recordings of the Third Concerto, for instance), but the list of those whose accounts are fit to stand alongside the composer's is slim indeed: Moiseiwitsch, William Kapell, Sviatoslav Richter (occasionally), Byron Janis (in the First Concerto), and Alexis Weissenberg. Among

younger musicians, Canadian pianist Arthur Ozolins comes to mind.

Still, these performances by Rachmaninoff himself remain on a pedestal of their own. They stand as monuments to the greatest pianist of our century, who, in fashioning the *Rhapsody on a Theme of Paganini*, made what is perhaps our country's greatest contribution to the concerto literature. Playing times: 71:53 (RCA 6659-2); 65:54 (RCA 5997-2).

Thomas L. Dixon

WAGNER: Parsifal.

Estes, Salminen, Sotin, Hofmann, Mazura, Meier; Bayreuth Festival Chorus and Orchestra, Levine. Rupert Fäustle, prod. Philips 416 842-2 (D, 4).

"Generally," says James Levine in an extensive interview that accompanies the trilingual libretto for this new *Parsifal*, "I adore live recordings. Because a piece of music lives in a live performance, since that's its natural form, its intended form, then when you listen to a performance recorded live, you have a very distinct advantage. There's no doubt that a recording is not a live performance—it is, rather, a souvenir of a live performance—and they are really two different things." Indeed.

Any label that signs a preproduction Bayreuth deal buys a pig in a poke (pardon the expression). Retakes? Forget it. You tape every performance of the work involved and pray you will be able to edit that material into a performance as close to perfection as possible. What you gain in spontaneity—which only a live audience seems to elicit in some artists—you may lose in the note-perfect fidelity to the score that a studio recording makes possible.

On that scale, this performance breaks about even. Some of the participants—James Levine, among them—seem virtually ideal. Others, including several of the principals, do not fare as well.

I didn't really sit up and take notice here until that anguished orchestral interlude during the Act I scene change (at the end of the first dialogue between Gurnemanz and Parsifal). The orchestra sounds, to put it simply, superb—as it does throughout the opera—and Levine brings the music passionately to life. Checking the orchestra roster, I found names indicating Czech, Hungarian, Japanese, Swiss, Anglo-Saxon, and other ethnic origins, and even one concertmaster named Angel-Jesus Garcia. In the orchestra, as in the chorus, Wolfgang Wagner has clearly continued postwar Bayreuth's ideal of ignoring nationality. And because instrumentalists and choristers from everywhere may aspire to Bayreuth, the festival need only accept the cream of the crop. That much is evident from the chorus's very first entry—men's voices only, in unison, but what a sound! Norbert Balatsch, who

trained the chorus, deserves special praise.

Top vocal honors go to Waltraud Meier, a stunning Kundry, and Simon Estes as Amfortas, who sounds just as impressive here as when I heard his Wotan in West Berlin's *Ring* cycle in 1985. (I started attending the Bayreuth Festival in 1952, one year after its postwar revival, following its era under the personal patronage of Adolf Hitler. So it is inevitable that I note the presence here of a Jewish-American conductor and a black American Amfortas. Even convinced anti-Nazi Bayreuth traditionalists must have found the latter a difficult adjustment—all the more reason to compliment Wolfgang Wagner for the courage of his artistic convictions.)

The cast includes several Bayreuth stalwarts. Both Hans Sotin and Franz Mazura at times force their voices in a disagreeable way that studio recording would have made unnecessary, but they do bring palpable authority and presence to their characterizations. If Peter Hofmann fails to measure up to Bayreuth's greatest heroic tenors, he still sings this role as well as anyone else available today, and perhaps better. With the majority of the cast, one repeatedly has the feeling they could have stuck more closely to Wagner's score except for the necessity (on stage and in actual performance) to think about all the other business at hand.

The audience, as German audiences at musical performances tend to, remains almost totally silent. The extraordinarily sensitive microphones required for this kind of enterprise pick up a certain amount of stage noise, none of it particularly distracting except when it sounds as if the wicked magician Klingsor has transformed his Flower Maidens momentarily into a herd of elephants. Also, I would have expected Bayreuth to come up with four bass bells that smack less of electronic production and amplification than those used here.

In the thick accompanying booklet, Levine, perhaps because of his reputation for preferring somber tempos, places himself in a Bayreuth context. Toscanini, that hot-blooded bravo, set a Bayreuth record for length with Act I of his *Parsifal*, which lasted 140 minutes! Richard Strauss, at the other extreme, whipped through the same act in only 90. Levine declares, "My own shortest first act was one hour 45 minutes, my longest two hours, depending on the search for the right atmosphere, the specific singers involved, etc."

Given the circumstances, the recording itself leaves nothing to be desired. When they reach Amfortas's agonized cry for mercy, Levine and Estes rise to a peak evocative of the halcyon Bayreuth days of George London and Hans Knappertsbusch. I have no higher praise than that. Playing time: 278:10. Paul Moor

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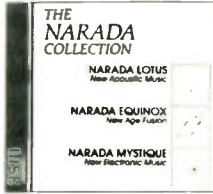
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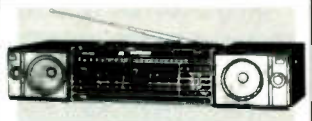
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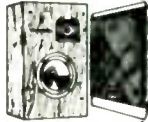
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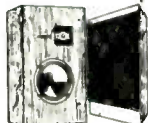
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A Champion of Songs

In jazz and pop from the Thirties to the Eighties, Susannah McCorkle celebrates her love of melody.

