

**SPECIAL
TAPE
ISSUE**

FEBRUARY 1982 \$1.50
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High Fidelity™

THE MAGAZINE OF AUDIO, VIDEO, CLASSICAL MUSIC AND POPULAR MUSIC

Revealing Lab Tests of 6 New Decks with DBX, Dolby C, "EE" Tape!

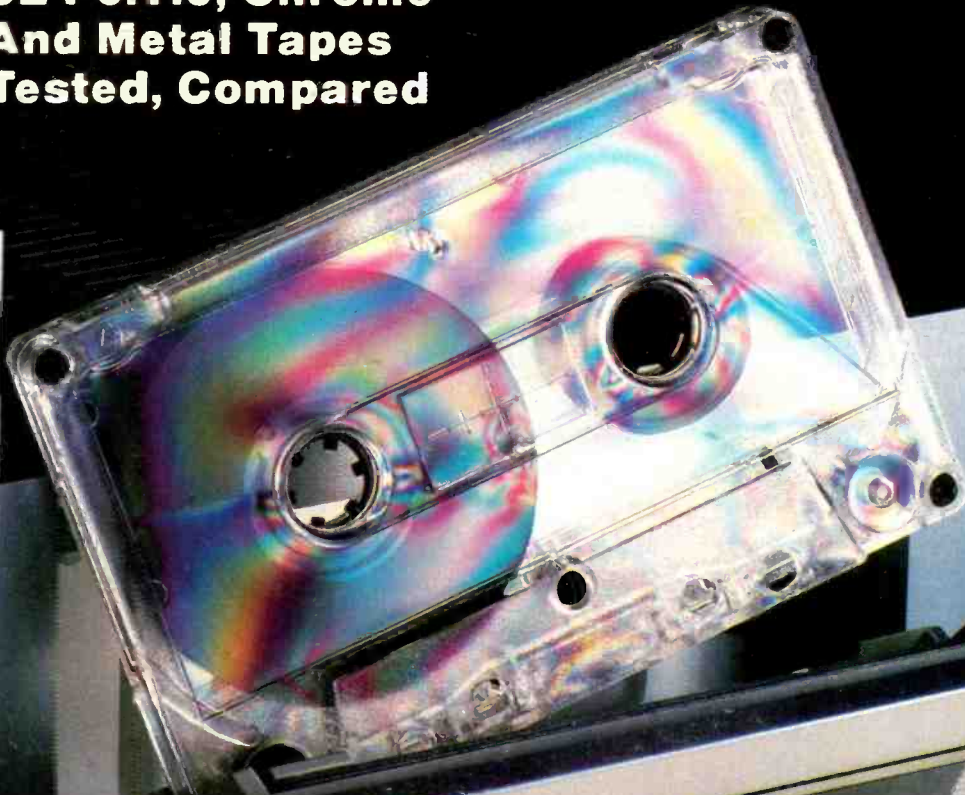
Incompatibility — Skeleton in the Cassette Closet

God and Money and Rock & Roll — The New Era of Christian Music

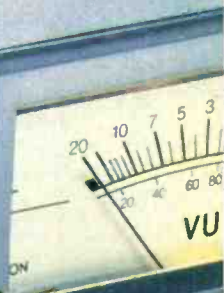
Flip a Switch, Get Better Video Movies ■ What Is "Good" Opera?

Which New Blank Cassette Tape Is Best For You?

**32 Ferric, Chrome
And Metal Tapes
Tested, Compared**



28CH9 12605 C0U98 02E12 JAN84
DAVID S BUCHANAN
2605 COUNTRY CLUB CRT DBG
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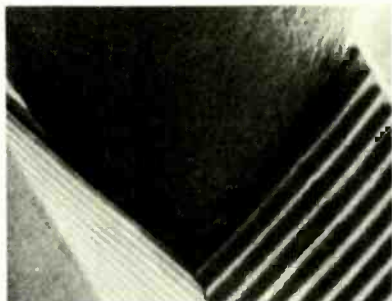
XSV/5000

One of the most dramatic developments of cartridge performance was the introduction of the Pickering XSV/3000. It offered the con-



sumer a first generation of cartridges, combining both high tracking ability and superb frequency response. It utilized a new concept in stylus design—Stereohedron, coupled with an exotic samarium cobalt moving magnet.

Now Pickering offers a top-of-the-line Stereohedron cartridge, the XSV/5000, combining features of both the XSV/3000 and the XSV/4000. It allows a frequency response out to 50,000 Hz.



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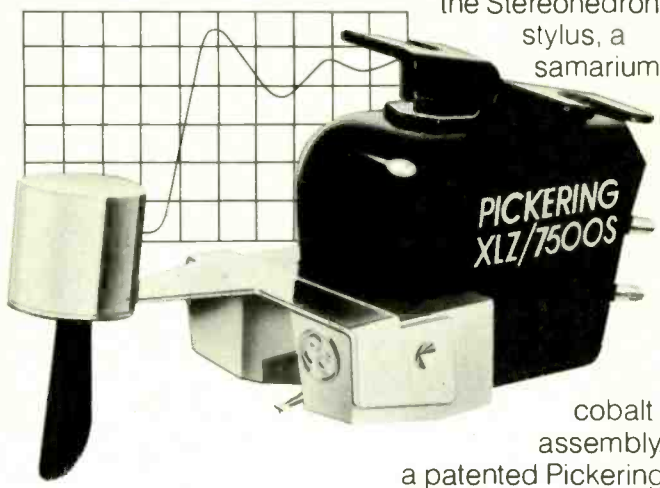
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For further information on the XSV/5000 and the XLZ/7500S write to Pickering Inc., Sunnyside Blvd., Plainview, N.Y. 11803.

from Pickering

High Fidelity

VOLUME 32

FEBRUARY 1982

NUMBER 2



25 *Tape Threader*



44 *Color Controls*



49 *What's Wrong Here?*



72 *Born Again LPs*

AUDIO

High Fidelity News by Dawn Gordon Digital by satellite; Cassette combo; Time-domain imaging		9
CrossTalk by Michael Riggs Murky cassettes; Double your pleasure		13
Basically Speaking by Michael Riggs Stereo: how the illusion is created		14
*Thirty-Two New Cassette Tapes Evaluated by Robert Long High Fidelity's comprehensive lab tests of new and reformulated tapes		17
*Sound Views by Robert Long Incompatibility: the skeleton in the cassette closet		24
*New Equipment Reports		
Akai GX-77 open-reel deck	25	Teac V-5RX cassette deck
Technics RS-M270X cassette deck	28	Onkyo TA-2070 cassette deck
Nakamichi LX-3 cassette deck	30	Yamaha K-960 cassette deck

