

30 CD
REVIEWS

HIGH FIDELITY

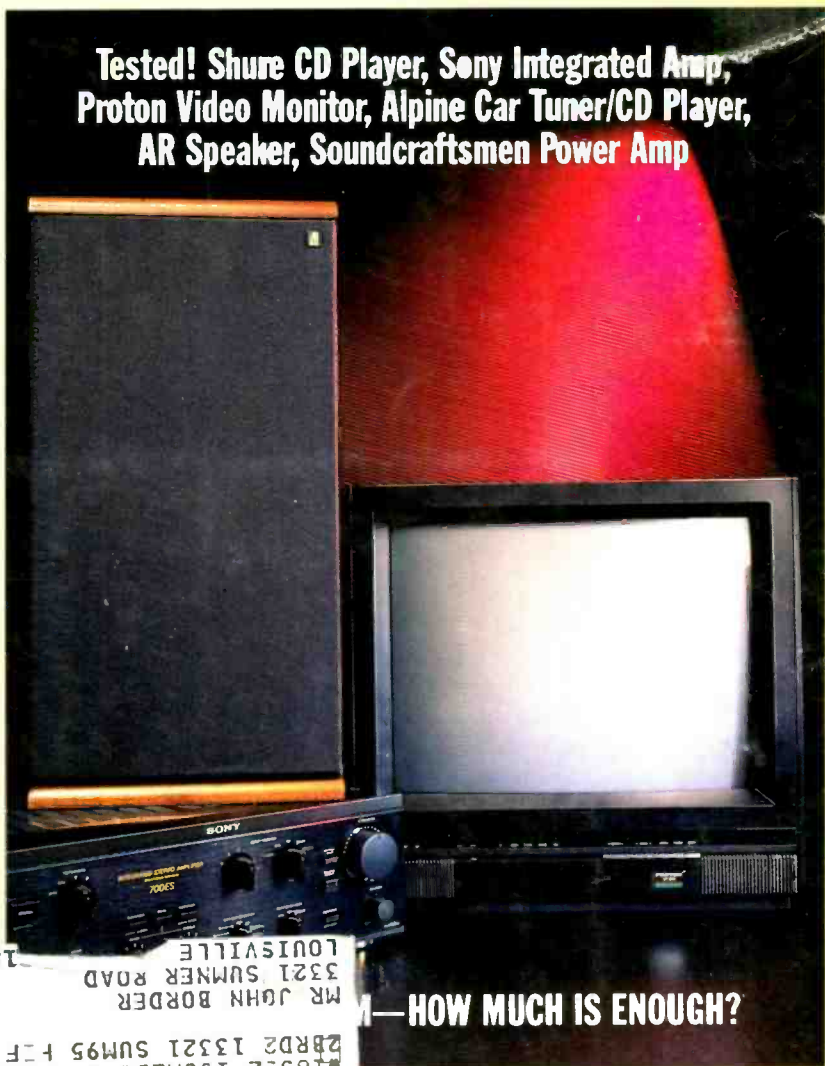
AUDIO - VIDEO - TEST REPORTS - MUSIC

THE ANTI-TAPING CHIP WHY MUSICIANS AND AUDIOPHILES BOTH LOSE

SPECIAL REPORT

The proposal to prevent taping of prerecorded or broadcast music by mandating the use of CBS's anticopy chip has pitted audio enthusiasts against musicians. In an exclusive report, High Fidelity Technical Editor David Ranada shows that the anticopying system will harm both the creators and the consumers

Tested! Shure CD Player, Sony Integrated Amp, Proton Video Monitor, Alpine Car Tuner/CD Player, AR Speaker, Soundcraftsmen Power Amp



#131C*****5-DIGIT 40218
#18332 1SUM25# 17 MAY89
2BRD2 13321 SUM95 F-EE RM
MR JOHN BORDER
3321 SUMNER ROAD
LOUISVILLE

—HOW MUCH IS ENOUGH?

\$STAR CONDUCTORS\$



A precision-engineered automobile deserves nothing less than Yamaha.



World class automobiles are engineered to a set of uncompromising standards, criteria which also distinguish our new DIN-chassis car audio series.

Each is built from a commitment to musical excellence made 100 years ago. The same commitment that has made Yamaha the world's largest manufacturer of musical instruments—from concert grand pianos to FM digital synthesizers.

We've also drawn on our extensive experience in professional audio equipment used in concert halls and recording studios worldwide. And incorporated features from our state-of-the-art home audio components.

One such feature is our unique Variable Loudness Control. First developed for home receivers and amplifiers, it ensures that low, mid and high frequencies maintain proper tonal proportion at any volume. So the sound is always well balanced.

Every unit has our new rotary head design for superb bi-azimuth control, creating greater dynamic range and full-frequency response in either tape direction. Our improved MR II tuner circuitry automatically controls FM noise to optimize reception of even the weakest signal. And our top models offer an optional theft-proof removable chassis.

Visit any authorized Yamaha Car Audio dealer today and listen to our full line of DIN-chassis products. Your precision-engineered automobile deserves nothing less.

Yamaha Electronics Corporation, USA, P.O. Box 6660, Buena Park, CA 90622

100
1887-1987
A Century of Quality

 **YAMAHA**

Even in a world that has come to expect the unexpected from Sony, our latest achievement is nothing short of astounding. A complete car compact disc system, with AM/FM tuner, 25-watt RMS per channel amplifier, and optional cassette deck that installs easily into the existing space in your dash.* That means no awkward brackets, no sacrificing cassette deck for CD and no having to mix and match components.

But that's only half the story.



With Sony's Compact Disc Player, you'll be hearing the sound that changed the way the world listens to music. And with its unilinear converter/digital filter, and ultra stable twin-axis transport, you'll have a car compact disc sound system that can't be equaled.

The Sony CDX-R88 Car CD System.** Seeing it is believing. Hearing it is unbelievable.

Car Compact Disc. **SONY**

THE LEADER IN DIGITAL AUDIO™

Even if you could figure out how Sony put a CD player, AM/FM tuner, amp and cassette deck in this space...

you'd still have to hear it to believe it.

SONIC HOLOGRAPHY:

LIGHT YEARS CLOSER TO REALITY.

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

When Bob Carver set out to redefine the stereo listening experience through Sonic Holography, he was really rebelling against the limitations of the stereo phonograph record. At the time his remarkable invention first started astounding audio critics and music lovers, vinyl discs were the musical standard.

If Sonic Holography can breathe life into even your oldest records, imagine what it will do for CD's, VHS Hi-Fi and other exciting new stereo sources.

Now there are at least five major audio/video breakthroughs which further expand Sonic Holography's potential to bring more excitement and realism into your life.

These innovations include the Compact Audio Disc, noise-free stereo FM, AM Stereo, Stereo television broadcasts and stereo HI-FI video formats.

Each provides the Sonic Hologram Generator in selected Carver preamplifiers and receivers with a chance to redefine the width, breadth and depth of the traditional stereo sound field — while using your existing speakers.

WHAT SONIC HOLOGRAPHY DOES.

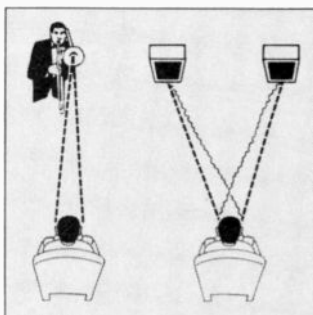
Watch a 13" black and white TV. Now see a movie in 70 millimeter.

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

These are not exaggerations of how much more dimensional and realistic Sonic Holography is than conventional stereo. The most experienced and knowledgeable experts in the audio industry have concurred. Julian Hirsch wrote in *Stereo Review*. "The effect strains credibility—had I not experienced it, I probably would not believe it." *High Fidelity* magazine noted that "...it seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers." According to Larry Klein of *Stereo Review*, "It brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

HOW SONIC HOLOGRAPHY WORKS.

When a musician plays a note, the sound occurrence arrives separately at your left and right ears. Your brain analyzes the difference in these sound arrivals and tells you exactly where the sound is.



L. Real-life sonic event results in two sound arrivals: one at your left ear, one at your right ear.

R. Stereo playback of that sonic event results in four sound arrivals. Two per speaker per ear = four.

Conventional stereo tries to duplicate this process by using two speakers to send a different version of the same sound occurrence to each ear. In theory, this should "trick" your brain's psychoacoustic center into placing the musician on a limited sound stage between your speakers. If — and only if — each speaker can be only heard by one ear.



Conventional stereo: The sound is heard, more or less, on a flat curtain of sound between the two speakers. Volume differences only. The timing cues are gone.



Sonic Holography: With SONIC HOLOGRAPHY, the sound is reproduced much like that of a concert performance, complete with timing, phase and amplitude cues. Three dimensional!

The problem is, these different versions of the same sound also cross in the middle of your listening room, so left and right ears get both left and right sound arrivals a split second apart. Stereo imaging and separation are reduced because both speakers are heard by both ears, confusing your spacial perception.

The Sonic Hologram Generator in the Carver 4000t, C-9, C-1 and Carver Receiver 2000

"The World's Best Sounding Car Speakers From the Genius of Matthew Polk"



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

P

olk Mobile Monitor Voted Speaker of the Year 1987

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

Polk's state-of-the-art 3 way 6" x 9 6502 (99.95 ea.) also incorporates polymer technology for superior sound.



polk audio
The Speaker Specialists®

5601 Metro Drive, Baltimore, Md. 21215



THE EVOLUTION OF THE DISC.



AND THE DISCWASHER.[®]

Early records were scratchy and extremely fragile. Now, with compact discs, you can program the cuts you want to hear (in the order you want to hear them), sit back, relax, and enjoy hours of uninterrupted pleasure. We've certainly come a long way.

Discwasher has come quite a distance, too. And though our first product (the famous D4+[™] Record Cleaning System) is still the industry standard for cleaning LPs, our new Discwasher Compact Disc Cleaner has a style and design that's more than equal to the remarkable discs it protects.

For starters, our CD Cleaner uses a computer-aided design to deliver a true "radial" cleaning (that's what the manufacturers recommend). And Discwasher's CD-1[™] Cleaning Fluid is scientifically formulated to lift and suspend contaminants as our non-abrasive cleaning pad easily and safely removes the debris from the disc surface. The result is no audio drop-outs or playback skips to mar your enjoyment.

Best of all, both Discwasher's CD and LP Cleaning Systems are serious equipment—at a reasonable price. Good "insurance" to protect your priceless CDs and albums. Just the latest step in an exciting audio evolution.



discwasher[®]

4309 Transworld Road, Schiller Park, IL 60176
A Division of International Jensen, Inc.

The makers of the famous D4+[™] Record Cleaning System.

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.



There's something for everybody in this month's test reports. The Shure D-6000 Compact Disc player spins 'em at home, while Alpine's first in-dash car tuner/CD player, the 7902, spins 'em on the road. Soundcraftsman and Sony show their muscle with, respectively, the Pro-Power Four power amp and the TA-F700ES integrated. Acoustic Research sounds off with its TSW-410 loudspeaker system, and the big picture is provided by Proton's VT-210 color monitor/receiver. Reports follow. ►

Not Evolutionary,

Introducing the Visionary New CLD-1010 LaserVision Discs, Compact Discs, Plus 5-inch CD Videos

Our new CLD-1010 is the first invention on earth capable of playing every audio and video laser format in existence.

Which means the CLD-1010 opens up your home to a vast array of entertainment software. Select from a huge library of over 2000 LaserVision™ titles, from the latest movies to opera, many with breathtaking digital soundtracks. The new 5-inch CD Videos. Compact discs. And the growing catalog of 8-inch music LaserDiscs™ as well.

The CLD-1010's remarkable capabilities are made possible by Pioneer innovations like our super-fine half-micron laser optical reader and advanced high-precision servomechanisms and electronics. You get brilliant, high-resolution, 400-line true-color pictures, 60% sharper than any VHS-HQ on the market.

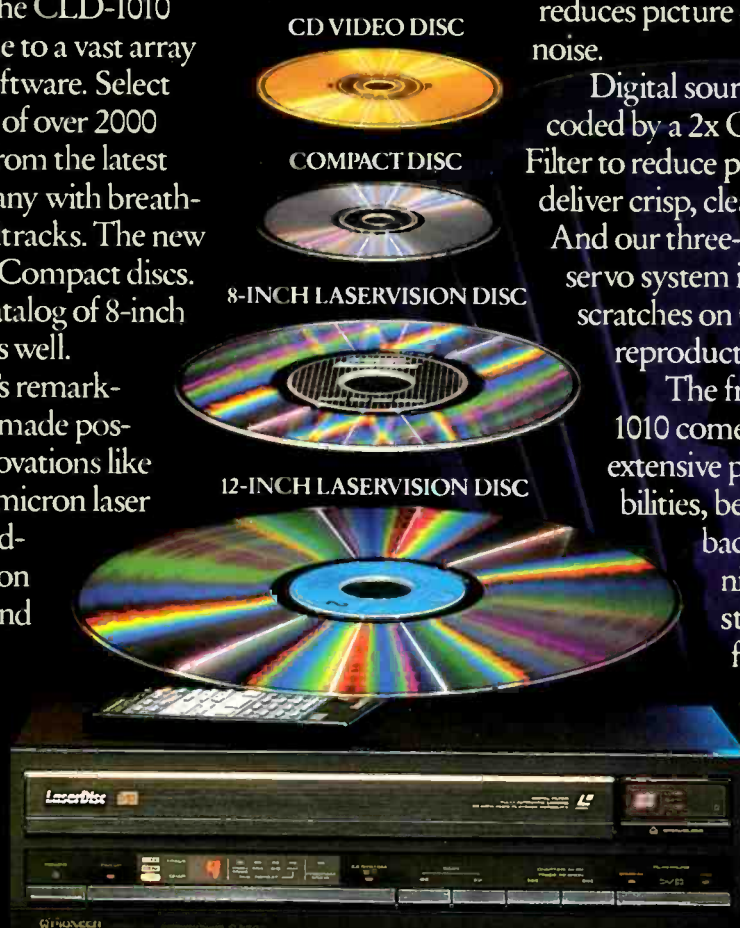
The CLD-1010 markedly reduces picture noise by "piggy-backing" the RF video amplifier on the laser pickup assembly to shorten the signal path. Color "jitter" is eliminated with a CCD time-base corrector and spindle servo system. A new

Feed-Forward Color Corrector maintains color accuracy, and an IC Video Detector along with Pioneer's exclusive Noise Canceller further reduces picture distortion and video noise.

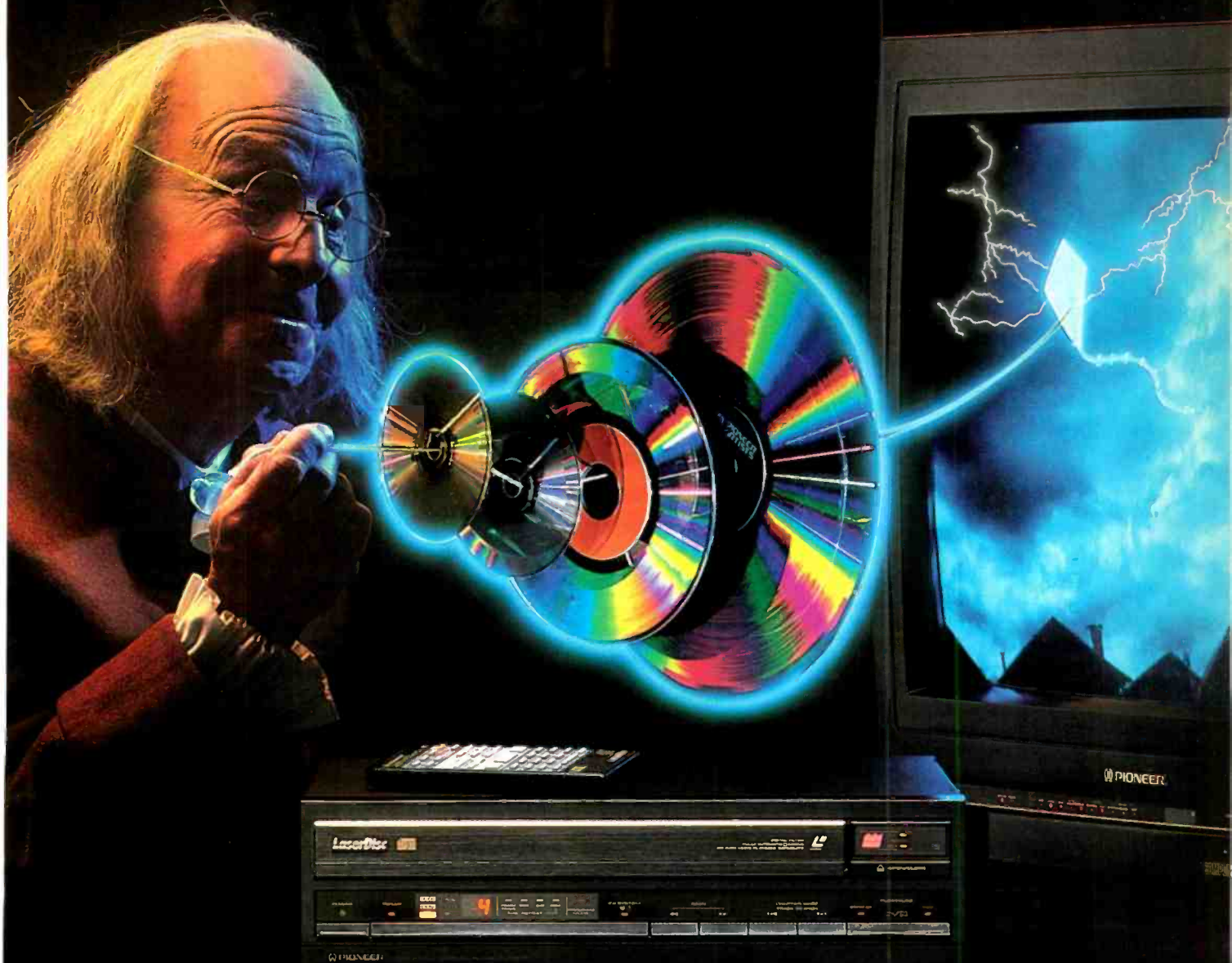
Digital source materials are decoded by a 2x Oversampling Digital Filter to reduce phase distortion and deliver crisp, clear dynamic sound. And our three-spot beam linear servo system ignores dust, dirt and scratches on CD's for improved reproduction.

The front-loading CLD-1010 comes complete with extensive programming capabilities, between-track pausing, backward/forward scanning, skip, search, still/step, and more. A full-function remote complements front panel operation of basic controls. And unlike videotape, you can access any point on a LaserVision disc as fast as lightning.

The Pioneer CLD-1010 is years ahead of its time. But why wait till the 21st Century to enjoy 21st Century home entertainment? It's all here, right now, at your Pioneer Dealer today. For more information, call 1-800-421-1404.



Revolutionary.



 **PIONEER®**

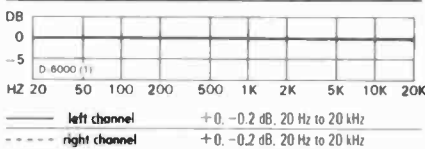
CATCH THE SPIRIT OF A TRUE PIONEER.

Shure D-6000 Compact Disc Player

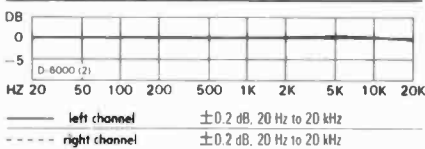


All data were obtained using the Sony YEDS-7, Technics SH-CD001, Philips 410 055-2, and Philips 410 056-2 test discs.

FREQUENCY RESPONSE WITHOUT DE-EMPHASIS



FREQUENCY RESPONSE WITH DE-EMPHASIS



CHANNEL SEPARATION (at 1 kHz) 100 dB

CHANNEL BALANCE (at 1 kHz) ±0.2 dB

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

without de-emphasis 100 dB

with de-emphasis 104 dB

DIMENSIONS: 17 BY 3 INCHES (FRONT PANEL), 1 3/4 INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. **PRICE:** \$599. **WARRANTY:** "LIMITED," ONE YEAR PARTS AND LABOR, FIVE YEARS ON LASER IN HOME USE. **MANUFACTURER:** MADE IN JAPAN FOR SHURE BROTHERS, INC., 222 HARTREY AVE., EVANSTON, ILL. 60602.

IF YOU THINK OF SHURE AS A COMPANY THAT has been dragged kicking and screaming into the CD age, think again. For decades, this manufacturer of cartridges for playing analog LPs has been making a wealth of non-cartridge audio products, many of them for professional rather than consumer use. It hasn't been that big a step from microphones, mixers and equalizers to its recent range of home surround-sound processors and CD players. So it comes as no shock that, in the D-6000, this longtime guru of the black-vinyl nirvana shows a decided aptitude for the new silvery medium.

The organization of the front panel follows standard lines. The power switch is near the left of the disc drawer, the open/close button at its right. Along the right bottom, under the readout window, are the main controls: stop/clear, forward and reverse scan, forward and reverse cueing ("skip"), and play/pause. To their right are three more buttons. One enables or defeats the memory function; one chooses beginning and end points for segment repeat; and the last is a memory button for programmed playback. At the extreme right are an output level control, which adjusts one of two back-panel output-jack pairs as well as the headphone level, and the headphone jack itself.

With the exception of the main power switch, all of these controls—including the

volume adjustment—are repeated on the supplied wireless infrared remote control, which runs on a pair of AA cells. The remote also incorporates a numeric keypad so you can choose tracks directly by number, either to begin play or for programming. (If you use only the front-panel controls, you must cue one track at a time with the skip buttons.) The keypad organization is a little unusual in that its ten regular buttons (0 to 9) refer only to the "ones" column; for digits in the tens, you use a button marked "+10." For example, to program Track 24, you press +10 twice, then 4.

During play, the readout displays minutes and seconds of elapsed time plus the track and index numbers of the passage presently playing. During memorization, the time display is preempted by the number within the programmed sequence. (You can't program by index number, by the way.) When you first close the drawer, total time on the disc is shown for a moment in this

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.

same space. The only other readouts are for status of repeat, memory, and so on. There are the usual three repeat modes: the full disc, the segment between start and stop cues, or a programmed sequence of tracks.

Incidentally, Shure makes the point that you can program the player even before you've closed the disc drawer, so you can use the disc label as a reference. In most cases, the jewel-case liner is a better reference, but the feature should prove useful under some circumstances, particularly as CD prices become more competitive and the packaging consequently chintzier and less informative. And while we're on *that* subject, the rather plain-Jane owner's manual for the D-6000 is more informative than most, thanks largely to the simple, direct, idiomatic English in which it is written.

The best setup for the D-6000 will depend on how you want your overall system to work. You can use the remote volume control to adjust speaker level from your armchair if you feed the rest of the system from the player's adjustable outputs. If the system itself has a remote volume adjustment, however, you're better off using the D-6000's fixed outputs and saving its volume adjustment for the headphones. There is a subcode output on the back panel to permit direct hookup for that feature—if and when it's implemented by CD makers for texts or other visual supplements to the digital audio.

The 6000's digital-to-analog conversion section uses oversampling plus a combination of digital and analog filtering. As a result, the inaudible "ringing" that can be seen in the pulse and square-wave traces from Diversified Science Laboratories is almost symmetrical: That is, there's almost as much in advance of the triggering transient

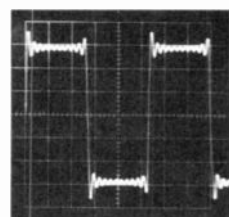
as there is following it. (In the real-time world of analog signals, an effect can't precede its cause.) Pulse polarity is positive—the normal condition. Many players reverse pulse polarity, though the audible importance of this remains debatable.

The digital filtering permits very flat response right up to 20 kHz. Though it's splitting hairs too fine to show clearly on our graphs, the curves for response without pre-emphasis have a tiny rise (less than 0.1 dB) over a broad range centered on about 10 kHz and are down not quite 1/4 dB at 20 kHz. Those made with pre-emphasis lie slightly higher, rising close to 1/4 dB—even as low as 5 kHz—and dropping off a hair less at the extreme top.

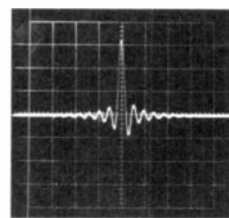
All the data, in fact, represent excellent performance. Look as hard as you may, you won't find significantly better figures for any characteristic in any other model at any price. The error-correction and -concealment tests were passed perfectly (as they are by most models we test these days, but not by at least one high-price entry), though the D-6000 is fairly sensitive to external vibration in the vertical plane. Tapping on the top of the case easily caused mistracking, but footfalls never disturbed it during our tests. And we discovered no evidence of speaker feedback.

During some tests, we discerned (or *thought* we discerned) an undefinable something extra: that elusive and highly subjective "musicality" evoked by some models. Notwithstanding that undocumented consideration, there's no doubting the excellence of the D-6000. As long as you're not looking for what we'd consider rather esoteric functions (like index-number programming), we don't see how you could possibly go wrong with so solid a design. ■

HARMONIC DISTORTION (THD + N; 40 Hz to 20 kHz)	
at 0 dB	< 0.01%
at -24 dB	≤ 0.034%
IM DISTORTION (70-Hz difference; 300 Hz to 20 kHz)	
0 to -20 dB	< 0.01%
at -30 dB	0.012%
LINEARITY (at 1 kHz)	
0 to -50 dB	no measurable error
at -60 dB	-0.1 dB
at -70 dB	-0.2 dB
at -80 dB	-0.4 dB
at -90 dB	+0.9 dB
TRACKING & ERROR-CORRECTION	
maximum signal-layer gap	> 900 μm
maximum surface obstruction	> 800 μm
simulated-fingerprint test	pass
MAXIMUM OUTPUT LEVEL	
line output (fixed or variable)	2.54 volts
headphone output (at clipping; 50-ohm load)	1.64 volts
OUTPUT IMPEDANCE	
fixed line output	570 ohms
variable line output	575 ohms
headphone output	150 ohms
SQUARE-WAVE RESPONSE (1 kHz)	



IMPULSE RESPONSE



T E S T R E P O R T S

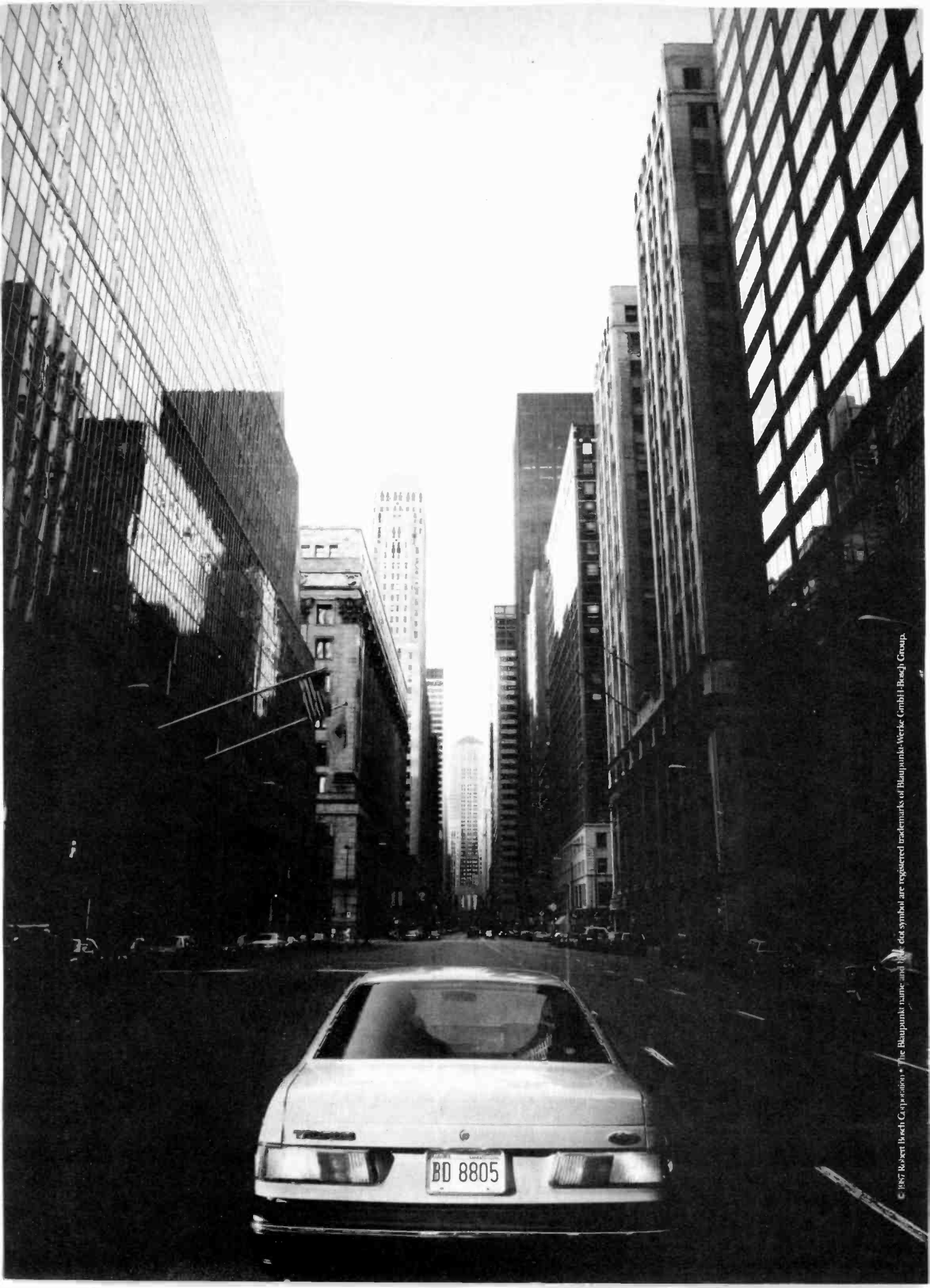
Sony TA-F700ES Integrated Amplifier

DIMENSIONS: 17 BY 6 1/2 INCHES (FRONT), 15 INCHES DEEP PLUS CLEARANCE FOR CONTROLS AND CONNECTIONS. **AC CONVENIENCE OUTLETS:** TWO SWITCHED (100 WATTS MAX. TOTAL), TWO UNSWITCHED (100 WATTS MAX. TOTAL). **PRICE:** \$700. **WARRANTY:** "LIMITED," THREE YEARS PARTS AND LABOR. **MANUFACTURER:** SONY CORP., JAPAN; **U.S. DISTRIBUTOR:** SONY CORPORATION OF AMERICA, SONY DR., PARK RIDGE, N.J. 07656.

THE SONY TA-F700ES IS NOTHING IF NOT imposing. Its size and 37-pound heft result, in part, from what Sony calls its Gibraltar (or G) chassis, which is quite literally "built like a rock": Its molded parts contain calcium carbonate, the basic ingredient of limestone and marble. The knobs, which are appropriately large and well marked, have a good, solid "feel," and the specifications are impressive.

A major objective of the G-chassis construction is suppression of vibration-in-

duced signal artifacts. Like a vacuum tube, but to a far lesser extent, a transistor can be microphonic: It may respond to vibrations (from power transformers or outside sources) by imposing extraneous modulation on a signal as it passes through. To reduce this distortion, Sony not only chooses vibration-damping or high-density materials, but forms and interconnects them for maximum rigidity. At the same time, the nonconductive, nonmagnetic chassis composition (unsaturated polyester resin rein-



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

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

Because ever since the first



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

The Alps.

The Pyrenees.

The Apennines.

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

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

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

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

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

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

We even take the trouble to design our own antennas.

Something not one of our competitors bothers with.

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

What you hear will be music to your ears.

Without all the static you've been accustomed to.

● BLAUPUNKT
Designed for people with ears.
And something between them.



the frequency extremes, and the frequency at which the shelf is reached depends on the degree of cut or boost. At moderate boost or cut settings, the shelving frequency often falls near the nominal turnover frequency; at extreme settings, it's usually about three octaves beyond the turnover, putting it above 20 kHz in both treble options. Maximum cut and boost presumably are about 10 dB (in the ultrasonic range) for the treble. In the bass, they run +7½ and -6 dB, which is sufficient for most purposes.

These results were obtained at the standard test level. When the lab measured boost/cut response at levels 20 dB higher and lower, the results were surprising. Lowering the gain, where you would expect a typical loudness-compensation circuit to increase the deep bass relative to the rest of the range, induced no appreciable alteration of response. Increasing the gain, however, reduced the effective boost-and-cut range of both controls: in the bass to a maximum of +4½, -2½, and in the treble to not much more than that. The tone action is smooth enough (though the detented steps aren't very evenly spaced), but the ineffective loudness compensation (to our ears) renders overall tone-control behavior rather unpredictable.

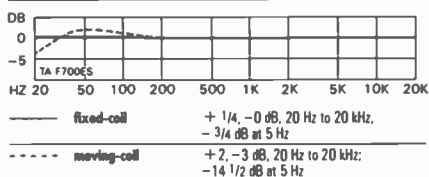
However, basic response through the line-level inputs is extremely flat throughout the audio range. The MM (moving magnet) phono response is almost as flat, rising only about ¼ dB in the range below 100 Hz. Switching to moving-coil operation introduces a slight peak of about 1½ dB near 50 Hz, with a rolloff below that reduces response by 14½ dB (relative to the midrange) at 5 Hz. This rolloff actually provides more attenuation of warp signals than is supplied by the switchable infrasonic filter (which is the only means of significantly controlling warp response at the moving-magnet setting). The front-panel switch that selects phono mode has two moving-coil options, labeled "3 ohms" and "40 ohms." As a glance at our data column will show, these don't represent the respective phono input impedances (which are 100 and 1,000 ohms, respectively); they are instead nominal source-impedance ranges for the pickups themselves.

In addition to the phono input, there are three high-level inputs (marked for tuner, CD, and aux), plus input/output pairs for three tape decks. The main monitoring selector has positions for phono, the three high-level inputs, and tape; a second knob chooses the deck. The recording selector repeats all but the tape option of the main selector and adds dubbing options: from either Tape 2 or Tape 3 to either or both of the other decks.

The remaining front-panel features are the stereo/mono mode switch, the main power switch, the headphone jack, and the switch for either, both, or neither of two speaker pairs. The back-panel speaker connections are heavy-duty binding posts for

RATED POWER	
8-ohm load	20.2 dBW (105 watts)/channel
4-ohm load	21.5 dBW (140 watts)/channel
OUTPUT AT CLIPPING (at 1 kHz; both channels driven)	
8-ohm load	20.9 dBW (123 watts)/channel
4-ohm load	22.6 dBW (180 watts)/channel
DYNAMIC POWER (at 1 kHz)	
8-ohm load	21.9 dBW
4-ohm load	23.7 dBW
2-ohm load	≈ 23.6 dBW
DYNAMIC HEADROOM (re rated power)	
8-ohm load	+1.7 dB
4-ohm load	+2.2 dB
HARMONIC DISTORTION (THD; 20 Hz to 20 kHz)	
at 20.2 dBW (105 watts)	≤ 0.013%
at 0 dBW (1 watt)	< 0.01%
FREQUENCY RESPONSE	
	+0, -1/4 dB, < 10 Hz to 50.6 kHz
	+0, -3 dB, < 10 Hz to 255 kHz

RIAA PHONO EQUALIZATION



SENSITIVITY & NOISE (re 0 dBW; A-weighting)

	sensitivity	S/N ratio
aux input	15.7 mV	82 1/4 dB
fixed-coil phono	0.265 mV	77 dB
moving-coil phono	17.5 μV	75 dB

PHONO OVERLOAD (1-kHz clipping)

fixed-coil phono	170 mV
moving-coil phono	11.4 mV

INPUT IMPEDANCE

aux input	51k ohms
fixed-coil phono	48k ohms; 360 pF
moving-coil phono, 3 ohms	100 ohms
moving-coil phono, 40 ohms	1,000 ohms

OUTPUT IMPEDANCE (re tape)

from aux input	1,000 ohms
from phono inputs	1,200 ohms

DAMPING FACTOR (at 50 Hz; re 8 ohms)

	145
--	-----

CHANNEL SEPARATION (at 1 kHz)

	73 dB
--	-------

INFRASONIC FILTER

	-3 dB at 9 Hz; ≈ 7 dB/octave
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forced with glass fiber, in addition to the calcium carbonate) can harbor no "eddy currents" that, like vibration, are said to be capable of coloring the resulting sound.

As a further attack on the minutiae that may compromise sonic perfection, Sony has adopted what it calls a Spontaneous Twin Drive power supply. In essence, it comprises two independent rectifier/capacitor sections: one feeding the power-amp section's voltage-amplification stage, the other the power amp's output stage. The idea here (as in similar designs from other companies) is to prevent interactions between stages due to supply fluctuations induced by signal demands. Similarly, Sony has taken pains to simplify internal signal routings: The company says that when the F700ES is switched into the "source direct" mode, the signal path is no more complex than that of a power amplifier alone.