BY FRANCIS DAVIS

Susannah McCorkle has chosen two antithetical careers for herself, one begging for solitude, the other demanding the spotlight. In the first, she has published several short stories, one of which—"Ramona by the Sea," set in the late 1960s, exploring a moody young woman's alienation from both the middle-class values of her parents and the radical alternatives of her college classmates—was included in the 1975 *O. Henry* prize collection, in the fast company of stories by Alice Adams, Harold Brodkey, Raymond Carver, E. L. Doctorow, and Cynthia Ozick. There is an unfinished novel in her drawer, which she plans to work on after recovering from what she hopes is a temporary case of writer's block—brought on, in part, by a change for the better in her love life and by growing success in her second career.

In that career, McCorkle has become the outstanding female jazz singer of her generation, with remarkable affinity for the era of Billie Holiday, Lee Wiley, and Mildred Bailey, when jazz and pop shared a common repertoire, when the keys to vocal improvisation were straightforward melodic embellishment and scrupulous attention to lyrics. McCorkle recognizes that the best old songs still have plenty of life in them: She feels no need to treat them as faded art songs, the way too many cabaret performers do. And unlike her rock contemporaries, who sometimes embrace

vintage pop as an excuse for costume extravaganza, she doesn't accessorize songs. She merely sings them—in a merry, slightly throaty voice that is seductive without being especially flirtatious—while standing perfectly still except to rise ever so slightly to her toes for high notes.

McCorkle has had bad luck with record companies, twice signing with financially insolvent independents that hoped to make big bucks with fusion and had little notion of how to promote a quality singer, yet this hasn't prevented her from building an impressive catalog of albums. The ones that show her off to best advantage are *The Songs of Johnny Mercer* (released domestically by Inner City in 1980), *Over the Rainbow: The Songs of E. Y. Harburg* (1981), *The Music of Harry Warren* (1982), and *Thanks for the Memory: The Songs of Leo Robin* (Pausa, 1985). On none of these does she settle for just the songs that everyone remembers: She includes Mercer's "Harlem Butterfly" along with his lyric for "Blues in the Night"; Harburg's lyric for "The Begat" from *Fin-*

ian's Rainbow as well as that for "Over the Rainbow" from *The Wizard of Oz*; Warren's music for "The Girl Friend of the Whirling Dervish" along with his music for "Forty-second Street"; and Robin's lyric for "Hooray for Love" as well as that for "Thanks for the Memory."

But McCorkle is genuinely interested in songs that reflect contemporary mores, and she has no desire to be stereotyped as an antiquarian. "People have told me I would have been a big star if I had come along back in the Thirties or Forties," she says, "but I've never wished for that, because I prefer being a woman now. I would have been a band singer or a starlet—a blonde cutie. I'm not one of those people who think that every song from the Thirties and Forties is wonderful and that the big bands should be brought back. I just like good songs, and I can hear right through period trappings—including the instrumental trappings of the Seventies and Eighties." So she has also recorded three albums—*The People That You Never Get to Love* (Inner City, 1983), *How Do*



A Champion of Songs

You Keep the Music Playing? (Pausa, 1986), and *Dream* (1987)—that juxtapose Rupert Holmes with Jerome Kern, Jimmy Webb with Irving Berlin, Paul Simon and Antonio Carlos Jobim with Cole Porter and Rodgers and Hart.

Her list of favorite singers is surprising. Along with Billie Holiday, whom you'd expect, she names Ray Charles, Mose Allison, and early Nat "King" Cole. McCorkle shares their lack of manner, but her style is more about effervescence than grit. However much her phrasing owes to Holiday, her precise diction and fresh-scented timbre recall no one so much as Doris Day—an observation McCorkle accepts gracefully enough now, although it used to vex her no end: "I was once fired from a gay club in London because the owner said I sounded too much like Doris Day—too much like *The Girl Next Door*. That hurt. As I get older, my voice is becoming deeper and darker, but it's still very sweet and youthful—and I've gone through periods of hating it, when I felt battered by life and wondered why my voice didn't reflect that. I'm flattered now when someone says I sound like Doris, because I've come to realize what a wonderful singer she is. But she's still not one of my favorites, because she's not the kind of singer you hear and think, 'Who is this woman and what has she lived through?'—like you do with Billie Holiday. The first time I heard Billie, I felt as if there was nothing separating us. I want people to feel that way about me."

In March, McCorkle taped a live concert for WMHT, Albany's PBS affiliate, at Proctor's Theater in nearby Schenectady, the city she commutes to from New York to be with her fiancé, Dan DiNicola. Called *Susannah McCorkle and Friends: Jazz Meets Pop*, the program also featured Gerry Mulligan, Mark Murphy, the Gene Bertocini-Michael Moore Duo, and the Eastman Jazz Ensemble and is scheduled for broadcast this fall.

On stage at Proctor's, McCorkle cut such a trim, confident figure in a succession of glittering gowns that it was difficult to believe she ever had anything in common with her troubled protagonist of "Ramona by the Sea." But like the fictional character, McCorkle was a compulsive overeater as a teenager. There is also a trace of Susannah in Ramona's estrangement from her college peers. Although active in the Free Speech Movement at the University of California in her native Berkeley, McCorkle was uneasy with the lifestyle that seemed to go along with po-

litical radicalism on college campuses in the 1960s. "It was a wonderful time to be in college, because we really were effecting political change. But I never went in for floral shirts, love beads, acid rock, sleeping around, and naming children after continents. I hated going to parties where everybody smoked dope and lolled around, not talking. I wanted to go to parties to dance, meet a boy, and fall in love. In my writing classes, I was laughed at for writing stories that everyone said belonged in women's magazines. Everyone was writing about first sexual experiences or first acid trips, and I couldn't, because I hadn't had either."