VIDEO TODAY & TOMORROW

VideoFronts by Dawn Gordon RF switcher; Camera adapter cables; VCR carrying case		42
*Buying a Video Camera? by Dawn Gordon Look for the most functional array of controls		44
Video Q. & A. by Edward J. Foster Head wear; Tearing pictures		46
TubeFood Edited by Susan Elliott Home video highlights on cassette and disc		46

CLASSICAL MUSIC

*What Makes an Opera Good? by Kenneth Furie Can we judge the worth of a work from a bad performance?		49
A Great Pergolesi Mystery Solved Reviewed by Nicholas Kenyon The <i>Concerti armonici</i> are actually by Wässenaer. Who?		52
Music from Czech Chambers Reviewed by Harris Goldsmith Lots of new Dvořák and some fine old Suk and Smetana		55
2001: A Space Oddity by John Culshaw A couple of Karajan concoctions: <i>Zarathustra</i> and <i>Giselle</i>		57
Records: Hamilton on Weill; Fenby's Delius; Mahler Eighth		58
Critics' Choice		60
The Tape Deck by R. D. Darrell Tuppence Colored; Penny Plain: Recyclings, continued		71

BACKBEAT/Popular Music

*Christian Music Takes Off by Davin Seay A quiet revolution is taking place among 60 million baby-boom believers		72
Input Output by Fred Miller The McLeyvier: a synthesizer/computer that scores and prints music		74
Pop Records: Hall & Oates; J. Geils Band; Del Shannon; Frank Sinatra		75
Jazz Records: John McLaughlin, Pee Wee Erwin, Emily Remler		80

DEPARTMENTS

Letters	4	Reader-Service Cards	65
		Advertising Index	82

*Cover Stories

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Letters

The Real Colin Wilson Speaks Up

A friend recently sent me an interesting article ["Will the Real Colin Wilson Please Stand Up?" August 1981] about this odd little record company in California that issues records of Havergal Brian with the names of invented orchestras and conductors—one of the main ones being one Colin Wilson. I was saddened that John Canarina did not mention that Colin Wilson is a real person—in fact, if I may say so with all humility, a moderately known English writer. The motive



in using my name was clearly to persuade American record buyers—who have vaguely heard of me and also of the well-known conductor Colin Davis—to confuse the two of us.

Personally, I don't have the slightest objection to the use of my name in this way. I did object when a publisher of pornography in California began using my name on books that were hopelessly badly written, but that is a different matter.

Colin Wilson
Cornwall, England

Disagreeing on Digital

Like the little boy who was unafraid to announce that the emperor had no clothes, Derrick Henry deserves bouquets for excoriating the current state of digitally mastered discs ["A Cooke's Tour of Mahler Tenth's," October 1981]. Ironically, these discs highlight the wasted potential of the more natural sounding analog process. Consider these claims.

Claim: Digital recording expands the dynamic range. Fact: The current "digital" discs are analog records and subject to analog limitations. Yet the best of them display as wide a dynamic range as ordinary ears can tolerate. I shall never forgive the major labels for intentionally compressing analog recordings since the early 1960s. If, for example, the bass-drum whacks on every record were cut into grooves as big as Telarc's, I'm sure they would sound equally impressive.

Claim: Digital recording eliminates wow and flutter, crosstalk, and pre-echo. Fact: These (Continued on page 6)

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Cover photo: Lou Jawitz

ADVERTISING

New York: ABC Leisure Magazines, Inc., 825 7th Ave., 8th Floor, New York, N.Y. 10019. Telephone: (212) 265-8360. Seymour Resnick, Advertising Director; Raymond Foster, Associate Advertising Director; George Dickey, Record Advertising Manager; Ozzie Bruno, Eastern Advertising Manager; Yetta Peltzman, Classified Advertising Manager; Robert Maddocks, Director of Graphics; Kathleen Davis, Director of Production; Janet Cermak, Advertising Production Manager; Cecelia Giunta, Administrative Assistant.

Midwest: ABC Leisure Magazines, Inc., 190 N. State St., Room 632, Chicago, Ill. 60601. Telephone: (312) 782-1173. William P. Gordon, Midwest Advertising Manager.

Los Angeles: ABC Leisure Magazines, Inc., 2020 Avenue of the Stars, Suite 245, Century City, Calif. 90067. Telephone: (213) 557-6481. Andrew Spanberger, National Advertising Manager; Janet Endryonas, Western Advertising Manager.

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synchro-bias circuitry. What it does is constantly send minute amounts of power to the amplifier transistors. And since they can't switch on or off, switching distortion is eliminated.

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(Continued from page 4)

defects have not been audible in carefully produced analog discs for years.

Claim: Digital recording eliminates tape hiss. **Fact:** Mediocre digital discs, like poor analog records, contain so much vinyl hiss and cut-in rumble as to overwhelm any tape noise that might have been present. In my experience, carefully engineered analog recordings are as quiet as the best digital ones. Furthermore, weren't we told that Dolby A would eliminate tape hiss forever? Were we duped?

Claim: Digital playback will cure these defects and also eliminate mistracking and scratches. **Reaction:** Once burned, twice cautious. I'll believe it when I hear it. Unfortunately, the distortions of timbre and ambience, which set Mr. Henry's teeth on edge, seem to be caused by the digital process itself. Predictably, they will be emphasized with the absence of scratches and other vinyl noise.

The digital process, I fear, is not the solution. Perhaps it is time for recording engineers to abandon their spectrum analyzers and other electronic devices (however "weighted") and learn once again to analyze musical sounds with their ears.

Paul M. Rose
San Francisco, Calif.

In their replies to "Disembracing Digital" ["Letters," August 1981], some audiophiles lay the blame for digital sound's shortcomings entirely on the recording technique, without taking into consideration all the other elements that create the finished product. Digital technology is not faultless; there will always be room for improvement. But I find many of the medium's recordings on the market today far superior to their conventional counterparts.

As both an avid audio- and videophile, I hope you continue to expand your video section. I believe many individuals will integrate their TV and audio systems into one entertainment center, particularly when stereo television arrives.

C.S. Johnson
Ottawa, Ont., Canada

Botching Beethoven

In his review of Artur Schnabel's first Beethoven concerto cycle [October 1981], Harris Goldsmith notes that he has not heard the British pressing of Keith Hardwick's transfers. I have heard the British pressing (World Record Club SHB 63), and it is a grotesque botch. Sides 1 and 2, containing the First Concerto, the Op. 34 Variations, and *Für Elise*, were mastered about a whole tone flat and with a persistent groaning instability of pitch. Most of the other sides are slightly sharp. I hope that EMI will correct this mastering, as it is now the worst possible representation of Schnabel's recordings.

Charles J. Schlotter
Pittsburgh, Pa.