The source-direct mode takes the signal just after it has passed through the 20-dB (actually, 21.5-dB) "muting" attenuator and bypasses the infrasonic filter, balance control, and tone controls to feed the volume control directly. The idea (inspired by the cleanliness of digital sound) is to enable you to eliminate as many potentially fidelity-inhibiting circuit elements as possible from the signal path, though there will be times when you will need such elements as tone controls.

The F700ES's two tone controls, on the other hand, seem to be more complex in behavior than usual. Both have variable turnover frequencies: nominally, 200 and 400 Hz for the bass, 3 and 6 kHz for the treble. In addition, the controls can be defeated altogether, even when you're not in the source-direct mode. But the effect of the controls also varies with the volume-control setting, in what Sony evidently considers a particularly sophisticated approach to loudness compensation (at least on the basis of the explanation supplied to us in lieu of an owner's manual, which wasn't ready when our tests were run).

On Diversified Scientific Laboratories' test bench, the labeled turnover frequencies proved to be approximately those at which there was a 3-dB level change with the controls fully rotated. The curves shelve toward

bared wires only. If you want to add a speaker equalizer or other outboard processor, there are preamp-out and amp-in jacks on the back panel, with a switch (instead of the usual, easily misplaced jumpers) to break the normal connection between sections.

The power section is rated not only at 8 ohms (the standard for home equipment as mandated by the Federal Trade Commission) and at 4 ohms (common practice, particularly for commercial-sound and car systems, in which 4-ohm speakers are the norm), but also at 6 ohms. The three ratings make a regular progression (105, 120, and 140 watts, or 20.1, 20.8, and 21.5 dBW) as

load impedance drops, suggesting that the built-in protection circuitry will not prematurely limit power as current drain increases, despite the back-panel caveat to stay with 8 ohms or more per speaker if you drive two pairs simultaneously. The DSL data confirm this impression, though output at 2 ohms does back off slightly from the 4-ohm figure in the dynamic-power test.

But with more than 23 dBW (200 watts) available for music peaks at both these impedances, this amplifier clearly is no slouch. Distortion measured only a hair above our reporting threshold (of 0.01 percent), and only at full rated power and very high fre-

quencies—a combination of factors you're unlikely ever to experience with normal music. Moreover, it proved to be entirely the second harmonic (the least offensive of by-products) and, because of the fundamentals' frequency range, beyond audibility in any event.

Essentially, the Sony TA-F700ES is a traditional (meaning audio-only) integrated amplifier that aims to forgo splashy special effects and give you a little more than you're likely ever to need where it really counts: in distortion-free power, input and tape options, and solid construction. It succeeds admirably. ■

T E S T R E P O R T S

AR TSW-410 Loudspeaker

DIMENSIONS: 12 $\frac{1}{2}$ BY 24 $\frac{1}{2}$ INCHES (FRONT), 11 $\frac{1}{2}$ INCHES DEEP. **PRICE:** \$530 PER PAIR IN WALNUT, \$536 PER PAIR IN OAK. **WARRANTY:** "FULL," FIVE YEARS PARTS AND LABOR. **MANUFACTURER:** ACOUSTIC RESEARCH, 330 TURNPIKE ST., CANTON, MASS. 02021.

IN THE TSW SERIES (WHICH REPLACES THE BXi Series), AR has designed a line of speakers stretching from low to moderate prices (\$212 to \$850 per pair), with similar construction and styling. TSW stands for Titanium/Solid-Wood, evoking both the oak or walnut slabs (your choice) at the top and bottom of each enclosure and the titanium Tetra-Helix tweeter shared by all but the bottom model (TSW-100, which has wood only at the top). The bottom four models are two-way systems; the remaining three, beginning with the TSW-410, are three-way.

The Tetra-Helical Constant Intensity Radiator, to give the tweeter's full name, is presented as the centerpiece of the series. Its diaphragm is a $\frac{3}{4}$ -inch titanium dome; fluid cooling is used in its voice-coil gap. The name is supplied by AR's "helicoid theory" of tweeter propagation, and a patent is pending on the device itself. The basic thrust is to prevent the sort of quasi-resonance that can be created by interaction of a sound's wavelength and the distance it must travel between the diaphragm and an exposed edge of the mounting plate. An edge concentric with the diaphragm acts cumulatively at a single frequency, since that frequency is everywhere diffracted in the same way from the plate edge, disturbing both frequency response and radiation pattern.

A common solution (though a relatively expensive one in terms of machining) is to bury the edge of the mounting plate by set-

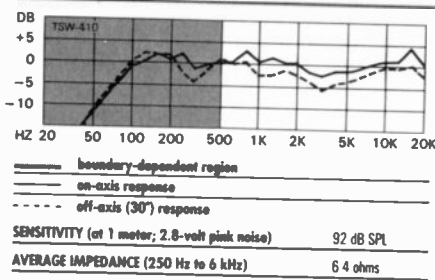
ting it flush with the baffle. This gives the sound no edge from which to diffract. AR has, instead, shaped the plate so that the distance from the center of the diaphragm varies from point to point along the edge of the mounting plate, spreading out over a band of frequencies and keeping it from accumulating significant amplitudes at any one pitch. Further aiding the process are an "acoustic lens," or phase-plug assembly, immediately over the dome and an Acoustic Blanket surrounding the tweeter assembly (and the midrange driver on the larger models of the series). The blanket is intended to absorb acoustic energy moving past the tweeter mounting plate and along the baffle surface before it reaches—and can be re-radiated by—the grille, which is constructed of a sturdy plastic frame with steel rods.

The grille's stretch fabric is held out at an angle by the rods so that the bottom end juts out farther than the top end. Although this suggests a sloping baffle, as in some supposedly phase-coherent floor-standing designs, the TSW-410 isn't intended for floor placement, and the baffle behind the grille actually is vertical. The owner's manual is written to cover a broad range of models and contains only generalized statements on placement, but an AR spokesman suggested using a stand and keeping the TSW-410 away from the wall behind it for testing. As we found out, this placement is best for listening also.

The 8-inch woofer and 6 $\frac{1}{2}$ -inch midrange driver—both with filled-polypropylene cone diaphragms and acoustic suspension loading—are mounted on the vertical axis, as is the tweeter. Nominal crossover frequencies are 3.8 kHz and 450 Hz, which is



ROOM RESPONSE CHARACTERISTICS



the upper end of the nominal woofer range. But both AR's specs and the near-field measurements at Diversified Science Laboratories make it plain that the output from the midrange driver overlaps the woofer's range and works in tandem with it. According to AR, the combined air-moving "grasp" of the two drivers at low frequencies approximates that of a 10-inch woofer.

In both the lab and the listening room, placing the TSW-410 directly on the floor yielded a bottom-heavy sound. Using stands improved the sound remarkably, at least in part by bringing the tweeters up to ear level. DSL used a 12-inch stand, 36 inches out from the wall; all the measurements shown were made this way. The graph is a textbook example of acoustic suspension response, with a rolloff of approximately 12 dB per octave below 100 Hz and quite smooth response above. The dip near 300 Hz is doubtless occasioned by a floor reflection. Even so, on-axis response stays within about +4½, -3 dB from 100 Hz on up. The off-axis curve lies a little lower, but it parallels on-axis response well and thus implies no major change in tonal balance when you move about the room, as our listening confirmed. Neither the moderate peak at the top end nor the apparent weakness in the crossover region above 3 kHz proved intrusive.

The impedance curve is exceptionally flat and lies rather low, implying efficient power transfer from the driving amplifier while arguing against use of paralleled pairs,

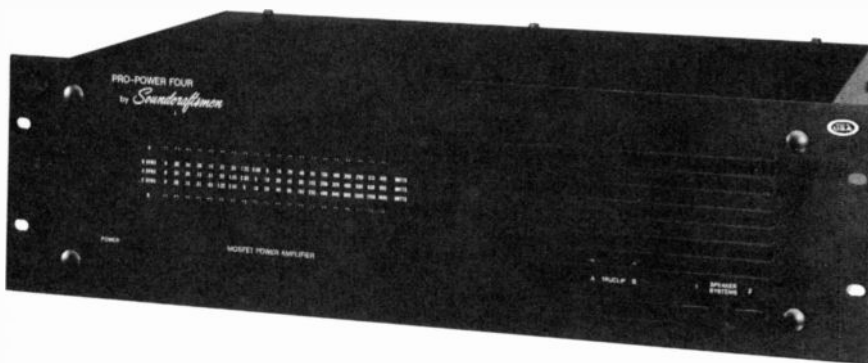
particularly at high levels with current-limited amplifiers. AR's impedance rating—4 ohms nominal, with a 3-ohm minimum—is conservative, but it makes the point. Within the audio band, DSL found no impedance value below 4 ohms (at 20 Hz), while the maximum value (at 80 Hz) measured 8.6 ohms. The minimum above the bass-resonance frequency (sometimes taken as the rating point, and here near 200 Hz) measures 4.3 ohms. From the midrange up, all values are between 5 and 8 ohms.

Above bass resonance (at 80 Hz, on the basis of the impedance curve), the distortion measurements consistently averaged ½ percent or less until drive level approached the maximum used in these tests. And even at that point (100 dB sound pressure level), the average is less than 1 percent, which we'd judge good for a speaker of this size. Sensitivity is a bit greater than we might have expected from the design and actually measures 3 dB higher than AR's spec—though the moral here is that there are many ways to measure sensitivity, so compare figures from different sources at your peril.

We were very pleased by what we heard. Again, we considered the heaviness of the bass unacceptable with the speakers on the floor, but the balance is very fetching with the recommended stands in place. The "personality" of the TSW-410 is open and lively, dynamic range and imaging are both above reproach, and coloration is slight. In short, AR has done it again. ■

T E S T R E P O R T S

Soundcraftsmen Pro-Power 4 Power Amplifier



DIMENSIONS: 19 BY 5¼ INCHES (FRONT PANEL), 10 INCHES DEEP PLUS CLEARANCE FOR CONNECTIONS. PRICE: \$749. MANUFACTURER: SOUND-CRAFTSMEN, 2200 S. RITCHEY, SANTA ANA, CALIF. 92705.

SOUND-CRAFTSMEN, WHICH HAS ALWAYS taken a very iconoclastic American approach to amplifier design, has also, through its unorthodox, made some important contributions to amplifier design

concepts, many of which are present in the Pro-Power Four.

Take, for example, the amplifier's use of MOS FET (metal-oxide semiconductor field-effect transistor) output devices. These cost more than conventional bipolar transistors, but have more ideal operating characteristics (lower inherent distortion, among other things) and greater immunity from self-destruction under stressful conditions. Only a few other manufacturers use MOS FETs; Soundcraftsmen chooses to pay the extra money for their sonic qualities. Those costs are offset in other ways.

One of these is the unit's Phase Control Regulation power-supply circuit, a design introduced by the company in 1984. It is an efficient means of controlling the average power supplied to the amplifier's output

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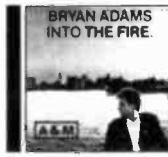
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347955

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350140. Pretenders—Get Close. (Sire)
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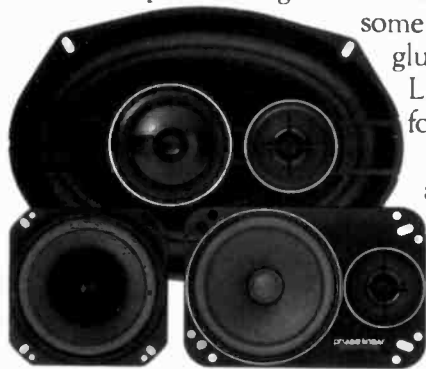
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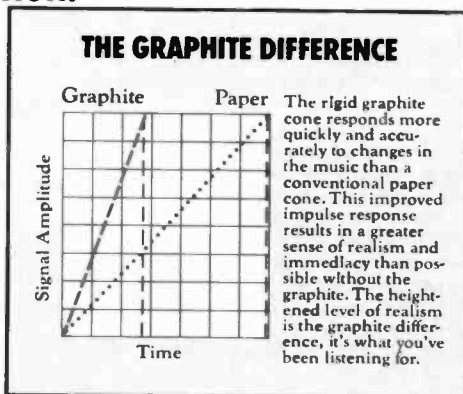
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tion. A speaker so rich and responsive, so true to the original source material that we might have copied the design ourselves—if we hadn't invented it!

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We know that many of today's top-of-the-line car systems possess incredible amounts of power.

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Phase Linear carries this high level of excellence right down to our sleek and handsome appearance, too. No matter what kind of car you drive, our equipment will look, fit and sound top-notch. And we have models that can upgrade the sound of any dashboard, door or deck, too!

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stages by selectively pumping jolts of AC-line power into storage capacitors. The feedback around this circuit maintains a nearly constant maximum output voltage under widely varying loads—the classic behavior of a tightly regulated power supply. The company also says this method of regulation minimizes the effects of reduced power-line voltage, an effect that can limit the maximum output of an amplifier using an unregulated power supply. The combination of the MOS FET output stages with the Phase Control Regulation supply is said to provide high current levels into low-impedance loads.

As with most other power amplifiers, the Pro-Power Four's front is rather plain. The austere appearance is brightened by the 20-step peak-reading output-level meters. The well-written manual emphasizes the often-ignored point, as do the separate 8-, 4-, and 2-ohm calibrations of the meters, that the precise output power is dependent upon the frequencies being amplified and the speakers' impedance at those frequencies. At best, then, the Pro-Power Four's level readings are only approximate.

Far more exact and useful are the unit's True Clipping indicators, one for each channel. Diversified Science Laboratories found that these do light up at the onset of clipping, and do so independently of the speaker impedance. To make the indication more vivid, all the level-meter LEDs for the appropriate channel are simultaneously illuminated with the corresponding clipping indicator. Decorative hole covers are supplied for those not taking advantage of the unit's front-panel rack-mounting holes.

The rear panel contains large not-to-be-blocked gratings that are the intake and exhaust of the unit's fan, as well as multiway binding posts for the two speaker connections and the input pin jacks. Soundcraftsmen, cognizant of the high voltages that can be generated at the output terminals of such a powerful amplifier, thoughtfully provides push-on insulators for the binding posts.

These are meant to cover the hot (red) terminals when they are directly connected to stripped-wire speaker cable.

Soundcraftsmen, in a letter to HIGH FIDELITY explaining some of the design goals for the amplifier, also expounded the proposition, almost heretical in these days of 6-dB dynamic headrooms, that an amplifier's continuous power is "of much more importance to accurate musicality than peak power." They justify this statement—rather well, we think—by noting that "there are sufficient numbers of sustained peak passages [longer than the 20-millisecond bursts of the official dynamic headroom measurement technique], particularly with the increased use of CDs, to make it extremely important that an amplifier have continuous power capability for reproducing those sustained high energy requirements." This is a valid point, and has been noted by other manufacturers who, instead of taking Soundcraftsmen's approach of providing prodigious amounts of continuous power, have opted only to extend the duration of their amplifiers' peak-power output to longer than 20 milliseconds.

The tight power-supply regulation, together with the emphasis on continuous output power, probably account for Diversified Science Laboratories' somewhat curious dynamic power readings, which, instead of being higher, are equal to or even less (in the case of 8-ohm loads) than the amplifier's continuous power at clipping. Not to worry. With a clipping power of 245 watts (23.9 dBW) into 8 ohms and 345 watts (25.4 dBW) into 4 ohms, and despite the rather low dynamic headroom, the Pro-Power Four has enough behind it for all but the most difficult listening situations (such as very inefficient speakers driven to disco levels in a large room). Particularly noteworthy is the ability to put out peaks of 355 watts (25.5 dBW) into 2-ohm loads.

Distortion was at all times well below audibility and, in any case, consisted principally of the relatively benign third harmonic. Signal-to-noise ratio, damping factor, and

RATED POWER	23.1 dBW (205 watts)/channel
OUTPUT AT CLIPPING (at 1 kHz; both channels driven)	
8-ohm load	23.9 dBW (245 watts)/channel
4-ohm load	25.4 dBW (345 watts)/channel
DYNAMIC POWER (at 1 kHz)	
8-ohm load	23.5 dBW
4-ohm load	25.4 dBW
2-ohm load	25.5 dBW
DYNAMIC HEADROOM (re rated power; 8-ohm load)	+0.4 dB
HARMONIC DISTORTION (THD; 20 Hz to 20 kHz)	
at 23.1 dBW (205 watts)	≤ 0.028%
at 0 dBW (1 watt)	< 0.01%
FREQUENCY RESPONSE	
	+0, -1/4 dB, < 10 Hz to 30.9 kHz
	+0, -3 dB, < 10 Hz to 132 kHz
S/N RATIO (re 0 dBW; A-weighted)	84 dB
SENSITIVITY (re 0 dBW)	74.8 mV
INPUT IMPEDANCE	22k ohms
DAMPING FACTOR (at 50 Hz; re 8 ohms)	180
CHANNEL SEPARATION (at 1 kHz)	70 3/4 dB

channel separation were all fine, and the input characteristics (sensitivity and impedance) are suitable for connection with nearly any preamp.

Output protection for the Pro-Power Four consists of multiple thermal sensing devices controlling the speed of its fan. The blades are always turning while the amplifier is on and, as DSL found, they switch into a rather noisy high gear after the amplifier has been delivering full power for several minutes. Our listening tests using typical pop and classical music played at rather loud levels over inefficient speakers (with a sensitivity rating of only 86 dB SPL) activated the high fan speed only rarely, and most of the time it couldn't even be heard over such loud music. Deliberately attempting to obtain the high fan speed continuously with music would probably have put our hearing, and the structural integrity of our listening room, at risk. There also was no reason to push the amplifier so hard. The Pro-Power Four smoothly and cleanly handled everything we gave it, with power to spare. ■

T E S T R E P O R T S

Proton VT-210 Monitor/Receiver

DIMENSIONS: 21 1/4 BY 19 1/4 INCHES (FRONT), 20 1/2 INCHES DEEP; SCREEN, 20 INCHES (DIAGONAL). PRICE: \$849. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR, TWO YEARS ON PICTURE TUBE. MANUFACTURER: MADE IN TAIWAN FOR PROTON CORP., 737 W. ARTESIA BLVD., COMPTON, CALIF. 90220.

DEJA VU—LITERALLY! JUST ABOUT A YEAR ago (August 1986), we reviewed the Proton 619A stereo monitor/receiver and found it performed "as well as or better than any other comparable unit we've tested in almost every category." Now we return to

Proton to review the VT-210, a new 20-inch (measured diagonally) monitor that has essentially the same styling, the same lineup of features, and as it turns out, very similar performance to last year's slightly smaller model. ▶



VIDEO MONITOR SECTION

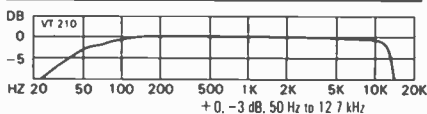
All measurements were made through the composite (direct) video inputs

HORIZONTAL RESOLUTION	≈ 290 lines
INTERLACE	perfect
OVERSCAN	
horizontal	≈ 6%
vertical	≈ 4%
CENTERING	
horizontal	perfect
vertical	down ≈ 1%
BLOOMING	see text

TV TUNER SECTION

All measurements were taken at the direct audio and video outputs

AUDIO FREQUENCY RESPONSE (mono)



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

best case (no color or luminance)	49 dB
worst case (multiburst pattern)	37 3/4 dB

RESIDUAL HORIZONTAL-SCAN COMPONENT (15.7 kHz)

	-49 dB
--	--------

MAXIMUM AUDIO OUTPUT (100% modulation)

TV or fixed	0.43 volt
variable	0.82 volt

As with the 619A, the VT-210's tuner spans all 82 VHF and UHF broadcast channels plus midband (A1-A5), superband (J-W), and hyperband (AA-WW and AAA-EEF) cable channels. Connection to cable or VHF is via a standard F connector, and there is provision for a 300-ohm twinlead UHF antenna. As with the 619A, there's a second pair of F connectors to hook in a pay-TV decoder, or a computer or video game generating an RF signal. If your computer has a digital (TTL-level) RGB output, the VT-210 handles it as well.

In addition to the RF inputs and the RGB connection, the VT-210 accommodates three composite video inputs with accompanying stereo audio connections. In round-robin fashion, these are selected by pressing either the front-panel TV/video button or an equivalent one on the wireless remote. Other front-panel buttons scan through the channels you've "memorized," raise and lower the volume, select between the antenna and auxiliary inputs, and power up the set. The remote performs all these functions and, additionally, provides direct access to any channel (via a numerical keypad), selects the channel previously tuned, activates the on-screen channel-number display, and engages the audio muting and sleep timer. The timer can be set to automatically turn off the VT-210 after 5 to 90 minutes.

Behind a hinged panel beneath the screen are the setup controls: master power (to disconnect the set from the line when

you're away for an extended period), vertical hold, color, tint, black level (brightness), picture (contrast), and detail. The color, tint, and black-level knobs have center detents suggesting the recommended settings. Separate bass, treble, and balance controls (also with center detents) affect the sound to the two small built-in speakers as well as the audio at the variable line outputs. (There are no speaker output connections.)

To the right of these controls, also behind the door, is a series of buttons and switches that program the channel memory, select between TV and CATV (cable) operation, and select automatic or manual fine-tuning (the latter accomplished via small up/down buttons above the switch). Three more switches activate Proton's video low-level noise reduction circuit, choose between normal operation and the RGB input, and between the SAP and main broadcast stereo audio channels. On the back panel are switches to disconnect the internal speakers, choose the sync polarity for the RGB input, and engage a 3.58-MHz trap that can help clean up the picture when using the monitor with a computer or video game.

In addition to the three direct audio-video inputs, the VT-210 sports three sets of rather versatile audio-video outputs. The first (labeled TV) carries the channel (picture and sound) to which the set is tuned, independent of the source you've chosen to watch. Thus, you can record a broadcast on a VCR connected to this output while viewing any of the three direct video inputs. Or, by jumpering the TV output to one of the direct video inputs and connecting your FM tuner to the corresponding audio input pair, you can receive simulcast broadcasts by choosing that video input and setting the video tuner to the appropriate TV channel and the FM tuner to the station carrying the audio.

In addition to the TV-out jacks, there are two other sets of audio-video outputs, one having fixed audio levels and one whose audio is affected by the VT-210's volume, balance, and tone controls. The former connections are the obvious choice for recording on a VCR; the latter's audio connections would be appropriate for driving an external power amplifier or powered loudspeakers. And the second video output could come in handy to drive a second monitor.

One of the clearest differences between last year's 619A and this year's VT-210 is the larger picture tube itself. The new model has a square-corner CRT with an exceptionally flat face, providing distortion-free viewing over a wide seating area. It is very difficult to maintain geometric linearity with a flat-face tube (so that objects do not change shape as they appear on different parts of the screen), yet Diversified Science Laboratories reports that the VT-210 is absolutely superb in that regard. Furthermore, the picture is almost perfectly centered along both axes and exhibits negligible overscan.

One of the most impressive attributes of the new CRT is its color accuracy, particular-

ly on difficult-to-reproduce deep greens, which are noticeably less "limy" than we've seen on most other tubes. The reds still tend to lean toward orange but not as much as on many other sets. Overall, the color rendition is excellent—both on the test bench and in normal viewing.

Black-level retention—a Proton specialty—is also excellent, and the picture is perfectly interlaced. Video transient response is, if anything, better on the VT-210 than on its predecessor, and the three color rasters proved equally pure. (Actually, as received, there were some blotches in the raster, but after we followed Proton's automatic degaussing instructions—turn the set off for 10 minutes and turn it back on, repeating if necessary—the blotches disappeared.) Gray-scale linearity and the related chroma differential gain are excellent, and there is very little change in hue with changes in scene brightness (measured as chroma differential phase).

In convergence, blooming, and horizontal resolution, however, the VT-210 does not quite live up to the performance of the earlier model. Convergence on our sample was only fair, with blues shifted slightly to the left over most of the screen. But since the error was so uniform, we believe a competent technician could readjust the set for excellent overall convergence. (Misconvergence over only a portion of the screen is harder to correct.)

With the BLACK LEVEL set at the detent, there was noticeable blooming over the upper half of the contrast range. This may have degraded the horizontal resolution, which at reduced contrast levels is better than the approximately 290 lines reported in the data. All measurements were made with the detail

knob at maximum. Turning it down mainly affects resolution in the 1.5- to 3-MHz region and is useful for softening an overly harsh picture or for reducing snow. This may be needed less often than usual because Proton's video noise reduction does reduce low-level snow in many pictures without grossly (or even noticeably, in many instances) degrading high-level resolution.

The tuner's video frequency response, measured through the TV output, rolls off above 3 MHz, implying a resolution of perhaps 260 lines. But since this output will be used mainly to record broadcasts on a VCR—and no current decks have anywhere near that resolution—we consider the loss relatively unimportant. As far as viewing is concerned, picture resolution through the tuner is almost as good as from the direct-video input.

Coming from the TV output, luminance level is higher and chroma level lower than standard, but they are within the automatic-gain-control range of an average VCR. Gray-scale linearity is very good, as are color accuracy and chroma differential phase. The chroma differential gain is less than we've seen on many other tuners and occurs only in the brightest parts of an image.

The tuner's audio response is adequately flat from 50 Hz to almost 13 kHz, whereupon a "whistle filter" kicks in and does a good job of removing the horizontal-scan frequency. Signal-to-noise ratio is at least average with a black raster and better than average in the worst case (when displaying the convergence test pattern). Maximum audio output level is higher at the variable output than at the fixed or TV outputs, but is more than adequate in all three cases. Output impedance is also low enough to be of no con-

AUDIO OUTPUT IMPEDANCE	≤ 820 ohms	
VIDEO FREQUENCY RESPONSE		
at 500 kHz	- 1/2 dB	
at 1.5 MHz	- 1 1/2 dB	
at 2.0 MHz	- 2 1/2 dB	
at 3.0 MHz	- 5 1/2 dB	
at 3.58 MHz	- 7 3/4 dB	
at 4.2 MHz	- 18 3/4 dB	
LUMINANCE LEVEL	25% high	
GRAY-SCALE NONLINEARITY (worst case)	≈ 5%	
CHROMA DIFFERENTIAL GAIN	≈ 18%	
CHROMA DIFFERENTIAL PHASE	≈ ± 5°	
CHROMA ERROR		
	level	phase
red	- 5 3/4 dB	+ 2°
magenta	- 5 3/4 dB	+ 2°
blue	- 5 3/4 dB	0°
cyan	- 5 3/4 dB	+ 5°
green	- 5 3/4 dB	+ 3°
yellow	- 5 3/4 dB	+ 6°
median error	- 5 3/4 dB	+ 3°
uncorrectable error	± 0 dB	± 3°

cern. The tone controls (which affect only the signal at the variable output and to the internal speakers) hinge at 1 kHz and provide a range of approximately +12½, -8½ dB at 50 Hz and +8½, -11 dB at 10 kHz.

Although we would prefer less picture blooming and the essentially "perfect" resolution of the 619A (which probably would have been there without the blooming), we're nonetheless pleased with the Proton VT-210. It is a well-conceived and excellently realized monitor/receiver. Besides, there are still only two program sources (live broadcasts and videodiscs) that come close to taxing the 330-line resolution of which the NTSC system is capable. Both can look superb on this monitor. ■

T E S T R E P O R T S

Alpine 7902 Car Tuner/CD Player

DIMENSIONS: 7 BY 2 INCHES (CHASSIS FRONT), 6 INCHES DEEP; TRIM, 7½ BY 2½ INCHES. CONNECTIONS: ROUND MALE AND FEMALE FOR IGNITION, FLAT FEMALE FOR POWER ANTENNA, ROUND MALE FOR "INTERFACE" (TO ALPINE ALARM SYSTEM), SPADE LUG FOR GROUND; MULTIPIN DIN-STYLE MALES FOR FRONT AND BACK LINE OUTPUTS, MULTIPIN DIN-STYLE FEMALE FOR LINE INPUT; STANDARD COAXIAL FEMALE FOR ANTENNA INPUT. FUSES: 3-AMP IN IGNITION LINE (AND IN IGNITION AND BATTERY LINES OF ACCESSORY ADAPTERS TO MATE MULTIPIN DIN CONNECTORS). PRICE: \$450. WARRANTY: "LIMITED," ONE YEAR PARTS AND LABOR. MANUFACTURER: ALPINE ELECTRONICS, INC., JAPAN; U.S. DISTRIBUTOR: ALPINE ELECTRONICS OF AMERICA, INC., 19145 GRAMERCY PL., TORRANCE, CALIF. 90501.

ALPINE SAYS ITS 7902 IS THE FIRST FRONT end to combine a CD player with an AM/FM tuner on a single chassis. It is certainly the first product of that description we've tested. (The only other AM/FM/CD combination we've reviewed needed a second chassis for the power-supply and tuner circuits but included a stereo power amp, which the 7902 does not.) The 7902 turns out to be an excellent performer with equally excellent ergonomics and thus a very welcome newcomer to the car CD-player field.

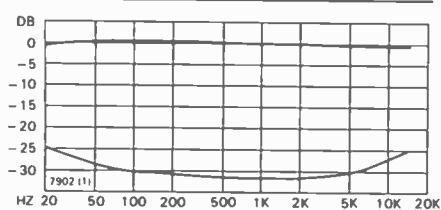
The 7902's single-chassis design simpli-

fies installation if you're going for an all-Alpine system. The company uses multipin DIN-style jacks to hook everything together with minimum fuss. If you want to mix brands, Alpine offers an adapter that supplies more common connectors: round male and female for ignition, battery, and remote power switching; a spade-lug ground; and regular pin jacks for the signal leads. Having both male and female connectors (each with a plastic hood to prevent inadvertent grounding) is a handy idea. The ignition and battery leads have 3-amp in-line fuses. ▶



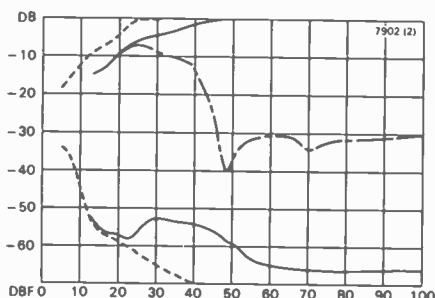
FM TUNER SECTION

FREQUENCY RESPONSE & CHANNEL SEPARATION



Frequency response + 1/2, -1 1/4 dB, 20 Hz to 15 kHz
 Channel separation ≥ 25 dB, 23 Hz to 12.5 kHz

FM SENSITIVITY & QUIETING



— stereo quieting (noise) & output
 - - - mono quieting (noise) & output
 ···· channel separation at 1 kHz

Stereo sensitivity (for 50-dB noise suppression)	see text
Mono sensitivity (for 50-dB noise suppression)	16 1/2 dBf
Stereo S/N ratio (at 65 dBf)	65 3/4 dB
Mono S/N ratio (at 65 dBf)	71 dB

CAPTURE RATIO	3.3 dB
SELECTIVITY (alternate-channel)	68 1/2 dB
AM SUPPRESSION	56 1/2 dB

DISTORTION (THD + N)	stereo	mono
	at 100 Hz	0.63%
at 1 kHz	0.29%	0.98%
at 6 kHz	1.3%	1.5%

One curious aspect of the hookup scheme that isn't clarified in the otherwise helpful owner's manual is that there's no chassis battery lead to supply an uninterrupted power source for the unusually comprehensive memory functions. Instead, that line must be hooked up via one of the three multipin connectors: Two male plugs interconnect with front and back power amps, respectively, while the female connector is for input from an auxiliary source for future expansion.

In any of these connectors, the battery pin powers the memory functions for the tuner, clock, and CD-player track location. When you shut off the ignition during disc play, the disc isn't ejected. When you restore power, playback continues right where it left off, just as if you had put the player into pause. However, you can't similarly interrupt play to check a broadcast news report, because the tuner functions only when you eject the disc. If you want to resume disc play after listening to the radio, you must recue manually.

The front-panel layout makes heavy use of the traditional Alpine large, square illuminated buttons, which sometimes change color from green to amber—for example, when you select a station preset. At the left is the only knob cluster: for volume (the main knob), fader (the outer ring), balance (pulling the main knob), and on/off (tapping the main knob). Above it are center-detented sliders for treble and bass.

Two rocker switches to the right of the knob cluster are particularly satisfying in their behavior, since they double on closely related functions for tuner and CD. The first offers up or down station-seek for the tuner, forward or back track-seek for CDs. The next tunes manually up or down or cues (at higher than real-time speed but with reduced output) forward or back across a CD. The top of the third rocker is a mono/stereo switch that affects only the FM tuner; the bottom is a memory-enable switch used for both adjusting tuner presets and programming (or adding to) a CD track sequence.

The first two buttons to the right of the display serve single purposes. The upper button steps through the tuner-preset banks (two FM and one AM). Each holds six fre-

quencies, corresponding to the six numbered buttons farther to the right. Below the tuner-bank button is one that toggles between PLAY and PAUSE for CDs. The six station presets double as special functions for the CD player: CLEAR clears one or all slots in the programming memory, depending on how long you press it; PRESET operates after the left-hand memory button has been pressed and enters the currently selected track at the first free programming slot while stepping the memory to the next slot (it can also be used to correct the last entry); P.S.P. (preset play) begins playback of a programmed sequence; REPEAT steps between a repeat of the current track, repeat of the entire disc, and off (it won't repeat a programmed sequence); SCAN samples each track in turn for ten seconds and will follow a programmed sequence if one is in memory; and A.D.I. (automatic disc initializer) re-starts play from the top.

When you insert a disc into the slot, it automatically overrides the tuner output. (CONTINUED ON PAGE 43)

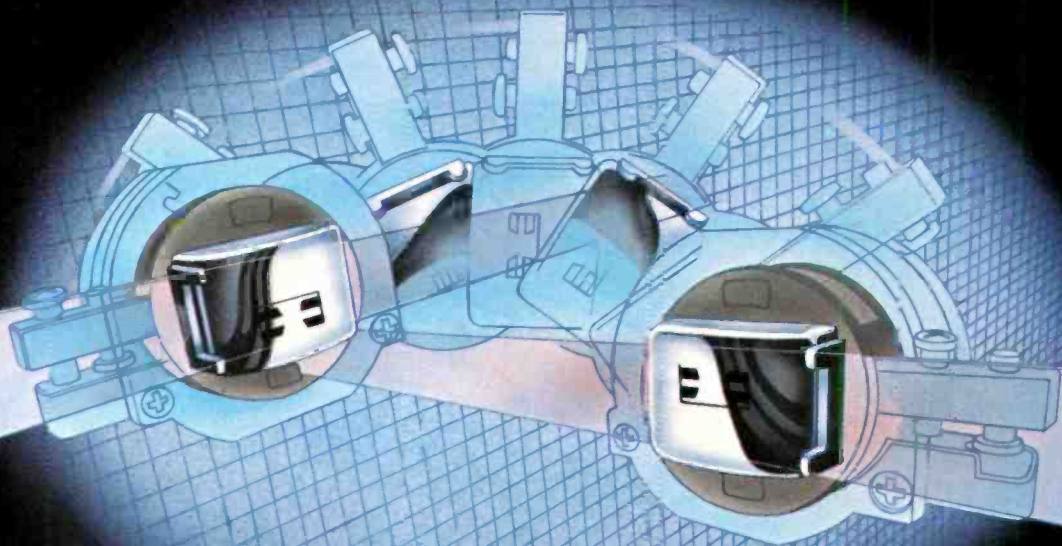
ABOUT THE dBW

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

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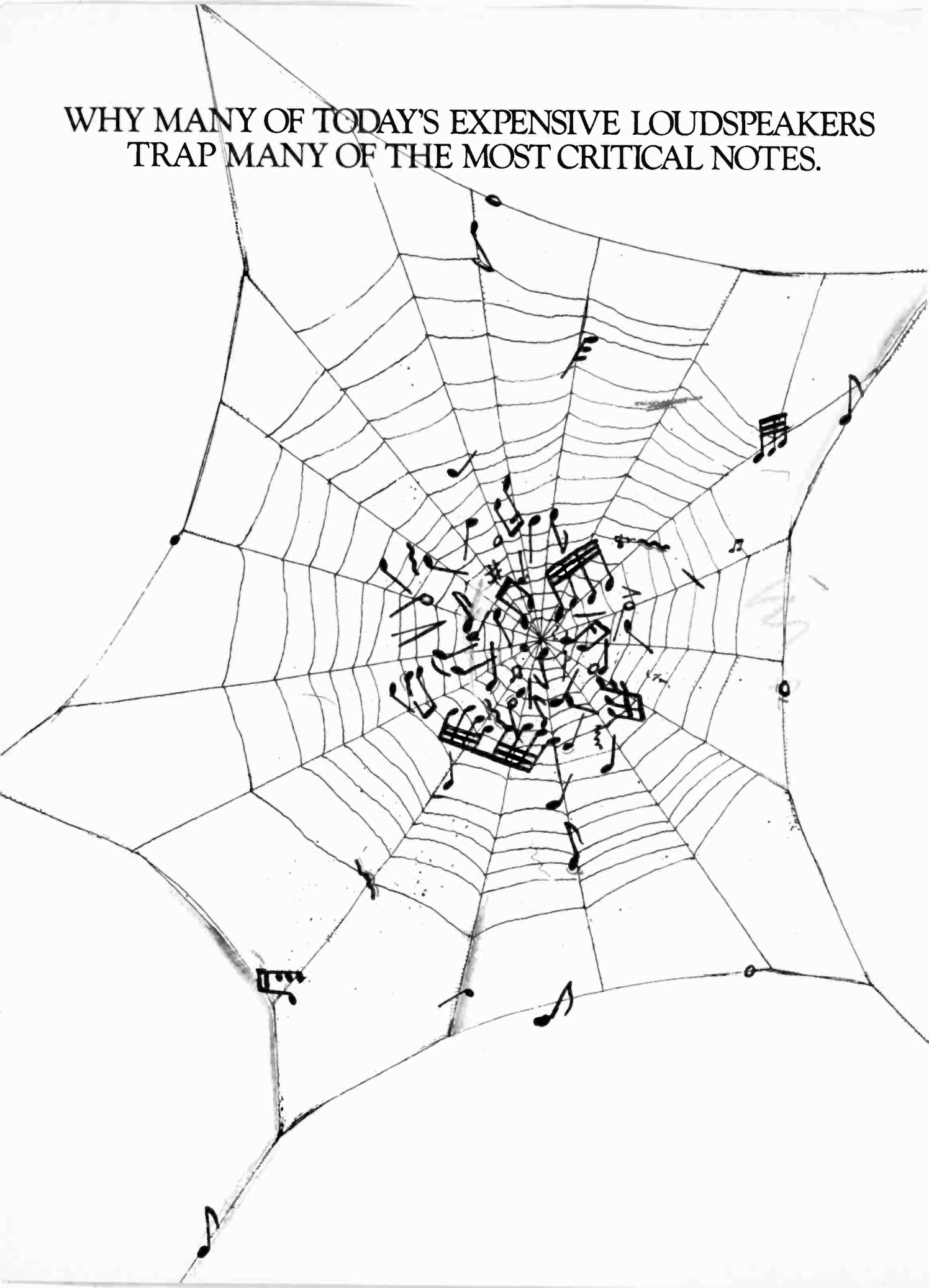
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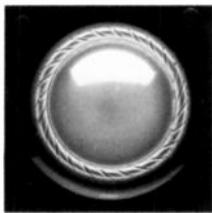
WHY MANY OF TODAY'S EXPENSIVE LOUDSPEAKERS
TRAP MANY OF THE MOST CRITICAL NOTES.