After graduation, McCorkle worked as an interpreter in Mexico, France, and Italy, and it was while living the expatriate's

"I've gone through periods of hating my voice, when I felt battered by life and wondered why my voice didn't reflect that."

life in Europe that she discovered jazz. "I found a vindication for those instincts that had been completely thwarted in college: my romanticism, my love of good writing and beautiful melodies, as opposed to loud, screaming guitars. These things were valued in Europe, where you could buy a Billie Holiday album for a few dollars in a drugstore or supermarket. It felt like being reunited with a family I never knew I had."

She made the leap from listener to performer "one, two, three, which says something about the galvanizing power of the music, because offstage I was still a very gloomy girl. As a teenager, I had sung in school plays and summer theater productions. My mother had encouraged me to try for a career on Broadway, but I didn't want to be Rose in *Bye, Bye, Birdie*, singing the same songs the same way every night, in the same costume, with my hair sprayed black. I didn't like singing in character. I just liked opening my mouth and singing. In Mexico City, I used to take walks down a traffic island during rush hour, singing where no one could hear me. It was a release from the solitude of writ-

ing short stories, and I guess that's also how I became a performer."

McCorkle first attracted attention as a singer during the five years she lived in London, before moving back to the States in 1979 with her then husband, British pianist Keith Ingham. The marriage dissolved soon afterward, although the couple continued to work together in New York until 1983. "I treasure the experience of singing with Keith, but we were incompatible except musically—and even music became a problem. Keith loves Chicago jazz of the Thirties and wanted me to be the reincarnation of Lee Wiley or Mildred Bailey, his favorite singers. I like them, too, but I wanted to expand. We would have big arguments whenever I wanted to do a contemporary song. The first time I showed him Rupert Holmes's 'The People That You Never Get to Love,' he crumpled up the sheet music and threw it across the room."

Truth be told, I tend to side with McCorkle's ex-husband in thinking that the contemporary tunes in her repertoire are unworthy of her. It's not that today's songs are intrinsically unworthy (though when we start talking Rupert Holmes, they are)—just that the most memorable of them aren't songs per se but hit records so identified with their original performers as to resist fresh interpretations. Which is why at Proctor's Theater it was Paul Simon's "Still Crazy After All These Years," not George and Ira Gershwin's "'S Wonderful," that called up memories of a specific time and place.

But give McCorkle the benefit of the doubt. For her, singing Holmes and Simon might be an honest effort to reestablish contact with her own generation, not a desperate attempt to stay up-to-date, as it might be for a singer ten or twenty years older. McCorkle may not write her own songs, but she wants some of those she sings to be about *her*, and that's perfectly understandable, even commendable. Besides, at Proctor's she managed to make the tuneless "The People That You Never Get to Love" sound like the keening blues it secretly longs to be. And despite the mix of standards and what might be called substandards, her effortless version of "On the Sunny Side of the Street," with Gerry Mulligan's crooning baritone-saxophone obbligato, was a vivid illustration of the twofold pleasure she offers at her best: incomparable songs from an earlier day and someone incomparable to sing them for us now. □



GIL EVANS

THE LEGACY ON CD

After Duke Ellington, Gil Evans was the greatest arranger in jazz history. Unlike Ellington, though, he was strictly a musician's musician, and he always had to scuffle to make ends meet. "I'm a living example," he once said, "of the fact that fame and fortune are not synonymous."

Evans, who died in March at the age of seventy-five, was born a couple of decades too late. Big bands were still a money-making proposition during the early '40s, when he was learning his craft as a staff arranger for Claude Thornhill. Unfortunately, Evans stayed with Thornhill from 1941 to 1948, by which time most of the other big bands were gone for good. Ellington survived the lean post-war years by paying the bills with royalties from pre-war hits like "Sophisticated Lady." Evans, who throughout his career preferred arranging to composing, had no such backlog of popular standards. "It never dawned on me," he recalled, "that, years later, I wouldn't be getting those [royalty] checks in the mail." As a result, his bills went unpaid—and his charts went unplayed.

The unprecedented complexity of Evans's arrangements added to his troubles. The lushly scored jazz version of the slow movement from Joaquín Rodrigo's *Con-*

cierto de Aranjuez heard on the Miles Davis album *Sketches of Spain*, for example, required eight grueling rehearsals before an orchestra of the top studio players in New York could produce a usable take.

But Evans remained imperturbable, secure in the knowledge that his recordings had long since made him immortal, particularly the three albums he made with Davis between 1957 and 1959: *Miles Ahead*, *Porgy and Bess*, and *Sketches of Spain*. Fortunately, all three are now available on reasonably good Compact Discs (Columbia CK 40784, 40647, and 40578, respectively), and digital remastering brings out the smallest details of Evans's subtle, richly textured arrangements with fresh clarity. In addition to these collaborations with Davis, three other albums from the same period are available on CD: *Out of the Cool* (MCA/Impulse! MCAD 5653), *The Individualism of Gil Evans* (Verve 833 804-2), and *New Bottle, Old Wine* (EMI-Manhattan E2 46855), the last recorded in 1958 with alto saxophonist Cannonball Adderley.