Ax-Grinder

Your reviewer Bill Adler seems to dislike everything. His review [September 1981] of Pat Metheny's new album, "As Falls Wichita, So Falls Wichita Falls," was particularly grating. In it, he describes (with sardonic disgust) the kind of nearly perfect layering effect that other artists have been praised for. Surely he must realize that this is the essence of the Metheny/Mays style, (Continued on page 8)

THE TAPE HEARD ROUND THE WORLD.

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If you want to hear history, listen to any Sony audio tape. Each one has a heritage of breakthrough technology. Each one will produce the finest sound you've ever heard. And in the future, Sony will still be creating breakthrough, state-of-the-art tapes. But that's only to be expected. After all, each and every one is named Sony.

SONY.

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(Continued from page 6)



Lyle Mays and Pat Metheny

one that boasts millions of fans on both sides of the Atlantic and represents Metheny's genius.

In his review of the Carpenters' "Made in America," he again drones on about hearing it all before, with a special emphasis on Hollywood and movie soundtracks. One could almost imagine the review of Beethoven's Ninth Symphony he would write for a popular magazine: "Here we go again. The same style and textures that have been prevalent in Beethoven's previous eight symphonies are again rehashed in his Ninth. It reminds one of a score from a lavish stage production . . ."

Mark R. Abraham
Carmichael, Calif.

The "New" HF

I have been a loyal and appreciative subscriber to HF for almost twenty years, but I am distressed

by your current de-emphasis of classical music. Your in-depth coverage of the genre was what made the old HF valuable. What space is devoted to classical music in the October issue is crowded with no less than eight pages of non-record-review material, which would have been welcome in more spacious days, but which in the new format throws the magazine's balance off severely. Incidentally, my 1,500-album record library has been built almost exclusively on the basis of HF reviews.

Paul Brian
Spokane, Wash.

I have subscribed to HF for the past fifteen years primarily for the classical record reviews, which I use as a guide to my record purchases, and secondarily for the equipment reports, which assist me in the occasional replacement of components as they wear out or become outmoded. But in recent years the number of your classical reviews has diminished to the point where you no longer cover enough of the new records to be of much use to the collector. More and more space seems to be given to features of no interest to the serious music listener—particularly BACKBEAT, which is for a completely different crowd, and VIDEO TODAY. Please devote more space to the new classical records, many of which I am eager to buy, but do not see reviewed in any American publication.

Richard P. Rosenthal
Brooklyn, N.Y.

Your October "Letters" section contained some complaints about HF's decreased coverage of classical music. Although I play classical guitar and appreciate classical music very much, I am primarily a pop and rock music fan. The BACKBEAT section has excellent record reviews and articles on pop and jazz musicians. I especially enjoyed the article on George Wallace and his home studio [September 1981].

I can understand how some readers might become upset by what they see as a threat to the classical coverage in HF, but I think it is admirable that you have broadened the magazine's scope to include other kinds of music. Thank you for providing an intelligent (though modest) alternative to the "pop-drive" fan magazines that are everywhere.

Reid Power
Bakersfield, Calif.

I have been an on-and-off subscriber for perhaps fifteen of the last twenty years. In the last few years, I have gotten the distinct impression that the magazine has been pandering to the most naive and casual owners of "high fidelity" equipment—what we on the West Coast refer to as the "Pacific Stereo" crowd.

T.E. Hlavac, Jr.
San Francisco, Calif.

I have collected HF magazines for more than twenty years and am dismayed by your recent changes. Go back four or five years and compare the articles and classical music reviews with what you are currently presenting, and you will see my point.

Robert L. Rich
East Windsor, N.J.

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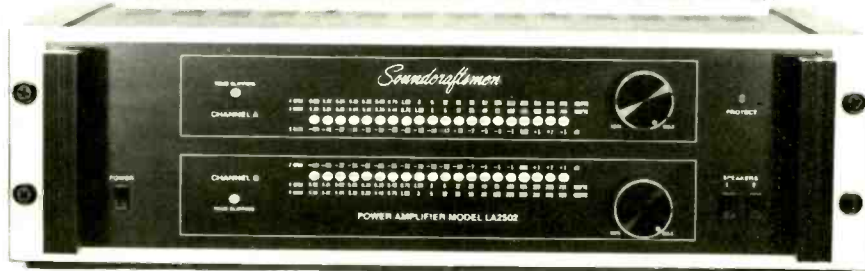
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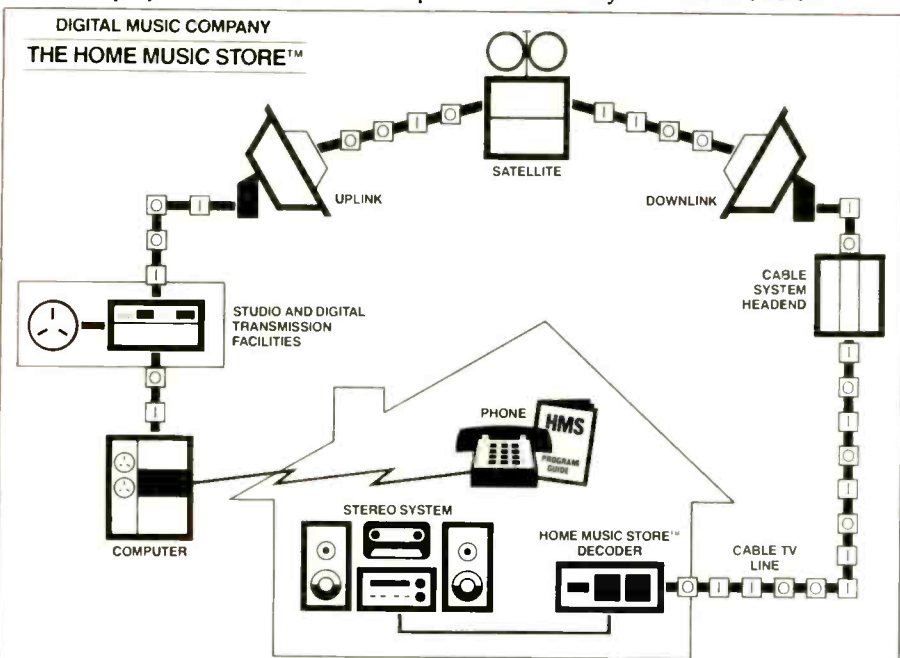
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High Fidelity News

New equipment and developments by Dawn Gordon



Satellite Digital Stereo

A unique premium audio service for cable subscribers called The Home Music Store is scheduled to debut in April. The service's parent, Digital Music Company of Washington, D.C., will transmit, via satellite, digitally encoded copies of master tapes to cable TV systems and then into subscribers' homes, where the PCM signal will be converted to analog by a special decoder. Five different channels, covering a full range of styles and types of music, will be available. A monaural channel will provide previews and information regarding new releases. Two additional digital channels will allow subscribers to record albums for a fee of

twenty to sixty percent less than the records' retail list prices. To use this service, you would make a selection from a monthly catalog, and then call a toll-free number and give your account number and a selection code. At a preselected time, one of the two sales/recording channels, which are otherwise locked out to subscribers, would be remotely activated by a computer signal, and the recording could be made.