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

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

For that select group, listeners with well trained ears, Altec Lansing has engineered a new line of



*Polyimide/Titanium
Mid-range*

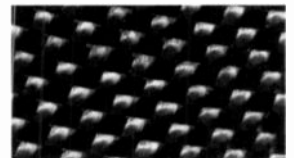
loudspeakers to recreate every subtlety of recorded music with a clear open sound and without coloring or distortion. Even the accuracy of CD recordings can be more fully appreciated on these Altec Lansing loudspeakers, prompting Stereo Review to remark "...the bass distortion

was among the lowest we have measured.

The speakers have...very good bass, and a warm, extended and unstrained character."

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domed drivers. Virtues like these compelled Stereo Review to also comment on Altec Lansing's "...high sensitivity and ability to absorb large power inputs...a



Carbon Fibers in Woofer Cone

speaker that can develop high sound pressure levels in any environment." Even the hand crafted walnut veneered cabinets utilize the latest computer aided design techniques, thick walls and extra bracing to eliminate resonance.

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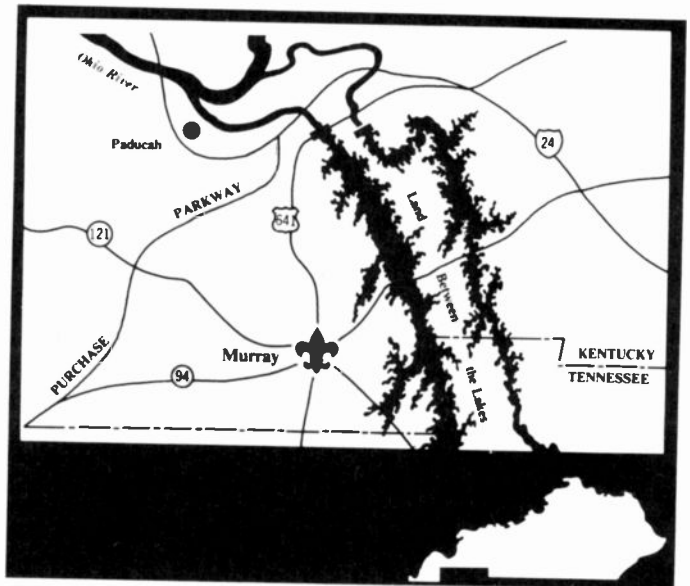
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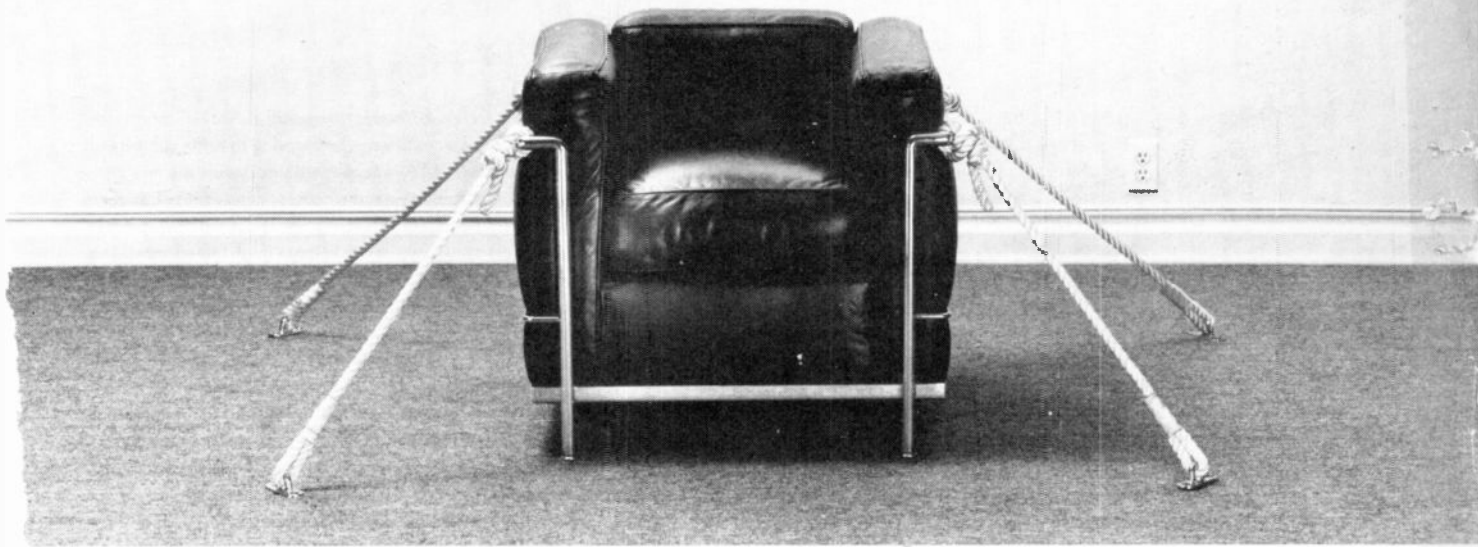
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Most speaker designers haven't changed their position in 30 years.

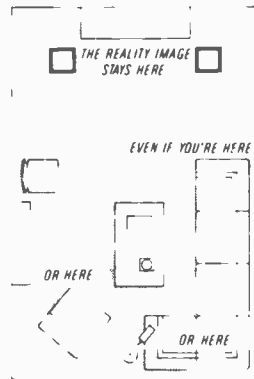


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Reality Imaging brings you right up to the stage. It's not only the sound, but the actual spatial reality—the feeling of being there. And it's an image that doesn't collapse if you move around.

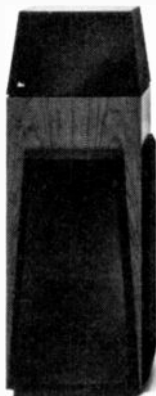


Not only can you hear it, you can see it.

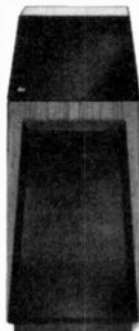
Ask your dbx dealer to demonstrate with a sound analyzer (such as the dbx 14/10) how consistently the flat and smooth response—and Reality Imaging—are maintained by dbx Soundfield speakers at every point in the room. Then ask him to do the same with any other speaker at any price.

You're in for a shock. And we seriously suspect you'll be changing your position on stereo speakers for good.

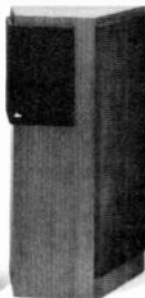
dbx Soundfield 1A
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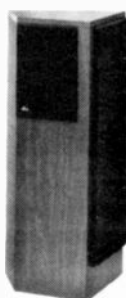
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Beyond stereo





TUBULAR SOUND

I'VE HEARD IT SAID MANY TIMES THAT TUBE POWER amplifiers have a more natural, mellower sound than the best of today's transistor amplifiers. Is that true, and if so, why?

Sam Silvano
Bell, Calif.

To mix a metaphor, you've asked me to juggle a hot can of worms. First of all, what makes for a "more natural, mellower sound"? Tube power amplifiers, with only one exception that I know of, use massive output transformers. In most cases, these transformers, not the tubes themselves, are responsible for the frequency-response characteristics that make up some of the "tube" sound (when such a sound actually exists). Such transformers can cause an amplifier's damping factor at low frequencies to fall far below its mid-range spec. With many speakers, this alters the bass response to provide the sort of warm, mellow sound preferred by some listeners.

It's frequently possible to provide solid-state amplifiers with some of the same sonic warmth as those tube units. This is easily done by connecting a 0.5- or 1-ohm, 10- or 12-watt resistor in series with each of your speakers. This increased series resistance was the reason that some audiophiles at one time advocated the use of thin, 22-gauge wire for speaker cable. I would be interested in hearing about the results from readers who try the resistors.

Other characteristics of tube equipment missing from well-designed solid-state components, and possibly responsible for any difference in sound quality, are higher distortion and higher noise.

SPEAKER IMPEDANCE

THESE DAYS, MOST MANUFACTURERS RATE THEIR speaker system impedances at 4 or 8 ohms, but I remember when systems of 16 ohms—and even higher—were common. What's the story on speaker impedance, and what determines the rating a manufacturer chooses?

David Lee
Ft. Lauderdale, Fla.

A couple of the engineers to whom I referred this question took the historical approach in their replies. They stated that speakers of 16-ohm impedance provided the best match to tube amplifiers, that 4 ohms represented the most appropriate load for the early germanium output transistors (which could handle high currents but not high voltages), and that 8 ohms was a reasonable choice for today's silicon-based solid-state amplifiers. And the use of 8-ohm impedances allowed running two systems simultaneously without overstressing the amplifier.

The EIA (Electronic Industries Association) Amplifier Standard specifies 8 ohms as the primary standard load with which amplifier manufacturers rate their products' output capabilities, but this is in no way binding on the speaker manufacturers, nor should it be. Four-ohm speakers have the advantage that they can draw as much as double the output power from an amplifier—assuming that the amplifier can

satisfy the increased current demand. However, many amplifiers run into trouble when attempting to drive two sets of 4-ohm speakers. A few speaker manufacturers are now producing 6-ohm-rated systems as a neat compromise between the opposing dangers of running out of current (low speaker impedance) or running out of voltage (high impedance). The improved protection circuits and output current capabilities found in today's amplifiers enable them to handle paralleled pairs of 6-ohm and, sometimes, 4-ohm speakers.

Several engineers I spoke to complained about the non-standard ways speaker impedance is rated by different speaker manufacturers. Among the various rating methods—each of which would produce a different impedance rating for the same speaker—are (1) DC resistance only, (2) minimum impedance in the audible range, which usually occurs within an octave or so above a speaker's bass resonance, (3) impedance at some specified frequency, and (4) an "average" impedance value arrived at by eyeballing an impedance vs. frequency curve for the speaker. The first two methods usually yield the lowest numbers and are therefore the most conservative with respect to the amplifier interface. Since there is no official standard for specifying impedance, a manufacturer's rating depends simply on what he chooses to regard as "nominal." Unfortunately, the impedances of a few 8-ohm-rated speaker systems fall as low as 2 ohms at certain frequencies. This can trigger the protective circuits of some amplifiers or cause them to overheat.

LINEAR STEREO VCR

I RECENTLY SAW AN RCA AD THAT WAS OFFERING BOTH "Hi-Fi Stereo" and "Linear Stereo" videocassette recorders. Is Linear Stereo an improved version?

Peter Seigal
Boston, Mass.

The main audio soundtracks on a videocassette have always been "linear," meaning that they are recorded on a line down the length of the tape by a stationary audio head, much as in an audio cassette recorder. However, the narrowness of the stereo tracks and the slow tape speeds across the fixed record/playback head result in tape noise and limited high-frequency response. Dolby B and other noise reduction circuits (like DNR) can be of some help, but the result would never qualify as high fidelity.

The high-quality alternative to "linear stereo" is not non-linear stereo, but helical-scan stereo: The Hi-Fi audio recording systems used by the Beta and VHS formats both employ the spinning video-head drum to lay down a frequency-modulated stereo signal. This helical track, which the two formats record by completely different techniques, can have excellent fidelity.

In short, mono-only VCRs play and record a linear mono soundtrack; stereo VCRs do the same for linear stereo soundtracks (they can also play linear mono sound); and Hi-Fi VCRs play and record helical-scan frequency-modulated stereo as well as linear mono or, in some machines, linear stereo.

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

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D A V I D

R A N A

DAT CERTAIN FEELING

IN WHAT SOME WOULD CHARACTERIZE AS A PAVLOVIAN reaction, audio editors are always excited by the arrival of a box containing a new stereo component. But the large carton from Luxman that arrived at the beginning of May elicited more than the usual salivation from this audio aesthete: It contained a sample of Luxman's first DAT machine, the KD-117, specially modified by Luxman to work on American instead of Japanese line current. As the first DAT deck we've been able to examine for any length of time (only two days, as it turned out), its features and capabilities were of intense interest. What struck me most from this brief acquaintance was the very distinctive "feel" of the DAT medium, which is in many ways quite unlike the familiar analog cassette.

Every new audio medium has its own operational peculiarities (features, to the optimist) to which users—and record producers—have to adjust. With the vinyl LP, it was long playing times; with stereo, it was the use of two speakers and the restriction of the listening position to a "stereo seat." The analog cassette was audio's first medium that was both easy-to-use and fairly durable, while the CD introduced an unprecedented speed of access to any portion of a recording. DAT, on the other hand, actually introduces no new concept that cannot be thought of as the result of a combination of certain aspects of the CD system and analog cassettes.

Naturally, the recorded sound quality of DAT is much better than that obtainable with analog recorders. In some ways, it is better than what professionals are obtaining with their \$10,000-plus digital tape machines, and better than what can be obtained from CDs. DAT's freedom from distortion, utter lack of wow and flutter, almost nonexistent background noise, and consistently flat frequency response make it a higher-quality medium than the best analog open-reel decks, not to mention any home audio cassette machine or Hi-Fi VCR. And a DAT deck is much easier to operate than an analog cassette deck in at least two ways. First, there are no tape-selection (bias, level, and equalization) settings to worry about (accordingly, there will be only one tape grade available, at least at the beginning). Second, it's very easy to set the recording level: Simply run it up as high as you can without activating the deck's overload indicator. The Luxman deck even has a special CD input with screwdriver-set record-level controls so that you need adjust the maximum recording level from a CD player only once (using a full-level tone from a test disc, I suppose). The fact that not every DAT machine I've seen has such a useful capability clearly indicates that the battle of the DAT decks will be fought over features.

But the features of a DAT deck that I think will ultimately be most important to the user are unfortunately the ones that usually don't make for spectacular advertising copy: cueing capabilities. For the first time in a consumer recording medium, the user will have the kind of control over cueing that has previ-

ously been the exclusive domain of the Compact Disc—if the deck is appropriately equipped. The DAT standard specifies methods for electronically labeling sections on a DAT with track (or band) numbers, but it does not tell how to best accomplish this function. This is where DAT deck designers will—or should—let their imaginations run wild.

For instance, the front panel of the Luxman deck features two small knobs, one an on/off switch labeled AUTO START-ID and the other a three-position switch called BLANK NOISE. The three positions of the latter—DIGITAL SOURCE, -60, and -80—give a small hint as to what these controls do: While recording, they automatically assign track numbers to sections of the music if the level of the sound drops below the assigned blank-noise level for a certain period. DIGITAL SOURCE requires that there be a near-total drop-off in background noise, as in the intertrack spacings of a CD, before the assigned track number is incremented. The other two settings of BLANK NOISE set the "noise floor" below which the signal must fall in order to increment and assign a track number. The system isn't foolproof and, on our sample, seemed to miss assigning some track numbers as we tried to record certain classical CDs (those in which the record producers rightly included "room tone" to produce sonic continuity between selections). Automatic track-number assignment is necessary, however, since the KD-117 seems to have no method of manually assigning track numbers (although we might have learned otherwise with an English instruction manual). Other DAT decks we've seen do include manual track-number assignment and resetting.

There are other small, but useful, differences between the DAT and analog-cassette media. The "write-protect" tab of a DAT actually slides open so that you can re-record on a cassette without using a piece of adhesive tape to cover the protection hole. A DAT cassette itself includes indicators for the length of the tape it contains, so you shouldn't ever have to tell a DAT machine the tape length in order for its remaining-time indicator to work properly. Many, but not all, of the first DAT decks have a CD-like audible fast-scan mode in which the music comes out at the correct pitch. Fast-forwarding, rewinding, and cueing are much faster than with analog cassettes, though not as fast as with CDs. Zipping from one end of a two-hour DAT to the other takes approximately 40 seconds, at least with the Luxman unit. But as soon as you get your hands on a DAT deck, you'll probably find these features to be far less important than your ability to quickly and accurately cue up selections, and even subsections of selections, using the format's various cueing modes. Aside from DAT's superb sound quality, these modes are the most important aspect of the new medium.

Note: Luxman, and all the other companies that have released DAT units in Japan, have, as of early May, made no announcement of DAT product availability or pricing in the U.S. ■

A BIASED REPORT

TIME WAS WHEN MAGNETIC RECORDING WAS TOTALLY unbiased. That is, the signal representing the sounds to be recorded was the only one fed to the recording head. But magnetic recording media are notoriously nonlinear at low signal levels, and even loud sounds get soft—twice each cycle for anything approaching a continuous tone. It wasn't long before someone discovered that adding a steady magnetic field, or bias, to the AC audio signal helped matters considerably by maintaining a continuous magnetic flux at the record-head gap, essentially offsetting (biasing) the recorded signal away from the most nonlinear levels.

Home recordists seem to have trouble with the concept of bias, partly, I suspect, because tape manufacturers often speak of bias as though it were a property of the tape rather than the recorder. "High bias" tape does have characteristics differing from those of "normal bias" tape, but the bias itself is supplied by the deck and is nowadays generated by an AC oscillator instead of a permanent magnet.

The discovery of such AC bias, which was a significant advance, dates from the early 1940s, when it was developed independently by Telefunken in Germany and by Marvin Camras in Illinois. To get a feel for how it works, think of yourself as a cook trying to get flour from a canister into a measuring cup. You can hold the canister horizontally and quickly spoon the flour out in dollops, but intuitively the process seems less efficient than pouring. The catch is that flour doesn't flow like a liquid. You can tilt the canister until gravity overcomes the adhesion of the flour to the canister and cohesion of the flour particles. But once this happens, you're in danger of dumping flour all over the floor. (In this case, gravity, as a constant force, can be compared to DC bias.)

What you probably will do instinctively, however, is tilt the canister somewhat less and tap on it. By overcoming the flour's "stickiness" in this manner (which is like AC bias), you can get it to pour at a more controlled rate, spilling less (creating less distortion and noise, in recording terms) than with either the direct (spooned) method or the DC (gravity alone) bias.

Like all metaphors, however, this one can be carried just so far without being misleading. For one thing, flour is ground to a more or less uniform particle size and thus is homogeneous in a way that sound is not because it contains such a mixture of frequencies and, therefore, of wavelengths. Much of magnetic recording is governed by the wavelength of the recorded tone (as measured from peak to peak of the magnetic flux "imprint" it leaves along the tape).

Recorded wavelength is obviously a function of both frequency and tape speed. The magnetic wavelength of a 1-kHz tone recorded on a cassette is the same as that of an 8-kHz tone on an open-reel tape running at 15 ips—eight times the cassette speed of 1 $\frac{7}{8}$ ips. The two tones are consequently similar in the depth to which they will record within the magnetic

layer of the tape, the maximum head-gap size that will play the signal back, and the AC bias level that will deliver maximum recording level. Yes, bias doesn't affect all wavelengths—and, therefore, frequencies—alike.

If you could see the output from each frequency range of your cassette deck and crank the bias up from grossly underbiased to grossly overbiased, you'd notice that output at all frequencies increases with bias. The first frequencies to stop increasing are the highs. Then the highs actually start to drop off as bias increases, even though the midrange output is still rising. Then it, too, falters and starts to drop, followed eventually by the bass. If the bias is increased enough, it will completely erase the recording as it is being made. (In fact, the erase-head signal is usually a high-amplitude version of the bias signal.) The amount of bias thus influences both the tape's sensitivity (output for a given input) and, because this effect varies with frequency, its frequency response.

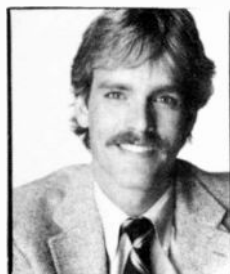
This is why reducing bias by some small amount from what might generally be considered an ideal setting tends to increase headroom (along with sensitivity) at high frequencies, but at some expense in midrange headroom. Raising bias tends to have the reverse effect, improving the midrange at the expense of the highs. The main reason the highs give out first as bias goes up is the boost applied by the recording equalization. This is intended to, and does, raise low-level highs above the inherent tape hiss. But as the total high-frequency signal—boosted program highs plus bias—increases, it eventually becomes powerful enough to erase its own record on the tape. The other reason the highs give out first is that their wavelengths are short. The longer the wavelength, the deeper it records within the tape's magnetic coating and the more impervious it is to self-erasure.

Several circuits have been developed that control self-erasure by altering bias under some signal conditions. The best, and the only one to achieve wide success, is HX Pro headroom extension. It reduces the ultrasonic bias when there's enough high-frequency energy in the signal to provide some of its own bias, keeping the total *effective* bias constant.

Considerations like these make us think of bias as something that influences the way the highs are recorded, whereas it actually affects the entire frequency range. And its effect can vary considerably from tape to tape, depending on the kind of magnetic particles employed, the thickness of the coating, and so on. This is why I encourage recordists to pick one tape brand and type that they know works well in their decks for the kinds of music they like to record. If you simply pick up whatever is on sale (and particularly if you buy gray-market tapes, whose formulations may differ from those manufactured under the same brand for use in this country or which may actually be counterfeit), you'll be in for some peculiar results sooner or later. ■



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



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

CDs ON THE ROAD

IS NOW THE TIME TO GO MOBILE WITH YOUR GROWING Compact Disc collection? If you're planning to spend over \$500 on an in-dash car stereo system, the answer is yes. Quality is up, and prices aren't getting any lower.

If you haven't auditioned a car CD player since their introduction several years ago, be aware that things have changed. Mistracking on rough roads has been significantly reduced on second-generation models. Newer players are also much less likely to be affected by deviations from a perfectly horizontal installation or by fluctuating temperatures. Plus, it's no secret that the sound quality of CDs in general has improved, thanks to better digital recording and remastering techniques. If you're serious about auto-sound and have the requisite change in your pocket, start shopping. Cassettes, particularly the prerecorded variety, simply don't compare in sound quality and convenience.

If you're waiting for the precipitous price drops that befell home players, don't hold your breath. Granted, recent models have shown a modest decline in price compared to their predecessors, but as I write, the dollar is hitting new lows versus the yen every day. Any further price drops would be minimal, and a strong possibility exists that the currency situation will force an increase instead. If you're thinking of a trunk-mounted CD changer, only owners of home CD changers not made by Sony have reason to hesitate. JVC, Pioneer, and Technics all plan to bring car CD changers to market, with others sure to follow. Considering the expense associated with the extra disc magazines, not to mention the possible trauma of having to shuffle multiple CDs between incompatible magazines shortly before leaving for work, it would make sense to share this investment between your home and car.

Don't buy just any car player without considering the many features available on given models. Let's assume that you're looking for a tuner/CD unit, since player-only models are less in demand. Let's also assume you've opted for a single-disc player, since the current selection of changers is a field of two (Sony and Alpine). Here are a few of the features to consider, and why:

Cartridge loading: A plus if you are currently riding around with loose cassettes lying in the passenger's seat or accumulating in the glove compartment. A CD-cartridge system, initially developed by Yamaha (and also offered by JVC, Blaupunkt, Clarion, and Audiovox) provides protection that need not be as clumsy as the traditional CD jewel boxes it replaces, since discs stay in their cartridges even during play.

Auxiliary input: Great for listening to those cassettes that have yet to be released on Compact Disc. An auxiliary input comes in two flavors—a front-panel mini-phone jack for patching a portable cassette unit or back-panel pin jacks for a more permanent attachment.

Dynamic range compression: Very important if you

like to listen to classical music in a noisy car. Unfortunately, this feature is currently available only on the Sony Disc Jockey changer.

Security: Since we are talking big-buck systems here, it would be nice if you could retain ownership for more than a week or two. Quite a few players offer some form of internal protection. Those that render their units inoperable if the power is interrupted seem to make the most sense (caution—a master criminal I'm not).

Single-chassis design: Makes things considerably easier if you're doing the installation yourself, but probably won't matter to a professional installer unless space is extremely limited.

Amplifier(s): Only the Sony CDX-R88 comes with an amplifier, which is contained in a separate chassis along with the tuner circuitry. All the others will need at least one power amp, maybe more, to do the job. Don't forget to budget not only the cost of the amps, but the additional cost of labor for installation as well.

Fader: Very important if multiple amps are used and a passive equalizer with a dual-amp balancer is not. Otherwise, an outboard dual-amp balancer will be necessary for front-to-rear level adjustments with four or more speakers. Such balancers may not only be difficult to find, but are also an additional \$20-plus expense and a potential installation headache. The fader on the aforementioned Sony CDX-R88, for instance, is nonfunctional without at least one external amplifier.

Programmability: Great feature for home players, but not such a big deal on a car model. After all, how far from the track-skip button are you likely to be when your least favorite song starts playing? And for reasons of safety, entering a program should be done while the car is at a full stop.

Direct track access: Possibly a bit more useful in a car than programmability. This lets you listen to a couple of favorite cuts *now*, assuming you know their track numbers.

Ergonomics: This is no small consideration when buying any car-stereo component, and CD players are no exception. Think about the buttons you're most likely to use, then examine the various models to see which one devotes the most front-panel area to those functions. Tiny buttons allow more features to be tucked into the same 14 square inches, but their size may render the additions meaningless while on the road. Night illumination also figures prominently here; if possible, turn the lights off while auditioning the player in question. Can you still find the important controls with a minimum amount of searching? Also, try to operate basic functions while not looking at the player. Can you load, play, scan, and stop a disc? Can you change tracks or switch to FM? If not, those microbuttons may be the last things you ever see. ■

Jay C. Taylor is Car Stereo Products Manager for Crutchfield.



HEATHKIT'S DO-IT-YOURSELF TV

dent in the trade deficit, electronics hobbyists will enjoy assembling Heath's GR-9009 AC/DC 9-inch color-TV kit. The GR-9009 uses a Zenith Chromacolor picture tube and modular chassis with mostly preassembled circuit boards. A built-in crosshatch generator allows convergence and purity adjustments. Features include a 178-channel quartz-locked electronic tuner, automatic color control, and a removable sunscreen for outdoor use. Price is \$250. For more information and to request a free Heathkit catalog, write to Heath Co., Dept. 150-915, Benton Harbor, Mich. 49022.

SUPER VHS HITS JAPAN

ON APRIL 21, JVC'S FIRST SUPER VHS VCR WENT on sale in Japan for about \$1,550 (at ¥142 to the dollar, then the exchange rate). As described in the April "Scan Lines," Super VHS is said to yield a horizontal resolution in excess of 400 lines and requires a new tape formulation for recording a wider luminance bandwidth. (S-VHS cassettes are otherwise identical to those for regular VHS.)

In addition to composite (single pin jack) video inputs and outputs, S-VHS machines have individual luminance (Y) and chrominance (C) connections to separate brightness information from the color portion of the signal, thus eliminating the picture-degrading effects of crosstalk. New television receivers will take advantage of these separate outputs, and presumably high-quality prerecorded S-VHS tapes will be made from films that have been remastered for feeding duplicators that have Y and C inputs.

S-VHS machines can play regular VHS tapes and include a switch for making regular VHS recordings. Thus, compatibility is ensured during the transition from VHS to S-VHS.

As you read this, the first U.S. machines should already have been shown at the June Consumer Electronics Show. We will report

on those in an upcoming issue, as well as any news regarding an S-VHS camcorder and the availability of prerecorded S-VHS tapes.

NO NOISE MAKES NOISE

IN JANUARY, WE REPORTED ON A COMPLEX NEW digital technique called No Noise that removes tape hiss, clicks and pops, and other unwanted signals from record companies' master tapes in preparation for rerelease on the very transparent and unforgiving Compact Disc. The company, Sonic Solutions, realizes that many existing recordings would sound unacceptable on CD, especially to consumers who have come to expect near perfection from the digital medium.

We are pleased to announce that the first rereleases using No Noise processing are now available. They include a 20-year-old live performance at the Taj Mahal by flutist Paul Horn (*Inside*, Rykodisc RCD 10040). For this recording, tape hiss and ambient noise were removed "without diluting the ethereal quality of the performance," according to Rykodisc president Don Rose. Another release is a concert film of a previously unusable 1968 performance by the Doors (MCA Home Video), in which lead vocalist Jim Morrison's microphone cable was loose (one can only imagine how it got that way). The resulting clicks are said to have been removed by No Noise without leaving noticeable artifacts. No Noise is also said to be ideal for restoring old film and television soundtracks.



All releases processed with No Noise are labeled with a special symbol (pictured). Acceptance seems to be running high, and the company plans to license the system to selected facilities around the country. Sonic Solutions is located at 746 Twentieth Ave., San Francisco, Calif. 94121.

A THREATENED INDUSTRY?

WITH ALL THE TALK FROM RECORD COMPANIES about DAT machines, the protection of intellectual property rights, and rampant illegal copying of records, CDs, and prerecorded tapes, one might logically assume that the recording industry has fallen on hard times. But guess what? According to the Recording Industry Association of America, revenues for 1986 rose six percent to \$4.65 billion, an all-time high. (First-quarter 1987 profits for CBS Records, a leading naysayer on the DAT issue, are already up a staggering 30 percent from the same period in 1986—a company high.) As expected, unit sales of LPs, EPs, and singles were down sharply (more than 20 percent) and those of cassettes up slightly (two percent), resulting in an overall decline in combined unit sales of

about five percent. A 134 percent rise in unit sales of CDs accounts in large part for the increase in total revenue.

Prerecorded cassettes account for well over half the unit sales and revenue for the recording industry. The growth rate of cassette sales peaked in 1985 after years of phenomenal increase that saw it overtake the LP in popularity. Is it a coincidence that as the listener's appetite for the high quality of digital sound grows, so does a disaffection for poor-quality prerecorded cassettes?

The major record companies have stated that they will not support the DAT format with prerecorded tapes. But with analog cassette sales clearly slowing down and CD sales in the stratosphere, it's hard to believe that the big boys won't see the digital writing on the wall. Betcha two bits? *C.J.E.*

SIGNET LOUDSPEAKER



BEST KNOWN FOR PHONO CARTRIDGES, SIGNET has expanded its repertoire of transducers with its first loudspeaker, the floor-standing SL-100 Definitive Image system. Originally announced about a year ago, it uses an unusual Ferralipse lens system consisting of two tweeters that fire rearward into an elliptical reflector. The reflected sounds are said to converge in-phase and radiate over a 120-degree angle to eliminate high-frequency beaming, thus better matching the wide dispersion pattern of the lower frequencies.

The midrange driver is a 3-inch soft dome enclosed in a separate sealed compartment. A 10-inch long-throw woofer with a polymer-impregnated cone is housed in a tuned-port enclosure that is said to endow the SL-100 with high efficiency. Amplifier connections are made via gold-plated five-way binding posts. Price is \$1,450 per pair. For more information, contact Signet, 4701 Hudson Dr., Stow, Ohio 44224.

ups: Stereo image expansion broadens the stereo soundstage and dynamic bass expansion increases bass boost in proportion to increasing input signal level. As in Yamaha's remote models, the volume control knob on Onkyo's TX-84 and TX-82 is motor driven for remote operation.

Rounding out the new receivers is the TX-80, a nonremote model rated at 33 watts (15.2 dBW) per channel that also has two tape inputs for dubbing and connections for two sets of speakers.

Dynamic headroom is rated at more than 1.2 dB (into 8 ohms) for each model, yielding dynamic power ratings of 81, 60, and 43 watts per channel from top to bottom. For more information, contact Onkyo, 200 Williams Dr., Ramsey, N.J. 07446.

TOP NEC DIGITAL VCR



THE FOUR-HEAD DX-5000U VHS Hi-Fi VCR is the third NEC model to include the company's unique digital video noise reduction (NR) system (the DX-2000U was reviewed in our April issue). It uses a field-storage method that reduces noise in playback by consecutive averaging of the video fields, thus improving the video signal-to-noise ratio, especially on poor-quality tapes.

As opposed to the DX-1000U and DX-2000U, where only the luminance signals benefited from digital noise reduction, the improved circuitry in the DX-5000U also processes the chrominance signals separately, yielding a further potential increase in the video signal-to-noise ratio. And the process works on all signals that pass through the unit's monitor output, including those from the built-in tuner as well as signals fed through from another source (such as a different-format VCR). The amount of noise reduction applied by the DX-5000U cannot be continuously varied, but is instead determined by a three-position switch that sets the clipping point of the limiter in the NR circuit: Position 1 (normal) sets it low, cleaning up ordinary-quality sources without causing time lag (blurring on scenes with motion) in the picture; if noise is still present, Position 2 or 3 raises the clipping level to a point that allows the noise to be removed while keeping time lag to a minimum. In addition, the new model incorporates a Digital Dropout Compensator that, says NEC, differs from conventional "line" techniques by analyzing the entire video field to

reduce the effects of dropouts caused by dirt or scratches on a tape.

As a consequence of the DX-5000U's field-storage circuitry, striking special effects are possible, including still frame and variable strobe action (with uninterrupted sound) of tape or TV broadcasts. The most welcome of these is Natural Slow Motion, which combines the benefit of four video heads with field storage to provide jitter-free, "nearly professional" forward slow motion on tapes recorded at the SP speed (which includes almost any prerecorded tape). Conventional slow-motion effects are possible in forward and reverse for the other tape speeds.

An indexing system marks the beginning of as many as nine recorded segments, which can then be cued to or successively previewed automatically for ten seconds. To further aid in locating specific segments, a real-time search function is included.

The number of controls on the remote is somewhat daunting, but things are made easier by a built-in LCD panel that confirms every operation, including the setting of the unit's 8-event/21-day timer. The remote also operates most NEC televisions.

More conventional features include VHS Hi-Fi and linear stereo (with Dolby B noise reduction), a cable-compatible tuner with MTS/SAP decoding, and HQ video circuitry. Suggested retail price is \$1,199. NEC is investigating other applications for its NR system, such as in large-screen monitors and projection TVs. For more information, contact NEC Home Electronics, 1255 Michael Dr., Wood Dale, Ill. 60191.