Evans's later recordings, like those of Davis, reflect a keen interest in new styles of popular music. "I don't like to have any historical music in my band," he told an interviewer. "I like to feel like it's

alive now." *There Comes a Time* (RCA/Bluebird 5783-2), a studio album recorded in 1975, contains several remakes of earlier charts, onto which Evans grafted synthesizers, rock rhythms, and extended instrumental solos. (RCA has also announced plans for a CD devoted to Evans's arrangements of the music of rock guitarist Jimi Hendrix, with whom Evans was planning to cut an album at the time of Hendrix's death in 1970.) Evans's last band—the Monday Night Orchestra, which played in residence at Sweet Basil, a New York jazz club—can be heard in performance on *Live at Sweet Basil, Vol. 2* (Gramavision 18-8708-2).

What about the CD wish list? To begin with, CBS should devote an album in its Columbia Jazz Masterpieces series to the Claude Thornhill Orchestra, making sure to include Evans's revolutionary big-band arrangements of Miles Davis's "Donna Lee" and Charlie Parker's "Anthropology" and "Yardbird Suite." Capitol should reissue the twelve 78 sides recorded in 1949 and 1950 by Davis's famous *Birth of the Cool* band, for which Evans scored "Boplicity" and "Moon Dreams." Finally, Prestige's 1957 *Gil Evans and Ten* and Pacific Jazz's 1959 *Great Jazz Standards* are long overdue for transfer. □

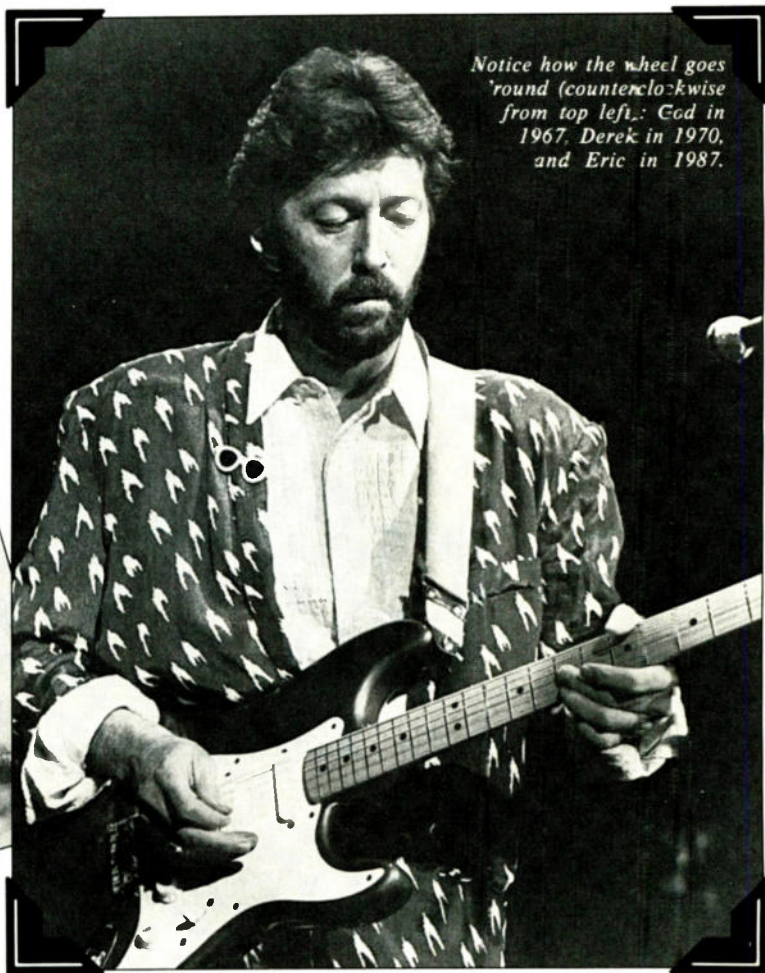
BY TERRY TEACHOUT



DON PAULSEN



BARRY WENTZELL STAR FILE



Notice how the wheel goes round (counterclockwise from top left): God in 1967, Derek in 1970, and Eric in 1987.

LARRY BUSACCA

A CERTAIN GUITARIST

ERIC CLAPTON: *Crossroads*.

Bill Levenson, reissue prod. Polydor
 ● 835 261-2 (4). ○ (6). □ (4).

Eric Clapton's quarter-century as a modern guitar hero is currently being noted with that most impressive of pre-posthumous honors, the multi-record boxed set—or, for our purposes, the multi-CD boxed set. With all configurations comes a handsome booklet containing an admiring but fair essay, a bevy of pix of Eric from assorted fashion phases, and a detailed listing of the anthology's 73 cuts, with playing times, complete personnel, and relevant recording information (places and dates). The whole deal, which includes more than 80 minutes of previously

unreleased material, runs five hours. The sound ranges from the simple but effective mono of the Yardbird sides to the full volley of the latest Phil Collins-produced efforts. It's a massive and varied undertaking encompassing a career that has taken some surprising turns.

The guitarist first made his mark with the Yardbirds, a British blues/pop/rock quintet that would have ridden the crest of the British Invasion wave had they not been just a little too hip for the times, especially during their days with Clapton (who would be followed by Jeff Beck and then Jimmy Page). Not that the Yardbirds were purists: Their take on the blues, at least for the medium of the 2½-minute single, was

succinct, sexy, and hyper, and though many of their songs may have been in the tradition, their fast, hard-driving delivery was strictly mod. *Crossroads* digs up three tracks from the Yardbirds' first recording session (late 1963) and follows this with the A- and B-sides of their first three singles (all from 1964). Clapton, sharing lead instrument chores with singer Keith Relf's harmonica, is limited to fills (expertly played) and short, short solos. Still, as on "Good Morning Little Schoolgirl" and "A Certain Girl," there are signs of things to come. Never as adventuresome as Beck or as lyrical as Page, Clapton went for the knife's-edge sound of blues-as-revenge, favoring terse, jabbing phrases,

often with a patina of distortion—the choice of an angry young man.