As presently envisioned, The Home Music Store will be available on subscribing cable systems for a monthly service fee of less than \$10, including the rental charge for the decoder.



Cassette Combo

Following in the footsteps of the KRX-5 cassette-deck/receiver is Kenwood's higher powered \$700 Model KRX-7. Power is rated at 45 watts (16½ dBW) per channel into 8 ohms from 30 Hz to 20 kHz with no more than 0.07% THD. Frequency synthesized digital tuning, a ten-station memory (five FM and five AM), and a muting switch are included. A built-in electronic clock can also be used as a timer for automatically recording programs off the air. The cassette section features metal capability, a Direct

Program Search System, feather-touch controls, Dolby B, and mike mixing. There are also provisions for connecting a pair of remote speakers.

Circle 140 on Reader-Service Card

Colorful Speakers

The appropriately named Rainbow loudspeaker from Black Acoustics is available in fifteen different colors to match a wide range of decors. To reinforce the 1.9-kHz mechanical crossover and to damp ringing, four thermoplastic coatings are applied to both the 6½-inch woofer and the 1¼-inch soft-dome tweeter. The compact (21 by 8 by 8 inches) 6-ohm system is said to have a

(Continued on page 10)

**NAD announces the model 6050C,
a Dolby C* cassette deck
with state-of-the-art performance
for under \$300!
Incredible? See your local NAD audio expert!**

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If you cannot readily find an NAD dealer in your neighborhood, send this coupon for literature on the Model 6050C and other fine NAD home entertainment products, as well as a dealer list, to:
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Zip _____

(Continued from page 9)



frequency response of 48 Hz to 18 kHz, ± 3 dB, and a sensitivity of 83 dB SPL at 1

meter from 1 watt. The Rainbow is priced at \$420 per pair; its optional adjustable stands cost \$80 per pair.

Circle 141 on Reader-Service Card

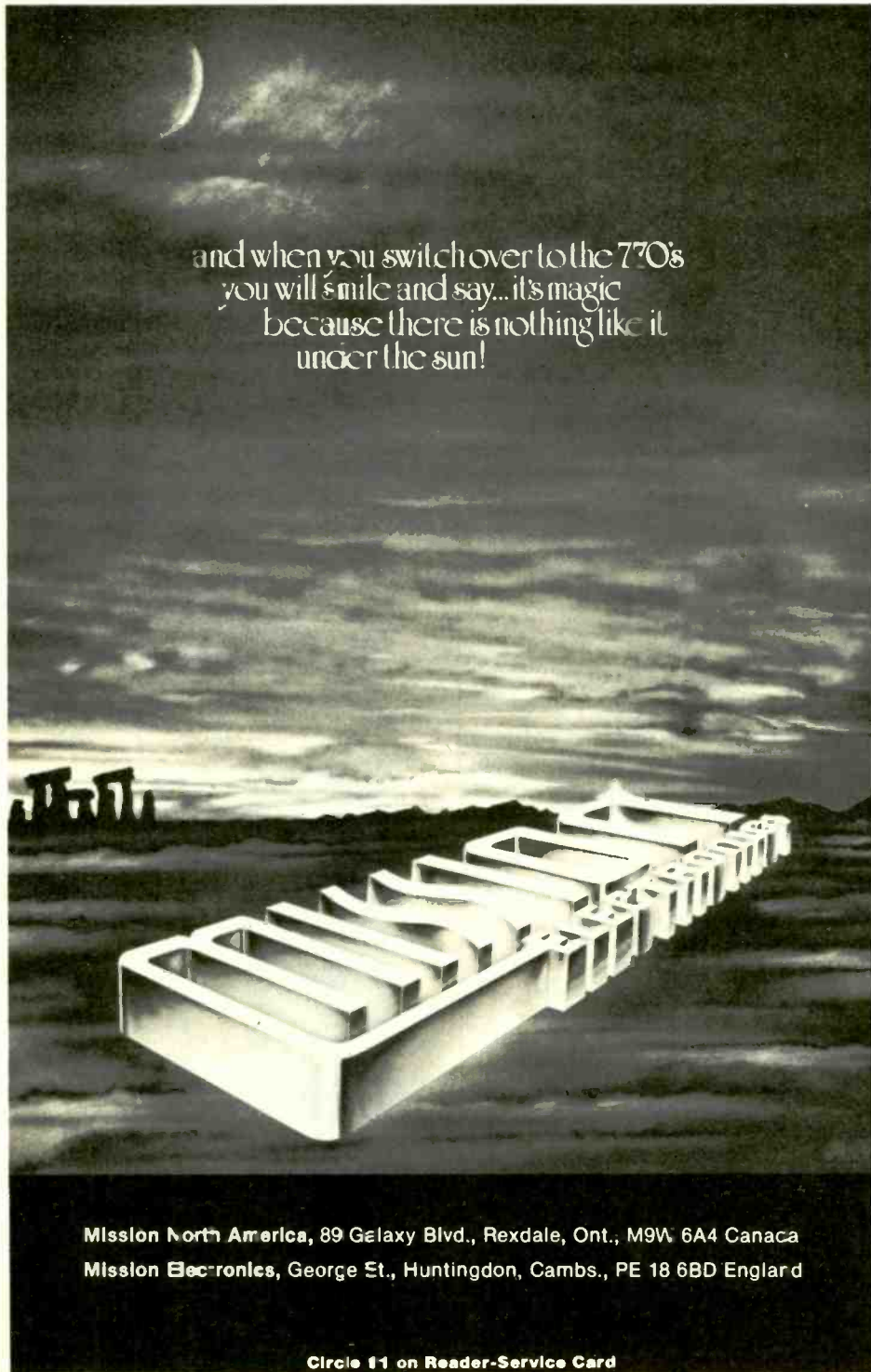
Dual Power from Adcom

The GFA-2 power amplifier from Adcom features a dual power supply that provides voltage to each channel independent of the other. The amp, which produces 100 watts (20 dBW) per channel into 8 ohms, has an



LED indicator light for its auto-reset protection circuit and two peak-reading LEDs that monitor the power output. The \$360 amplifier is said to have a frequency response of 20 Hz to 20 kHz, ± 0.2 dB, at full rated power.

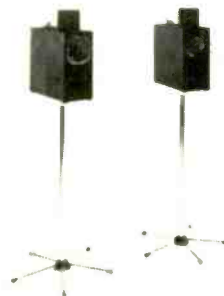
Circle 142 on Reader-Service Card



and when you switch over to the 770's
you will smile and say...it's magic
because there is nothing like it
under the sun!