HANDIER HANDYCAM



SONY HAS DOWNSIZED THE ORIGINAL RECORD-only 8mm Handycam to 2.13 pounds (with battery and tape), making it the lightest consumer camcorder ever. Like its predecessor, the CCD-M7U has two-position focus and a solid-state image pickup. Simplicity of operation is achieved by making white balance and iris adjustments completely automatic;

the only controls are for recording start/stop and focus position (long-range or arms-length close-up). LED indicators in the optical viewfinder confirm recording mode and focus position and warn of low battery charge.

A new one-hour rechargeable battery is 50 percent lighter than the previous one and clips onto the back of the CCD-M7U. This is also the first camcorder that can run on dry cells: The optional EBP-55 battery case holds six AA alkaline cells that can provide an hour of recording time for occasions where AC power is unavailable for charging the nicad pack.

Included with the camcorder as part of the "Pak 7" system are the EV-P10U playback deck and a molded plastic carrying case. The deck has both RF and direct audio-video outputs for connection to any television, as well as an edit switch to enhance dubbing to other decks of any format. It can also operate portably with the rechargeable battery pack. Suggested retail price for the entire Pak 7 system is \$1,450. For more information, contact Sony Corp., Sony Dr., Park Ridge, N.J. 07656.

RABBIT OFFSPRING



RABBIT'S SECOND VIDEO PRODUCT (THE FIRST is a VCR signal-distribution system) is called Double Play, and it is basically a TV tuner that connects to any existing TV to provide "digital" effects such as picture-in-picture and freeze frame. (We tested the first product of this sort, the Multivision 3.1, in our March issue.)

The Double Play superimposes a second broadcast station or a videotape picture in a small box in any corner of the TV screen and can freeze the smaller picture or "swap" it with the main picture. Using the unit's remote control, this enables viewers to keep track of two programs at once and instantly switch either one to the full screen. The tuner can be programmed to scan through chosen stations on the mini-screen and can display the channel number on command. Price is \$229. For more information, contact Rabbit Systems, 233 Wilshire Blvd., Santa Monica, Calif. 90401.

MADE IN THE USA

AS BOB HOPE WOULD SAY, "SURE, IT MATTERS to me." Although it won't make much of a

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mance of the AM tuners in home equipment is (with one or two exceptions) so poor that few people ever consider using them for anything but news or sports broadcasts, which is why we don't bother testing them. If this situation ever changes, so will we.

—E.d.

STATION IDENTIFICATION

IN THE APRIL "CROSSTALK," LARRY KLEIN comments on the common practice of FM stations shortening their on-air frequency IDs. You should be aware that a broadcast outlet can identify itself in any way it wishes except at or near the top of each hour, when it must give its legal station ID, including call letters and community of license. Deregulation has eliminated most other requirements, though stations still may not use false call letters.

The reader to whom Mr. Klein was replying listens to a fairly crowded FM band in San Diego; hence, frequency identification there is less outlandish than it can be in small markets like my own, where a station at 101.5 MHz bills itself as "FM 101." With the increasing market penetration of digital-readout tuners, the smart programmers in radio are leaning toward more specific iden-

tification, and even the "lucky" stations are calling themselves "106.9 KMOK-FM," for example. Now, if we can just get those guys to stop dubbing all their music to endless-loop tape cartridges!

Don McKay

Program Director, KRIC
Lewiston, Idaho

UNITY-GAIN EQ

IN APRIL'S "CROSSTALK," LARRY KLEIN WRITES that "the improved headroom of today's equalizer designs has obviated input/output matching." I think this is misleading advice. True unity gain assures maximum headroom with the least possible noise and distortion. I see no reason to give up any of the performance I have paid for or to risk damage to my system.

The benefits of unity gain are easily seen on an oscilloscope. If the output voltage is greater than the input voltage, severe clipping—possibly enough to damage other components in the system—is likely. Very minor clipping may cause no damage, but it will affect the sound of the music being played. In either case, the result is undesirable. If the output level is less than the input

voltage, no clipping will occur, but components following the EQ will not realize their full potential. Either way, when true unity gain is not achieved, the true music is not heard.

Daniel P. McCann

Pittsburgh, Pa.

We agree that it is desirable for an equalizer to be set for overall unity gain. (As Klein noted, input/output matching "still represents good practice . . . because it minimizes the possibility of amplifier and speaker overload at strongly boosted frequencies.") However, modern equalizers usually can deliver 10 or more volts without clipping—far greater than the inputs they are likely to see, which typically range no higher than 1 or 2 volts. And reducing the overall output level is unlikely to increase noise perceptibly unless the cut is fairly large (greater than just a few dB).—E.d.

COSTLY REPAIRS

MY RECEIVER RECENTLY WENT DEAD IN ONE channel and I brought it to a local authorized repair store. They charged me \$75 to repair a unit that cost \$300 when new. My friends tell me similar stories. Are the repair-shop owners trying to get rich at the expense



of the consumer—and why don't the manufacturers do something about it?

John Taylor
Boston, Mass.

Contributing Editor Larry Klein replies: We live in a time when very complex electronic devices are manufactured by automated machinery controlled by computers. This is why you can buy a digital watch or a pocket AM/FM radio for well under \$10. But the reduction to the vanishing point of the expensive hand-assembly component of today's electronic devices is of no help when the unit needs repair. Repairs continue to be very labor-intensive—and involve skilled, trained, and expensive labor at that. In short, although electronic products are built by the most sophisticated automated assembly techniques available in history, the only way they can be repaired is by the equivalent of an 18th-century handicraft approach. And today, that's expensive!

WHITHER GARRICK OHLSSON?

I AM A FAN OF GARRICK OHLSSON, WHO HAS not produced a new recording on the Angel label for several years. He is one of the most versatile pianists playing today, and it had been my hope to replace all of his records with Compact Discs. No such luck. I wrote to

Angel and received a very brief letter saying that there would be no new recordings and no CDs of his old recordings. No reason given. To me, it is unbelievable that the label would just cancel a contract with an artist of Ohlsson's stature.

Do you know why Angel no longer represents him on records? Also, what would it take to encourage London, for example, to buy up the original Angel tapes and reissue them as CDs on their own label?

Recently, I learned that Ohlsson had just recorded the Scriabin Piano Concerto on some new label. Do you know anything about that?

Robert S. Delatte, Jr.
San Francisco, Calif.

The main reason any record label decides not to renew a contract with an artist is that the records didn't sell. For the same reason, don't expect London to pick up the Ohlsson masters from Angel for reissue on Compact Disc. However, Ward Botsford of Arabesque Records informs us that Ohlsson has signed a recording agreement with his company for four records. The first, due in the fall of 1987, will be the first volume in a series devoted to the solo piano music of Carl Maria von Weber. (The sessions

took place April 9-11.) The remaining three releases will consist of the Dvořák Concerto, to be recorded with the Czech Philharmonic; the Brahms Concerto in B flat, with the Gewandhaus Orchestra of Leipzig; and volume two of the Weber. According to Botsford, the Scriabin Piano Concerto was recorded in Czechoslovakia for Supraphon—which, incidentally, is not a new label.—Ed.

LOOKING FOR LA BANDA DI CHIETI

AFTER MANY YEARS OF ALMOST FRUITLESS search, I would appeal to any of your readers who are in possession of Victor (Scroll Series) or Decca Blue Label 78s of a symphonic band that toured the United States in 1933 and 1934 under the name La Banda Di Chieti, directed by Nicola Santarelli. They were guests at the Chicago World's Fair and created a sensation on their world tour. They performed at the Syria Mosque here in Pittsburgh at the time, and many old-timers still talk of their performance.

Benjamin E. Silvestri
Vandergrift, Pa.

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



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"Spectacular...it is quite an experience"

Stereo Review Magazine

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

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

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

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

"Exceptional performance no matter how you look at it"

Stereo Review

Listening to any Polk True Stereo SDA* is a remarkable experience. Listening to either of the Signature Edition SDAs is an awesome revelation. Their extraordinarily lifelike three-dimensional imaging surrounds the listener in 360° panorama of sonic splendor. The awe inspiring bass performance and dynamic range will astound you. Their high definition clarity

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

allows you to hear every detail of the original musical performance; while their exceptionally smooth, natural, low distortion reproduction encourages you to totally indulge and immerse yourself in your favorite recordings for hours on end.

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

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

"Literally a new dimension in sound"

Stereo Review

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

Both the SDA-SRS and SRS 2 incorporate:
1.) time compensated, phase-coherent multiple

driver vertical line-source topology for greater clarity, increased coherency, lower distortion, higher power handling, increased dynamic range and more accurate imaging. 2.) a mono-coque cabinet with elaborate bracing and MDF baffle for lower cabinet read-out and lower coloration. 3.) progressive variation of the high frequency high-pass circuitry for point-source

"Literally a new dimension in the sound"

Stereo Review Magazine

operation and wide vertical dispersion. 4.) the use of small active drivers in a full complement sub-bass drive configuration coupled to a large 15" sub-bass radiator for extraordinarily tight, quick and three-dimensional mid and upper bass detail combined with low and sub-bass capabilities which are exceptional. The speakers are beautifully finished in oiled oak and walnut.

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Musician Magazine

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Where to buy Polk Speakers? For your nearest dealer, see page 75.

EDITED BY CHRISTOPHER J. ESSE



REMEMBER THE RECEIVER? IT ALMOST GOES without saying that what was originally conceived as a one-box alternative to a separate amplifier and tuner has become the flag carrier in the march toward audio-video integration. Even traditional audio manufacturers have fallen in line with hybrid products, further strengthening the once-innocent receiver's role as the fundamental building block of an audio-video system.

Innocence Lost

FIVE FROM YAMAHA. Yamaha's new line of receivers is headed by the RX-1100U (\$949), a 125-watt-per-channel (21.0 dBW) model that uses the company's Absolute Linear Amplification (ALA) circuitry, a variation of negative feedback that the company claims provides improved distortion cancellation. Features include controls for level and detail of video signals, selectable IF bandwidth and a fine-tuning control for the tuner, three sets of speaker terminals, and an infrared remote that also operates other Yamaha RS Series audio components.

The RX-900U (\$699) is a similar 85-watt (19.3-dBW) model that has two sets of

speaker outputs and a video level control, but no video detail control and no LED indicator on the volume control knob.

At \$549, the 65-watt (18.1-dBW) RX-700U is a slightly pared-down version of the RX-900U that employs Yamaha's conventional amplifier circuitry but retains the video level adjustment and RS-compatible remote control.

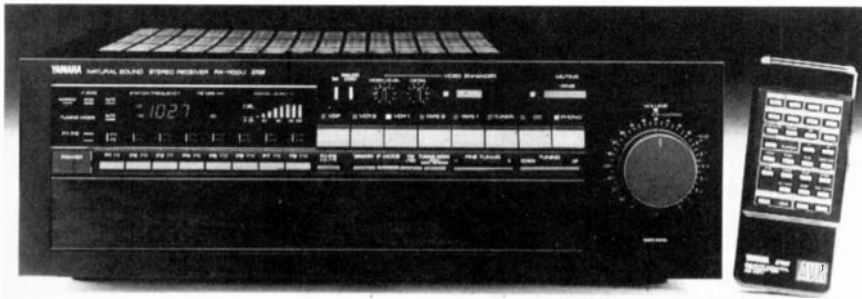
Next down the line is the RX-500U (\$379), rated at 50 watts (17.0 dBW) per channel and including an independent recording output selector and inputs for two tape decks and a video sound source. It has a dedicated remote that controls volume lev-

el, selects input sources, and skips through the tuner's station presets.

The rotary volume knob on all four of Yamaha's remote-control receivers is motor-driven, which affords level changes in smaller increments than are typical with up/down electronic volume controls, as well as lower noise.

Finally, the only nonremote model is the 37-watt (15.7-dBW) RX-300U, which at \$269 features Yamaha's variable loudness control and connections for two pairs of speakers. The dynamic headroom for both the RX-300U and RX-500U amplifier sections is given as more than 2 dB.

For more information, contact Yamaha Electronics Corp., 6660 Orangethorpe Ave., Buena Park, Calif. 90620.



YAMAHA'S TOP-OF-THE-LINE RX-1100U RECEIVER INCLUDES VIDEO LEVEL AND DETAIL CONTROLS



ONKYO'S TX-84 IS AVAILABLE WITH EITHER A DEDICATED OR A PROGRAMMABLE REMOTE CONTROL

THREE FROM ONKYO. Actually, five. Two of the new receivers from Onkyo, the 60-watt (17.8-dBW) TX-84 (\$450) and the 45-watt (16.5-dBW) TX-82 (\$350), come with either a dedicated remote control or, for \$80 more, the company's new RC-AV1M Universal Programmable Remote (as the TX-84M and TX-82M, respectively). The RC-AV1M is preprogrammed to operate both of the receivers and most Onkyo cassette decks, turntables, and CD players. Because it can memorize more than 100 functions of other infrared remotes, however, it can serve as the single controller for an audio-video system, regardless of brand. Correspondingly, the RC-AV1M is also sold separately for \$120.

The TX-84 and TX-82 include connections for two tape decks and two video sources, with dubbing possible either way within each pair. A Selective Tone Control (a.k.a. loudness compensation) applies a variable level of boost simultaneously to lower and upper frequencies. Two effects in the TX-84 are geared for video-sound set-

solve this muddling of sound arrivals by actually creating another "sound." This special impulse cancels the objectionable second sound arrival, leaving only the original sound from each loudspeaker.

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

CARVER CD AND TUNER INNOVATIONS EXTEND THE POSSIBILITIES.

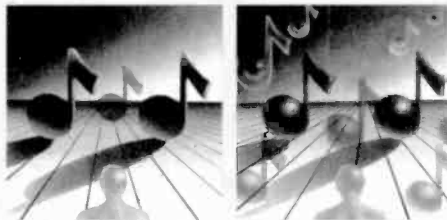
Any stereo source can be transformed from monochromatic flatness into vibrant three-dimensional reality with Sonic Holography.

Compact discs afford vastly increased dynamics, frequency response and freedom from background noise. Yet their potential is trapped in the 2-dimensionality of conventional stereo. Sonic Holography can surround you with the drama and impact of digital. (And the Carver Compact Disc Player with Digital Time Lens sound correction circuitry can enhance your listening experience even further).

Thanks to the Carver Asymmetrical Charge-Coupled FM Stereo Detector, FM stereo broadcasts can be received with vastly increased fidelity. Hiss and interference-free, any signal, from chamber music to live rock concerts,

can take on an astonishing presence and dimension through Sonic Holography.

The new Carver TX-11a AM/FM tuner delivers AM stereo broadcasts with the same dynamics and fidelity as FM. A perfect source for the Sonic Hologram Generator. Think of it: AM can actually become a three-dimensional phenomenon through Carver Technology!



SONIC HOLOGRAPHY PUTS YOU INSIDE THE VIDEO EXPERIENCE.

More and more people are discovering what theaters discovered some time ago: Audio makes a huge contribution to the realism of video. Still, it has taken the incredible, near-digital quality of VHS and Beta Hi-Fi to make the marriage of audio and video truly rewarding. Now even rental movies fairly explode with wide frequency range, dynamic impact and conventional stereo imaging.

Add the steady emergence of stereo TV broadcasts by all three major networks of prime time programming and special broadcasts, and you have fertile ground for the added realism that only Sonic Holography can deliver.

Unlike so-called "surround sound" a Sonic Hologram Generator puts you into the middle of any stereo soundtrack, (stereo, Hi-Fi stereo, broadcast stereo or even simulcasts). It psychoacoustically expands the visual experience with life-like sound that envelops you in the action.

Once you've heard Sonic Holography with a good video tape or LaserDisc, you'll never go back to mere stereo again.

ENHANCE YOUR SPACIAL AWARENESS WITH FOUR CARVER COMPONENTS.

The patented Carver Sonic Hologram generator circuit is available on two preamplifiers, our largest receiver and as an add-on component. Each can transcend the limits of your listening (and viewing) room. Each can add the breathtaking, spine-tingling excitement that comes from being transported directly into the midst of the musical experience.

Before you purchase any component, consider just how much more Carver can enrich your audio and video enjoyment. And then visit your nearest Carver dealer soon.



The Carver Sonic Holography quartet. Pictured from left to right is the 4000i Preamplifier, the C-9 sonic Hologram Generator, the Receiver 2000 with remote control and the C-1 Preamplifier.

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SOFT PACIFIC

PAUL MOOR'S REVIEW OF *SOUTH PACIFIC* [APRIL] was by far the kindest and most generous critique of this horrible travesty of an album I've read so far. I could hardly believe my eyes when I read Moor's comment that Mary Martin sang "certain passages" better than Kiri Te Kanawa.

"Certain passages"?! Mary Martin sang every blessed note a billion times better, and so did Mitzi Gaynor! Te Kanawa is lost on this recording, and her renditions range from ill-considered to downright embarrassing. As for José Carreras . . . his crooning of "Theeee Nee-ahr-ly Hwasse Mine" and his other numbers sounds about as much like a French planter as José Jimenez.

I thoroughly resent the bald-faced lie on the cover claiming the London Symphony Orchestra plays on the album when, in fact, all we get is a tiny, theater-pit-sized band from that orchestra. CBS's stupid cardboard-box packaging of the CD with an outside program book that won't fit in the jewel box adds the final *coup de grâce*.

CBS should drop this mess from its catalog and issue public apologies to Rodgers and Hammerstein's heirs.

David Green

Houston, Texas

IN DEFENSE OF BAKER'S ROMEO

I WOULD LIKE TO TAKE ISSUE WITH A REMARK made by Thor Eckert, Jr., in his review of the new Gruberova/Baltsa recording of Bellini's *I Capuleti e i Montecchi* [May]. In referring to EMI's earlier recording of this opera, made in the '70s, he stated that it "put Sills against the hopelessly miscast Janet Baker." Baker's Romeo, obviously studied with care, was sung with an intensity that was a hallmark of the many recordings she made. Although I own the new CD recording of this beautiful opera, I find myself reverting to the Sills/Baker recording, which, to my ears, is a performance that has stood the test of time.

Geraldine Segal

Randallstown, Md.

SURROUND-SOUND PATENTS

THANK YOU FOR YOUR MENTION IN THE APRIL issue's coverage of the Winter Consumer Electronics Show. But one point needs to be straightened out: The high-separation surround "logic" that I have licensed to Dolby Laboratories was by no stretch of the imagination originally developed for SQ matrixing. We are talking about patent licensing. The fact that the patent had already been issued was a precondition of negotiating the SQ license under it. Beyond that, CBS did it its way. The rest, as they say, is history.

As your article states, I have a special relationship with Shure Brothers, which has a direct license with Audiodata conferring

certain rights under my patents (beyond the rights sublicensed by Dolby to every manufacturer of consumer Dolby Surround equipment). Another company that has a customized license under my surround patents is Fosgate, Inc., which is also licensed to use my new 360° Space Matrix technology (patent pending).

Peter Scheiber

Managing Partner
Audiodata Co.
Bloomington, Ind.

WE RECEIVED YOUR APRIL ISSUE AND NOTED Robert Long's comments regarding surround sound at the Winter CES as well as his comments regarding Peter Scheiber, his patents, and his relationship with Shure Brothers. We would like to point out that Peter Scheiber currently has an exclusive arrangement with Fosgate, Inc. The only collaborative work Peter has done in recent years has been with Jim Fosgate on the 360° Space Matrix.

As Long notes, Peter Scheiber does own the major patents in the field of matrix surround processing. He has licensed Dolby Laboratories to use the patents for both encoding and decoding applications (Dolby Stereo and Dolby Surround). More recently, Peter concluded an additional licensing agreement with Dolby Labs to allow them to sublicense a basic logic circuit for the MP Matrix. This system will be known as Dolby Surround Pro Logic. The new license restricts Dolby to sublicensing for MP Matrix applications only.

Currently, only Fosgate and Shure Brothers have separate licenses with Peter that allow them to use "logic" circuitry in their home products. In the case of Shure Brothers, Peter simply licensed them under the patents and the company developed its own circuitry. Fosgate, on the other hand, has worked closely with Peter over the last several years. The results have been the 360° Space Matrix and the 360° Digital Space Matrix, as used in the DSM-3602, our current state-of-the-art surround audio processor.

Charles Wood

Marketing Manager
Fosgate, Inc.
Heber City, Utah

We have requested samples of the Fosgate DSM-3602 for review.—Ed.

WINE, WORDS, & WRONG DEFINITIONS

THE OVERALL ANALOGY AT THE FOUNDATION of Rich Warren's "Wine, Words, & Song" [March] may be a good one, but the definition given for "noble rot" is incorrect. It is not "a disaster if it appears prior to the fermentation process." Noble rot, or *Botrytis cinerea*, is a fungus that is indeed beneficial,

even essential, to the making of some wines, specifically the very sweet wines of Germany and France. But this fungus attacks the grapes while they are still on the vine, resulting in a drying of the grapes and a concentration of their sugar content before harvest. This most certainly occurs prior to fermentation.

Thomas Allison

Brooklyn, N.Y.

8mm INCONSISTENCY

IT IS IRONIC (NOT TO MENTION INCONSISTENT) that at the same time the electronics industry is encouraging us to upgrade our TV sets to stereo it expects us to pay a premium to downgrade our VCRs to mono ["Why 8mm?" February]. I find it incomprehensible that a magazine calling itself HIGH FIDELITY is pushing the mono 8mm format. You should push for a stereo 8mm format (or change your name to HIGH VIDEO FIDELITY/LOW AUDIO FIDELITY).

Don Schmick

Atlanta, Ga.

All of the consumer VCR format standards, including the one for 8mm, require a mono audio track and offer stereo as an option. The system used for recording stereo audio on 8mm videotapes was described in the "Why 8mm?" article. And we are not pushing the 8mm format, just reporting on it—as we will do with any promising new video developments. —Ed.

AUDIO-VIDEO RECEIVERS

YOUR REPLY TO TIMOTHY HENDEL'S LETTER [March] is incorrect. The Wintec R-1060 was the first receiver to include a TV tuner. I owned one for about five years and then got a Technics SA-550, which also has a built-in TV tuner. Both were mono, but Technics brought out a receiver with a stereo TV tuner the year after the SA-550.

Dan L. Adkins

Reading, Pa.

We thought Mr. Hendel was referring to receivers containing tuners that handle the video as well as the audio portion of a TV broadcast. We are not familiar with the Wintec, but the Technics receivers did not have that capability. The Jensen AVS-1500 did.—Ed.

WHY NO AM?

I AM A STEREO-AM ENTHUSIAST, SO IT BOTHERS me that you rarely give any consideration to the performance of the AM tuner sections in the equipment you test. Why not?

Thomas England

Dayton, Ohio

We do test the AM tuners in car units and comment on their performance, but only because FM reception is not always possible on the road. The perfor-

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HIGH FIDELITY

THE ANTI-TAPING CHIP



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COVER PHOTOS: NICHOLAS BASILION

ON THE COVER: CLOCKWISE FROM THE RIGHT: PROTON VT-210 MONITOR/RECEIVER; SONY TA-F700ES INTEGRATED AMPLIFIER; ACOUSTIC RESEARCH TSW-410 LOUD-SPEAKER



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R I G G S

FX vs. HIGH-TECH

BY FX, I MEAN FOREIGN EXCHANGE. YOU'D HAVE TO HAVE been living underwater for the last six months not to know that the dollar has taken an express elevator to the currency basement. As I write this, you can change money at a rate of less than 140 yen to the dollar; the last time I was in Japan, about two years ago, a dollar would buy you 250 yen. We're looking at a drop of more than 40 percent, at least relative to Japanese currency.

But in the world of consumer electronics, this is the key conversion, because most of the audio and video equipment sold here is made by Japanese companies. So you would expect prices for everything from receivers to VCRs to be going straight up. Yet at the Winter Consumer Electronics Show in January, prices overall were, if anything, a little down. And initial indications are that we'll be seeing more of the same at the Summer CES.

There are two main reasons for this. One is increasing reliance on manufacturing in countries with lower labor costs or local currencies that enjoy a more favorable rate of exchange with the dollar. Sony, for example, builds most of the television sets it sells here in California. Another is fear of lost sales or market share (particularly to Korean and Taiwanese competitors) and the production cutbacks that such setbacks would ultimately entail. The Japanese aversion to production slowdowns is legendary. It is said that during the big recession at the beginning of the decade, the American distribution arm of one major Japanese audio manufacturer scrapped large amounts of equipment because its parent company wouldn't match supply to the retail sales rate and warehousing the overflow was too expensive.

In short, the Japanese are gritting their teeth and hoping that better days come before bankruptcy. However, the consumer doesn't get a completely free ride. We've grown accustomed to rapid advances in technology and equally swift migration of new developments from expensive showpieces to affordable products. At the very least, part two of that expectation will have to change. When and if Super VHS and DAT arrive here, the machines will be costly—in the \$1,200 to \$2,000 range. And though prices eventually will drop, they probably will come down more slowly than they did for CD players and ordinary VCRs and bottom out at a significantly higher plateau. Japanese manufacturers may not feel that they can raise prices substantially on established products, but neither will they feel free to cut them on new entries with the abandon of years past. ■

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(CONTINUED FROM PAGE 38) loads itself, and begins play at the first track. If you want to play a programmed sequence, you can set up the memory even before you insert the disc. As many as 20 selections can be programmed. Unless REPEAT is engaged, the player automatically recues to the first track and pauses when it comes to the end of the disc. If you eject the disc, it will sit somewhat less than halfway out, awaiting removal. You can reload it by pushing it in slightly or by pressing EJECT once again; if you do nothing for about 15 seconds, the disc automatically reloads and the player goes to PAUSE. This helps protect your CDs, but during our test, the ease with which we could lose control of a disc we wanted to remove proved a minor annoyance in a moving car.

Playback sound quality during our road test proved above reproach. We don't know how much of the player's perfect tracking record is due to the special features of the Alpine transport—the die-cast zinc chassis, lightweight laser pickup element, silicone oil damping, and anti-backlash gear design in the tracking mechanism itself—but the company clearly is doing something right. Similarly, the simulated-fingerprint and simulated-dirt (black-dot) tests caused no misbehavior on the Diversified Science Laboratories test bench. On the other hand, one or two audible ticks appeared during even the least demanding signal-layer-error test, and skipping occurred at more demanding levels, though outright aborting didn't occur until the second-to-hardest test (800-micrometer interruptions).

The decoding circuitry uses two-times oversampling and a combination of digital and analog (Butterworth) filtering. Response is quite flat through most of the range, though it is up about 1/4 dB (left channel) to 3/4 dB (right) in the deep bass, gradually falling off through the treble to about -3/4 dB or more at 18 kHz and then more rapidly above, to about -1 1/2 dB at 20 kHz. These effects are somewhat more pronounced in the right channel (plotted in our graph) than the left, and the rolloff is slightly greater with pre-emphasis than without. But none of these departures from perfection can be considered more than very minor, and the same can be said for all the remaining CD-section measurements.

The tuner section also behaved very well in our road test. FM "spitting"—as we have been calling the bursts of noise and distortion typically produced by weak and varying signal strength combined with high and fluctuating multipath—was almost inaudible. Subjectively, reception suffered more from distortion than from noise and more from unstable, phasey stereo imaging than from either of the other ills. Because the 7902 has a mono/stereo switch (not all models do, unfortunately), the imaging problem is easy to banish on weak stations, and neither of the other problems is severe. FM listening quality was therefore judged well above average.

The tuner separation and quieting

curves suggest the reasons for these conclusions. The latter remain admirably low, right down to minute radio-signal strengths. They are kept there partly by attenuating overall output (the top curves on the graph) somewhat more than usual—which of course attenuates the noise along with the signal—and in stereo, by blending channels rapidly below signal strengths of about 40 dBf. This rapid blending produces unstable imaging with fluctuating signal strength.

Technically, the stereo sensitivity is a very respectable 34 dBf; we omitted the figure from our data column because 1-kHz channel separation at that input level is only 6 3/4 dB—arguably, no longer true stereo, although it's enough to deliver some stereo effect. Since this reduction in separation is important in keeping weak signals listenably quiet, some front ends offer even less separation at the same rating point.

There is a local/distant (DX) switch on the front panel, but it affects only the sensitivity of the station-seek function, not the actual tuner performance. You can seek out all receivable stations or only strong ones, but whatever you tune to will be received with maximum sensitivity and so on (the approach we prefer). The remaining data all are typical of good after-market gear. Frequency response droops slightly toward both frequency extremes (and retains the very slight downward slope toward the upper end we noted for CDs), but is flatter than was once the rule in home gear only a few years ago. The response figures shown below the graph were measured in mono, while the droop is a hair less in stereo.

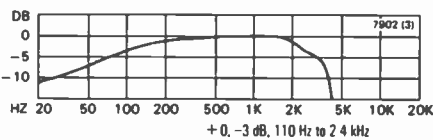
The AM section is fairly typical of the front ends we test: It has been designed for speech intelligibility, rather than sensuous sound. The restricted bandwidth and steep high-frequency cutoff help suppress the artifacts that plague weak AM reception. Most notable is the superb selectivity figure, which is better than we can document reliably and is thus shown simply as greater than 100 dB. Not surprisingly, we judged the AM listening quality better than average.

The 7902's overall response is the same as that of the CD section, which means that its slight departures from flat response should be attributed to the preamplifier, with the tone controls at their detents, rather than to the CD section's own circuitry. The tone controls themselves offer more than minimal adjustment range. The bass is most affected at about 40 Hz, where it can attain about 13 dB of cut or boost. In the treble, the maximum range is about ±11 dB at 15 kHz.

We see car CD players as the way of the future. Other models will surely come along to rival the 7902's single-chassis format and probably its performance, but few will be able to rival its exceptional ease of operation. The controls that really matter—meaning nearly all of them—are clearly differentiated, intelligently grouped, well illuminated, sized for adult human fingers, and attractive. And that in itself is a triumph. ■

AM TUNER SECTION

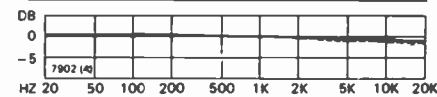
FREQUENCY RESPONSE



SENSITIVITY	3.1 μ V
SELECTIVITY	see text
AVC RANGE	64 dB

COMPACT DISC SECTION

FREQUENCY RESPONSE



no de-emphasis	+0.9, -1.4 dB, 20 Hz to 20 kHz
with de-emphasis	+0.9, -1.6 dB, 20 Hz to 20 kHz
CHANNEL SEPARATION (at 1 kHz)	84 dB
S/N RATIO (re 0 dB; A-weighted)	
without de-emphasis	97 dB
with de-emphasis	101 dB
HARMONIC DISTORTION (THD + N; 40 Hz to 20 kHz)	
at 0 dB	≤ 0.010%
at -24 dB	≤ 0.036%
AM DISTORTION (70-Hz difference; 300 Hz to 20 kHz)	
0 to -30 dB	≤ 0.12%
LINEARITY (at 1 kHz)	no measurable error to < -60 dB

TRACKING & ERROR-CORRECTION

maximum signal-layer gap	see text
maximum surface obstruction	> 800 μ m
simulated-fingerprint test	pass

PREAMPLIFIER SECTION

BASS CONTROL	+9 3/4, -10 1/4 dB at 100 Hz
TREBLE CONTROL	-10 1/2, -11 dB at 10 kHz
LINE OUTPUT IMPEDANCE	910 ohms
MAXIMUM LINE OUTPUT LEVEL	
from FM (100% modulation)	1 volt
from CD	3.89 volts

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MUSIC

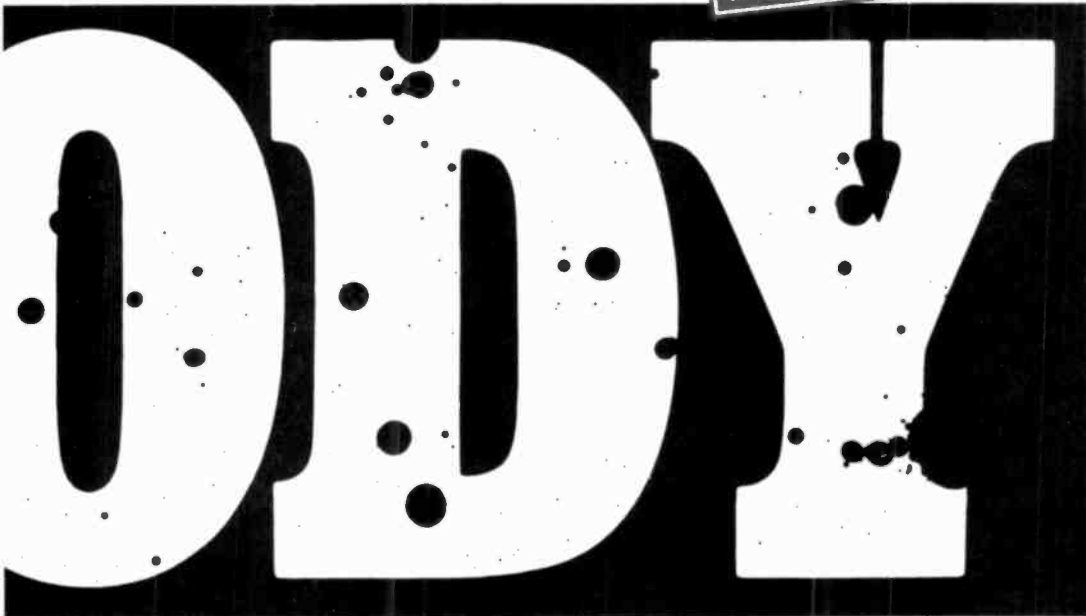
CBS's COPY CODE SYSTEM CANNOT DO WHAT ITS PROPONENTS CLAIM, WILL CRIPPLE THE GROWTH OF DAT, AND WILL HURT BOTH CREATORS AND CONSUMERS OF RECORDED MUSIC.

AS WE GO TO PRESS (EARLY MAY), THE LEGISLATIVE FATE OF COPY coding is still unknown. But whatever the outcome, the contents of this article will remain relevant and vitally important to audiophiles and music lovers. If the bills that would require inclusion of Copy Code scanners in DAT recorders are defeated, they are almost certain to be reintroduced in the next session of Congress. The issue will not just go away. If the bills become law, it will be important to understand their significance and to campaign to have the restrictions lifted, for the good of everyone. —Ed.

IT ALL STARTED IN 1979, WHEN RESEARCHERS AT THE NOW-DEFUNCT CBS technology center in Stamford, Connecticut, were directed to find a method of stopping unauthorized copying of records and tapes. After experimenting with inaudible signals that would disrupt the recording process (then only analog), and after not finding any method that did not require the addition of circuitry to the recorder, they came up with what CBS calls Copy Code. Although the system *does* require a detector in the recorder, it was CBS's hope—and is now the hope of much of the record industry—that a law would be enacted to require such circuits in tape recorders, including analog and digital audio

decks and VCRs.

One such proposed law (which is being advanced in several bills with nearly identical wording) is the Digital Audio Recorder Copy-Code Act of 1987, whose grand, sweeping edicts make for chilling reading to anyone familiar with



the most fundamental principles of high fidelity audio:

(a) No person shall manufacture, assemble, or offer for sale, resale, lease or distribution in commerce (1) any digital audio recording device which does not contain a copy-code scanner; or (2) any device, product, or service, the primary purpose or effect of which is to bypass, remove, or deactivate a copy-code scanner. (b) No person shall bypass, remove, or deactivate a copy-code scanner. [A copy-code scanner is] an electronic circuit . . . (A) which is built into the recording mechanism of an audio recording device; (B) which, if removed, bypassed, or deactivated, would render inoperative the recording capability of the audio recording device; (C) which continually detects, within the audio frequency range of 3,500 to 4,100 hertz, a notch in an encoded phonorecord; and (D) which, upon detecting a notch, prevents the audio recording device from recording . . . for at least 25 seconds. . . . An "encoded phonorecord" is a phonorecord which has a notch within the audio frequency range of 3,700 to 3,900 hertz." . . . [A notch is] an absence of sound resulting from the removal of sound signals at a certain frequency. [italics added]

It boils down to this: To prevent unauthorized copying of any particular recording, all of its incarnations will have to be "notched"; its LP, cassette, and CD versions will have to have a "certain frequency" removed (filtered out). Unfortunately for the creators and consumers of recorded music, such antimusical processing would be, in the end, literally and figuratively

self-defeating. (For a detailed technical description of Copy Code—and possible methods for defeating it—see the accompanying explanation, "Electronic Warfare." For a list of House and Senate Bills containing Copy Code legislation and the names of a few players in this matter, see "Sound Off," p. 51.)