Feeling stifled by the Yardbirds' attempts at a pop breakthrough—on "For Your Love," a groovy period-piece complete with hot bongos, the guitarist is limited to anonymous riffing—Clapton left the band and joined John Mayall's Bluesbreakers. Though obviously a liberating move for Clapton, his withdrawal from the increasingly experimental eclecticism of the Yardbirds into the by-the-book blues replications of Mayall's group also revealed, for the first time, the essentially conservative aesthetic that would so baffle (and frustrate) many of his fans during his changeable career. Of the six Mayall cuts here, the fruits of this conservatism are most evident on "Have You Ever Loved a Woman": Recorded live, and poorly (even the CD can't redeem Mayall's miked-mangled vocal), in April 1966, it has Clapton pulling out all the emotional stops without resorting to mere virtuosity. Listeners responded: It was during his Mayall stint that the infamous "Clapton Is God" graffiti began to appear around London. A well-meaning salute, it reflected both admiration and the guitarist's limited reputation (nobody had to write that the Beatles were gods, because everyone knew that already).

But Mayall's purism was a dead end for a young guitarist attuned to his times, so E.C. reentered the blues/pop/rock fray with his next group, Cream—the vehicle that would make his fame worldwide. The 12 Cream songs selected for *Crossroads* include all the expected hits and near hits as well as two previously unreleased studio cuts, "Lawdy Mama" (1966) and the jazzier "Steppin' Out" (1968) with concise solo spots from bassist Jack Bruce and drummer Ginger Baker. In Cream, Clapton could hone his aggressive blues chops with responsive cohorts, and here the CD's tendency to allow one to enter into the arrangements is most appreciated. Also, on cuts like "Tales of Brave Ulysses" and "White Room," where drums dominated the original LP versions, proper balance is restored.

Although this time around Clapton contributed to the eclecticism—he could be the impetus for the ecstatic interplay of "Crossroads" and then turn around and write the sweet but dippy "Anyone for Tennis"—his dissatisfaction with the group's direction helped lead to its demise

in late 1968. He then rebounded with Blind Faith, a false start that lasted for one album and one American tour; the band is represented here by three cuts, including the previously unreleased blues "Sleeping in the Ground."

After playing with Delaney and Bonnie (one cut here), the guitarist released the solo *Eric Clapton* (1970), produced by Delaney and featuring the kind of top-heavy, joyous jams so popular in the wake of Leon Russell's successes. The blues was still the base, but less urban than Southern rural; consequently, E.C. was beginning to play with an effective drawl. Notable among the three cuts included here is an alternate mix of "After Midnight," augmented by horns—not that the song needs the extra kick, but what's the harm?

Later in 1970, Clapton founded his last great group (so far), Derek and the Dominos. This blues-drenched combo allowed the guitarist to once again go for a non-experimental, single-track approach, and pulling back from the wild climaxes of Cream, he began playing with a clear, ringing, and more romantic type of intensity. This is evident on the biggest bonus of the anthology, two newly released live Domino cuts and five tracks from the band's never-finished second studio album. Collectors will also be interested in a freshly remixed version of "Layla." It's a dubious achievement, though: By punching up the drums and Clapton's singing, it gains a harder groove but loses some of the emotional impact of the drowning-man morass of the original. Layla, of course, was George Harrison's wife, Patti, and it was awash in unrequited love and drugs

that Clapton made his Derek masterpieces. The drugs soon overwhelmed him and led to a two-year hiatus. It is the subsequent comeback and long solo career that make up the other half of *Crossroads*.

The post-Derek studio Clapton has often sounded like a person in retreat from excess, finding solace in simple love songs, mild rockers, and more reflective blues. (Clapton in concert has been a different story—and would be a different review.) Besides having to live down the rep of the blazing guitar hero, the new and restrained Clapton was releasing decidedly mellow albums that were going against some heavy prevailing winds: His contributions during the peak of punk and new-wave ascendancy were those paragons of tasteful craftsmanship, *Slowhand* (1977) and *Backless* (1978).

Crossroads covers this period intelligently, including 14 cuts from the eight albums that start with *461 Ocean Boulevard* (1974) and end with *Money and Cigarettes* (1983)—only *E.C. Was Here* is not represented—as well as six previously unreleased studio and live recordings. Attention is divided between "straight" songs like "Wonderful Tonight" and "Hello Old Friend" and bluesy guitar workouts like "Double Trouble" and the newly released '77 live "Further On Up the Road." It's hard to imagine that someone thrilled with the first half of *Crossroads* is also going to be thrilled with this post-Derek stuff. But though there may not be much to love, there's plenty to like, and credit must be given to reissue compiler and producer Bill Levenson for mostly avoiding the longueurs and picking the best of the lot (though three cuts from the snoozy *Slowhand* and only one from the satisfyingly tight and plucky *Money and Cigarettes* seems a bad choice).