Mission North America, 89 Galaxy Blvd., Rexdale, Ont., M9W 6A4 Canada
Mission Electronics, George St., Huntingdon, Cambs., PE 1B 6BD England

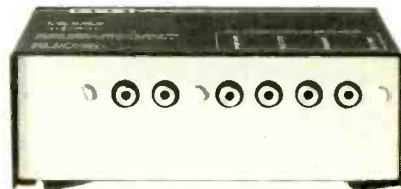
Circle 11 on Reader-Service Card



Time-Domain Stereo Imaging

Acoustic Image loudspeaker systems are designed by the manufacturer to produce detailed stereo imaging through accurate reproduction of time-domain information. According to Acoustical Physics Laboratories, the low-diffraction time-aligned loudspeakers should be used with a subwoofer system. A 5-inch midrange/bass driver crosses over at 3.5 kHz to a 1-inch soft-dome tweeter for a frequency range of 60 Hz to 22 kHz. The 8-ohm loudspeakers are priced at \$500 per mirror-image pair and are available in kit form for \$225. Stands are optional.

Circle 147 on Reader-Service Card



Safe Crossing

The 6000-6 electronic crossover from Ace Audio is said to deliver perfect phase and transient response in the crossover region. Plug-in modules, available at \$33 each, will set the crossover frequency at any point from 40 Hz to 16 kHz. The 6000-6 is designed for use with amp/preamp combinations or receivers with PRE-OUT/MAIN-IN connections; it can be used for biamping or (with two units) triamping. Price of the 6000-6 is \$175.

Circle 148 on Reader-Service Card

Circle 10 on Reader-Service Card ▶

Introducing TDK AD-X. The normal bias tape with Super Avilyn technology.

New TDK AD-X is the first normal bias audio cassette to use TDK's Avilyn magnetic particle—based on the renowned Super Avilyn formulation that has kept TDK the leader in audio and videotape technology.

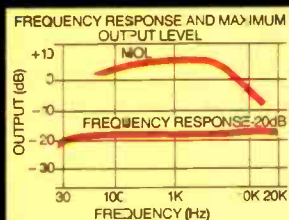
The Avilyn advantage offered in AD-X is demonstrably clear. You now can record and play back—in the normal bias/EQ position with complete compatibility for any cassette deck over a wider dynamic range and with far less distortion. Even at higher recording levels, the increased headroom in

new AD-X can easily handle strong signal input without over-saturation.

When you hear the brilliant playback resulting from the higher

MOL and lower bias noise you won't believe that your deck can "improve" so much.

The new AD-X has truly versatile applications. Its higher sensitivity makes it ideal for all-round home entertainment use and also suitable for any cassette player.



Avilyn magnetic particle achieves higher saturation and lower noise.

To ensure years of reliable use, AD-X is housed in TDK's Laboratory Standard Mechanism, and protected by TDK's lifetime warranty. With its distinctive packaging, you won't miss it.

So for high quality recordings in the normal bias/EQ position, snap in the new TDK AD-X. You'll discover that the Avilyn advantage means superior overall performance for you.

TDK
THE MACHINE FOR YOUR MACHINE



Record at higher levels with far less distortion.



**WHY SPEND \$200 MORE
ON A BETTER TAPE DECK
WHEN ALL YOU NEED IS \$2 MORE
FOR A BETTER TAPE.**



No matter how much you spend on a tape deck, the sound that comes out of it can only be as good as the tape you put in it. So before you invest a few hundred dollars upgrading your tape deck, invest a few extra dollars in a Maxell XLI-S or XLII-S cassette.

They're the most advanced generation of oxide formulation tapes. By engineering smaller and more uniformly shaped oxide particles, we were able to pack more of these particles onto a given area of tape.

Now this might not sound exactly earth-shattering, but it can help your tape deck live up to its specifications by improving output, signal-to-noise ratio and frequency response.

Our XL-S cassettes also have an improved binder system, which helps keep the oxide particles exactly where they're supposed to be. On the tape's surface, not on your recording heads. As a result, you'll hear a lot more music and a lot less distortion.

There's more to our XL-S tape than just great tape. We've also redesigned our cassette shells. Our Quin-Lok™ Clamp/Hub Assembly holds the leader firmly in place and eliminates tape deformation. Which means you'll not only hear great music, but you'll also be able to enjoy it a lot longer.

So if you'd like to get better sound out of your tape system, you don't have to put more money into it. Just put in our XL-S tape.

maxell
IT'S WORTH IT.

Maxell Corporation of America, 60 Oxford Drive, Moonachie, N.J. 07074

CrossTalk

Practical answers to your audio questions by Michael Riggs

Murky Cassettes

Recently I bought a Sony TC-K81 cassette deck, which I use with a Yamaha CR-840 receiver and Infinity Q_b speakers. Tapes I record on the Sony sound great, but all the prerecorded cassettes I have bought (all Dolby B encoded) sound very muffled. Changing the bias and equalization settings on the deck has no effect; turning the Dolby off helps slightly, but the sound is still subpar. Are the prerecorded tapes I bought defective?
—Jeffrey S. McKee, Goldsboro, N.C.

Possibly, but not very likely. The sad truth is that many prerecorded cassettes are dull in the treble. Time is money, so manufacturers usually duplicate cassettes at thirty-two or even sixty-four times normal speed, which means that a 1-kHz signal is being recorded at 32 or 64 kHz and that a 5-kHz tone is transferred (one hopes) at 160 or 320 kHz. This is not easy to do, and when low-quality tape is used (as it often is) the result is usually loss of high frequencies.

Bias affects only the recording process, so changing it during playback should make no difference, and using the 70-microsecond chrome EQ with Type 0 or 1 ferric tape would make the sound duller rather than brighter. As you have discovered, turning off the Dolby does brighten the sound a little, but at the expense of added hiss.

Prerecorded cassettes, if carefully made with good tape at normal or near-normal speed, need not be sonically inferior to high-quality discs.

Double Your Pleasure

I would like to add a second pair of speakers to beef up my system's stereo effect. Does it matter what kind I get as long as they have the same impedance as the ones I already have?—Michael Benson, Tucson, Ariz.

Since you will presumably be playing all four speakers together, it would be best for them all to be the same model, or at least very similar in sound. If you are going to be running them in parallel from the same amplifier (do not wire them in series, as this will cause severe sonic degradation) and want them to play at the same level, both

sets should have about the same sensitivity and impedance. With most amplifiers, you should also be careful that the combined impedance of the speakers does not fall much below 4 ohms. The formula for determining the approximate combined impedance (or Z_T) of two speakers wired in parallel is:

$$Z_T = \frac{Z_1 \times Z_2}{Z_1 + Z_2}$$

where Z_1 is the impedance of the first speaker and Z_2 the impedance of the second.