FURY ABOUT SOUND

ON APRIL 2, IN TESTIMONY BEFORE CONGRESS by the Recording Industry Association of America (RIAA), David Stebbings (Director of Recording Research at the CBS Records Technology Center in Milford, Connecticut) stated that the Copy Code system encodes any master recording "by removing a sliver of sound from the music." He further claimed that "listeners cannot distinguish an encoded recording from an unencoded recording" and that the encoding filter is "effectively inaudible and does not affect the quality of the music." And indeed, in a demonstration of encoding using a "notched" track from Barbra Streisand's *The Broadway Album* (a CBS CD, CK 40092), there was no immediately apparent difference between the filtered and unfiltered versions. But the sonic nature of the segment played would make the effects of the system hard to discern in any case, not to mention that the material was unfamiliar to many of the listeners in the room and that opportunities for comparison were limited and controlled by CBS representatives.

However, that was followed by an utterly convincing counterdemonstration of the audible sonic effects of the Copy Code filter by the Home Recording Rights Coalition (HRRC). The HRRC used a filter designed according to

ELECTRONIC WARFARE

TECHNICAL INFORMATION ON THE CBS COPY Code system is scarce, mainly because, as of this writing, CBS has refused to divulge any of the technical details essential for independent evaluation of the latest version of its system, and because the specifications released thus far are known to have changed. But enough has been revealed about Copy Code's encoding and scanning processes to permit a basic technical description and an evaluation of the system's practicality, as well as proposals of ways to fool or "jam" it.

Encoding with the Copy Code system involves filtering the music through a very narrow notch (bandstop) filter. A CBS document dated March 19, 1986, specified the center frequency of the filter as 3,840 Hz and its -3-dB points as ± 125 Hz (3,715 and 3,965 Hz). For you engineers familiar with analog filter architectures, the design had a sixth-order Chebyshev response and was realized by cascaded biquad bandpass-filter stages whose output is subtracted from the original signal to create the encoded output. The depth of the notch was variable between -12 and -80 dB.

Recent reports have revealed that CBS—probably in an attempt to reduce the audibility of the filtering—has narrowed the filter width (reportedly to ± 120 Hz), has increased the rate of rolloff within the stopband (to a ninth-order Chebyshev response), may possibly have shifted the center frequency (by a few hertz upward), may have phase-equalized the filter (which would reduce, but not eliminate, ringing), and has settled on a maximum notch depth (said to be -67 dB). No matter what has been done, one characteristic remains: To "protect" the music, any sounds it contains between 3,715 and 3,965 hertz are "notched out."

The sharpness of the encoding filter, while necessary if its audible effect on music is to be minimal,

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may cause other sonic problems besides missing notes or altered musical timbres. A sixth-order Chebyshev filter made from biquad stages is a rather complex device, containing about a dozen operational amplifiers. Each will add noise to the audio signal. Phase equalization of the filter would add further active components to the circuit and noise to the signal. Dynamic range will be further reduced by possible substage overload: Depending on the input signal, one or more of the cascaded stages may overload before the final output does, thus adding distortion to the music. Making the filter a ninth-order design would only exacerbate these problems.

A Copy Code scanner is inherently more complex than even a ninth-order encoder filter, because it must reliably detect the encoded notch even if the recording is reproduced on an off-speed player, and more important, because it must avoid "false positives" that would halt the recording even if the source material were not encoded. As described in the March 1986 document, and shown here in a block diagram for the first time, CBS's version of a Copy Code scanner operates on the sum of the recorder's input channels. This sum signal is then fed through a "wide" bandpass filter (3,840 Hz \pm 375 Hz) so that the rest of the circuit "looks" only at the region around the notch frequency. A fast-acting automatic gain control compresses the filtered signal so that the following circuits see little variation in level. This is necessary to prevent the level-dependent detection circuit from being triggered by musical dynamics (it also lessens the circuit-quality requirements on the following stages).

The filtered and compressed signal is now split into two nearly identical paths. Both paths, with their rectifiers and integrators, serve to create slowly varying DC voltages. One path contains a narrow bandpass filter that is (or was) supposed to be identical in response to the encoding notch filter, so it generates a DC voltage

the then-known parameters of the system. When a pure tone was swept through the frequency range of the notch—disappearing when it neared the notch frequency—the Congressmen, along with the assembled press and observers, could easily "distinguish an encoded recording from an unencoded recording." And when the notes of a scale played on a piano passed through the notched frequencies, the change in timbre was unmistakable.

In his testimony, Stebbings claimed that the HRRC filter was incorrect because the notch was too wide and was located at the wrong frequency: "It [the HRRC filter frequency] was placed on musical notes that were part of the recording in a way that overlapped with audible sound." In an unnecessary swipe at those who built the HRRC filter, Stebbings testified that "any competent audio engineer could have easily avoided any of these obvious mistakes, at least with CBS technology." That technology, however, was not generally available on April 2, because, as Stebbings admitted, "We have yet to release our [latest] technical specifications for the encoder to anyone outside the music industry." Nor is it available as of this writing (early May), despite

Stebbing's April 2 promise to Congress to make the system available for independent listening tests.

After that morning's testimony was over, Stebbings, commenting to me on the HRRC demonstration, said, "You heard attenuation of the fundamentals of two piano notes. Now, on their document there, which they have produced, you've got the [minus] 3-dB points on the fundamental [of the piano note]. Now you know that if you change either a fundamental or an overtone on a piano by 3 dB, you're not going to hear any difference. So I'm saying that *that* demonstration was not even the spec he said it was. Believe me, our encoder wouldn't make that sound effect on a piano."

UNCERTAIN FREQUENCY

IF THE PROPONENTS OF THE COPY CODE SYSTEM choose to defend it with such musical/technical arguments, so be it. Basic facts about how musical instruments behave demonstrate that *any* anticopying system operating in a fashion similar to Copy Code in the frequency band specified by the legislation stands a good chance of causing audible changes—detrimental ones—to a great deal of music.

The notch, Stebbings claims, "is cut so as to fall between the fundamentals, overtones, or harmonics of notes on the musical scale." It does, but only if you adopt a restricted and rather culture-specific view of what constitutes a musical scale. The center frequency of the Copy Code notch is given by one CBS document as 3,840 Hz (3.84 kHz), and that was the frequency of the HRRC filter, although the precise frequency (within 10 or 20 Hz) matters little. Musically speaking, the filter frequency is about halfway between the highest A sharp and B natural on a standard piano keyboard, assuming that the instrument has been tuned to modern standard pitch with middle C equaling 261.626 Hz (and A4 equaling 440 Hz) and that the instrument has been tuned in equal temperament, with the pitches of a 12-note scale separated by a frequency ratio of 2 to the $1/12$ power (see Fig. 1).

Unfortunately for Copy Code's promoters, few instruments—not even pianos—fulfill both of these assumptions. In fact, the notch does *not* "fall between the fundamentals, overtones, or harmonics" of a piano, because all correctly tuned pianos are actually tuned "sharp" in their highest registers. In tuner's parlance, a piano's tuning is "stretched" in the uppermost octaves so that the notes' fundamental frequencies are *higher* than a simple application of the equal-

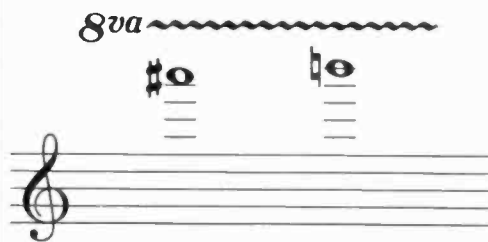


FIG. 1. THE NOTCH FREQUENCY OF THE COPY CODE ENCODING FILTER FALLS SOMEWHERE BETWEEN THE TOP A SHARP (B FLAT) AND B NATURAL OF A PIANO, SHOWN HERE IN MUSICAL NOTATION. THESE TWO PITCHES ARE FOUND IN PIANO MUSIC BY LISZT AND DEBUSSY, AMONG OTHERS. THE FILTER FREQUENCY WAS ORIGINALLY ON THE QUARTER TONE BETWEEN THESE TWO PITCHES.



FIG. 2. THE THIRD HARMONICS OF THESE TWO OFTEN-USED PITCHES, THE D SHARP (E FLAT) AND E NATURAL TWO OCTAVES ABOVE MIDDLE C, FALL CLOSE TO THE COPY CODE ENCODER FREQUENCY. IF A MUSICAL INSTRUMENT IS NOT TUNED TO MODERN STANDARD PITCH, OR IF PITCH INFLECTION IS USED IN THE MUSIC, THEN THE HARMONICS MAY FALL DIRECTLY INTO THE NOTCH.

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temperament ratio would dictate. This stretching is necessary to bring the fundamentals of the high notes into consonance with the harmonics of lower notes. Those harmonics are moved up in pitch by the characteristics of piano strings (they have some stiffness, which shifts the harmonics slightly from being simple multiples of the fundamental frequency).

Using a middle C of 261.626 Hz, a typical grand piano's highest equal-tempered A sharp will be not tuned to a calculated 3,729.31 Hz, but to around 3,783 Hz (half a quarter-tone higher). Stebbings's post-testimony claim to me was at best dubious: A Copy Code encoder will not attenuate the fundamental of a piano's high A sharp by only 3 dB. Instead of being 111 Hz away from the filter's center frequency, that note is only 57 Hz away and will be virtually obliterated by the encoder, causing a change in timbre. This is precisely what was heard in the HRRC demonstration. Granted, not all piano works explicitly call for such high notes, but those that do (including works by Liszt, Debussy, and many contemporary composers) will have the musical effect ruined as a player hits a clanging high A sharp (or B flat). Other acoustic instruments (such as pipe organs, glockenspiels, xylophones, and violins) as well as electronic synthesizers generate fundamental frequencies straddling the pitch of the Copy Code filter, and their sound quality would also be at risk when passed through it.

And not only the high A sharp or B natural will be altered. All the notes for whose fundamentals 3.84 kHz is a harmonic will be changed, perhaps audibly so, and especially if the instrument being used is not tuned to standard modern pitch. As you start examining these submultiples of 3.84 kHz, you immediately enter regions for which a great deal of music has been and is being written. The Copy Code filter is close to the third harmonics of the D sharp and E natural two octaves above middle C. These two pitches occur very often in, for example, flute and violin music (see Fig. 2). A violinist using vibrato while playing one of these pitches, say, in the Bach, Beethoven, or Brahms violin concertos, could sweep the third harmonic of the instrument's sound through the frequency of the Copy Code filter, with disconcerting changes in timbre a distinct possibility. Streisand may escape sonic mutilation, but the classical "Three Bs" will not. Performances using historical "original" instruments are often performed below modern standard pitch, so that the instruments' harmonics stand a good chance of falling directly into the abyss. Historical pipe organs are tuned in all sorts of non-equal-tempered systems to all sorts of standard pitches. Many orchestras deliberately tune sharp for a more bril-

liant tone quality. For example, the Boston Symphony is said to tune its A4 to 442 Hz instead of 440 Hz. At the top A sharp, this 2-Hz difference has been magnified to more than 16 Hz, pushing the whole ensemble's fundamentals and harmonics closer to the notch frequency.

There are few, if any, types of music whose pitches would conveniently avoid Copy Code's musical black hole. You don't have to be a graduate student in ethnomusicology to understand that any culture whose music contains much pitch inflection (Indian, Chinese, and Japanese classical music and good old American jazz spring immediately to mind) will generate fundamentals or harmonics that will eventually slide into the notch. If, as Jan Timmer (President of Corporate Management at Polygram International) believes, home taping represents "cultural vandalism," then the Copy Code system, with its claims to inaudibility poorly founded on the equal-tempered scale, equally signifies cultural demagoguery. All told, it is impossible to design a dependable Copy-Code-type anticopy system whose encoding will filter all music without audible damage. Indeed, for the Copy Code system to operate at all, the music must originally have some information at and near the notch frequency.

UNFINISHABLE SYMPHONY

THE RECORD COMPANIES SUPPORTING COPY CODE (not all do) seem willing not only to distort, perhaps grossly, the very product they are trying to protect, but also to impose a form of culturally biased musical censorship. If the system is required by law, a composer or arranger will not be able to write certain notes with the assurance that they will emerge in recorded performance without some form of sonic impairment. What if, in order to achieve a certain musical effect, a composer needs to sweep a tone through the frequencies of the Copy Code notch? (This happens occasionally in synthesized pop music and in the Ondes Martenot part in Messiaen's *Turangalila* Symphony.)

If the Copy Code system is indeed so audibly innocuous as to "not affect the quality of the music," why has CBS steadfastly refused to release those relevant technical details on the system that would enable independent listening tests? Where are the artist endorsements like the ones that accompanied the release of the CD system? We have yet to hear ringing praise of the system from the likes of Herbert von Karajan or Maurizio Pollini (Polygram artists), Michael Tilson Thomas and Murray Perahia (CBS artists), or

representative of the signal level found in the frequency range of the encoded notch. The other signal path's DC voltage represents the level of the frequencies around the notch.

The CBS description states that "if the music is not encoded, then the DC outputs from the first and second integrators will be the same. If, however, encoded music is used, then the DC output of the first integrator will remain at a small value, whereas the output of the second integrator will be much greater. By using a comparator, which detects the ratio of these values, within a preset margin of tolerance [also necessary to guard against false detections], the presence of the 'notch' in the music signal can be determined."

The control circuit has several functions. First, it sweeps the center frequencies of the scanner's bandpass filters by ± 6 percent so that the notch will be detected even if the music to be copied is played off-speed by as much as one musical semitone. When a notch has been detected during a sweep, the control circuit "freezes" the filter center frequencies and switches the integrators from a search-mode averaging period (80 milliseconds) to a long averaging period (13 seconds). If, after 13 seconds, the scanner still detects a notch, the circuit will signal the recorder to stop taping. Otherwise the whole circuit is reset and the search process repeated. The long wait is supposed to be the final guarantee against false detections, since it is unlikely (or so CBS thinks) that unencoded music will have a naturally occurring notch in its spectrum that lasts 13 seconds.

From this detection scheme, one can conclude that attempts to further narrow the encoding filter will not only increase that filter's ringing but will probably also increase the number of false alarms in playback. The narrower the slice taken out of the music spectrum, the less likely it will contain any signal to remove and the more likely that the recorder's scanner will

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(302) 478-9300

FLORIDA

Absolute Sound
(305) 629-1930
Audio Advisors
(305) 586-8497
Fox Audio
(305) 287-4335
Sound Plus Wood
(305) 391-1843
Verns Electronics
(305) 391-3259
Audio Workshop
(813) 748-3868
Cooper For Stereo
(813) 527-6863
Maurice Stereo
(813) 876-1951

STEREO GARAGE

(813) 775-5900
Behrens Audio Lab
(904) 721-1860

GEORGIA

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

HAWAII

Audio Shoppe
(808) 955-0944
Bose Entertainment Ctr.
(808) 533-4122
Hilo Audio
(808) 935-7146

ILLINOIS

Audio Enterprises
(312) 754-6056
Audio Visions
(312) 960-4946
Columbia Audio-Video
(312) 354-4770
Columbia Audio-Video
(312) 433-6010
Media Room
(312) 966-5590
Mills Recording
(312) 332-4116
Sounds Deluxe
(312) 887-9818
Stereo Studio
(312) 896-6464
Stereo Studio
(312) 357-0046
Team Electronics
(312) 658-8600
America's Best Audio
(312) 338-0565
Columbia Audio-Video
(312) 964-4886
Stereo Studio
(312) 741-1350
The Shoppe
(312) 939-4014

INDIANA

Classic Stereo
(219) 483-0553
Classic Stereo
(219) 483-0553
Larry's Radio
(219) 255-6434
Classic Stereo
(317) 282-5264
Classic Stereo
(317) 562-9344
Tom Doherty's Audio
(317) 842-7503
Alan Audio
(812) 332-2192
Audio Connection
(812) 232-1663
Risley Electronics
(812) 423-5436
Risley Electronics
(812) 886-9543

IOWA

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

KANSAS

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

KENTUCKY

Audio Video By Design
(502) 425-3333
Risley Electronics
(502) 685-2264
Risley Electronics
(502) 821-5620
Risley Electronics
(502) 443-4444

AUDIO CONNECTION

(606) 432-8132
Ovation Audio
(606) 278-0335
Sounds Around Town
(606) 528-0566
Sounds Around Town
(606) 664-6487

LOUISIANA

J's Sound Center
(318) 387-6044
Stereo & Record Cent.
(318) 361-2666
Stereo & Record Cent.
(318) 365-6223

MARYLAND

Myer-Emco
(301) 458-2000
Signal & Sound of Balt.
(301) 882-4700
Sound Studio
(301) 546-3181

MASSACHUSETTS

Taylor's Audio
(413) 499-1420
The Music Store
(413) 774-2836
Audio Video Environ.
(617) 864-8001
Electric Gramophone
(617) 443-3703
Encore Audio
(617) 236-4646
High Fidelity House
(617) 799-9737
Nantucket Sound
(617) 532-5777
Nantucket Sound
(617) 734-0700
Nantucket Sound
(617) 771-4434
Nantucket Sound
(617) 948-6622
Nantucket Sound
(617) 326-2344
Nantucket Sound
(617) 371-3078
Sound Inc.
(617) 356-5454
The Music Box
(617) 255-5100
The Music Forum
(617) 343-9393
The Music Forum
(617) 632-0660
The Music Forum
(617) 534-4431
Trolle Stereo
(617) 404-7847
Audio Concepts
(619) 899-8819

MICHIGAN

Stereo Center
(313) 239-9474
Video Alternative
(313) 549-3100
Classic Stereo
(616) 957-2130
Classic Stereo
(616) 381-6049
Langlois Stores
(616) 733-2528

MINNESOTA

Stereo 1
(218) 727-3552
Stereo 1
(218) 829-3566
Team Electronics
(218) 739-3874
Amalgamated Audio
(507) 286-1328
Amalgamated Audio
(507) 452-1965
Midwest Satellite
(507) 236-2233
Audio By Design
(612) 475-1443
Entertainment Designs
(612) 335-8616
First Tech
(612) 377-9840
First Tech
(612) 376-1185
Stereo 1
(612) 255-8866
Top Tech
(612) 980-9707

TOP TECH

(612) 920-4817
Top Tech
(512) 544-7412
Top Tech
(512) 636-5147
Top Tech
(512) 451-1735
Stereo 1
(201) 282-8820

MISSISSIPPI

Audio Advantage
(601) 328-4500
Audio Advantage
(601) 841-2400
The Sound Circuit
(601) 445-2377
The Sound Circuit
(601) 683-6033

MISSOURI

Hi Fi Fo Fum
(314) 647-3606
Wright's Sight & Sound
(816) 665-7208

MONTANA

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

NEVADA

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

NEW HAMPSHIRE

Audio Of New England
(603) 225-3313
Audio Of New England
(603) 524-1532
Cajon's
(603) 893-1904
Soundstations
(603) 778-1402

NEW JERSEY

AC Audio Video
(201) 526-1777
Atlantic Stereo
(201) 390-0780
Elite Audio Video
(201) 884-0044
S Audio
(201) 292-2799
Lanides Audio
(201) 879-6889
Leonard Radio
(201) 261-5525
Mironmouth Stere
(201) 842-6565
Semin Sound
(201) 575-8910
Stereo City
(201) 561-5577
The Sounding Board
(201) 445-5006
Soundwaves
(609) 751-1900
Sound Waves
(609) 645-1222

NEW MEXICO

The Sound Room
(505) 524-7090

NEW YORK

Audio Exchange
(212) 964-4570
Audio Exchange
(212) 982-7191
Audio Salon
(212) 249-4104
Continental Sound
(212) 459-7507
Custom Media Design
(212) 689-5916
Leonard Radio
(212) 840-2025
Leonard Radio
(212) 840-2025
Music Masters
(212) 840-1956
New York Video
(212) 755-4640
Park Avenue Audio
(212) 685-8102
Audio Exchange
(516) 334-7077
Audio Exchange
(516) 295-2100

DESIGNATION'S STEREO

(516) 822-5277
Designation's Stereo
(516) 475-4242
Sound Insights
(516) 536-9160
Chemung Electronics
(607) 962-4606
Chemung Electronics
(607) 733-5531
Chemung Electronics
(607) 272-2225
Rowe Photo/Video
(716) 442-8230
Stereo Shop
(716) 442-2879
Stereo Shop
(716) 621-4050
Stereo Shop
(716) 424-1820
The Stereo Advantage
(716) 631-8214
Clone Audio
(718) 987-2850
Clone Audio
(718) 987-2850
NYC Media Room
(718) 783-2113
Sound Or Wheels
(914) 471-9830

NORTH CAROLINA

Audiohaus
(704) 256-6911
Mac's TV
(704) 437-2494
Anderson Audio
(919) 633-3611
Microwave Audio World
(919) 446-1200
Stereo Sound
(919) 942-8546
Stereo Sound
(919) 782-4111

OHIO

B & B Appliance
(216) 842-5600
B & B Appliance
(216) 261-5600
Far East Audio
(216) 264-2161
Hammond Electronics
(216) 497-3070
Sight & Sound
(513) 474-4776
Sight & Sound
(513) 931-3100
Sight & Sound
(513) 772-8500
Sight & Sound
(513) 471-5622
Sight & Sound
(513) 248-1110
Stereo On Wheels
(513) 898-4590
Stereo On Wheels
(513) 866-4131
Stereo On Wheels
(609) 751-1900
Hammond Electronics
(614) 237-2504
Hammond Electronics
(614) 278-9292
Hammond Electronics
(614) 522-8467

OKLAHOMA

Contemporary Sounds
(405) 755-0795
Sound Station
(918) 336-2240
The Phonograph
(918) 665-6363

OREGON

Focus Electronics
(503) 364-3288
Hawthorne Stereo
(503) 234-9375

SHACKELL'S STEREO

(503) 476-5282
Shackell's Stereo
(503) 773-3732
Stereo Plant
(503) 382-9062

PENNSYLVANIA

Sassafras Audio
(713) 789-1180
Sassafras Audio
(215) 776-1941
Sassafras Audio
(215) 527-3656
Sassafras Audio
(215) 357-7400
Sassafras Audio
(215) 855-5065
Sassafras Audio
(215) 627-2913
Sassafras Audio
(215) 362-2180
Soundworks
(215) 543-7222
Sound Shack
(412) 224-7000
The Listening Post
(412) 443-6160
The Listening Post
(412) 681-8433
The Listening Post
(412) 856-1199
Hi Fi Shop
(717) 564-7688
Hi Fi House
(717) 737-7775
M & M Stereo Equip.
(717) 524-9182
Summit Audio-Video
(717) 823-5656

SOUTH CAROLINA

Frailay Electronics
(803) 771-7340

SOUTH DAKOTA

Western Stereo
(605) 332-5535

TENNESSEE

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

TEXAS

Hillcrest High Fidelity
(214) 528-0575
Hillcrest High Fidelity
(214) 352-9757
Hillcrest High Fidelity
(214) 934-8585
Hillcrest High Fidelity
(214) 248-9104
Stereo & Record Ctr.
(513) 757-3500
Stereo & Record Ctr.
(214) 297-1933
Stereo & Record Ctr.
(214) 938-9401
Stereo & Record Ctr.
(214) 561-7455
Texasiana Audio Ctr.
(414) 793-2866
Block Audio
(409) 832-0276
Bipr's Stereo Design
(512) 646-6991
Discovery Audio Video
(512) 396-2333
El Alba Electronics
(512) 542-8932
El Alba Electronics
(512) 542-8932
Pandara Electronics
(512) 542-8932
Shovery Stereo
(512) 682-1221

TAPE TOWN AUDIO VIDEO

(512) 851-2392
Audio Video
(713) 696-5719
Groove Audio Video
(713) 523-2900
Sheffield Audio
(713) 789-1180
Hi Fidelity of Lubbock
(806) 794-4507
Soundroom
(806) 353-917
Sound Idea
(817) 277-1924
Sound Idea
(817) 346-4500
Sound Idea
(817) 284-4503
The Sound Room
(915) 594-8201

UTAH

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

VERMONT

Mountain Music
(802) 775-2308

VIRGINIA

Contemporary Sounds
(703) 371-4815
Earfood Fine Audio
(703) 665-4477
Excalibur
(703) 548-3113
Myer-Emco
(703) 536-2900
The Audio Center
(703) 982-8793
Audio Exchange
(804) 262-0438
Digital Sound
(804) 424-5850
Sounds Unlimited
(804) 792-6717

WASHINGTON

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

WASHINGTON D.C.

Myer-Emco
(202) 299-9100

WEST VIRGINIA

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

WISCONSIN

General Electronics
(414) 964-7660
General Electronics
(414) 281-6851
Gene's Sound/Camera
(414) 458-2141
Wisconsin Electronics
(414) 921-5555
Wisconsin Electronics
(715) 423-2910

WYOMING

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

LUXMAN

INTERRUPTED

SPECIAL REPORT



deem a naturally occurring notch the result of encoding.

From the complexity of the scanner operation, one can guess how CBS plans to turn the circuit into an integrated "chip" form (which, as of this writing, has not yet been done). If a filter similar in complexity to the encoding filter is to be used in the scanner—and especially if its center frequency is to be swept—then there is only one practical way the scanner can be produced. It will have to use switched-capacitor solid-state-filter chip-manufacturing techniques. This is the only way such fine-tolerance variable-frequency filters can be made without using hand-selected parts or post-assembly trimming (which would make the chip cost much more than CBS's claimed \$1).

ELECTRONIC COUNTERMEASURES

IF, IN A RECORDER, THE COPY CODE SCANNER function is indeed carried on a separate chip and is not incorporated as part of another vital IC (a likely proposition if it is done with switched-capacitor technology), it will not take long for methods of bypassing, deactivating, or disconnecting the scanner IC to become common knowledge. Actually performing these operations will be illegal if the legislation passes, but at least one way of getting around the Copy Code scheme may not be.

Since the CBS system is frequency sensitive (with a vengeance), all that's necessary to defeat it is a simultaneous shift of playback and recording speed beyond the ± 6 -percent search range of the scanner chip. Although CBS says provisions can be made for doubling the scanner filter frequencies (to stymie double-speed analog dubbing decks), it is not possible to account for the infinite number of possible playback/recording speeds—the scanner will be looking for the notch in the wrong place. Congress will also have to outlaw continuously variable speed controls on decks and players.

other performers whose work is to be shielded by the Copy Code system. Perhaps they haven't even heard of Copy Code. By advocating the system, are record companies presuming to speak for Liszt, Debussy, and the rest of the composing community?

Also strangely silent in this affair have been reputable audio engineers and designers, especially those of the CD system, many of whom work at Philips. I've observed them applying prodigious energy and brainpower toward the sonic perfection and operational reliability of that digital medium. I can't believe they would, on principle, allow their work to be so undone by Copy Code and not raise a fuss. Perhaps Philips's CD-system designers have been "reminded" that their employer also owns much of Polygram Records.

THE ULTIMATE TURN-OFF

COPY CODE SUPPORTERS, IN ADDITION TO NOT realizing—or dismissing—the musical damage it may cause, also seem not to realize that requiring the installation of a Copy Code circuit in a digital-audio tape recorder (or, for that matter, in an analog deck or VCR) will be self-defeating. They have forgotten the history of the Dolby-encoded analog cassette: It, like DAT, is a medium pioneered by the high fidelity industry (Advent and Nakamichi, to be specific) and promoted by

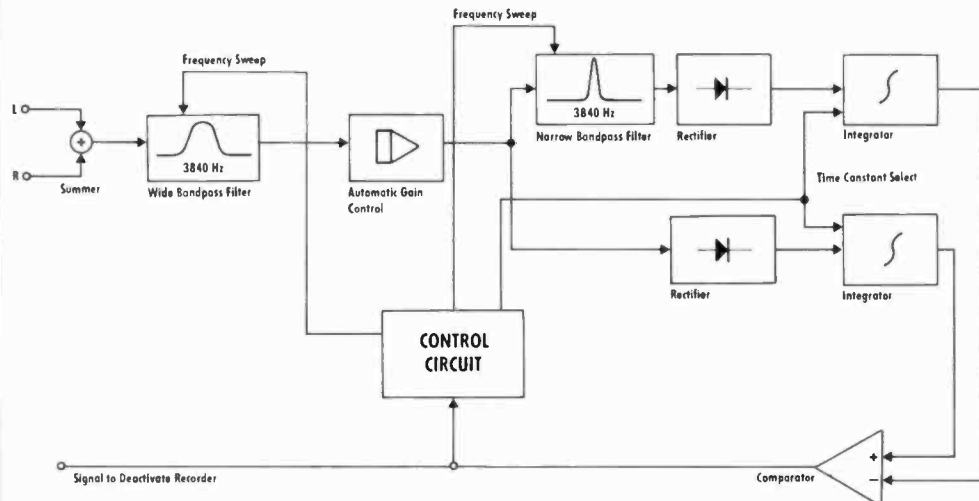
it before any prerecorded software was available. Advent, in fact, resorted to duplicating its own line of prerecorded Dolby-encoded cassette tapes in order to convince the rest of the world of the high fidelity potential of a medium originally intended for dictation machines. Now, thanks largely to Sony's introduction of the Walkman (unprompted by the recording industry), analog cassettes make up a substantial portion of the prerecorded music sold worldwide, surpassing in dollar volume and unit sales both the LP and the CD.

There is no reason to believe that the same type of hardware and software acceptance will not eventually come to the DAT medium. No reason, that is, unless consumers are inhibited from investing in DAT technology from the start. Consider the following questions:

- Would you buy a deck (digital, analog, or video) that would prevent itself from taping your own records for your personal use?
- Would you want a DAT deck for making live recordings (the best possible use for such high-quality technology) if, in the middle of a once-in-a-lifetime musical event, the Copy Code circuit might think it detected a notch in the music and, without warning, shut down the recording "for at least 25 seconds"?
- Would you purchase a recording if you knew it had been intentionally filtered and might be missing some musically crucial frequencies?

The incorporation of Copy Code chips in DAT machines and the encoding of music software will effectively eliminate most of the poten-

BASED ON A VERBAL DESCRIPTION IN A CBS DOCUMENT, OUR BLOCK DIAGRAM OF A COPY CODE SCANNER SHOWS THE DISTINCTIVE DUAL PATH (UPPER RIGHT) THE SIGNAL TAKES ON ITS WAY TO THE COMPARATOR, THE DEVICE THAT ACTUALLY MAKES THE RECORD/DON'T-RECORD DECISION. THE CIRCUIT'S PROVISIONS AGAINST FALSE ALARMS MAKE IT VULNERABLE TO JAMMING BY SEVERAL TYPES OF HOMEMADE CIRCUITS.



ILLUSTRATIONS BY NINA WALLACE

INTERRUPTED

SPECIAL REPORT

tial market for DAT machines. If this is the true intention of the Copy Code advocates, they have taken a very shortsighted view. Without a large number of DAT decks already in use, there will not be a market for prerecorded DAT software when a high-speed DAT duplication process is perfected. Nor will there be lower-cost mass-market DAT machines, because large-scale production economies will not have taken effect. Requiring the Copy Code system in all DAT machines will ultimately prove costly to the recording industry because it will handicap, and perhaps foreclose, the potentially very lucrative prerecorded DAT market.

COPY CODE COPS

SUPPOSE A LAW REQUIRING COPY CODE IN TAPE machines is passed. How will it be enforced? By the threat of civil lawsuits? By the dreaded "RIAA Tape Police"? In testimony also presented April 2, Fred Weingarten, of Congress's own Office of Technology Assessment (OTA), urged Congress to investigate:

the extent to which, and how, the Federal Government might need to be involved in order to make a technological solution [to the software-copying issue] stick. Insofar as these technologies are susceptible to bypass or deactivation, the Government would, first of all, have to make such activities illegal. Then, in order to detect and enforce this prohibition, either the Government or private parties would have to conduct some form of search, inspection, or surveillance. . . . Courts would also experience a greater workload to the extent that deactivating or bypassing technological devices entails civil lawsuits. . . . Such laws may be very hard to enforce since they attempt to govern how people use their personal property in the privacy of their homes.

I, for one, would not appreciate a midnight raid by the Copy Code Cops, nor would I be disposed to buy the recordings of any company supporting such folly.

"Every technological approach to protection," said Weingarten, "requires a trade-off between the security of the property and its accessibility, marketability, cost, and quality." As you have seen, the Copy Code system will not make the software secure, but it will certainly make it less accessible. Those record companies refusing to encode their products might gain a marketing advantage and added prestige in the eyes

of music consumers.

Somebody will eventually have to pay for the development of the Copy Code chip, its manufacturing, and its incorporation into tape-recorder circuitry, as well as for the manufacturing and installation of encoders and the remastering of software through Copy Code filters. Since I can't imagine the recording industry paying for all of this voluntarily, it is the music consumer who ultimately will bear these economic burdens. Furthermore, as the quality of prerecorded software is deliberately violated by the Copy Code process, the burden of musical damage will be borne by all sensitive listeners and musicians. Weingarten summed it up simply: "Attempts to control information flows too tightly may either fail or be so draconian as to be legally and socially unacceptable, as well as economically costly." He might well have added: musically disastrous. ■

SOUND OFF

MANDATORY INSTALLATION OF COPY CODE scanners in DAT machines is called for in House bill HR-1384 and Senate bill S-506, as well as the Administration's "Competitiveness" Trade Bill. Key movers to contact include Rep. **James Florio** (D, N.J.), Chairman of the House Commerce, Consumer Protection, and Competitiveness Subcommittee; Rep. **John Dingell** (D, Mich.), Chairman of the House Committee on Energy and Commerce; Rep. **Robert Kastenmeier** (D, Wisc.), Chairman of the House Courts, Civil Liberties and Administration of Justice Subcommittee; Rep. **Peter Rodino, Jr.** (D, N.J.), Chairman of the House Committee on the Judiciary; and Rep. **Jim Wright** (D, Tex.), Speaker of the House. Senators to contact include **Daniel Inouye** (D, Hawaii) Chairman of the Senate Subcommittee on Communications; Sen. **Ernest Hollings** (D, S.C.), Chairman of the Senate Committee on Commerce, Science, and Transportation; Sen. **Dennis DeConcini** (D, Ariz.), Chairman of the Senate Patents, Copyright and Trademarks Subcommittee; Sen. **Joseph Byden, Jr.** (D, Del.), Chairman of the Senate Committee on the Judiciary; and Sen. **Robert Byrd** (D, W. Va.), Senate Majority Leader.

The Home Recording Rights Coalition is at P.O. Box 33576, 1145 19th St. N.W., Washington, D.C. 20033, (800)-282-TAPE. You might also want to let Copy Code advocates know your feelings by writing to the Recording Industry Association of America, 1020 19th St. N.W., Suite 210, Washington, D.C. 20036, (202) 775-0101, and to the Coalition to Save America's Music, 1200 New Hampshire Ave., N.W., Suite 320, Washington, D.C. 20036, (202) 728-4964.

If you are handy with a soldering iron and are near a parts store, several more advanced countermeasures are possible. Those willing to sacrifice audio quality can build a filter with a very sharp roll-off above 3,500 Hz or a notch filter wider than the scanner's first bandpass filter (that is, centered on 3,840 Hz and wider than ± 375 Hz). Either will fool the scanner into thinking that the recording is unencoded. These filters would probably be illegal because they would not get around the legal prohibition on "any device, product, or service, the primary purpose or effect of which is to bypass, remove, or deactivate a copy-code scanner." (Under this restriction, telephones would have to be banned too, since a primary effect of feeding an encoded signal over poor-quality phone lines would be to render it unprotected.)

The most sophisticated approach would have as its goal the "filling in" of the encoded notch without a substantial loss of audio quality. One way to do this is to add to each channel a band of deliberately generated harmonic distortion (or possibly only noise) at the notch frequency. The amount added would have to be automatically regulated, by some form of voltage-controlled mixing, so as not to sound unnatural. But here the anti-false-alarm provisions of the CBS scanner can be used to advantage. It is not necessary to constantly add distortion; it just needs to be mixed in often enough to make the scanner continually reset itself without triggering, perhaps only every 5 or 6 seconds. And since there is a 13-second leeway, the precise moment of the de-notching can be selected by the jamming circuit so as to create little or no audible disturbance. While this method would be fairly complex and the circuit would have to be duplicated for each channel, it can be built from common off-the-shelf parts that would cost at most \$75. It would cost even less if the timing of the mixing operation were controlled by a \$1 Copy Code scanner chip!

D.R.

MAXIMUM HEADROOM

BY LARRY KLEIN

A historical and technical guide to an important specification

THE FIRST EDITION OF THE CURRENT U.S. standard for amplifier test procedures states: "Particularly noteworthy is the introduction of a new measurement, Amplifier Dynamic Headroom, that addresses itself to the power output capability of an amplifier when that amplifier is called upon to handle music-waveform signals, rather than continuous sine-wave signals." Dynamic headroom is a rating of an amplifier's ability to deliver large amounts of power on a short-term basis. Although it is an important and widely accepted measurement today, it wasn't always so. In fact, the dynamic-headroom specification was standardized only after considerable debate.