Alas, just when the staunch Clapton fan has reconciled himself to the diminishing but not dishonorable returns of the later career phase, *Crossroads* presents us with the Clapton/Phil Collins collaborations from *Behind the Sun* (1985) and *August* (1986). On these, E.C. plays second banana to Phil's supposedly surefire hit-making bombastic production. It seems ironic that the 25-year career survey ends with the sort of bid for radio airtime that drove Clapton out of the Yardbirds—and the anthology's capper, a slick version of "After Midnight" from a Michelob beer

(Continued on page 77)

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- Ⓢ Cassette
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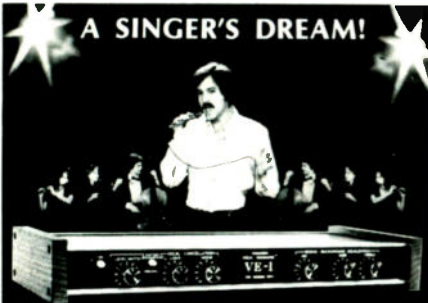
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(Continued from page 73)

commercial, isn't encouraging. But if Clapton's latest phase seems uncharacteristically craven, and musically sterile, perhaps we shouldn't worry: Judging by the story *Crossroads* has to tell, this too shall pass.

Richard C. Walls

THE BEATLES: Past Masters, Vol. 1.

George Martin, prod. Parlophone CDP 90043.

THE BEATLES: Past Masters, Vol. 2.

George Martin, prod. Parlophone CDP 90044.

Okay, here we go:

Revelations:

"Thank You Girl": Stuck on *The Beatles' Second Album*, this song comes and goes without much effect. Here, with layers of reverb stripped away, it swings, led by the confidence of Ringo's drums and the joyful rawness of John and Paul's vocal hook, "and all I gotta do."

"This Boy": The CD revives the bass, only hinted at on *Meet the Beatles!*

"Long Tall Sally": Talk about "Rock and Roll Music," this is it, friends. Paul wouldn't stupefy us again until "Helter Skelter," and the guitar/bass/drum interplay on the breaks is impressive on CD.

"I Call Your Name": John's vocal, buried on the *Second Album*, is upfront and resonant, emphasizing the sure flow of the melody.

"I Feel Fine": A startling transformation, right up there with "Baby You're a Rich Man" on the CD of *Magical Mystery Tour*. The dense echo of *Beatles '65* is gone, leaving a well-balanced stereo recording that boasts a full bass, dead-center vocals, and the finest clarity for that intelligent guitar. Owners of *A Collection of Beatles Oldies* will be familiar with a measure of these benefits, but the CD version is still a discovery.

"She's a Woman": Again, we have a complete makeover from *Beatles '65*. This time, the improved bass and the subtle, warm focus given to Paul's vocal make the song more personal, like a casual shuffle.

"The Inner Light": Said Paul about George's song: "Forget the Indian music and listen to the melody. Don't you think it's a beautiful melody? It's really lovely." He was right—though I wouldn't sell the Indian music quite so short. In fact, with all the acclaim today for African-influenced rock and other world musics, George need make no apologies for being 20 years ahead of everyone else. On CD, "Love You To," "Within In Without You," and "The Inner Light" are a fascinating trilogy.

Disappointments:

"From Me to You": The vocals are punched up—to the point of being shrill. The problem is shared, in varying degrees, by several of the other mono tracks, espe-

cially "I'll Get You." (By the way, followers of the mono vs. stereo debate should be aware that stereo versions do exist of "From Me to You" and "Thank You Girl," both of which are mono here.)

"She Loves You": Dropouts dog the cymbal, probably because of a deteriorating master. Also, halfway through the last verse, the entire soundstage does a flip.

"I Want to Hold Your Hand": The abrupt shift from the bright mono of "I'll Get You" to the scattered stereo of this track is disconcerting. The guitar apostrophes gain prominence, but the vocals are somewhat harsh compared with their counterparts on both *Meet the Beatles!* and *A Collection of Beatles Oldies*, and the entire song seems lacking in power.

"Get Back"/"Don't Let Me Down," "The Ballad of John and Yoko"/"Old Brown Shoe": On these singles, the vocals are punched down. The songs are further dulled by a treble-trouncing bass, which is better balanced on *Hey Jude (The Beatles Again)* as well as on the original 45s.

Throwaways:

"Love Me Do": This is the version with Ringo on drums, and in every way it's inferior to the *Please Please Me* version with Andy White on drums and Ringo on tambourine: The playing is sloppy, the vocals are weak, and you can't even hear Ringo.

"Komm, Gib Mir Deine Hand"/"Sie Liebt Dich": The first has the Beatles singing German lyrics over the backing track to "I Want to Hold Your Hand," and it sounds as lousy as the quick cut-and-paste job it obviously was; master quality is poor, too. The second is a total remake of "She Loves You," played by-the-numbers and badly produced.

"Matchbox": A recital by Ringo. "Honey Don't" is a raver by comparison.

"Across the Universe": It may be sacrilege to admit such a thing, but I'll gladly take Phil Spector's *Let It Be* version over this one, which ended up on a World Wildlife Fund charity album called *No One's Gonna Change Our World*. The bird calls, the nagging wah-wah guitar, and the sweet harmonies are things I can live without—so thought Spector, too, who replaced them with a choir and orchestra and slowed the result down from its original chirpy speed. I have no doubt that "The Long and Winding Road," onto which Spector piled a far more oppressive choir and orchestra, would sound better in Paul's original spare-piano version. But in the case of "Across the Universe," Spector took an insufferably cute song and made it into something more like . . . Lennon.

Oddities:

"From Me to You" (mono) includes the harmonica intro; the stereo version on *A Collection of Beatles Oldies* does not.

"Thank You Girl" (mono) lacks the harmonica outro and two harmonica lines mid-song; *The Beatles' Second Album* does not, whether mono or stereo, as Capitol apparently made its mono "Thank You Girl" from the stereo master.