Finally, although adding more speakers will create an effect of some sort, it is unlikely to enhance the stereo image. The more probable result is a more confused image with impaired localization of sound sources.

Equalization Blowout

My system consists of a Micro Seiki DD-24 turntable with a B&O MMC-20E cartridge, a Yamaha CR-2040 receiver rated at 120 watts [20 3/4 dBW] per channel into 8 ohms, a pair of Polk 10 speakers, and an ADC Sound Shaper One equalizer. While using the equalizer, I have blown the fuses on my speakers four times. Now, when I play loud music I don't use the equalizer and have blown no more fuses. Is the equalizer the problem, or (as someone told me) oscillation from the receiver, or something else?—Paul Kaufman, Highland Park, Ill.

You don't say exactly what you were doing with your equalizer, but the symptoms you describe lead me to suspect that you were using it to boost the output at certain frequencies, probably at the low or the high end. Although the additional output might not have been enough to make the overall loudness seem much greater than it was with the equalizer out, it certainly would have required the receiver to deliver more power to the speakers—apparently enough, when the volume was already high, to blow the Polks' fuses. By reducing the amount of boost (especially at the low end), you might still be able to get some of the benefit of equalization without blowing fuses when you crank up the volume.

We regret that due to the volume of reader mail we get, we cannot give individual answers to all questions.

Now you can add
the three-dimensional
impact of
Sonic Holography
to your system
three different ways.



The C-4000 Control Console includes Sonic Hologram Generator, full-function stereo pre-amplifier, time-delay system with built-in 40 watt (total) power amplifier, Autocorrelator System that reduces noise up to 8 dB, a peak limiter/downward expander that nearly doubles dynamic range.



The C-1 combines the Sonic Hologram Generator with a full-function preamplifier.



The C-9 Sonic Hologram Generator allows you to add Sonic Holography to any system, including one with a receiver.

And when you do, you'll hear what these audio experts heard in their systems:

Hal Rodgers, Senior Editor of Popular Electronics: "When the lights were turned out we could almost have sworn that we were in the presence of a real live orchestra."

Julian Hirsch of Hirsch-Houck Labs: "The effect strains credibility—had I not experienced it, I probably would not believe it... the 'miracle' is that it uses only the two normal front speakers."

Larry Klein, Technical Director of Stereo Review: "... it brings the listener substantially closer to that elusive sonic illusion of being in the presence of a live performance."

High Fidelity put it this way: "... seems to open a curtain and reveal a deployment of musical forces extending behind, between and beyond the speakers... terrific."

And now, whatever components you own, you can hear what all the audio experts have heard and acclaimed: Sonic Holography by Carver.

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Basically Speaking

Audio concepts and terms explained by Michael Riggs

Stereo: Theory and Practice

LOW DISTORTION, low noise, and flat frequency response: These are the three basic criteria for high fidelity sound reproduction. They are the guarantors of sonic purity. But they ignore a very important dimension of the natural listening experience.

Consider a component system much like those sold in the fifties, but updated to the technical standards of 1982, with a turntable, an amplifier, and a single loudspeaker. The records played on this system are recorded with a single microphone, and the sound that emerges from it squeezes all the instruments together, so that they appear to be playing from a single point on the stage. Obviously, this is not natural—not at all the way one would hear things at a live performance.

A way of creating a more accurate spatial image was developed many years before most people had any idea there was a problem, by the brilliant, prolific engineer Alan Blumlein in England and by Bell Labs in the U.S. Although their approaches differ in detail, they are similar in basic concept. The idea is to use two microphones, rather than just one, positioned so that one favors the right side of the stage while the other favors the left. Thus, the microphones mimic the behavior of our own ears.

The signals from the two microphones are kept separate throughout the recording and playback processes. The most obvious consequence for the consumer is that to properly play back recordings made in this fashion he must have two loudspeakers (instead of just one) and a two-channel amplifier (or a pair of single-channel amplifiers) to drive them. Correctly set up and playing a well-made two-channel recording, such a system can convey the instruments' lateral positioning very well and also give some sense of the recording site's ambience.

These stereophonic recordings and playback systems provide such greatly enhanced realism that they have almost entirely supplanted the single-channel monophonic systems that launched the era of high fidelity. They achieve their effect by means of aural deception, by faking the

cues that enable our ears and brain to localize sounds in space.

These cues are of two kinds: timing (or phase) and amplitude. Because our ears are on opposite sides of the head, about seven inches apart, sounds emanating from anywhere not directly in front of or behind the head arrive at one ear before they arrive at the other. Using the difference in arrival times and the distance between the ears, the brain determines the direction from which the sound is coming.

In addition, sounds originating nearer one ear than the other will tend to be louder in the closer ear than in the more distant one. The brain also uses this difference in amplitude to locate the sound. The two mechanisms complement each other, and either or both can be used to create the ste-

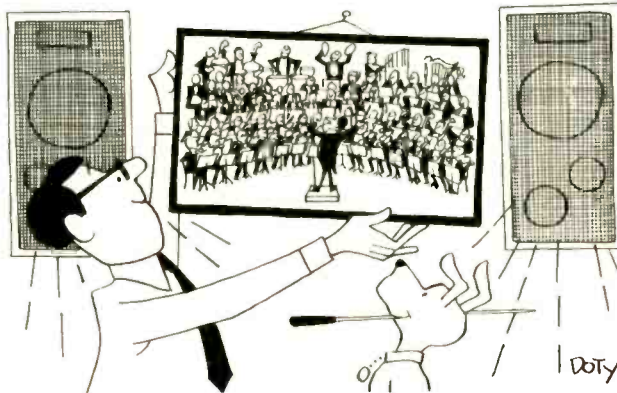
are pointed, are more sensitive in this respect than are those using omnidirectional microphones. Directional microphones also make it possible to eliminate timing information completely, leaving only amplitude differences. This can be done with a coincident pair of directional microphones mounted one directly above the other and aimed at opposite sides of the stage. Or it can be done by putting separate microphones very close to each instrument or section of instruments and recording their outputs on separate tracks of a multitrack tape recorder. Later, the producer mixes all these tracks down to a two-track stereo tape. In doing this, he adjusts the levels of each original track going into each of the two final tracks, thus placing the various instruments in their proper positions on the stereo stage.

There is no prescription for making a good stereo recording, and what microphone technique is best depends on many variables, including the type of music and the acoustics of the recording site. A good case can be made for using only a few distantly placed microphones (rather than elaborate multimiking) for most music performed with acoustic instruments, but it does not pay to be dogmatic about this.

The quality of the stereo image obtained from a recording is critically dependent on proper loudspeaker placement in the home. Many people seem to think that all they have to do to get the stereo illusion is to wedge a couple of speakers somewhere in their living rooms. Nothing could be further from the truth. True, you would undoubtedly hear a more pleasantly diffuse sound if you sat between two speakers placed at opposite ends of the room from your chair, for example, than you would from a single speaker, but you would not hear correct instrumental localization.