In 1975, I was a member of the IHF (Institute of High Fidelity) subcommittee—chaired by HIGH FIDELITY Contributing Editor Edward Foster—that was assigned the task of updating the amplifier measurement standard that had been in force since 1966. I use the expression "in force" somewhat loosely: The old standard was at best a cloutless collection of ambiguities and loopholes and was largely ignored by the industry it was supposed to help regulate. While the necessity for some rating of an amplifier's short-term output was clear, just how to go about testing and specifying it was not. The committee members were painfully aware of the misleadingly inflated music- or peak-power ratings then specified by most manufacturers. Nobody wanted the new spec to leave the door open for more of the same. (For definitions of "music power" and other amplifier-power terms, see "Power Words," p. 53.)

A STEADY SUPPLY

OUR PRIMARY CONCERN WAS TO PROVIDE A test that would fit in with the then recent Federal Trade Commission (FTC) rulings on amplifier power measurement (which survive, among other places, in the test

methodology for continuous average power). We were also aware that any spec we devised would be at odds with the traditional goals of designing an amplifier's power-supply.

The purpose of a power supply in an amplifier is to convert the high-voltage alternating line current to direct current for use by the amplifier circuits. At one time, and apparently still among some manufacturers, it was engineering-school gospel that a proper amplifier power supply

was to be well-regulated ("stiff," "hard," or "tight"). Such a supply mimics the behavior of a battery: Its output voltage remains as rigidly fixed as possible so long as the current being demanded of it does not exceed the supply's capabilities. When, on the other hand, the output voltage of a power supply tends to rise and fall with the current drawn from it, it is referred to as unregulated, or, less technically, "soft" or "loose."

The IHF's "music power" rating (and

POWER TESTS

A QUICK REVIEW OF THE IHF PROCEDURES FOR testing an amplifier's output power will help clarify some of the issues under discussion. Appropriate load resistors (of 8, 4, or 2 ohms and a high power rating to prevent melting) are connected across the amplifier's right- and left-speaker output terminals. Across one channel's load resistor (say, the left) are connected an audio voltmeter and a harmonic-distortion analyzer. A sine-wave signal generator is connected to the input jacks of both amplifier channels. The preconditioning mandated by the Federal Trade Commission requires that both channels be operated for one hour into the rated load impedance at 33 percent of the amplifier's rated output power.

After the preconditioning has heated up the amplifier, testing for *continuous average power* can begin. The sine-wave generator output (usually at 1 kHz) is slowly raised while the operator monitors the power output and distortion level of the left channel. When the manufacturer's rated (specified) distortion level is reached, the input level is fixed. As the standard says, "The signal shall be applied for a period of not less than 5 minutes." The voltage developed across the load resistor is then measured and converted into a wattage figure. If, for example, the amplifier were able to

produce 20 volts of signal across the 8-ohm load resistor before exceeding the rated distortion, that would indicate a power rating of 50 watts. (Power in watts equals output voltage squared divided by the load resistance.)

A *clipping headroom* measurement is obtained by raising the level of a continuous sine wave, as used in the continuous average power measurement, until the amplifier output clips. The ratio (expressed in decibels) of the voltage reached to that obtained in the continuous average power rating is the amplifier's clipping headroom.

Measurement of *dynamic headroom* is accomplished by use of a special signal: a 1-kHz sine wave that jumps up 20 dB in level for 20 milliseconds ($1/50$ second) every half second. This is fed to the amplifier, and the maximum output voltage obtained without clipping the 20-dB bursts is recorded. The dynamic-headroom rating itself is the ratio (expressed in decibels) of the average power of a sine wave having the same peak-voltage level as that obtained with the special test signal to the average continuous power.

A copy of the IHF amplifier standard, now called "Standard Methods of Measurement for Audio Amplifiers" (EIA RS-490/November 1981), may be purchased from the Electronic Industries Association, 2001 Eye St., N.W., Washington, D.C. 20006.

—L.K.

the instructions for how to obtain it) in the 1966 standard was a poorly conceived attempt to recognize that soft power supplies actually can be beneficial. A well-designed unregulated supply can cost less and yet may provide large amounts of power for short periods—following the dynamic range requirements of music, which is mostly rather quiet but contains frequent large, short-duration peaks. An amplifier with a continuous-output rating of, say, 40 watts (16 dBW) but that is able to deliver 80 watts (19 dBW) of power on a short-term basis is likely to sound better (because it is not clipping) on high-level musical transients than an otherwise identical amplifier that, because of its tightly regulated power supply, has a lower maximum short-term output. Of course, an amplifier that is able to put out 80 watts continuously can play louder (by 3 dB) than another amp that can achieve 80 watts only for brief periods, but it would probably be more expensive. But without some kind of dynamic-power rating, there would be no recognition of those amplifiers that could deliver musically significant amounts of power for short periods.

SHORT-TERM POWER

EVERYONE AGREED THAT THE CONTINUOUS power of an amplifier should be rated as it always had been—by the ability of the amplifier to provide a constant voltage into a resistive test load at a given distortion over a specified frequency range. And it was agreed that the flaw in the old music-power rating was in the recommended test technique, *not* in the concept itself. All that remained was to define “short term” in some meaningful way so that a dynamic-power test could be designed. The committee’s task was thus to come up with a waveform to be used in our revised dynamic-power measurement, plus a new term to describe it that would avoid the stigma attached to “music power.” After some analysis of recorded musical waveforms, we decided that the peak output level had to be maintained for at least 20 milliseconds to be truly useful (audible). The final test waveform decided on was a 1-kHz sine wave that increases in level by 20 dB for 20 milliseconds every half second. It sounds like a tone interrupted by loud beeps.

To avoid a repeat of the “music power” wattage-rating shenanigans, we decided to express the increase above the continuous power by a ratio (converted to decibels) rather than in watts. This got around the FTC wattage-rating restrictions in addition to being foolproof: Advertising copywriters probably don’t understand decibels well enough to pervert the usage of “dynamic headroom.” We noodled the question of a new descriptive term, and I think I was the one who came

POWER WORDS: A GLOSSARY

clipping: A form of amplifier-overload distortion in which the peaks of the output waveform are flattened (clipped off) as the absolute maximum output level of the amplifier is reached. Clipping may occur at various output voltages, depending on the maximum output current capability of the amplifier with different signals and loads.

clipping headroom: The ratio, expressed in dB, of the *actual* maximum (clipping-level) continuous average output power to the amplifier’s *rated* continuous average output power. Clipping headroom is normally 0 dB or greater.

continuous average power: The amount of power an amplifier can generate continuously with no more than a specified amount of distortion into a specified load. “Continuous” refers to the minimum measurement time (5 minutes), and “average power” in watts is, as the IHF standard says, “numerically equal to the square of the rms [root-mean-square, a method of signal averaging] voltage measured in volts at the output-load resistor, divided by the load resistance in ohms.”

current: The rate of flow of electrons in an electrical field created by a voltage. Current is measured in amperes, 1 ampere being the flow of 6.28×10^{18} electrons per second.

dBW: A unit of a logarithmic power-rating scale. The IHF standard states “0 dBW is defined as equivalent to 1 watt. Power ratings in dBW are numerically equal to 10 times the common logarithm of the power in watts.” The dBW is very useful in comparing amplifier output powers. For example, the difference in maximum continuous output level of an amplifier rated at 120 watts

(20.8 dBW) and one rated at 100 watts (20 dBW) per channel is precisely the difference, in decibels, between their dBW ratings (0.8 dB in this case, hardly a difference worth the money).

dynamic headroom: A measure of an amplifier’s short-term maximum-output capability. As a measurement, it is the ratio, expressed in dB, of the maximum output power an amplifier can produce using a special waveform to its rated continuous average output power. This waveform is a 1-kHz sine wave that jumps upward in level by 20 dB for 20 milliseconds every half second. All other things being equal, an amplifier with a higher dynamic headroom is preferable.

headroom: In audio, the amount of extra dynamic range of a device or medium beyond its specified or measured normal maximum output.

music power: An obsolete specification defined as the greatest single-frequency power that an amplifier can generate—when measured immediately after the application of a high-level signal—without exceeding its rated distortion figure.

power: The rate of energy expenditure when a force causes motion. In electronics, the force is a voltage and the motion is the movement of electrons in a current. Power is measured in watts, with 1 watt equaling 1 volt \times 1 ampere. Power in watts is also equal to voltage squared divided by the load resistance in ohms.

voltage: The measure of the strength of an electric field, which is the force that moves electrons through a conductor.

David Ranada

up with “Dynamic Headroom.” (For an explanation of how power output is measured, see “Power Tests,” p. 52.)

WHY MAX HEADROOM?

THERE ARE SEVERAL WAYS OF LOOKING at the virtues of high dynamic headroom. The continuous output power of an amplifier is basically provided by a large, heavy, and relatively expensive power transformer. A conventional Class AB output amplifier designed to provide a continuous power of, say, 200 watts (23 dBW) per channel is therefore quite costly. However, if the continuous rating were to be 50 watts (17 dBW) but the dynamic headroom a high 6 dB, the amplifier would still have 200 watts available for musical peaks and yet would be smaller,

cooler, lighter, and far less expensive. Now, a 50-watt amplifier won’t cut the mustard when sustained power beyond its rating is called for, but for short-term peaks, any extra headroom can make a worthwhile audible difference. Any amplifier headroom is nice to have available when you are playing CDs, or (someday?) prerecorded DATs, whose ratio of peak-to-average signal level can be 10 to 20 dB higher than those on the equivalent LP. Somehow, the amplifier testing committee was lucky enough in 1975 to foresee, or idealistic enough to at least hope, that one day the dynamic range of program material would approach that of live music, and that by instituting a precisely defined dynamic-headroom rating, consumers could profitably compare amplifiers’ abilities to reproduce such wide-range recordings. ■



LONG LIVE THE KING

SO BUDDY RICH IS GONE. IT WOULD appear then that supermen are mere mortals after all. Not a bit of it!

I came upon Buddy in the late 1960s, when I was attempting to make a name for myself in London as a rock drummer. Carl Palmer insisted that he take me to a club to see Buddy and his new band. Most of the evening has gone with the mists of time. Two things, however, are etched in memory. The first is the wonderful precision of Buddy's band and the breathtaking work of the various soloists. The

second is the man himself. Being in my twenties at the time, I was completely unprepared to see someone almost 30 years my senior transform my instrument from the merely mundane to the stratospheric. His invention, combined with the sheer pleasure of playing, transfixed everyone watching in the small room.

Shortly after that evening, I attended a clinic that Buddy conducted. In the audience were some of the best names in English percussion, and once again, excitement was rampant. Buddy entered, sat at his kit, and regaled the room with ten minutes of his particular form of acidic humor. That disposed of, he gave a brief recital, playing while seated forward, sideways, and finally backwards, all the time performing faultlessly. The most indelible memory of that day, though, is of the question-and-answer session that followed. Many respected drummers waded in with queries about technique and timing; to a man, they were treated to the sort of sarcastic rebuff that Buddy did so well. But when a small boy of not more than eleven stood up and asked, in a tremulous voice, what appeared to the assembled throng to be an extremely naive question about the hi-hat, Buddy came down from the stage with the item in question and proceeded to gently explain and demonstrate the answer. There wasn't a man present who didn't wish he was that young boy.

There are only two reactions open to the less fortunate of us when viewing a master at work: depression and inspiration. Buddy Rich was that rare individual who always forced the second reaction, because of his enthusiasm for what was so obviously *his* business. I shall miss him.

Andrew Steele

Mr. Steele played drums in Peter Frampton's first band, the Herd, and has since been active as a session musician.



TO SLAVA WITH LOVE

ALTHOUGH WE HAVEN'T MET before," Gregory Peck said, "I understand that I am to call you Ted, and you are to call me Greg." I looked up from my script and saw that he was smiling. "That will be fine with me, if it's all right with you," I said a little sheepishly. I'm not used to movie stars.

We were in the executive offices of the National Symphony Orchestra, preparing our lines for the next night's gala concert in honor of Mstislav Rostropovich's 60th birthday in the Concert Hall of the Kennedy Center. Peck had agreed to be the emcee, and was honing the script with producer Peter Wexler at his side. His marvelous sense of polish and euphonious voice were going to be our insurance—our guarantee that no matter what went wrong, we'd be a hit. Even nervous editors unaccustomed to bright lights and live audiences weren't going to prevent *this* concert from going over the top.

Of course, I wouldn't be writing about it if it hadn't gone marvelously. Rostropovich ("Slava to his friends, which means Slava to everybody," Peck observed at the start) watched it all from the President's box. The First Lady sat at his side; next to her was Galina Vishnevskaya. The National Symphony played for its music director under the batons of guest conductors Leonard Bernstein, Yehudi Menuhin, Cristóbal Halffter, James Conlon, and Maxim Shostakovich. In addition to Menuhin, the evening's soloists included Anne-Sophie Mutter, Jean-Pierre Rampal, Isaac Stern, Eugene Istomin, Yo-Yo Ma, Frans Helmerson, and Bella Davidovich. Krzysztof Penderecki led the Choral Arts Society of Washington in the premiere of a new work, *Song of the Cherubim*, written in honor of Rostropovich. A new hybrid rose, named for Slava, was presented to him by Kathleen Turner, and at the end, the First Lady led the orchestra and the audience in "Happy Birthday to You."

In the middle of it all, I strutted and fretted my hour upon the stage, managed to say "Greg" and not "Gregory," and tried to deliver a couple of anecdotes about the man who is this year's MUSICAL AMERICA Musician of the Year. Later, there was a big party at the French Embassy, where we all congratulated Slava on his honorary knighthood from Queen Elizabeth (Sir Slava?). As I was writing this, the White House announced that Slava will receive the Medal of Freedom from President Reagan in June. We sure know how to pick a Musician of the Year.

Ted Libbey

E D I T E D

B Y

K E N

R I C H A R D S O N

E D I T E D

B Y

T E D

L I B B E Y

CLASSICAL

Star conductors are on the move, leaving America's orchestras without the "personalities" they once had and diminishing their stature on record.



BY THEODORE W. LIBBEY, JR.

Musical Chairs

for every winner there are six, eight, a dozen losers. It's a metaphor for life, and we learn it at an early age.

Today there's a new game of musical chairs being played on the podiums of the world's major orchestras. But in this game of musical chairs, there are no losers.

Instead of chairs neatly lined up, the game is played with music directorships scattered here and there. There are more of these positions than there are players in the game, so no one is ever eliminated. But since it is not a good idea to leave one or another of them vacant for too long, the rules allow for a player to occupy more than one chair simultaneously. This he does simply by moving back and forth, sometimes while the music is playing, sometimes when it has stopped. The distances are not great—it is rare that positions are

WHETHER INVENTED MUSICAL CHAIRS had the right idea. A handful of chairs arranged in a circle. Music from a jack-in-the-box, and a procession of kids in party clothes and comical hats marching around the chairs until the music . . . stops! A mad dash, and—always—someone with nowhere to go. The thrill of victory among the survivors, and the agony of defeat writ large on the face of the unfortunate little one. Remove a chair, start the music over again, and continue, each time with one more child than there are chairs, until only the lucky one remains.

What makes sense about musical chairs is that

*HAVING A STAR ON ITS PODIUM
IS THE MOST IMPORTANT ADVANTAGE
AN ORCHESTRA CAN GIVE ITSELF.*

separated by more than a few thousand miles, and frequently they are much closer than that—so it only takes a few hours by jet to get from one to another.

Since there is a shortage of players, some of the best are offered large amounts of money to occupy specific positions, generally the most prestigious ones. These players occasionally spend a turn or two as "guests" in another's position before returning to their assigned ones; to make the game a bit more interesting, there is a pool of players without assigned positions who do the same thing. The rules allow the players with the assigned positions to stay where they are, but few of them choose to do so for more than 10 weeks a year. The object of the game is to make money and, of course, to keep the music going.

It all sounds so simple, even a child could do it. The realities, however, are more complicated than the musical-chair metaphor suggests. Instead of simple rules, the game is governed by a fascinating interaction of personalities, aesthetics, cultural politics, and, yes, money. There are parts for press agents, critics, record companies, and boards of directors. Nonetheless, the making of a music director is a game, in which the conductor is both a participant and a piece. The *real* players—often seated on opposite sides of "the board"—are his management and that of the orchestra.

It was not always this way. Thirty or forty years ago, music directors spent the entire season with their orchestras, and as often as not held what amounted to lifetime tenures. It was possible to say that such orchestras as those of Chicago, Boston, Philadelphia, and Cleveland *were* the orchestras of Frederick Stock, Serge Koussevitzky, Eugene Ormandy, and George Szell; and in Europe, there was the inexhaustible Willem Mengelberg, who manned the helm of the Concertgebouw Orchestra for half a century. One global development that, in the interim, has contributed to the gradual disappearance of such arrangements is the lengthening of symphony seasons. Most major orchestras now operate 52 weeks a year, with subscription seasons ranging from 24 to 28 weeks; tours, special programs, and summer seasons fill an additional 20 weeks or so, and paid vacations account for the rest. Such seasons, while guaranteeing a reasonably good standard of living for the players, place great demands on orchestras and music directors alike. No conductor, however energetic, can prepare that much repertory or spend that many weeks in front of the same orchestra

without burning himself out, so the door has been opened to guests.

Perhaps even more significant is the fundamental change that has come over the role of the music director itself. It used to be that a music director took total responsibility for planning a season's repertory, engaging soloists, examining new scores, auditioning new players, and rehearsing and conducting the orchestra. Now, many major orchestras have specialists, called by a variety of titles (often something like "artistic administrator"), to help with the first three tasks. While still responsible for the overall direction of artistic policy, the music director spends more of his time with the orchestra, on the podium. One reason this has happened is that, as the principal conductor, he has become a commodity: Having a star on its podium is the most important advantage an orchestra can give itself today. Star conductors bring recording contracts with them. Star conductors sell tickets. Star conductors attract the interest of wealthy patrons. Star conductors are marketable products who, like athletes, command enormous salaries, but, also like athletes, usually make a huge difference at the box office. An orchestra like the Boston Symphony or the New York Philharmonic is, to be sure, an artistic entity, but it is also in the entertainment business, a medium-size nonprofit organization that functions like a large corporation, with hundreds on its payroll and millions in its budget. It is essential for such enterprises to have star performers on their podiums.

The emergence of the star music conductor is a symptom of the gradual replacement of interest in music by interest in performance. One may well lament that fact, but the players in the game recognize it and play accordingly. Musical chairs is a mechanism for producing star conductors. How well does the mechanism work? A recent, and very neat, example is provided by the rotation of music directors that was sparked by Edo De Waart's departure from San Francisco in 1985. To replace him, a suitably mature and seasoned maestro had to be found, preferably a European. Herbert Blomstedt,

a Swede born in Massachusetts who for roughly a decade had been principal conductor of the Staatskapelle Dresden, fit the bill. That left a position in Dresden open, not the easiest place to fill one, but ideal for someone on the rise. Hans Vonk, conductor of the Netherlands Opera, was summoned. And who takes over the Netherlands Opera? Who else but De Waart? The elegance of the solution was complicated somewhat when Neville Marriner decided to leave the music directorship of the Minneapolis Orchestra. De Waart has gotten that post, too.

In another recent round of musical chairs, the orchestras of Cleveland, Pittsburgh, and Los Angeles had changes of leadership—and all three have made a big point of saying how happy they are. It started in 1980 when Lorin Maazel, music director in Cleveland, announced he was leaving to take charge of the Vienna State Opera in 1982. Cleveland, which insiders say really wanted to get Colin Davis, finally made an offer to Christoph von Dohnányi, who was then conducting the Hamburg Opera. A brilliant press campaign preceded his arrival in Cleveland, and he and the orchestra appear to have enjoyed an exceptionally happy honeymoon. In 1985, André Previn surrendered his post as music director of the Pittsburgh Symphony in a dispute with the orchestra's management over policy matters, and was picked up on the fly by the Los Angeles Philharmonic, which had been discreetly looking for a successor to Carlo Maria Giulini, forced for personal reasons to curtail his activities there. That left Pittsburgh directorless, but not for long: Maazel's precipitous departure from Vienna in 1984, following a row with a meddlesome government minister, had put him back in the game. Pittsburgh, with the incentive of a huge bonus (another sporting gesture), was able to get him to spend a goodly number of weeks there as music advisor, and, beginning last season, as principal guest conductor. In 1989, he will become the orchestra's music director.

The result? Three apparently happy orchestras. Pittsburgh is delighted to have a maestro of Maazel's stature and experience as a guiding presence. And for Maazel, it is something of a homecoming: He grew up in Pittsburgh and played violin in the orchestra for a couple of years, and his parents still live there. He makes no secret of his satisfaction at being relieved, for the time being, of administrative duties: Free to divide his time among a number of the world's top orchestras, he took four of them, including Pitts-

*WITHOUT REPUTATIONS . . . DO AMERICAN
ORCHESTRAS HAVE ANYTHING LEFT
TO OFFER THE RECORD LABELS?*

THE CD SPREAD

MINI-REVIEWS OF THE LATEST COMPACT DISCS

BY ROBERT E. BENSON, DAVID HURWITZ, CHRISTOPHER MANION, K. ROBERT SCHWARZ, TERRY TEACHOUT, JAMES WIERZBICKI, AND BILL ZAKARIASEN

MILHAUD STRING QUARTETS: AQUITAINE PLAYERS

DARIUS MILHAUD, SURELY ONE OF THE 20TH century's most prolific composers, turned out 18 string quartets between 1912 and 1950. They're not his best efforts, and almost any one of them can be heard as representative of the lot. Notwithstanding Milhaud's penchant for experimenting with structure and his occasional forays into polytonality, ethnic rhythm, and quasi-Expressionist melodic free flight, they invariably come across as mere bonbons; sophisticated as they are in terms of craftsmanship, none of them makes much of a statement, and even their very real charm wears thin after several of them are heard in succession.

The only available recordings of the Milhaud quartets are those on the French Cybelia label: In recent years, the Arcana Quartet brought out two albums of them (Nos. 2, 6, and 15 on CY 653 and Nos. 3, 4, 9, 12, 14, and 17 on the two-disc set CY 651/2), and now an ensemble made up of members of the Centre National de Musique de Chambre d'Aquitaine has issued Nos. 5, 8, 11, and 13. These latest performances are remarkable mostly for their energy; intonation is sometimes insecure, the sound is more often than not rough-edged, and the feeling of suavity that *ought* to permeate Milhaud's chamber music is generally lacking. Playing time: 63:56. (Cybelia CY 805. Distributed by Qualiton Imports, 39-28 Crescent St., Long Island City, N.Y. 11101.) J.W.

BALAKIREV SYMPHONY NO. 2: USSR STATE, SVETLANOV

THIS IS THE LATEST IN A SERIES OF RELEASES from Le Chant du Monde featuring Russian orchestral music performed by Yevgeny Svetlanov and the USSR State Symphony Orchestra. It offers music by Mily Alexeyevich Balakirev (1837-1910), guiding spirit of the group of nationalist composers known as "The Five." Included are his Symphony No. 2, in D minor, and the symphonic poem *Tamara*. Beecham recorded the latter score with the Royal Philharmonic and seemed to get a bit more out of it than Svetlanov, whose treatment is less imaginative. Those who enjoy colorful Russian music will nonetheless derive much pleasure from these interpretations. Recorded in 1978 and 1979 by Melodiya, these accounts have a full, vivid sound that I find very satisfying. The transfer to CD has been skillfully accomplished. Playing

time: 56:59. (Le Chant du Monde LDC 78.758. Distributed by Harmonia Mundi, U.S.A.) R.E.B.

CHRISTOPHER PARKENING: RECITALS AND REISSUES

I DOUBT THAT ANYONE BETTER APPRECIATES Christopher Parkening's genius than Andrés Segovia. The venerable maestro, whose life has been a monument to the guitar, has repeatedly singled out the brilliant young American as one of the most gifted guitarists of our time, one "touched by the finger of God."

Parkening, in turn, comes to us as a pilgrim from Segovia's mysterious, haunting world. He is one of the few who have ever truly mastered the guitar, and for him the love of Segovia's music was the beginning of wisdom. Segovia, after all, single-handedly brought the guitar out of obscurity and into the realm of serious music, compiling in the process a wealth of challenging transcriptions, notably from Bach. Parkening, to his credit, embraced that patrimony and has sought to preserve and enhance it for future generations. Angel has recently released on Compact Disc four remarkable collections that represent both aspects of his efforts.

In the Spanish Style contains an hour of Parkening's finest early recorded selections (playing time: 59:42; Angel EMI CDC 47194). Here, in what are some of the most challenging pieces in the repertory, he establishes the breathtaking standard of technical perfection and sensitivity that has become his trademark. No other guitarist has approached Segovia's example so closely.

Parkening's playing reflects not only a love of the great tradition that informed it but also the religious inspiration that occasioned the creation of so many classical masterpieces. In *Simple Gifts* (playing time: 38:10; Angel EMI CDC 47525), the guitarist soars from an exquisite Bach *Präludium* to the rhythmic Nigerian "Jesus, We Want to Meet." In the "Evening Prayer" from Humperdinck's *Hänsel und Gretel*, he effortlessly and quite faithfully captures the hushed voices and poignant orchestral accompaniment of the original. The duets offered here—all transcribed by Ronald Ravenscroft (with Timothy Howard on harpsichord and Parkening playing both voices in the "*Laudate Dominum*" from Mozart's *Vesperae Solennes de Confessore*, K. 339)—will be welcomed by all who have sought a wider reper-

tory for the guitar. The best gift of all comes from Haydn, via Ravenscroft's fine transcription of the hymn tune from the master's String Quartet, Op. 76, No. 3, a majestic pearl that will grace the recitals of guitarists for generations to come.

A Bach Celebration (Angel EMI CDC 47195) is Parkening's first foray into recording with full orchestra. (Even though he has performed the Rodrigo concertos on tour for years, he has yet to record them.) The collection is reminiscent of *Parkening Plays Bach* [reviewed in "The CD Spread," September 1986]; and while it must be said that "Sheep May Safely Graze" and "Jesu, Joy of Man's Desiring" appear better suited to unaccompanied performance, "How Joyful Is My Heart," with Allan Vogel's oboe d'amore, stands out as a fine example of the art of arranging. The disc's playing time is only 37:17, but the collection should be popular among music lovers who might find listening to a solo guitar recital too taxing.

Kathleen Battle's work with Parkening in *The Pleasures of Their Company* is the jewel in the crown here, offering such extraordinary pleasures that one hopes further collaborations will follow. In the Renaissance pieces, Parkening handles his debut as an accompanist with a grace that both underscores Battle's measured, sure interpretations of John Dowland and limns the beauty of the original lute accompaniment, a most difficult achievement that seems to come naturally.

The later pieces cover a broad spectrum, from the whispered "*Para Niñar*" to the jubilant spirituals and the boisterous "*Boi-Bumba*." Guitar and voice combine as one melodious and harmonious instrument in the inspired, sensitive hands of these performers. *The Pleasures of Their Company* (playing time: 43:56; Angel EMI CDC 47196) not only marks a promising debut for this duo of superstars but should become a classic among collections of song. C.M.

SCHMELZER, MUFFAT SONATAS: LONDON BAROQUE, MEDLAM

ON DISC, AT LEAST, THE LARGELY ITALIANATE virtuoso instrumental works of the Austrian composer Johann Heinrich Schmelzer (c. 1623-1680) have been sadly neglected by the vanguard of early music's "authenticity" movement. The London Baroque's new digital recording of five of the three-part sonatas actually introduces Schmelzer's name to the current catalog. It's a welcome record-

ing, and a splendid one, too. Under the direction of cellist Charles Medlam, the performances, like the material itself, are on the whole more notable for their surface brilliance and dramatic effect than for their substance. Beneath the flashy veneer, however, the listener can observe countless fine details—in the sheer variety of articulations in the violin passages for example, or in the phrasing of the bass lines—that suggest the players' indulgence in razzle-dazzle, like Schmelzer's, is very much a matter of choice.

Only one of the Schmelzer pieces is from a published collection (the 1659 *Duodena selectarum sonatarum*); the others—which include a *Lamento* on the death of Ferdinand III and a sonata based on the folk song "Lanterly"—are from manuscripts at the library at Olmütz (Olomouc), Czechoslovakia.

They share the disc with two works by Georg Muffat, a lengthy *Sonata a 5* from the 1682 *Armonico Tributo* collection and an unpublished accompanied violin sonata. In the latter, the refined, appealingly aggressive soloist is Ingrid Seifert. Playing time: 61:35. (Harmonia Mundi, U.S.A. 90.1220.) *J.W.*

BERLIOZ "FANTASTIQUE": CONCERTGEBOUW, DAVIS

THE TRANSFER OF SIR COLIN DAVIS'S BERLIOZ series to CD continues with his 1974 renake of the *Symphonie fantastique*. The digitally remastered analog sound is satisfactory, and the performance is wonderfully elegant, with the Concertgebouw Orchestra in excellent form throughout. Superb liner notes by David Cairns. Playing time: 55:39. (Philips 411 425-2.) *T.T.*

SCHUBERT, SCHUMANN FANTASIES: PERAHIA

THE SCHUMANN C MAJOR AND THE SCHUBERT *Wanderer* fantasies, a familiar coupling, are superlatively performed here by Murray Perahia, one of our most consistently satisfying pianists. The only possible complaints are technical ones: Andrew Kazdin's digital sound is slightly cold and tubby, and the Schubert contains no internal bands. Playing time: 51:52. (CBS Masterworks MK 42124.) *T.T.*

HAYDN MASSES: AUGSBURG, KAMMLER

IN 1740, EIGHT-YEAR-OLD JOSEPH HAYDN became a chorister at St. Stephen's Cathedral in Vienna. Nine years later, when his voice changed, he was unceremoniously dismissed. One of Haydn's earliest surviving compositions, the *Missa Brevis* in F major (Hob. XXII:1), dates from that same year. The Mass in G major (*Sancti Nicolai*, Hob. XXII:6) of 1772 and the *Missa Brevis* in B flat major ("Little Organ Solo," Hob. XXII:7) of 1775 are also included on this recording. These early masses are essentially cheerful and optimistic, uncomplicated in their attitude toward God. Yet certain adventurous harmonic progressions and a poignant lyricism, particularly in the *Sancti Nicolai*, point

to the composer's later maturity.

It is a special joy to hear these masses performed by a choir much like the one of Haydn's youth. The soloists and chorus of the Boy's Choir of Augsburg Cathedral produce a pure, light tone, not burdened with too much vibrato, and they display remarkable vocal control in both pitch and articulation. In fact, the choir is so vibrant and energetic that the overly polite Residency Chamber Orchestra of Munich, conducted here by Reinhard Kammler, pales in comparison. Perhaps the orchestra felt obliged to make a distinction between sacred and secular that Haydn himself did not. But the Augsburg boys make this first CD of Haydn's early masses a delightful discovery. Playing time: 54:12. (Angel EMI CDC 47529.) *K.R.S.*

BRUCKNER EIGHTH: NHK SYMPHONY, MATAČIĆ

THE YEAR BEFORE HIS DEATH, LOVRO VON Matačić (1899–1985) made a live recording of Bruckner's Eighth Symphony with Japan's NHK Symphony Orchestra. Though he used the Nowak edition (which makes some cuts that I find a bit annoying), Matačić delivered a most impressive performance—alongside the Deutsche Grammophon version with Herbert von Karajan and the Berlin Philharmonic (which uses the longer Haas edition), one of the finest performances currently available on record. Matačić's overview of this immense score is uplifting and upbeat: The allegro movements for once aren't dragged, while the heavenly adagio unfolds as a rapt, beatific arc that makes the listener feel as if he were hearing the most beautiful music ever written. In addition, for an Oriental orchestra, the playing of the NHK Symphony is quite amazing. One expects precision and gorgeous tone from all those Suzuki-trained string players, but not such blazingly heroic work from the brass section, which in this instance rivals that of the Berlin Philharmonic itself. Moreover, this Denon CD manages to pack the entire 75-minute symphony on one disc—without the least bit of sonic compromise—which automatically makes this version a best buy. Highly recommended. Playing time: 74:13. (Denon C37-1001.) *B.Z.*

RACHMANINOFF SYMPHONIES: BERLIN, MAAZEL

THESE WONDERFUL PERFORMANCES ARE IN the spirit of the composer's own: Lithe, supple, and elegant, they let the emotion speak for itself. They do for the three symphonies what Edo De Waart and Zoltán Kocsis did for the piano concertos in their Philips recordings; instead of portraying Rachmaninoff as a gloomy, Byronic throwback, they allow him to speak to our contemporary sensibility. The tone is ironic, nostalgic, oddly grotesque, and thoroughly modern.

Since these performances by Lorin Maazel and the Berlin Philharmonic got short shrift in the wake of Vladimir Ashkenazy's then new but utterly conventional views of

Nos. 2 and 3 (No. 1 is something special—his only podium performance deserving preservation), Deutsche Grammophon's convenient repackaging allows you to redress the balance. The orchestra plays superbly, the recording is much better than DG's digital average, and the fillers (*The Rock* and *The Isle of the Dead*) are equally distinguished. Playing time: 167:19. (Deutsche Grammophon 419 314-2.) *D.H.*

BERG, STRAVINSKY CONCERTOS: PERLMAN; BOSTON, OZAWA

THIS HIGHLY REGARDED 1979 ANALOG account of the Berg and Stravinsky violin concertos has now been digitally remastered for Compact Disc. Itzhak Perlman's playing is warm and sympathetic, while Seiji Ozawa and the Boston Symphony provide poised and lucid accompaniments. Separate recordings of these concertos may come out ahead on points, but as a coupling, this disc leaves nothing to be desired. Playing time: 47:37. (Deutsche Grammophon 413 725-2.) *T.T.*

DELIUS WORKS: ROYAL, BEECHAM

SIR THOMAS BEECHAM, ONE OF THE CENTURY'S great conductors, made few stereo recordings, none better-sounding than these. Frederick Delius was his specialty, and his interpretations of the music have never been surpassed. For that reason, Delians can consider this release the Second Coming. Each disc offers more than 73 minutes of music. Yes, it's mostly quiet and slow, often elegiac in feeling. But in the way he expressed the tranquility, rapture, and the sensuous beauty of nature, Delius was unmatched. From the early *Florida Suite* to *Brigg Fair*, *Songs of Sunset*, and the ever popular *On Hearing the First Cuckoo in Spring*, the 13 works on these two discs offer a rewarding musical experience. Playing time: 73:15. (Angel EMI CDC 47509.) *D.H.*

MAHLER FIRST: SAINT LOUIS, SLATKIN

LEONARD SLATKIN AND THE SAINT LOUIS Symphony Orchestra have lately been spending most of their session time with Angel and RCA, and both partnerships have begun to bear fruit: a 1985 Grammy for Prokofiev's Symphony No. 5 (RCA) and Grammy nominations for discs on both labels in the last two years. But the sonic virtues of the orchestra are still best represented on the recordings made with Telarc in the late 1970s and early '80s. This new CD release of Slatkin and the SLSO's Mahler First from 1981 is as vibrant and clean sounding as the newer Angel and RCA product; the balances, however, are the ones Slatkin actually achieves in the concert hall, not those that are fine-tuned in the control booth. And Telarc's patently simple engineering makes the recorded sound as impressive as the performance. Playing time: 50:37. (Telarc CD 80066.) *J.W.*

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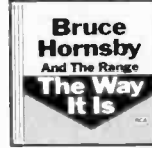
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BEYOND BOMBAST: THE INTIMATE SHOSTAKOVICH

SHOSTAKOVICH:

Quintet for Piano and Strings, in G minor, Op. 57*; **Quartets for Strings: No. 7, in F sharp minor, Op. 108; No. 8, in C minor, Op. 110.**

○ Richter*; Borodin Quartet. Igor Veprintsev and Edward Shakhnazaryan, prods. Angel EMI CDC 47507 (A).

SHOSTAKOVICH:

Quartets for Strings: No. 3, in F, Op. 73; No. 8, in C minor, Op. 110.

○ Manhattan Quartet. Victor E. Sachse, prod. Centaur CRC 2020 (D).

SHOSTAKOVICH:

Concerto for Piano No. 2, in F, Op. 102*; **Symphony for Strings in A flat, Op. 118a**

(arr. by Barshai from String Quartet No. 10)†.

○ D. Shostakovich*, M. Shostakovich*, Turovsky†; I Musici de Montreal, Members of the Montreal Symphony Orchestra†. Brian Couzens, prod. Chandos 8443 (D). ○ ABRD 1155. □ ABTD 1155.

SHOSTAKOVICH'S FINEST MUSIC IS QUITE possibly to be found in his chamber works. Even at their best, his symphonies can be enigmatic; at their worst, they occasionally degenerate into bombast. Their caustic grotesqueries and deliberate banalities, juxtaposed with passages of searing intensity and unrelenting power, are not to everyone's taste. The chamber works are more homogeneous and more easily grasped, perhaps because of the inherently intimate nature of their forms, which also precludes their use, or abuse, as *de rigueur* hymns to the Russian Revolution.