"I Call Your Name" (stereo) has the cowbell starting after John first sings the title line; mono *Second Album* not only has the cowbell starting at the song's beginning but also has the less complicated guitar opening.

"Paperback Writer" (stereo) has the guitar riff in the left channel; stereo *Hey Jude (The Beatles Again)* is reversed, with the guitar riff in the right channel, and also

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has louder backing vocals.

Packagings:

The plain black-and-white design for *Past Masters* may not represent the summit of art direction, but each CD booklet does contain several well-reproduced photographs—including a full shot from the session shown on the *Revolver* LP, whose original back-cover photo was inexplicably slashed and reshuffled for the *Revolver* CD. And each booklet offers decent notes, mentioning dates, takes, and more.

Dreams:

With the release of *Past Masters*, EMI has granted our wish of having the Beatles' 27 remaining-to-be-digitized tracks in a new, chronological collection, augmented by six alternate takes of previously transferred material. The sound is mostly excellent, and the playing times—18 cuts at 42:30 and 15 cuts at 51:03—are respectable. But I wish that EMI, many months ago, had thought things out a little better still, like so: Move "Day Tripper," "We Can Work It Out," "Paperback Writer," and "Rain" over to the first disc (where they belong) and, deferring mainly to the chronological order of recording dates, follow them with "Strawberry Fields Forever," "Penny Lane," "Only a Northern Song," "All You Need Is Love," and "Baby You're a Rich Man." Then begin the second disc with "All Together Now," "Hey Bulldog," and "It's All Too Much"; "Magical Mystery Tour," "Your Mother Should Know," "I Am the Walrus," "The Fool on the Hill," "Flying," and "Blue Jay Way" (the *Magical Mystery Tour* EP in its original sequential order); and "Hello Goodbye." The results: The present gap between 1966's "Rain" and 1968's "Lady Madonna" would be filled, the dubious *Magical Mystery Tour* and *Yellow Submarine* CDs would not have been necessary, and the two *Past Masters* would have provided us with 27 tracks at 70:13 and 21 tracks at 75:02. Yeah, well, you can't always get *exactly* what you want. Let's be thankful we got what we needed.

Ken Richardson

LUXURIA: Unanswerable Lust.

① *Gavin MacKillop and Luxuria, prods. Beggars Banquet 6990-2. © (Distributed by RCA.)*

Here comes another British duo, but rest easy: Luxuria does not sound like the dreaded Pet Shop Boys. Rather, Luxuria sounds like *everything but* the Pet Shop Boys. Yet in quoting nearly all pop genres from the past two decades, Luxuria, more than any other band I've heard these days, somehow avoids simply rehashing *Where We've Been* and instead comes out chiming *Where We're Going*.

One half of this duo is Howard Devoto, who with Pete Shelley founded the Buzzcocks, a new-wave band of the late Seven-

ties best heard on its collection of 45s, *Singles Going Steady*. But Devoto left after contributing to the group's first EP, *Spiral Scratch*, and went on to form the more complicated Magazine, which released five albums before disbanding in 1981. Two years later, Devoto made a solo LP, *Jerky Versions of the Dream*, and five years further on, he checks in with Luxuria. The other half of this duo is Noko, a Liverpool guitarist whose band, the Umbrella, had folded when he met Devoto through Shelley in 1986. Devoto and Noko co-wrote all nine songs here (with help on a few of them from keyboardist/programmer Leroy James and Magazine bassist Barry Adamson), and they bring to Luxuria a hot mix of prime Buzzcock/Magazine elements along with some of the most urgent guitar work to leap from England in quite a while.

And all those other influences, too: majestic "Wichita Lineman" violins from the Sixties ("Lady 21"), noisy Robert Fripp guitar bursts from the Seventies ("Flesh"), and wide bass channels from the Eighties, whether by way of four-string funk ("Public Highway") or bouncy synth ("Luxuria"). There's also a beautiful cello line in one spot, not to mention horns (used intelligently, at long last) in two spots, not to mention real live drums in most spots (especially the glorious hollow crack of the snare in "Celebrity"). Meanwhile, Devoto takes us on a tour of Keyboards Through the Ages, and his insistent lead vocals—here melodramatic, there sly—combine the flavor of a Bob Geldof with the torn motion of a John Lydon. Most important, however, is that Noko guitar, source of hard-rock chords ("Pound"), sputtery breaks ("Rubbish"), American-style spangles ("Mlle."), and enough distortion to keep things a bit messy. But despite such a traffic jam, the music remains pop—albeit cerebral, layered, and unmistakably British, all of which may explain why the album's first single, "Redneck," has failed to make a dent in the charts.

Another explanation could be the thicket of Devoto's lyrics, hardly the stuff of singalong hits. The man who wrote "Orgasm Addict" ten years ago still has love and sex and everything in between on his mind: The name of his band derives from the Latin for "lust," the name of his album is *Unanswerable Lust*, and much of the material here delves into affairs of the body. "It's one hell of a thing, sex," Devoto comments in a press release, "one hell of a notion at least." Trouble is, in Devoto's language, it can become at most one hell of a novel, making several of these songs word-heavy. Indeed, most of the songs, no matter the subject, are burdened somewhat by the weight of Devoto's dreams. He even quotes Proust, for Pete's sake. Still, the lyrics are always imagina-

tive, and Devoto is capable of getting to a point quickly and sharply: "I hate having to desire you/Hate feeling this again/I hate having to desire you/In common with other men."