To hear an accurate stereo image, you must sit approximately midway between and in front of the two loudspeakers, so that you and the speakers approximate an equilateral triangle. And ideally, the speakers should be toed in so that their axes cross slightly in front of you. That done, you should hear the musicians as though they were playing on an imaginary stage stretching between and behind your speakers.

Next month, I'll explore the long-playing phonograph record. **HF**



reio effect.

To capture timing cues, it is necessary to use properly spaced microphones. Sounds that arrive at the right-hand microphone before they reach the left-hand one will be reproduced by a stereo playback system so that they emerge from the right speaker before the left speaker. This in turn causes the sound to arrive at your right ear before it reaches your left ear and vice versa. How far to the right or left of center a sound appears to come from depends on how much later it arrives at one microphone than at the other—and therefore at one ear than at the other. It's a trick, of course, and not an altogether perfect one, since at a concert the direct sound from any given instrument comes at you from only one direction, not two. But it works.

Virtually any microphone technique will pick up some amplitude cues, although those using directional microphones, which discriminate against sounds arriving from directions other than the ones in which they

Loran™ is the cassette of the future... but it's here right now. The original and only heat resistant cassette shell and tape that withstands the oven temperatures of a car dashboard in the sun. Testing proves that even TDK or Maxell cannot take this kind of punishment.

With Loran, you'll capture a full range of sound as you've never heard it before. Tape that delivers magnificent reproduction of highs and lows, along with an exceptionally low background noise level. Super sensitive with an extremely high maximum recording level capability. That means you can record Loran at high input levels for greater clarity. As a matter of fact, we recommend it.

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With all these features, it's no wonder Loran was selected as "one of the most innovative consumer electronics products..." by the Consumer Electronics Show Design and Engineering Exhibition.

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LORAN™
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WHEN ALL OTHERS FAIL... LORAN CASSETTES ARE SAFE AND SOUND SENSATIONAL.



Actual cassettes tested in a closed car in the sun.

MAGNIFICENT OBSESSION.



In our zeal to build superb tape recording equipment in the extreme, we at Teac are sometimes driven to steal. From ourselves.

The extraordinary X-1000R illustrates this very well. In it, we have incorporated professional features originally designed for our TASCAM recording studio equipment.

These include a linear LED counter which measures tape in hours, minutes, and seconds. A Search To Cue (STC) and Search To Zero (STZ) capability. In addition, there's Auto Reverse in both directions, in play or record.

The X-1000R, as is current professional practice, employs DBX® noise reduction. An exclusive in home reel-to-reel. And also, as in professional recording equipment, full-tension servos guarantee high stability and accuracy. And low wow and flutter specs of just .03% @ 7½ IPS.

All of which add up to an impressive collection of features, we think you'll agree. And if we happened to borrow a lot of them from our professional designs, well that shouldn't bother you one bit.

TEAC MADE IN JAPAN BY FANATICS.

Thirty-Two New Cassette Tapes Evaluated

Comprehensive lab tests of new and reformulated ferric, chrome, and metal tapes.

by Robert Long



HOW MANY RECORDISTS, I wonder, have any idea how much hard work goes into the perennial improvements in cassette-tape formulations. Granted that these efforts are not undertaken altruistically; by achieving that little edge of superiority over competing products, each manufacturer hopes to increase his share of the huge and financially rewarding blank-tape market. But while it may sound like an Economics 101 cliché, the end user is the consistent beneficiary of the competition.

In trying to keep abreast of all this activity, we have chosen thirty-two different tape types that we have not tested before or that have been reformulated since our last test. All are from brands that either enjoy or are actively pursuing wide distribution and all with important credentials of

one sort or another for the home recordist. The sheer quantity of information generated by these tests is intimidating. Fortunately—as we discovered in our last round of testing—there is far less disparity from brand to brand than once was the rule. This works to the recordist's advantage since it reduces the likelihood of unpleasant surprises when the supply of your favorite tape runs out and you're forced to substitute another. But there are differences, of course, and sometimes they are significant.

In reading our results it is important to keep in mind that in testing the tapes with a real recorder (as opposed to giving such "abstract" data as squareness-ratio and coercivity figures, which are difficult or impossible for the home recordist to relate to his immediate problem: getting a good

recording), we document behavior only with *that* recorder. These tests were made on the same Nakamichi 582 used for the last round of cassette testing. Its bandwidth is wide, so it doesn't obscure the tape's behavior at high frequencies; its recording head gap is fairly representative for a "three-head" deck, avoiding extremes that could make a major difference with tapes whose magnetic coating is either very thin or very thick; and it is not extreme in its approach to bias/equalization tradeoffs in recording, minimizing the possibility that it will be radically different in this respect from most good decks today. But the possibility that a given tape will respond differently in your deck remains and must be allowed for: It's always a good idea to try out a tape you're interested in and evaluate

AUDIO Cassette Tests

the results critically before adopting it for a recording you want to fuss over. In fact, you'll probably get better results, on average, if you stay with a tape whose limitations you know and respect than if you employ one that is intrinsically "better" but relatively unfamiliar, tempting you to push it too hard or (if your instincts are more conservative) to leave its potential underutilized.

As in our past cassette tests, DSL first adjusted the deck's bias to produce equal sensitivity at 333 Hz and 10 kHz for a recorded level of 25 nanowebers per meter (20 dB below DIN 0 dB level, which is defined as 250 nanowebers per meter at 333 Hz). At this point, the bias setting and the resulting tape sensitivity are compared to our reference samples of Nakamichi's own brand in each group: EX-II for the Type 1 ferrics (otherwise known as "standard" or "normal" or LH tapes), SX for the Type 2

chromes, ferricobalts, and similar formulations, and ZX for the Type 4 metals. (We have included no Type 3 ferrichromes, in which there appears to be relatively little interest these days among home users and for which the 582 has no special switching.) The relative bias requirement of the tape under test is expressed as a percentage of that required by the reference tape in its group; the relative sensitivity is expressed in dB, with a plus figure indicating that there was greater output from the test tape than from the reference tape for a given signal input.

The graph shows the relative output at all frequencies between 100 Hz and 20 kHz as a continuous line. The dotted line is the headroom ceiling, measured as 3% intermodulation distortion with tone pairs 1 kHz apart and centered on 2, 4, 6.3, 10, 15, and 20 kHz. Midrange headroom—this time measured as the more conventional 3% har-

monic distortion—is represented by the "gunsight" symbol at 333 Hz. You'll find numerical characterization of the headroom data, expressed in dB with respect to our standard zero reference, below the graph, together with additional distortion information measured at 333 Hz.