Shostakovich's Piano Quintet in G minor—one of the finest chamber works of the 20th century—is a beautifully balanced piece, a work of variety and rhythmic vitality with a full complement of haunting themes. Unlike some of Shostakovich's late works, it is not overloaded with largos, and it does not leave the listener with the impression of unrelieved desolation. On a new Angel EMI Compact Disc, Sviatoslav Richter and the Borodin Quartet give the quintet an enlivening performance that, as one would expect from artists of this caliber, has just the right



THE BORODIN QUARTET: PLAYING WITH A PRECISION AND EXPRESSIVITY THAT ENABLE ONE TO GRASP THE SUBTLETY AND POWER OF THE MUSIC

touch. The live analog recording, made in 1983, sounds fine in spite of an occasional tubbiness in the piano, and the audience is undetectable until the concluding applause.

This generous disc, with a playing time of close to 70 minutes, also contains the Borodin Quartet's accounts of Shostakovich's Seventh and Eighth Quartets. The Seventh is a brief, gemlike work dedicated to the memory of Shostakovich's first wife. The poignant grief lyrically expressed in the first two movements gives way to energetic pro-

tests and angry desperation in the extraordinary fugal pages of the third. The piece's concluding movement, an extended assimilation of all the preceding elements, ends with a sense of peaceful resignation.

The Eighth Quartet, also a mournful work, was supposedly written as a protest against fascism engendered by Shostakovich's memory of seeing war-damaged Dresden. This view, supported by Shostakovich's dedication of the quartet to "the victims of Fascism and War," has led to ridiculous de-

REG WILSON

scriptions of the music as depicting the evil drone of hostile bombers and the crackling of gunfire—although where the waltz music of the third movement fits into this scenario is anyone's guess. In Solomon Volkov's *Testimony*, Shostakovich explicitly rejected this program: "The Eighth is an autobiographical work" that has nothing to do with "exposing fascism," he is reported as saying. [The piece quotes themes from several of Shostakovich's works and makes use of a musical motto derived from his initials: DSCII. Using the German spellings for the notes, the motto is D, E flat (Es), C, B natural (H).—Ed.] The work is weighted at both ends by gentle, lovely largos that convey a feeling of deep sorrow. They frame a ferocious allegro molto, which alternates between stabbing chords and wild gypsylike material, and an allegretto based on a weird little waltz. It is extraordinary music, in which Shostakovich takes on the aspect of a Russian Janáček.

The Borodin ensemble plays both quartets with a precision and an expressivity that enable one to grasp both the subtlety and power of the music. The analog recordings, from 1981 and 1978, are quite good, though a slight background hiss is detectable.

The Eighth Quartet may also be heard on a new Centaur disc featuring the Manhattan String Quartet (playing time: 48:25). It is paired with the Third Quartet, the second longest of the 15 Shostakovich wrote. Completed in 1946, shortly after the Ninth Symphony, it is every bit as powerful a composition as the Eighth Quartet. Its opening allegro has the same kind of wild, violent swagger and hammered chords as the allegro from the Eighth, while the ensuing adagio is beautifully poignant and haunting, surely one of Shostakovich's finest inspirations. The final movement closes with a quiet lament that must be one of the most touching farewells in chamber music.

The Manhattan Quartet has a rawer style of playing than the Borodin, one that makes up in excitement what is lost in subtlety and tonal refinement. These players dig in with energy and total commitment. The sound on the disc—very clear and a bit raspy—goes with the quartet's style; there is nothing mellow here, but it will keep you on the edge of your seat. If there is a drawback, it is that another of Shostakovich's quartets could have easily fit on this disc.

Shostakovich's chamber-scale Piano Concerto No. 2 in F, Op. 102, written between Symphonies Nos. 10 and 11, is puckish, exhilarating, whimsical, wistfully romantic, and humorous. Anyone who has been beaten nearly to death by one of the longer symphonies should listen to it for sheer refreshment. The sense of innocence and the absence of vulgarity may be due to Shostakovich's having written the concerto for his son, Maxim, who premiered it in 1957 at the age of 19. (Later that year, Shostakovich Senior recorded it with André Cluytens and the French National Radio Orchestra). Whatever the reason, it brims with delight.

FORMAT KEY

- Ⓛ LP
- Ⓜ Cassette
- Ⓛ Compact Disc
- Ⓜ Videocassette
- Ⓛ Videodisc
- Ⓛ Open reel

RECORDING INFORMATION

(A) analog original

(D) digital original

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

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

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

Now, on a Chandos release (playing time: 44:34), the concerto's dedicatee, Maxim Shostakovich, conducts 1 Musici de Montreal in an account with his son, Dmitri, at the piano. The performances, not surprisingly, are quite similar. Maxim and the younger Dmitri, only marginally slower than Cluytens and the elder Dmitri, are completely in tune with the sprightly zest of the two allegros, as well as with the unabashed tenderness of the intervening andante. Grandfather would have been proud.

It is paired with the transcription for string ensemble of String Quartet No. 10 in A flat, made by Rudolf Barshai with Shostakovich's blessing. One must first grant that this transcription makes the Tenth Quartet into something quite different; only then can its merits—the added weight and power it gives the music—be appreciated. While Barshai's transcription and Turovsky's performance do not sacrifice anything in intensity and do show new sides to this gem, something is still missing—specifically a sense of intimacy and of the intense communicativeness and expressivity that intimacy affords. The sound is quite good if a bit reverberant. My only real complaint concerns playing time: There is less than 45 minutes of music on the disc.

Robert R. Reilly

BACH:

English Suites: No. 2, in A minor, B.W.V. 807; No. 3 in G minor, B.W.V. 808.

Ⓛ Pogorelich, Hanno Rinke, prod. Deutsche Grammophon 415 480-2 (D). Ⓛ

THOSE WHO HAVE DISMISSED THE CAREER OF Ivo Pogorelich as a product of hype or showmanship, rather than genuine talent, may find their judgment called into question by his new recording of Bach's *English Suites* Nos. 2 and 3. Like them or not, Pogorelich's interpretations—the result of a formidable musical intellect—are not easily ignored.

Certain general observations can be

made about Pogorelich's approach. He favors lean textures and pointed articulation and uses little pedal except to sustain long tones. His dynamic inflections, while sometimes rather drastically achieved, are never antithetical to the musical substance. In fact, the dynamic and timbral shadings create the poetry; only rarely does Pogorelich stoop to tempo manipulations.

Not all movements are equally successful. The most appealing are the *Préludes*, the *Bourrée*, the *Gavotte*, and the *Gigues*, in which Pogorelich's brisk tempos and crisp articulation create a driving, motoric effect. The *Allemandes* are surprisingly subdued, while the *Courantes* tend to be needlessly strident. Only the *Sarabandes* are excessively mannered; here, the pianist's impassioned readings prove too grand for the scope of the writing.

Pogorelich observes all repeats, even in the reprises of the *Bourrée*, the *Gavotte*, and the *Sarabandes*. Without any justification, he extends the *Préludes* by leaping from the closing ritornello to a parallel passage earlier in each movement, once again playing from that point to the end. Apart from such whims, Pogorelich's readings are recommended to those who accept the notion of Bach on the piano. Without a doubt, they are worthy of standing alongside Glenn Gould's provocative accounts. Playing time: 56:15.

K. Robert Schwarz

BACH:

Motets: B.W.V. 225-230, 118.

Ⓛ Collegium Vocale de Gand (Ghent); Chœur et Ensemble Instrumental de la Chapelle Royale, Herreweghe, Michel Bernard, prod. Harmonia Mundi HM 90.1231 (D). Ⓛ HM 1231/2 (2). Ⓛ (2).

Motets: Singet dem Herrn ein neues Lied, B.W.V. 225; Der Geist hilft unser Schwachheit auf, B.W.V. 226; Jesu, meine Freude, B.W.V. 227; Fürchte dich nicht, B.W.V. 228; Komm, Jesu, komm!, B.W.V. 229; Lobet den Herrn alle Heiden, B.W.V. 230; O Jesu Christ, B.W.V. 118.

BACH:

Motets: B.W.V. 225-230, 118; Cantatas: Christ lag in Todes Banden, B.W.V. 4; Nun ist das Heil und die Kraft, B.W.V. 50.

Ⓛ Monteverdi Choir, English Baroque Soloists, Gardiner, Michel Garcin, prod. Erato ECD 88117 (2, A). Ⓛ STU 71337. Ⓛ

BACH:

Motets: B.W.V. 225-230.

Ⓛ Rostock Motet Choir, Capella Fidicinia Leipzig, Eschenburg, Reimar Bluth, prod. Capriccio 10 030 (D).

BACH'S SIX INDISPUTABLY AUTHENTIC MOTETS (B.W.V. 225-230) are among his least-known vocal works. Written for various special functions—funerals, memorial services, even a birthday celebration—they bear a general resemblance to the early cantatas. Their German texts consist of chorale verses and Biblical extracts, and the settings, like those of the early cantatas, shun operatic aria and recitative and cling to dense, polyphonic choral realizations. Although instrumental parts survive only for B.W.V. 226, an

instrumental doubling of the vocal lines, or at least a basso continuo accompaniment, would have been likely for all six.

These three recent recordings of the motets display distinctive approaches, although they share some common traits. Philippe Herreweghe, John Eliot Gardiner, and Hartwig Eschenburg all use authentic instruments, and strive for a semblance of Baroque vocal technique. While their decisions regarding instrumental doubling, the make-up of the continuo, the use of male and female singers, and the assignment of soloists vary widely, all three Bach interpreters remain within the boundaries of historical practice.

Herreweghe, leading Paris's Chapelle Royale and Ghent's Collegium Vocale, comes closest to today's concept of Baroque performance. The vocal tone is pure and almost without vibrato, the articulations are obsessively detached, and the textures are transparent. Although these delicate readings deny the motets any semblance of grandeur, they make up in intimacy and linear clarity what they lack in strength.

Gardiner, leading the Monteverdi Choir and English Baroque Soloists, achieves more powerful performances, capturing the drama of the motets in sonorities far richer than Herreweghe's chamberlike ones. Although its articulations are crisp, Gardiner's group aims for a more sustained sense of line than Herreweghe's. The larger choral ensemble colors its sound with a modicum of vibrato, and Gardiner directs with an eye toward the music's rhetorical flourishes and with an emphasis on achieving a vivid dynamic and coloristic range.

Eschenburg, leading the Rostock Motet Choir and Capella Fidicinia Leipzig, comes closer to Gardiner's longspun phrasing than to Herreweghe's detached lines, but lacks either one's sense of textural transparency. Moreover, he resorts to mannered tempo manipulations in an attempt to create grandeur, distorting the rhythmic flow in the name of word-painting and cadential delineation.

While Herreweghe is beyond reproach, his interpretations may put off those who seek grand, imposing accounts. Such listeners will probably prefer Gardiner. Gardiner, however, combines the motets with an impassioned rendition of Cantata No. 4 and a variety of motetlike cantata movements, thereby taking up two CDs rather than one. Playing time for Herreweghe: 70:22. Playing time for Gardiner: 124:01. Playing time for Eschenburg: 68:06. *K. Robert Schwarz*

CARLOS:

Beauty in the Beast.

Carlos. Wendy Carlos, prod. Passport SYNCD 200 (D). © (Distributed by JEM.)

THIS LATEST EFFORT BY WENDY CARLOS IS more appealing than her *Digital Moonscapes* album on CBS a few seasons ago. Here, too, she uses an array of digital synthesizers to re-create the sounds of instruments that people



COMPOSER WENDY CARLOS WITH ONE OF HER "BEASTS"

in the pop music business describe—following a logic apparent only to themselves—as "acoustic." In this case, though, the sonic models are not the instruments that make up the standard Western orchestra but, rather, such exotic devices as Tibetan bells, African log drums, Indian tamburas, and Javanese gamelans; the several cuts *not* based (stylistically as well as sonically) on traditional non-Western music are also somewhat exotic, for their relatively simple tunes are flavored with "out of focus" harmonies based on various microtonal tuning systems.

Beauty in the Beast is more engaging than *Digital Moonscapes*, but only because the sounds themselves are sometimes fascinating. By and large, the music is pop—all of it simply (albeit smoothly) constructed and none of it as dynamic or ear-dazzling as the authentic Third World music Carlos tries to imitate. In her liner notes, Carlos opines that all machines—including digital synthesizers—are to a certain extent "beastly" and that all beasts—including the mechanical ones—are to a certain extent beautiful. This album, she says, reveals some of the beauties she's found in her particular electronic beasts. The sounds *are* lovely, but that's about all there is to it.

People who buy this CD ought to check it out in the store before they take it home. On my copy, the two longest tracks—the "Poem for Bali" and the 144-note-per-octave "Just Beginnings"—were horribly marred by skips and blips. Playing time: 57:50.

James Wierzbicki

CRUMB:

A Little Suite for Christmas*.

WERNICK:

Sonata for Piano ("Reflections of a Dark Light")†.

Orkis. Bill Bennett* and Tony Amest†, prods. Bridge BCD 9003 (A). © BCS 7003.

AS ANYONE WHO LIVES IN THE CAPITAL AREA knows, Lambert Orkis—the principal keyboard player with the National Symphony



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PIANIST LAMBERT ORKIS

Orchestra and resident pianist with the Smithsonian Institution's Twentieth Century Consort—is an outstanding performer of modern music.

Even Orkis, however, has trouble breathing life into the hulking piano sonata Richard Wernick wrote for him in 1982. Granted, this 41-minute soliloquy is *supposed* to be a heavyweight piece; according to William Bland's liner notes, its three movements depict "anger and despair" and "dark introspection," "reminiscence," and "static, immobile inarticulation," and—in an ultimately quiet finale based on one of J. S. Bach's most anguished chromatic motifs—"a reaffirmation of spiritual faith." But the music is merely massive, not monumental. It plods and staggers, as though trying to support some lyrical burden that is nowhere to be heard. For all its lofty intentions—and in spite of the dedicated reading Orkis gives it—the Sonata for Piano is sadly uninspiring.

Wernick's catalog includes many works that demonstrate his ability to use a stark, atonal vocabulary and rigorous constructive techniques as means to richly—sometimes profoundly—expressive ends. One thinks, for example, of his 1971 *Kaddish-Requiem* (Nonesuch 71303), his 1979 chamber cantata based on William Blake's *A Poison Tree* (Spectrum SR-183), and his Pulitzer Prize-winning, as-yet-unrecorded *Visions of Terror and Wonder* for mezzo-soprano and orchestra. All of those pieces, however, involve texts, and their dynamic qualities derive largely from Wernick's deft musical commentaries on meaningful words. The only poetry in the Sonata for Piano is to be found, alas, in the three movements' aphoristic subtitles. And that's not nearly enough to make the piece work.

On the other hand, George Crumb's 1979 *A Little Suite for Christmas* has all the momentum it needs to carry a listener through its 15-minute duration. In the tradition of Messiaen's *l'ingt regards sur l'Enfant Jésus*, it's a series of pianistic meditations on aspects of the Nativity. The seven sections—all short and well paced—are generously colored with the sustained harmonics and pizzicato strums that have long been part of Crumb's sound palette, but the results—even in this

recording, which throws the sound effects into sharp relief—are not at all gimmicky. Like the Wernick sonata, this is very serious music, but it has the advantage of being *effective* serious music. Playing time: 56:17.

James Wierzbicki

HONEGGER:

Symphonies: No. 2, for Trumpet and Strings; No. 4 ("Dolce basiliensis").

Ⓛ Bavarian Radio Symphony, Dutoit, cond. Michael Kempff, prod. Erato MCE 75259 (D). Ⓞ Ⓛ ECD 88178

WITH THESE TWO RELATIVELY UNFAMILIAR works, Charles Dutoit and the Bavarian Radio Symphony Orchestra complete the first digitally recorded cycle of the symphonies of Arthur Honegger. (The first installment in the series was the 1984 release of Symphonies No. 3 and 5; Symphony No. 1, in the company of several symphonic poems, appeared just last year.) Honegger's Second Symphony (1941), for string orchestra, has been recorded several times, but probably never as winningly as here. The less frequently heard Fourth has been recorded before only by Ernest Ansermet, for London in 1969. Its title is apt indeed, for it is deliciously alluring music. With its mercurial changes of mood, it may come as a revelation to those who have heretofore known Honegger only by his brash, mechanistic *Pacific 231*.

Like the earlier releases in this Erato/Editions Costallat series, this one is lovingly, idiomatically played and gleamingly, warmly recorded.

R. D. Darrell

PROKOFIEV:

Symphony No. 5, in B flat, Op. 100; Dreams, Op. 6.

Ⓛ Concertgebouw Orchestra, Ashkenazy. Andrew Cornall, prod. London 417 314-2 (D). Ⓞ Ⓛ

AT A RECENT CONCERT IN CARNEGIE HALL, Vladimir Ashkenazy led the Royal Philharmonic Orchestra in what several New York critics decried as dismal performances of Strauss's *Don Quixote* and Rachmaninoff's Symphony No. 2. The consensus was that Ashkenazy lacked the musicianship and podium skills needed to achieve decent results. Since the Concertgebouw can play rings around the Royal Philharmonic, Ashkenazy's new account of Prokofiev's Fifth Symphony *sounds* technically polished. But then, so did his recording of the Rachmaninoff Second, which was made with the Amsterdam orchestra, and his *Don Quixote*, for which Ashkenazy had the superlative Cleveland Orchestra playing around him.

Still, this is a much poorer performance than one might think upon first hearing. Its shortcomings manifest themselves in Ashkenazy's total lack of interpretive viewpoint, his inability to project the music's architecture, and his gross inattention to dynamic shadings, especially in the range above mezzo forte.

Listen, for example, to the great first-

movement climax with its thundering drums and crashing tamtam. A good conductor, like Neemi Järvi on his Chandos recording of the same work, knits this passage together: The cymbals answer the tamtam, while the drums propel the groaning, heaving brass upward. A slight accelerando screws the tension tighter still until the movement's final collapse. What does Ashkenazy give us? Brittle cymbals, a tamtam that sounds like a trash-can lid struck with a wooden spoon, clotted gobs of brass, and a deep bass throb (like an organ pedal) that makes hash out of the entire low end of the sonic spectrum. This isn't music, it's noise.

Until someone has the guts to tell Ashkenazy to stick to the piano, all we can do is vote with our wallets. Go with Järvi on Chandos. Vanity records such as this waste a fine orchestra, a record company's limited resources, and that most precious quantity of all, your time. Playing time: 51:39.

David Hurwit

SCHUBERT:

Sonata for Piano, in C, D. 840 ("Unfinished").

Ⓛ Richter. Philips 416 292-2 (A). Ⓞ Ⓛ

SVIATOSLAV RICHTER FASCINATES BY THE extremes to which he goes, whether in his demoniacally fast performance of Beethoven's *Appassionata* Sonata or in this intensely concentrated, slow-motion account of Schubert's unfinished Sonata in C, D. 840. In either case, Richter's is not a trick performance but the result of rethinking by a profound musician.

Richter's vertical dissection of the Schubert sonata comes close to stasis at times and seems quite stark and austere. Each note is made to stand on its own; not one is allowed to pass by as part of the singing line that a Wilhelm Kempff, for example, plays so lyrically. The result is unquestionably mesmerizing.

However, played in this fashion, the music seems naked, if not skeletal. While Kempff draws out the piece's full human drama with flexible tempos and a rich palette of tonal shadings, Richter sounds almost monochromatic and metrically square. His interpretation is fascinating for how much of Schubert's beauty it can sustain, at times even enhance—it's a bit like seeing *Hamlet* in black and white. But there's nothing quite like Shakespeare or Schubert in full dress, and for that reason, I would recommend this performance primarily for the connoisseur.

Richter plays only what Schubert wrote, eschewing various completions of the last two movements. The music simply stops. He takes the repeat in the first movement, which, with his slow pacing, brings the timing for that movement alone to a lengthy 22:35. The sound of this live, analog recording made in Germany in 1979 is remarkably fine; the audience was sufficiently hypnotized by what it was hearing that it remained almost inaudible. Playing time: 45:07.

Robert R. Reilly

SHOSTAKOVICH:**Symphony No. 5, in D, Op. 47.**

1 Berlin Philharmonic Orchestra, Bychkov. Philips 420 069-2 (D). © □

WHEN SHOSTAKOVICH'S FIFTH SYMPHONY burst upon the world in 1937, it was hailed as the quintessential musical product of Socialist Realism, the doctrine, directly associated with Stalin, that art should be popular and optimistic. Clever Western critics admired the first three movements and solemnly proclaimed the supposedly triumphant finale marred by bombast. Their condescending view of the work as a "flawed masterpiece" cast a shadow over its growing popularity.

In 1959, Leonard Bernstein and the New York Philharmonic recorded a frenetic, hyperactive performance of the symphony. Suddenly the finale seemed more plausible than had been thought, and the question arose: Might it really have been *meant* to be a triumph? In one of the most shattering performances of the Fifth on disc, Mstislav Rostropovich and the National Symphony Orchestra answered with a resounding "No!" Diametrically opposed to that of Bernstein, Rostropovich's finale grows steadily slower, the last triumphant chords incidental to the pounding drums and the shrill violins' stabbing repetitions of their single note—giving musical substantiation to Rostropovich's claim that the "optimism" of the movement was nothing more than the forced smile of the victim being tortured on the rack. Final-

ly, just this past year, Gennady Rozhdestvensky and the U.S.S.R. Ministry of Culture State Symphony recorded a performance with a finale of such staggering vulgarity that even the official interpretation rang hollow.

Now Soviet émigré conductor Semyon Bychkov makes his recording debut with still another perspective on this infinitely rich music. In the finale, he adopts Rostropovich's approach, but to much less powerful effect. That may be partly because the Berlin Philharmonic is too light-textured an ensemble for this often brutal music. Or it may be that Bychkov has gauged his interpretation to fit the orchestra's type of sound. The first movement gets a much quicker reading than usual, very fluid, but with some lumpy gearshifts in the opening pages. The Scherzo lumbers by quite slowly. This throws the weight of the argument onto the slow movement: absolutely exquisite, with gossamer string textures. In this context, the finale makes its point without exaggeration. It's an interesting, legitimate approach, but one that cannot be recommended over those of Rostropovich or Rozhdestvensky, simply because they find more in the work as a whole. Playing time: 48:07. *David Hurwitz*

STRAVINSKY:**Le Sacre du printemps;****Four Norwegian Moods.**

1 Cleveland Orchestra, Chailly. Paul Myers, prod. London 417 325-2 (D). © □

THE RITE OF SPRING IS SCORED FOR A HUGE orchestra that includes augmented wind, brass, and percussion sections. This London recording spotlights the latter, particularly the bass drum, which is recorded with incredible clarity and impact. The sonic approach is spectacular in its way, but it yields little in the way of warmth or concert hall realism.

After hearing Riccardo Chailly and the Cleveland Orchestra in a broadcast performance of *The Rite* some months ago, I expected much from this recording. Unfortunately, it does not have the excitement of the broadcast. Chailly gives a brisk, rather prosaic reading that is short on imagination, although the Clevelanders play beautifully. The inclusion of *Four Norwegian Moods* scarcely suffices to make the Compact Disc a good value in playing time; surely from the myriad short orchestral pieces of Stravinsky, London could have found *something* additional.

It is also unfortunate that London does not provide separate cueing bands for the different sections of *Rite*. There are only two bands for the entire work; if you want to find a particular section, you'll have to do considerable fast-forwarding. Audio buffs will doubtless want to have this recording for its vivid percussion, but for me, the *Rite* to have is Colin Davis's Concertgebouw version on Philips, generously coupled with *Petrouchka*. Playing time: 41:33. *Robert E. Benson* ▶



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ELGAR:

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

Royal Philharmonic, Previn. ① Philips 416 612-2, May.

HAYDN:

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

L'Estro Armonico, Solomons. ① CBS Masterworks M3 42157, May.

HILDEGARD OF BINGEN:

Symphonia armonie celestium revelationum (selections).

Kirkby; Gothic Voices, Page. ① Hyperion CDA 66039, April.

RACHMANINOFF:

Concerto for Piano and Orchestra No. 1, in F sharp minor, Op. 1.

DOHNÁNYI:

Variations on a Nursery Song, Op. 25.

LITOLFF:

Scherzo, from the Concerto Symphonique for Piano and Orchestra, No. 4, in D minor, Op. 102.

Ozolins; Toronto Symphony Orchestra, Bernardi. ① CBC SMCD 5052, May.

ROUSSEL:

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

Orchestre National de France, Dutoit. ① Erato MCE 75283, May.

SIBELIUS:

Symphony No. 1, in E minor, Op. 39; Abillottaret ("The Oceanides"), Op. 73.

City of Birmingham Symphony Orchestra, Rattle. ① Angel CDC 47515, May.

FISCHER-DIESKAU:

Salzburg Festival Live Recordings.

Fischer-Dieskau, Moore. ① Orfeo C 140 101, 201, 301, 401, 501, June.

TCHAIKOVSKY:

Concerto for Violin and Orchestra, in D, Op. 35.

CHAUSSON:

Poème, Op. 25.

① Kennedy; London Philharmonic Orchestra, Kamu. Andrew Keener, prod. Angel EMI CDC 47623 [D].

BARTÓK:

Sonata for Solo Violin*.

ELLINGTON:

Mainly Black†.

① Kennedy*, Dankworth†. Andrew Keener, prod. Angel EMI CDC 47621 [D].



NIGEL KENNEDY'S INQUIRING SPIRIT HAS LED him to reexamine the Tchaikovsky Violin Concerto, and the results are provocative, if not altogether satisfying. Kennedy's flexible tempos and rhapsodic manner occasionally become disruptive; fast passagework is rushed past the point of technical security, while slow musical lines are needlessly distended. This same impetuosity leads Kennedy into some surprisingly rough articulations and instances of strident tone. However, such lapses are compensated for by moments of breathtaking poetry, particularly in lyrical passages, and there is no mistaking the uninhibited Romantic streak that runs through his playing. On the whole, though, Kennedy's performance here lacks the perfect balance between passion, personality, and control that characterized his recent recording of the Elgar Concerto (EMI 747210 2).

None of the shortcomings of his interpretation are evident in Kennedy's brilliant recording of Bartók's Sonata for Solo Violin (1944) and Duke Ellington's *Mainly Black* (1943), selected from the jazz-orchestra suite *Black, Brown and Beige*. Not only is Kennedy's pairing of these works a stroke of genius, but the stylistic versatility he displays in them is, to the best of my knowledge, unparalleled among present-day violinists. His Bartók is immensely assured and imbued with an almost demonic intensity. (Here, Kennedy's rhapsodic tempo fluctuations and violent articulations are ideally suited to the music.) *Mainly Black* is offered in a deft,

austere violin and double-bass arrangement by Kennedy himself, a version that makes Ellington sound more startlingly original than ever. This is no chic, watered-down foray into jazz, cleverly designed for crossover appeal. Kennedy, who has spent long years working with the legendary jazz violinist Stéphane Grappelli, has mastered the radically different jazz violin technique, with its restrained vibrato, gritty bow stroke, lean tone, biting portamentos, and rhythmic freedom. The result must be heard to be believed. Playing time for Tchaikovsky/Chausson: 55:24. Playing time for Bartók/Ellington: 69:01.

K. Robert Schwarz

VAUGHAN WILLIAMS:

A London Symphony; The Lark Ascending*.

① Griffiths*; Royal Philharmonic Orchestra, Previn. James Mallinson, prod. Telarc CD 80138.

ANDRÉ PREVIN, WHO RECENTLY ANNOUNCED that he is stepping down as music director of the Royal Philharmonic to become that orchestra's principal guest conductor, has been rerecording his bread-and-butter repertoire with the RPO for Telarc. The results have ranged from very good (the Tchaikovsky Fifth) to rather limp (the Rachmaninoff Second). Previn is usually at his best in British music, and his new recording of Ralph Vaughan Williams's most lovable symphony (playing time: 48:43) represents a fine effort all around.

Compared with Previn's 1972 recording of *A London Symphony* with the London Symphony, tempos throughout the piece are a fraction slower. This works well in the dramatic first movement, while the second is so gorgeous that technical considerations seem irrelevant. The scherzo lacks the last ounce of agitated mystery (Adrian Boult's 1971 account is wonderful in this respect), and although the finale begins very well, the great climax, with its apocalyptic gong stroke, doesn't have the shattering impact of the Boult or the early Previn performance. It's not just a question of volume—there's plenty of that. Rather, Previn's episodic treatment prevents the music from accumulating the necessary momentum.

Telarc's "mike in the bass drum" recording technique works well with this symphony. The dynamic range is awesome, though some high-frequency information sounds muffled. The glockenspiel in the first movement, for example, simply doesn't cut through the texture as it should.

None of these criticisms would matter were it not for the competition. Previn's fine earlier performance, now available on an RCA CD (6238-2-RC), was coupled with a charming account of Vaughan Williams's *Concerto Accademico*; the present recording features a decent reading of *The Lark Ascending*. Boult's emotionally right but occasionally imprecise reading (Angel EMI CDC 47213) sounds almost as impressive as the Telarc, and it includes a wonderful performance of the *Fantasia on a Theme by Thomas Tallis*. And, on a PRT Compact Disc, John

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Barbirolli's raw, impulsive performance of *A London Symphony*, in adequate sound, remains unmatched for excitement.

David Hurwitz

RECITALS AND MISCELLANY

EDITA GRUBEROVA:

Famous Opera Arias (5).

Gruberova; Munich Radio Symphony Orchestra, Gardelli, Axel Mehrle, Dieter Sinn, and Diether Warneck, prods. Orfeo C 101 841 (D). \odot

MOZART: "Vanne, t'affretta—Ah, se il crudel periglio" (Lucia Silla). STRAUSS: "Grossmächtige Prinzessen" (Ariadne auf Naxos; original version).

BELLINI: "Ah! non credea mirarti" (La Sonnambula). THOMAS: "Je suis Titania" (Mignon). CHERUBINI: "Et tu, che a me divin prometti il destino" (Medea).

LIEBERSON: Bagatelles. STRAVINSKY: Serenade for Piano, in A; Sonata. WOLPE: Form IV: Broken Sequences; Pastorale; Four Studies on Basic Rows; Passacaglia.



EDITA GRUBEROVA: A PHENOMENAL COLORATURA, WITH TASTE

PROFESSIONALLY SPEAKING, COLORATURAS capable of singing the sopranicidal role of Zerbinetta in *Inadue auf Naxos* seem to have the life expectancy of mayflies. Over the decades, I have seen them come and go, a few of them blazing like comets, briefly, before burning out—at least for that role. Strauss indulged himself to the fullest, pushing the demands of Zerbinetta's cruelly long (14:46) recitative and aria to the absolute limits of a contemporaneous *Stimmphänomen* named Maria Ivogün (whose subsequent Berlin pupils, incidentally, included a 1956 Fulbright Fellow named Evelyn Lear). Of all the Zerbinettas I have heard, I would have to award my personal palm to Edita Gruberova, the Slovakian soprano who burst onto the international scene at the 1974 Salzburg Festival and has reigned at the Vienna State Opera ever since.

I had never before encountered the opening Mozart aria, conceivably because Mozart's murderous *fiorture* place it beyond the capabilities of all but a very few sopranos. Gruberova tosses it off as the unique Miliza Korjus might have—only with the additional command of vibrato, timbre, and diction that she shares with almost no other coloratura in that high register. The Bellini

concentrates not on pyrotechnics but on bel canto—as does the Cherubini, aside from a little duettino with flute obbligato. The *Mignon* aria offers some extraordinary filigree, but Gruberova, like every soprano of recent decades, ought to listen to Nellie Melba's uncanny, *true* trill on her old acoustic recordings—and not rest until she is able to emulate it.

If this record (playing time: 45:59) affects you as it has me, you won't want to miss the earlier Gruberova release, *The Ari of Coloratura* (Orfeo C 072 831 A).

Paul Moor

PETER SERKIN:

Peter Serkin.

Serkin, Elisabeth Ostrow, prod. New World \odot NW 344-2 (D). \odot \odot

LIEBERSON: Bagatelles. STRAVINSKY: Serenade for Piano, in A; Sonata. WOLPE: Form IV: Broken Sequences; Pastorale; Four Studies on Basic Rows; Passacaglia.

PETER SERKIN TRAVERSES NO LESS THAN 60 years of 20th-century piano music on this rewarding disc, from the neoclassicism of Stravinsky through the expressionism of Stefan Wolpe to the alternately tranquil and scampering dissonance of Peter Lieberson. Stravinsky's Sonata (1924) and Serenade in A (1925) are brittle, lean-textured works, infused with a Bachian contrapuntal rigor. Lieberson's music has received sympathetic readings from Serkin in the past, most notably in the expansive Piano Concerto of 1983 (New World NW 325). The three miniature Bagatelles (1985) consist of a boldly arpeggiated *Proclamation*, the radiantly calm *Spontaneous Songs*, which seem to suspend the passage of time, and a lively, jazz-inflected *Dance*.

A special word must be devoted to the neglected Stefan Wolpe (1902-1972). Born in Berlin, Wolpe studied with Busoni and Webern before leaving Europe for Palestine and later the United States. The three works selected here frame his long career: the *Passacaglia* of 1936, *Pastorale* of 1939, and *Form II: Broken Sequences* of 1969. The *Passacaglia* is unquestionably a masterpiece, speaking a dissonant, atonal language of violent intensity and propulsive rhythmic power. Built upon one unyielding, prolonged crescendo, its harrowing vision eloquently mirrors the horror of its era. *Form II* employs a more jagged, pointillistic idiom, but it loses none of the earlier work's darting, explosive energy.

Too often, Wolpe—and especially Stravinsky—are played as if percussive power should suffice. Though Serkin never denies this music's chiseled textures and hammered intensity, he chooses to stress its more poetic, reflective aspects. Stravinsky and Wolpe emerge with their reservoirs of energy intact, but with a new warmth and delicacy that results in a surprising emotional breadth. No one takes literally any longer Stravinsky's polemical denial of music's expressive potential, and it is high time that others follow Serkin's intelligent, insightful path. Playing time: 53:48. K. Robert Schwarz



'Round midnight and you've no videos to watch?
Rhapsody Films has plenty.



BY FRANCIS DAVIS

Putting Jazz Back Into the Picture

S EEN ANY GOOD MOVIE LATELY? I CAN recommend a few you may be never heard of, with memorable characters and scores: *Jackie McLean on Mars*, *Sun Ra: A Joyful Noise*, *Lift the Bandstand* (with soprano saxophonist Steve Lacy), and *The Last of the Blue Devils* (with Count Basie, Big Joe Turner, and Jay McShann). These unsung jazz documentaries—along with about two dozen others devoted to the likes of Toshiko Akiyoshi, Jaki Byard, Bill Evans, and Elvin Jones—are available on Beta and VHS videocassette from Rhapsody Films (P.O. Box 179, New York, N.Y. 10014), the first U.S. video company devoted exclusively to jazz and blues.

"The problem facing anyone who makes a film about jazz is that his fate is in the hands of about 25 decision-makers across the country who think the subject is too esoteric," explains Bruce Ricker, the forty-four-year-old native New Yorker who runs Rhapsody out of the living room of his Greenwich Village apartment. "The people who program TV, for example, figure that because only maybe five percent of the public is interested in jazz, there's no sense putting these films on the

air. Even PBS and cable think along those lines because the people in charge there all want to be executives at commercial networks someday and they've adopted the network sensibility. But the home video explosion permits the independent filmmakers in my catalog to bypass those decision-makers. And it allows the 2,000 or so people who buy every jazz album that comes out to program jazz on their TV sets, too."

Ricker's sensitivity to the plight of jazz filmmakers comes from being one himself. The top-selling item in Rhapsody's catalog is *The Last of the Blue Devils*, his 1979 feature-length ode to the fraternal spirit prevailing among Kansas City swing musicians even in old age. "After the bars closed at 1 a.m., they would gather at the Foundation, a private club that used to be the black Local before the Musician's Union integrated in the late '60s," Ricker says. "These were a bunch of old men, some of them not very well known, who had never given up, who still looked forward to playing together and swapping stories after all those years. After hanging out with them on the weekends for about six months, it occurred to me that there was a good novel there—or even better, a good film."

Originally budgeted at \$12,000, *The Last of the Blue Devils* wound up costing \$225,000 and taking

CAPTURING THE VISUAL SPECTACLE OF SUN RA IN "A JOYFUL NOISE" (TOP LEFT) AND SWAPPING STORIES ABOUT KANSAS CITY SWING WITH JAY McSHANN IN "THE LAST OF THE BLUE DEVILS"

four years to complete. "I'd never made a film before, and I sometimes got so excited about what was happening in front of my eyes that I forgot to load the camera," Ricker laughs. His costs escalated as his sense of what the film represented grew more ambitious and he realized that footage of the regulars at the Foundation had to be supplemented by interviews with Kansas City emigrants who had gone on to bigger and better things, including Count Basie, Big Joe Turner, Eddie Durham, and Jo Jones.