My suggestion is that you drink in the music a few times before opening the CD booklet. Headphones are a good idea, too: Though the CD does give more of an edge to Noko's guitar accents compared with the perfectly fine LP version, neither format alone can fully sort through the intentionally busy production. However you listen, enjoy an album that already belongs on your Ten Best list for 1988—and take pleasure in the notion that 1989 and the Nineties will be very good musical years if bands like Luxuria are able to thrive.

Ken Richardson

TALKING HEADS: Naked.

① *Steve Lillywhite and Talking Heads, prods. Fly/Sire 25654-2. © (D)*

JERRY HARRISON: Casual Gods.

① *Jerry Harrison, prod. Sire 25663-2. © (D)*

Talking Heads have often stepped out in new directions, challenging their fans to stay hip, but *Naked* is as boldly different as they've dared to get. Like *Remain in Light*, the new album contains hybrids of international styles—specifically, African and Caribbean arrangements borrowed from the Paris music scene—and numerous players again help the core band get across that global village sound. Of course, hip Americans can handle musical influences from other cultures, too; the album's thorniness stems from occasional dissonance and a creepy undertone to many of the lyrics that goes beyond David Byrne's usual image of quirky discomfort.

The eeriness is partially offset by several cheerful songs built on rousing horns and perky percussion. The most immediately and lastingly likable of these is "(Nothing But) Flowers," a calypso-zouk "Big Yellow Taxi" in reverse. But the lighthearted material is overwhelmed by a cynical thread that runs through the last six songs. Sarcasm infects both the offbeat music and the mocking vocals and is most pronounced in "The Democratic Circus," an election-year satire, and "The Facts of Life," which reduces love to "a machine without a driver" in a world where "God has no master plan." The cleansing rain that starts falling in "The Democratic Circus" winds up drowning the broken old man at the end of "Cool Water," a powerful closer that proves chillingly beautiful if you can stand the dark world view.

Digital-format extras include another cut in the ominous vein ("Bill") and an enlightening page of production notes, but the CD booklet lacks the LP jacket's partially hidden Chinese proverb—"If there is no Tiger in the mountains, the Monkey will be King." Maybe it's further hidden in

the subcode graphics. That's right: This is the first CD that shows still-video images on your television screen (as opposed to the live-action images of a CD-V). Lyrics, chord changes, and instrumental arrangements appear in conjunction with specific songs. Unfortunately, CD players capable of decoding this information, as well as converters for existing players, are not yet available. If you're interested in preparing for the future, be sure that your copy of *Naked* does indeed come from the apparently limited run of encoded CDs: My copy makes no mention of the graphics, either on the packaging or in the booklet.

Casual Gods, from Talking Heads keyboardist and guitarist Jerry Harrison, is also reminiscent of *Remain in Light* as well as of his less polished first solo effort, *The Red and the Black*. Harrison's vocals are a cool cross between Jim Morrison and Robbie Robertson, his band is tight, and his perfectly honed "Rev It Up" is a great single. But the rest of the album's similar-sounding funk is trapped in such a deep-groove monotony that you'll miss the transitions from song to song if you don't pay attention. Exceptions are "Man with a Gun" and "Let It Come Down," which are at least more tuneful. Only one of the CD's two bonus tracks is an extended-mix rerun (of "Bobby"), but neither is worth owning.

Andrew Nash

CHARLIE PARKER: Celebrating Bird: The Triumph of Charlie Parker.

Gary Giddins and Kendrick Simmons, dir. Sony Video Software JO 509.

SONNY ROLLINS: Saxophone Colossus.

Robert Muggie, dir. Sony Video Software JO 583.

Though hampered by the miniscule amount of existing Bird footage and faced with the challenge of placing the alto saxophonist's innovations in their historical context, *Celebrating Bird: The Triumph of Charlie Parker* still manages, in 58 minutes, to give an informative rendering of both the man's life and his artistic achievement. Gary Giddins, adapting his book of the same name for the videocassette, uses interviews with Parker peers like Dizzy Gillespie and Jay McShann, as well as with first and last wives Rebecca and Chan, to create a picture of Bird the compelling personality. Meanwhile, a narration pays attention to the groundbreaking artist, with cogent examples of his fiery genius on the soundtrack.

These reminiscences and evaluations are punctuated by archival performance clips from Diz, Louis Armstrong, Coleman Hawkins, Thelonious Monk, Billy Eckstine, and others. Aside from stills,

Parker himself appears only in a silent film snippet, oozing charisma, and in a 1952 kinescope of a Bird/Diz quintet playing "Hot House" on columnist Earl Wilson's long-forgotten TV show, *Stage Entrance*. It all adds up to a thoughtful introduction for the neophyte and a pleasing artifact for fans.

Saxophone Colossus takes a different approach to its legendary subject, presenting itself as a video LP: Its 101 minutes offer generous helpings of tenorist Sonny Rollins in performance, along with knowledgeable "liner notes" by critics Ira Gitler, Giddins, and Francis Davis. Half of this videocassette is excellent, and those Rollins partisans who say the man must be seen live to be fully appreciated now have the evidence to back up their claim. His outdoor concert segment, from August 1986, is a revelation, and his huge, exhilarating sound and ability to infuse a long solo with unflinching invention held this nonpartisan rapt.

Unfortunately, the video's second half, a Tokyo concert with a symphony orchestra, is anticlimactic. An ambitious concert with some intriguing folkish themes by Rollins, this simply isn't the sort of format that showcases his strong points—a fact that the constant interjection of touristy highlights of Japan doesn't disguise.

Richard C. Walls

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