Today, an uncomplicated hour-long film focusing on one musician can be made for between \$150,000 and \$200,000, according to Ricker, who currently has a documentary on the Village Vanguard and portraits of Bill Evans and Thelonious Monk in the planning stages. In order to raise the necessary capital, a filmmaker has to hope for money from a number of different sources. A large video manufacturer here or in Japan might advance five figures for a film about a musician with some marquee value—"one of the 10 or 12 recognized as giants by the general public," Ricker notes. "On top of that, you'd still need grants from the Federal government and advances against foreign television rights." Ricker, who has to scrape to shoot his own films, is hardly in a position to float other filmmakers; in lieu of an advance, Rhapsody pays an unusually high royalty rate on the videocassettes it distributes.

Ricker contends that home video is now the real market for the jazz filmmaker, who is usually as unable to compete in the marketplace as the jazz musician. "You can get your film shown on domestic TV," he says, "if you're willing to let them have it for practically nothing." PBS, for instance, generally pays as little as \$20 to \$80 per minute for such material. "You're better off not allowing it on TV, because people will tape it, and that's X number of cassettes you won't sell. As for theatrical distribution, *'Round Midnight* isn't going to open any doors for non-fiction jazz films. A lot of filmmakers don't even bother to strike theatrical prints anymore; why go to the expense when you'll have maybe ten bookings total, including festivals. They shoot on film but go right to videocassette."

RICKER ENTERED DISTRIBUTION ALMOST BY chance. As part of the 1981 Kool Jazz Festival, he produced a jazz film series at the Carnegie Hall Cinema. A year later, when he ran a similar series at the Bleecker Street Cinema in connection with the Greenwich Vil-



"JACKIE McLEAN ON MARS": THIS CHARACTER STUDY OF THE ALTO SAXOPHONIST BEGAN AS A GRADUATE SCHOOL THESIS.

lage Jazz Festival, "a lot of the individual filmmakers who didn't have distributors told me to hang on to the prints and send them half the money if I got some bookings. Gradually, I put the films on videocassette, and Rhapsody drifted along for two or three years, selling a tape to a school or a library now and then—until all of a sudden, more than 50 percent of American homes had VCRs and there was a small demand for jazz films." Schools and libraries still account for roughly a third of the company's sales, with video stores (and record chains with video departments) accounting for another third and mail-order customers here and abroad the final third.

Rhapsody's titles tend to be about insiders' favorites rather than household names.

*The best films are as
worshipful and distanced
as Whitney Balliett's prose.*

At least four of the films in its catalog had the most humble origins imaginable: Ken Levis's *Jackie McLean on Mars*, David Chan and Ken Freundlich's *Passing It On: A Musical Portrait of Barry Harris*, Michelle Paymar and Roberta Grossman's *Sippie* (about Sippie Wallace), and Dan Algrant's *Anything for Jazz* (about Jaki Byard) all were initiated as graduate school theses. Artistically, Rhapsody's titles are a mixed lot. Performance films—including the delightfully atmospheric *Jazz: Earl Hines and Coleman Hawkins*, from 1965, and the abysmally shot and recorded *Sonny Rollins Live*, from 1973—account for only a handful. The majority are character studies, and the best of these are as simultaneously worshipful and distanced as Whitney Balliett's profiles for *The New Yorker*, with the bo-

nus of actual music rather than vivid description of it.

Levis's *Jackie McLean on Mars*, for example, doesn't shy away from the dilemma vexing the great alto saxophonist, whose foothold in academia enables him to turn down poor-paying engagements but denies him the practice time and performance opportunities he needs to retain his edge as an improviser. In *Lift the Bandstand*, Peter Bull shoots Steve Lacy against simple but elegantly stylized backdrops apposite to the saxophonist's music;

the archival footage and still photographs of Lacy's mentors Sidney Bechet, Thelonious Monk, Gil Evans, and Cecil Taylor are judiciously interspersed with Lacy's articulate observations, and the film is a model of its kind. Robert Mugge's *Sun Ra: A Joyful Noise*, in addition to capturing the visual spectacle of Ra's live performances (something only hinted at on his many concert LPs), succeeds in bringing Ra's enigmatic personality into clearer focus than almost anyone has ever been able to do in print.

There are other treasures in Ricker's catalog, including his own *The Last of the Blue Devils*, which has become even more valuable as oral testimony with the passing of so many of the men it lyrically celebrates. *Bill Evans on the Creative Process* is a comically stiff but riveting black-and-white educational short featuring the pianist answering the questions of his officious-sounding older brother. A compilation called *Jazz Shorts* is notable for "Daybreak Express," D. A. Pennebaker's breakneck subway ride to the music of Duke Ellington, and "Honky Tonk Bud," Scott Laster's tour-de-force dramatization of a piece by Chicago saxophonist and composer Edward Wilkerson. Chuck France's *Jazz in Exile*, featuring candid interviews with Lacy, Dexter Gordon, Phil Woods, Johnny Griffin, and others, provides a strong antidote to *'Round Midnight*'s overromanticized view of the expatriate blues.

On the other hand, *Talmage Farlow*, the Toshiko Akiyoshi study *Jazz: Is My Native Language*, and the films about Harris and Byard plod along without much narrative finesse. Even so, these films represent the only way that future generations will have of knowing what these important musicians were like as people—what expressions crossed their faces as they played their instruments, what tones their voices took as they discussed their frustrations and accomplishments. All of Rhapsody's films—the good, the bad, the indifferent—are worth watching because their subjects are.

HUNTERS AND COLLECTORS:

- ① **Human Frailty.** I.R.S. IRS 5801.
- ② **Living Daylight.** I.R.S. IRS 36017.

IN THE BEGINNING, THE AUSTRALIAN BAND Hunters and Collectors was a mess: hoarse vocals, occasional brass blurts, and monstrous bass and drums, like a Gang of Four gone bonkers. Anyone who remembers the group's crunching Slash LP *Jaws of Life* will be surprised by the more tuneful *Human Frailty*, which includes a wonderful, honest love song, with harmonies even ("Throw Your Arms Around Me"). There still are lots of rockers ("Say Goodbye," "Is There Anybody in There?," "99th Home Position"), but now we get real songs instead of rants. Mark Seymour's voice is a bit smoother, but it stays angrily out front, and the self-described "wall of rhythm" created by bassist John Archer and drummer Doug Falconer remains the best bedrock since Pylon's. In all, this is the sound of welcome organization, not sellout. On the B-side of its current five-song EP, *Living Daylight*, the band applies this strategy to remixes of two *Jaws of Life* tracks, "The Slab" and "Carry Me"; though the results are okay, some recent live material would have been preferable. On the A-side, meanwhile, are three new songs, all even tighter than *Human Frailty* and all great.

Ken Richardson

THE SONNY CLARK MEMORIAL QUARTET:

- ① **Voodoo.** Black Saint BSR 0109CD.

THE SONNY CLARK MEMORIAL QUARTET IS John Zorn on alto, pianist Wayne Horvitz, drummer Bobby Previte, and bassist Ray Drummond. The first three, regulars of New York's new music scene, bring an irresistibly tilted perspective to this tribute to Clark, a little-known but much-respected pianist of the mid-Fifties. Zorn, who spends more time in his own projects blowing duck calls and sax mouthpieces, is a scorcher on fully assembled horn. Horvitz and the just-right rhythm section are all energy and sly motion, skillfully slinking around the borders of bop conventions. This is what neoclassicism should be all about: healthy respect with plenty of bite. Hey, guys, how about an Elmo Hope or Eddie Costa tribute while you're at it?

Steve Futterman

JOSH WHITE, JR., WITH ROBIN BATTEAU:

- ① **Jazz, Ballads, Blues.** Rykodisc RCD 10033.

THE RED CLAY RAMBLERS:

- ① **A Lie of the Mind.** Rykodisc RCD 10034.

THESE TWO CDS ILLUMINATE THE MEDIUM'S value in reproducing acoustic music with clarity. The CD-only *Jazz, Ballads, & Blues* offers spare instrumental versions of ten songs popularized between 1927 and 1949 by Josh White, Sr. His son's crisp finger-picking rhythms provide solid ground for Robin Batteau's wistful fiddle melodies. The blues

IN Short ORDER POP AND JAZZ MINI-REVIEWS

numbers (including "House of the Rising Sun") are particularly well served by the delicate but emotive arrangements, and "Miss Otis Regrets" and "You'd Be So Nice to Come Home To" are likewise interpreted so well it's hard to recall their origin as Cole Porter numbers. *The Music of Sam Shepard's "A Lie of the Mind"* offers the multi-instrumental style of the Red Clay Ramblers. And with the group's five-part-harmony verses and gospel choruses, there also are many opportunities for testing CD's treatment of vocalists. This clean, balanced disc passes admirably. Highlights include the traditionals "Red Rocking Chair," "In the Pines," and "The Gal I Left Behind Me" and the band's own "Light Years Away," a contemporary waltz.

Leslie Berman

GIL SCOTT-HERON:

- ① **Black Wax.** Sony Video Software R0234BE (Beta), R0234VH (VHS).

A WALK AROUND GIL SCOTT-HERON'S neighborhood is likely to be a real eye-opener. No puppets here, unless you include some of the politicians in the Washington, D.C., buildings that serve as the backdrop for many of the links that tie together the video's live material. A recording of his song "Washington, D.C." is ever present during these links as he talks about the city's poverty and inequity, topics that infuse his music. In the live footage from 1981, the expanded ten-piece Midnight Band is in rare form, and though this predates "Re-Ron," other excellent references to the Reagan administration (like "B-Movie") get their due. An outstanding and pithy video by an artist who more often than not embodies both of those qualities.

Hank Bordowitz

COLIN JAMES HAY:

- ① **Looking for Jack.** Columbia CK 40611.

THERE ARE AT LEAST TWO GOOD SONGS HERE ("Hold Me," the title track). Hard to tell whether there are any more, what with Rob-in Millar's cacophonous production blocking the intimacy that Man at Work Colin James Hay gave to his former band. Overkill, indeed. Check out the "Hold Me" 12-inch for its far superior "Home Sweet Home" and "Going Somewhere," two non-LP cuts that should have been added to this short (42:27) CD.

Ken Richardson

DAVID SANBORN:

- ① **A Change of Heart.** Warner Bros. 25479-1.
- CONSIDERING THAT IT FOLLOWS THE LIVE *Straight to the Heart*, which came closest to

capturing the emotional intensity of David Sanborn's alto sax blowing, *A Change of Heart* is a change for the worse, with little heart in evidence. Back in the studio, Sanborn is often technically dazzling, but he's surrounded by a slick sound that kills any possibility of excitement. For a better sampling of his incisive solos, watch for his visits with Paul Shaffer's band on *Late Night with David Letterman*. Sanborn outshines his recordings every time Dave goes to a commercial.

Andrew Nash

CASSELBERRY-DUPRÉ:

- ① **City Down.** Icebergg ICE 215.

UPCOMING VOCAL TEAM CASSELBERRY-DUPRÉ makes a fine reggae outing here. But these women don't confine themselves to fresh versions of Bob Marley: They also add riddim to folk and country rock, and believe me, Dory Previn and the Eagles never sounded like this. Both singers are strong soloists, but when Jaqué DuPré's gospel-rooted contralto-soprano takes quirky departures and darts around J. Casselberry's jazz-infused baritone-alto, what emerges is *their* sound. Add political vision, like on Toshi Reagon's "South Africa," and Casselberry-DuPré become a moving force.

Kate Walter

DEEP PURPLE:

- ① **The House of Blue Light.**

Polygram 831 318-1.

EVERYONE QUOTES "SMOKE ON THE WATER" when referring to Deep Purple's *Machine Head*, yet few recall "Pictures of Home" and "Never Before," tracks that featured the band's songwriting finesse and instrumental elasticity—the lack of which makes this new LP so depressing. These may be the same Mark II Purples, but the material is more reminiscent of Tommy Bolin-era sludge; I'll take '84's "Knocking at Your Back Door" and "Perfect Strangers" over this. And pardon me, guys, but your ages are showing: The once athletic Ian Paice plods maddeningly at his drum kit (biggest letdown), while vocalist Ian Gillan and organist Jon Lord are mere shadows. Sure, the Purple *sound* is here, but go back and listen to, say, *Fireball's* "No No No" and you'll realize how truly disappointing this reunion is.

Ken Richardson

MTUME:

- ① **Theater of the Mind.** Epic EK 40262.

VARIOUS ARTISTS:

- ① **Native Son.** MCA 6198.

ONETIME JAZZ PERCUSSIONIST JAMES MTUME has become an intriguing black-pop producer and performer by creatively blending the improvisatory flair of his past work with the synth-funk textures of '80s material. Both the CD of his most recent group album, *The* (CONTINUED ON PAGE 79)

ROYAL FAMILY SNAPSHOTS



DAVIS PHOTO: COURTESY COLUMBIA RECORDS

DAVIS (ABOVE) AND ARMSTRONG:
THEY PROVIDE TWO OF THE BEST
MOMENTS IN "TRUMPET KINGS."

VARIOUS ARTISTS:
Trumpet Kings.

Burrill Crohn, dir. and prod. Video Artists International 29036 (Beta), 69036 (VHS).

NARRATED BY WYNTON MARSALIS, THIS VIDEO purports to show us the history of the jazz trumpet, from Buddy Bolden to Lester Bowie. It leans on the marvelous movie collection of David Chertok but can't escape the scarcity of good clips from the early years of jazz. The relative weakness of the footage on more recent figures is less excusable: We are given a dullish segment of Freddie Hubbard on fluegelhorn and an uncharacteristic bebop solo by Bowie, barely supported by the Art Ensemble of Chicago.

Burrill Crohn's writing is not always graceful, or even accurate. Marsalis is forced to introduce the music as "this uniquely American, democratic art form we call jazz" and later states that Dizzy Gillespie was the only trumpeter to find "another way of playing rhythms different from Louis Armstrong." I doubt it. At one point, Marsalis demonstrates—and these demonstrations are very useful—Armstrong's smearing half-valve technique. But after announcing that he will go down an octave, he descends merely a fifth. Marsalis introduces a marvelous 1957 solo by Rex Stewart as a blues chorus, but Stewart is playing a popular

song, "The Blues My Naughty Sweetie Gives to Me."

Yet much of *Trumpet Kings* is delightful watching. We see a portly Duke Ellington leading his 1930 band with solos by Freddie Jenkins and Tricky Sam Nanton; we watch Armstrong dance and sing his way through most of a 1933 "Dinah." Henry "Red" Allen takes a flutter-tonguing solo on "St. James Infirmary," and Bunny Berigan follows a dreadful vocal on "Until Today" with a stirring, Armstrong-inspired solo. Other clips, such as Red Nichols's scating vocal, have only nostalgic value. Musically, the best segments are by Gillespie before his big band in 1947 and with a small group in 1959, a brilliant duet between swing trumpeters Charlie Shavers and Buck Clayton, and Miles Davis playing "So What" in 1959. The climax is a heartwarming duet between Gillespie and Armstrong, in which their two styles, the most potent in jazz, mesh gracefully. Marsalis's playing, which concludes *Trumpet Kings*, seems negligible after that. *Michael Ullman*

JOHN COLTRANE:

The Coltrane Legacy.

Burrill Crohn, dir. and prod. Video Artists International 29035 (Beta), 69035 (VHS).

THE HUGE PERSONALITY OF JOHN COLTRANE projects onto the two-dimensional TV

screen in much the same way Reality appeared on the walls of Plato's cave: as a shadow. Although the quality of this print is never really bad, the barren studio settings can't possibly do justice to the lushness of the music, nor can a one-hour documentary re-create such a life any more effectively than a Mets video can substitute for a seven-game World Series. Furthermore, though Trane knew his repertoire well enough to truncate it, some of these songs were *naturally* meant to go on for half an hour or more and do not readily serve as museum pieces.

But why belabor the point? None of this is the filmmaker's fault, and any decent footage of Coltrane is automatically priceless, so this videocassette is entirely welcome. It gives us a solid taste of those crucial years central to Trane's oeuvre, 1959-64, and the direct, revealing commentary of Elvin Jones, Jimmy Cobb, and Reggie Workman supplies the necessary added brushstrokes to the portrait.

Coltrane's quartet truly had no equal. The vast reach of drummer Jones, the intense lyricism of pianist McCoy Tyner, the playful invention of bassist Jimmy Garrison, the serene majesty of Trane himself... at their best, these men lived at the heart of the great swirling nebula of creation and from there sang their song. No music course or transcription or analysis can explain that search for the unexplainable.

The inclusion of Eric Dolphy on some tracks gives a hint of the greater freedom Coltrane would later pursue with Pharoah Sanders. Another good video dealing with those later years would certainly be helpful.

Joe Blum

THE ART FARMER/BENNY GOLSON JAZZTET:

Back to the City.

⊙ Helen Keane, prod. Contemporary C 14020.

THE JAZZTET OF THE EARLY '60s REPRESENTED either the best or the worst jazz of the period, depending on your point of view. On one hand, they codified for all time the three-horn front line, listenable melodies, and straight-ahead improvisation that spelled out hard bop; on the other hand, the very redundancy of that theme-solo-theme format characterized an already dying style, and it was anathema to the various fusion heads and freedom heads that were appearing Hydra-like all over the musical scene. As it was, the group disbanded after only three years, with fluegelhornist Art Farmer eventually settling in Vienna and tenor saxophonist Benny Golson retiring to the studios of Hollywood. But fate, along with a few good promoters, has brought them together again, and at a time when people are apparently ready to hear uncomplicated, down-home jazz.

The group has benefited from the layoff. Golson hasn't lost the offbeat, personal approach that once made his voice so recognizable, and Farmer's warm lyricism has grown more confident. Meanwhile, after years with

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- ⊙ LP/EP
- ⊞ Cassette
- Ⓛ Compact Disc
- Ⓜ Videocassette
- Ⓜ Videodisc

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Art Blakey, trombonist Curtis Fuller is now a star in his own right. But it's the rhythm section that's the hub: enfant terrible Marvin "Smitty" Smith, no longer a child but perhaps today's most exciting drummer; Ray Drummond, whose five-minute bass solo on "Speak Low" is the high point of this LP; and pianist Mickey Tucker, who holds it all together. There are no weak links in this chain, nor is there any grandstanding: The repertoire is current, and each solo is relevant and to the point. It's a deeply satisfying record.

Joe Blum

POP

U2:

The Joshua Tree.

⊙ Daniel Lanois and Brian Eno, prods. Island 90581-1. ⊞ ⊞

U2 CAN BE SELF-IMPORTANT AND HUMORLESS, but you have to give them credit. For the second time in a row—first with 1984's *The Unforgettable Fire* and now with *The Joshua Tree*—an arena band has made a moody pop record featuring meandering anthems, lyrics with a searching spiritual bent, and fewer guitar solos than a Bryan Adams single. And it *still* sells 2 million copies in its first month of release. That's quite an accomplishment, but again, give them credit: Failed "big statement" or not, *The Joshua Tree* is the most subtle album by a major-league act since Bruce Springsteen's *Nebraska*.

Rather than turning U2 into a bunch of spaceheads, as they threatened to do on the explorative *Unforgettable Fire*, producers Daniel Lanois and Brian Eno have focused the band's cliffs-of-Dover sound. Much like Eno's influential ambient records, many of these songs are built on a simple pattern: Starting quietly, they ascend gradually until, by midway point, the band is cooking full steam. Following the inevitable thrashing climax, the music recedes as gently as it entered. This approach has its drawbacks. The huffing and puffing in the opening track, "Where the Streets Have No Name," takes the listener on an invigorating ride that doesn't seem to go anywhere. But on the

more stately numbers—the hymnlike anti-drug "Running to Stand Still," the mournful "One Tree Hill" (a eulogy for a dead friend), and the single "With or Without You"—the result is as riveting as any of U2's more strident stadium rockers. The cresting-wave approach works especially well on "In God's Country," a dreamy observation of America that is one of the band's most gorgeous songs. As elsewhere, Bono's exhortative vocals are beautifully recorded just slightly upfront of The Edge's lucid guitar riffing and the muscular Larry Mullen Jr./Adam Clayton rhythm section.

The band, which is nothing less than ambitious, trips up elsewhere. The album's overall theme—something about the mystery and allure of the U.S.—is harder to suss out than the plot of *Quadrophenia*, although the touches of Americana, including harmonic and country-blues guitar, are admirable. Some fans may also feel the album is too atmospheric for its own good, and that's partially true. The two meditative numbers that end the LP—"Exit," based on the story of executed murderer Gary Gilmore, and "Mothers of the Disappeared," about Central America—are one too many and nearly kill the album's momentum. Yet, true to the downcast, pensive side of U2's Irish heritage, the haunting sound of *The Joshua Tree* lingers long after the record has left the turntable.

David Browne

DON'T LOOK BACK.

⊙ D. A. Pennebaker, dir.; Albert Grossman and John Court, prods. Paramount Home Video LV 2382. ⊞

BOB DYLAN WITH TOM PETTY AND THE HEARTBREAKERS:

Hard to Handle.

⊙ Gillian Armstrong, dir.; Elliot Rabinowitz, exec. prod. CBS/Fox Video Music 3502-80. ⊞

DON'T LOOK BACK, D. A. PENNEBAKER'S 1967 cinema verité documentary of Bob Dylan's 1965 tour of England, has to be the most fascinating profile of a rock musician. Following Dylan and his entourage into concert halls, hotel rooms, and limos like a disinterested third party, Pennebaker's handheld camera captures the enigmatic artist in all his contradictions at the height of his creativity and influence. The end result bristles with energy, in scenes both on and off the stage.

That Dylan comes off as a complete jerk is of little consequence. As obnoxious as he was toward press and even his fans, his incessant word-gaming, while juvenile, was still a step ahead of the oldsters that his protest songs of the time railed against. As for the songs themselves, Dylan's performances here are simply extraordinary. He really could sing like nobody else, and in concert or swapping songs afterward with Joan Baez and Donovan, Dylan sings like the boy genius he was.

Twenty years later, the contemporary Dylan seen in the ten-song *Hard to Handle*, filmed in concert in Australia, is little more

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than a caricature of himself, his shot voice chanting lines in the same sing-song pattern over and over again. Compare the two versions of "It's Alright, Ma (I'm Only Bleeding)," the sole number appearing on both videodiscs, to see just how distressing the difference is. And even with two decades worth of advanced technology, neither the sound nor the picture quality of the color *Hard to Handle* is measurably better than that of the black-and-white *Don't Look Back*. In fact, the videodisc sound of *Don't Look Back* is great in and of itself.

Jim Bessman

NICK DRAKE: Fruit Tree.

Joe Boyd, prod. Hannibal HNBX 5302. (Distributed by Carthage, Box 667, Rocky Hill, N.J. 08553.)

TAKEN TO DRESSING IN BLACK AND SCARED OF performing in public, British singer-songwriter Nick Drake was the sort of person who made Leonard Cohen sound like the life of the party. The three albums he released during his lifetime were the recorded equivalents of mood swings, starting with the delicate and beautiful *Five Leaves Left* (1969), progressing through the lush, more upbeat *Bryter Layter* (1971), and ending with the relentlessly bleak *Pink Moon* (1972). When Drake was found dead in his bedroom in 1974, an apparent suicide, it seemed almost inevitable.

While that may paint a depressing picture, Drake's baroque meld of folk/jazz is actually uplifting: It resonates with the same hopeful pessimism that charged the State-side work of contemporaries Tim Hardin and Tim Buckley (with whom Drake shared a soft, vulnerable voice). *Fruit Tree*, a boxed set that collects all three albums plus a respectable bonus LP of miscellaneous outtakes and demos, makes a good case for his overlooked talent. It also reveals that, in context, the weakest of the three original LPs is *Bryter Layter*: Joe Boyd's art-song production dangerously approaches the cocktail-jazz preciousness of Michael Franks. Still, the album features some of Drake's best writing—"Hazy Jane II," for instance, chugs along like good folk-rock should—and shows that he could be an inventive John Fahey-style acoustic guitarist.

Five Leaves Left and *Pink Moon* give a fuller, more compelling portrait of the troubadour as tortured artist. Lyrics grow increasingly despondent: "a troubled cure for a troubled mind" on *Five Leaves Left* becomes "Now I'm weaker than the palest blue" on *Pink Moon*. Arrangements are sparse without being rudimentary on the earlier LP, but by the time of *Pink Moon*, Drake was so depressed that he laid down bare voice-and-guitar tracks and stopped there. The result is one of the most chilling, despair-ridden albums in pop music, and Drake's death two years later only makes it more morbidly intriguing.

Despite the nice packaging (each of the three regular-release LPs comes with its

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original cover art, and the enclosed booklet has a well-written, if hagiographic, bio and all the lyrics), there's something cliquish about *Fruit Tree*. Like Hannibal's recent Sandy Denny box, it appears designed to appeal strictly to completists and the already converted, thereby blocking out potential new fans unwilling to shell out \$28.95. That's a shame, because while Nick Drake may be an acquired taste, his music remains vibrant and provocative. For a downer of a guy, that is.

David Browne

VARIOUS ARTISTS:

Women in Rock.

Stephanie Bennett, dir. and prod. MCA Home Video 80428-19 (Beta), 80428-18 (VHS).



CHER (LEFT) AND TURNER: WHAT'S TO BE LEARNED?

WOMEN IN ROCK IS A TERRIBLE DOCUMENTARY. Considering that Stephanie Bennett did such a good job with her earlier efforts *Girl Groups* and *The Compleat Beatles* makes it even more disappointing. Its scope is too broad for an hour, and the editing is awful, shifting haphazardly between chronological and thematic threads. There are plenty of talking heads—Tina Turner on racism, Brenda Lee on the roots, Bette Midler on black artists, Cher on going it alone, Darlene Love on Phil Spector, Grace Slick on the Jefferson Airplane, Bonnie Raitt on touring—but when random remarks are injected without any editorial vision (and some don't even pertain to the subject), it's impossible to draw any historical or sociological conclusions. It's unclear, for instance, whether it's easier now or just as difficult for women who sing or play instruments.

Clips zigzag from the '60s to the '80s and back again with transitions clichéd enough to make the viewer wince. Example: Rosanne Cash comments on today's women not having to follow self-destructive paths; quick cut to Janis Joplin. And what's to be learned from then-and-now shots of sex symbol Tina Turner? That she loves wigs and has great legs?

The MTV excerpts—like those of Aretha and Annie, Madonna and Blondie—are already tired, and the archival footage is most-

ly overworked stuff. Of course, there are exceptions: teased-haired Lulu gyrating to "Twist and Shout" and fourteen-year-old Brenda Lee radiating innocent sexuality in "Sweet Nothin'." And there are a few decent interviews: Maria McKee's analysis of Joplin's influence and Exene Cervenka's comments on what destroyed her. But if you want the kids to see Cher's bellbottoms or to know why Janis is a legend, then rent—don't buy—*Women in Rock*.

Kate Walter

THE ALLMAN BROTHERS BAND:

Eat a Peach.

Tom Dowd, prod. Polydor 823 654-2. © (2). (2).

EVEN IF THIS WEREN'T A SINGLE-CD RELEASE (playing time: 69:44) of the double-LP *Eat a Peach*, it would remain a treasure for its uninterrupted version of "Mountain Jam," available for the first time in any format. Furthermore, the CD's detailed fidelity outshines the LP's sound and rejuvenates some of the most creative rock ever recorded.

Eat a Peach opens with the stunning rockers "Ain't Wastin' Time No More" and "Les Briers in A Minor," where a thundering rhythm section and Gregg Allman's bluesy organ are counterpoints for Dicky Betts's fluid guitar licks. After the moody masterpiece of "Melissa" comes "Mountain Jam," seamlessly spliced into its full 33:40 glory by Polygram's Dennis M. Drake. The band weaves together gentle Grateful Dead-like doodling, bubbly boogie, and fiery electric blues, periodically returning to the simple theme of Donovan's "There Is a Mountain" (still mistitled "First There Is a Mountain").

Through most of the recording, the CD's clarity showcases individual performances. There's no mistaking Duane Allman's biting slide guitar for Betts's silky-sweet tone when they play a synchronized bridge in "Blue Sky" and duel briefly in "One Way Out," and even percussionists Buich Trucks and Jai Johanny Johanson are disentangled. A dark mix does cloud the disc's first three songs, yet even here the sound surpasses that of the turbid LP.

The CD booklet lacks the wonderful original centerfold, so the LP is worth keeping, if only for the art.

Richard Price

(CONTINUED FROM PAGE 73) *ater of the Mind*, and the soundtrack to the film *Native Son*, of which he wrote and produced the bulk of the material, display his clever use of musical snippets and sociocultural philosophy. On the former, "New Face Deli" snipes at Michael Jackson and others who allegedly had cosmetic enhancement to woo white consumers, while "Deep Freeze" depicts underclass frustration and "P.O.P. Generation" tackles those who rush to make superficial analysis of complex problems. *Native Son*'s frequently quick fades, bubbling banks of synthesizers, and constant mood shifts are faithful to the sense of impending tragedy inherent in Richard Wright's classic 1940 novel. James Mtume has already created a provocative body of work; these two releases are worthy additions.

Ron Wynn

LEO KOTTKE:

⊙ **A Shout Toward Noon.** Private Music 2007.

A LOT OF THIS LP SHOULD BE AS FAMILIAR AS old shoes to Leo Kottke fans, but unfortunately it displays only one facet of his talent. With the exception of the fluid rag "Air Proofing Two," *A Shout Toward Noon* is very antifrantic; those who love Kottke for raucous slide sonatas like "Busted Bicycle" will be disappointed. There are some surprises, like the jazzy syncopation that crops up in "The Ice Field," and some tasty melodies, but I expect more from Kottke than just polite Alex de Grassi-isms.

Hank Bordowitz

THE ROCHEs:

⊙ **No Trespassing.** SOS/Rhino RNEP 706 16. "KNIFED" AND "LA VIE C'EST LA VIE" SOUND fine, but the former is standard a cappella stuff, and the latter is at least five years old. What's less, "That Won't Happen" and the title cut are pedestrian, *Another World*-ly production numbers. So on this four-song EP, the usually wonderful Roche sisters tread water. Somebody page Robert Frapp.

Ken Richardson

THE WIND:

⊙ **Living in a New World.** Midnight 121. TO COMPARE THE WIND WITH THE BYRDS, THE Lovin' Spoonful, or the Rascals would not be totally inaccurate, but it would be grossly

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unfair. Though firmly rooted in that era, the Wind has taken off every which way from there to make a stick-to-the-roof-of-your-mouth kind of pop that doesn't sound dated at all. So something as funky as "Stuck" isn't out of place near the wry "Sushi Bar." The most distinctive music occurs when the band mingles electric and acoustic guitars and duet vocals on "Good News, Bad News," "Nothing's the Same," and the title track. Melodies go off in strange directions, as do the themes of modern romance, poverty, and keeping up with the trends, which is obviously not an obsession with these guys.

Hank Bordowitz

THE BARRY ALTSCHUL QUARTET/QUINTET:

☉ **That's Nice.** Soul Note SN 1115.
DRUMMER BARRY ALTSCHUL TRAVELS THE eclectic route here, moving from traditional to freer forms with ease and conviction,

sometimes in a single piece. A great asset in making this coherent is trombonist Glenn Ferris, who sounds like a restrained Roswell Rudd and whose sense of swing is impeccable. But these are all seasoned pros who take a relaxed approach to postmodern options, and this is a concept, and a group, just loose enough, and just tight enough, to be fun.

Richard C. Walls


RAY MANTILLA SPACE STATION:

☉ **Synergy.** Red VPA 198. (Polygram.)
PERCUSSIONIST RAY MANTILLA IS A LATIN musician with a jazz sensibility who has played with, among others, Max Roach. The well-recorded *Synergy* features two jazz classics ("Star Eyes," "Eronel") and original Latin numbers by Mantilla and by members of his band, including the fine pianist Eddie Martinez. Mantilla's a precise, inventive drummer, as the shifts of time and accent on

"Star Eyes" demonstrate. The ensemble sound is attractive and idiomatic, except on "Eronel": Thelonious Monk's tune, with its open spaces, is perhaps antithetical to this group's restless rhythms. Otherwise, this is an unusually attractive album, made so in part by the saxophone solos of Steve Grossman and Dick Oatts.

Michael Ullman

MICK JAGGER:

Running Out of Luck. CBS/Fox Video Music  3503-24 (Beta), 3503-34 (VHS).

IN WHICH OUR HERO IS MUGGED, DUMPED, enslaved, and imprisoned while singing the nine songs from *She's the Boss*. This "long-form video" is clumsily directed by Julien Temple and badly acted by everybody. One great moment: Our hero tries to convince two Brazilians he's "Mickie Jaggéro," prancing to a Stones song in self-parody.

Ken Richardson

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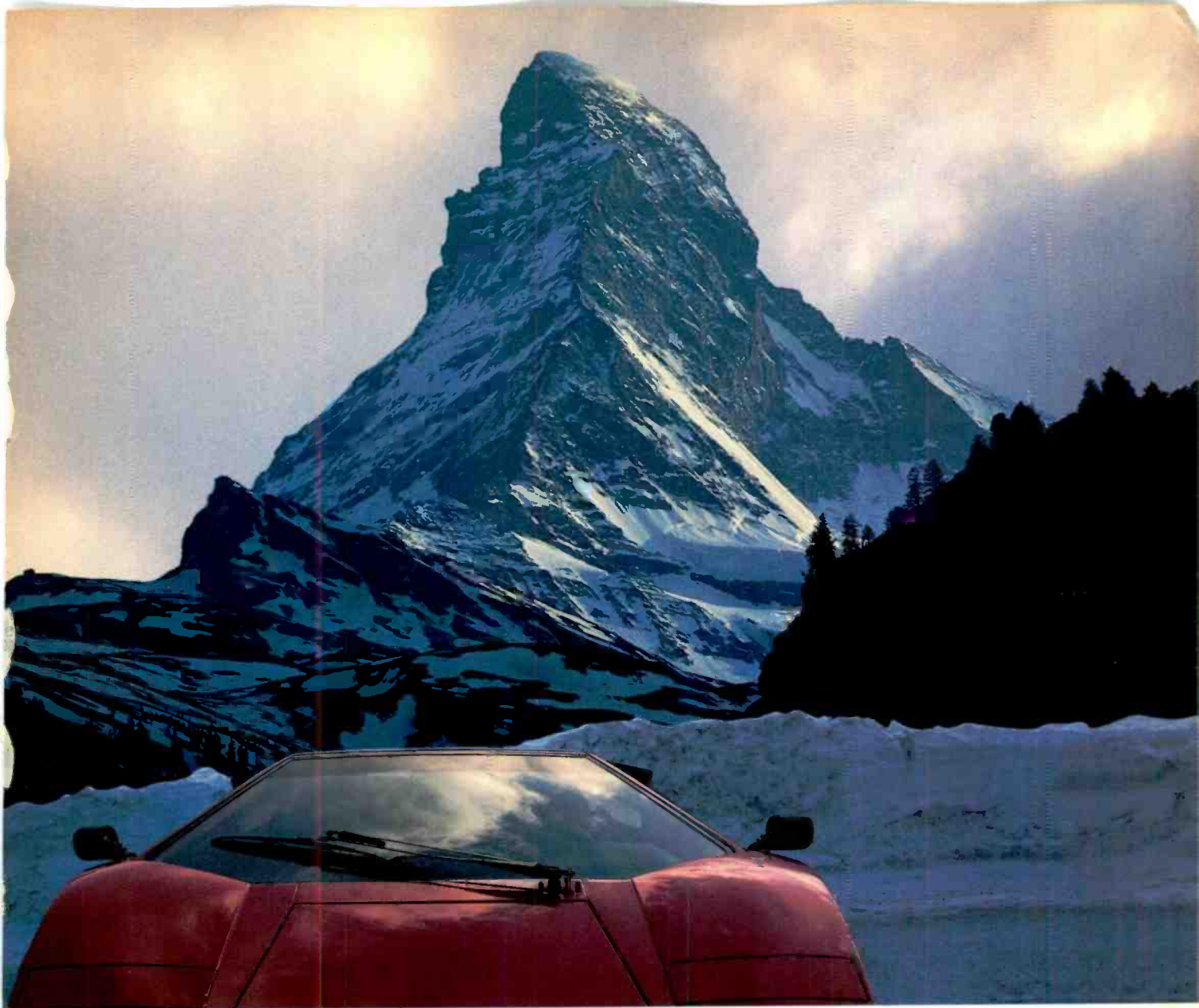
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