You'll also find two statements of noise behavior. The A-weighted noise is "objective" in that it is always expressed in terms of the same zero point. If you always record at the same meter reading, regardless of the tape you're using, this is the figure that's most important to you. If, on the other hand, you study the properties of the tapes you use and demand more of those that have more to give, you will record at a higher level on tapes that have greater headroom. In that case, the midrange S/N ratio, which is measured from the same noise floor but extends up to the 3%-distortion ceiling, will be more useful.

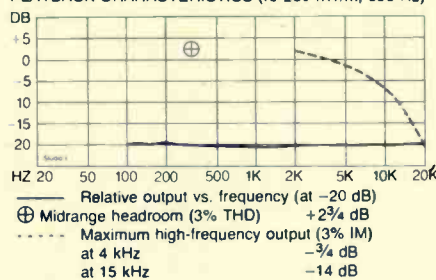
AMP

Adams Magnetic Products is by no means the first enterprise to package cassette tape stock from Agfa (a major German producer of magnetic tapes, though in this country its cassette formulations are sold only to duplicators and other users whose names replace Agfa's on the finished products). AMP is, however, the first company in our experience to acknowledge its source freely to us. The ferric Studio I tests very well, but the Superchrom appears not to be at its best on the Nakamichi. A deck supplying more high-frequency pre-emphasis would have permitted the use of higher bias current without losing 10-kHz level; the result might have been flatter response (less lower-treble droop and less peaking above 10 kHz), lower noise and distortion, and possibly a net gain in midrange headroom. On the right deck, therefore, Superchrom could be a very fine tape, though it appears at a disadvantage here. Its least attractive quality is the relatively low high-frequency headroom (which should be lower still in a deck applying more bias). But the importance of that characteristic depends on the demands imposed by the program signal.



AMP Studio I C-90 cassette tape (Type 1)

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

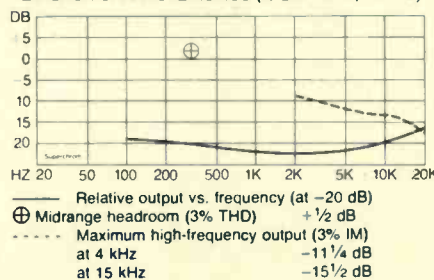


RELATIVE BIAS	97%
RELATIVE SENSITIVITY (333 Hz)	-3 1/4 dB
A-WEIGHTED NOISE (re 0 dB)	+54 dB
MIDRANGE S/N RATIO	56 3/4 dB
THD (at 333 Hz)	at 0 dB 1.01% at -10 dB 0.20%
C-90 PRICE	\$3.49



AMP Superchrom C-90 cassette tape (Type 2)

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



RELATIVE BIAS	92%
RELATIVE SENSITIVITY (333 Hz)	0 dB
A-WEIGHTED NOISE (re 0 dB)	-60 1/2 dB

MIDRANGE S/N RATIO (re 3% THD)	61 dB
THD (at 333 Hz)	at 0 dB 2.67% at -10 dB 0.69%
C-90 PRICE	\$5.89

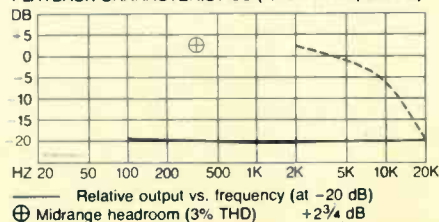
BASF

One of the pioneering companies of recording tape, BASF recently overhauled both its formulations and its packaging. Details like shell finish and labeling space have been improved, and magnetic properties have been adjusted to international tape-matching practices used by recorder makers. All three tapes demonstrate the changes well, with Performance doing almost as well as Professional I, the fancier ferric. For Professional II, BASF uses a true chromium dioxide coating, with which somewhat better noise and headroom figures can be achieved, it believes, than with the ferricobalt particles that many companies now use in their "chrome" tapes. BASF had told us, however, that we should expect Nakamichi's heads to demonstrate this superiority less than other decks would; the lab figures show a good Type 2 tape but not the extra edge, apparently confirming BASF's expectation.



BASF Performance C-90 cassette tape (Type 1)

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



All measurements were made by Diversified Science Laboratories. Results, including graphs, may be compared to prior cassette tape tests, especially those appearing in the July 1980 HF.

Taking average values in each of the three tape-type groups represented, the test results are very much what you would expect. The metal (Type 4) tapes have the least distortion and the greatest headroom, both in the high-frequency range and in the midband; thanks to the latter, metal's S/N ratios are the highest, though the absolute value of the noise (as measured on playback) is about on a par with that of the Type 2 tapes. Furthermore, the metal tapes are the most consistent in behavior from brand to brand. They remain the type to use when you want to take your best shot and their relatively high cost is no deterrent.

The ferrics (Type 1) average almost as low in distortion as the metals, though their headroom properties are neither as attractive nor as consistent as those of the metals. Some of the ferrics tested here are reasonably priced and a little more old-fashioned magnetically (less sensitive and less bias-

hungry, for example) than is typical of Type 1. They still manage to keep up with the competition, even though the stakes have been raised as the particle technology of the "chrome compatible" Type 2 tapes has trickled into the Type 1 field. There is, in fact, little difference between a "hot" premium Type 1 formulation and its Type 2 counterpart, except for the exhortation on the package that you treat the latter as a "chrome" tape. That means employing 70-microsecond (instead of 120-microsecond) playback EQ, which in turn requires more high-frequency pre-emphasis during recording (thus using up high-frequency headroom) and more de-emphasis during playback (thus suppressing hiss a bit more).

You can see the result of these changes in our data. On average, there is much less high-frequency headroom in the Type 2 tapes than there is among the best Type 1

ferrics. Type 2's distortion is also a shade higher on average, but hiss levels are a little lower. So for average signals, you'll get a quieter recording on Type 2 than on Type 1, but where you need high-frequency headroom (say, for a jazz combo or the bells of the *Boris Godunov* Coronation Scene) you may be able to record at a higher level on a good Type 1 tape and thus get as quiet a recording with lower distortion as well—and at a somewhat lower price.

Since some brand names will be unfamiliar to most readers, our tests are grouped alphabetically by company. In perusing them, however, keep in mind that some worthy brands are not represented here because we tested their products in July 1980 or earlier. Specifically, 3M's Scotch brand, Sony, and RKO all have tapes that tested well in the past, but since they remain substantially unchanged, are not included here.

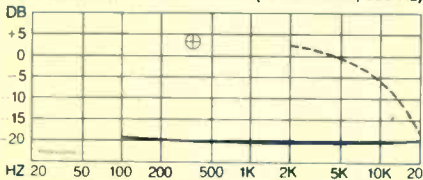
----- Maximum high-frequency output (3% IM)
at 4 kHz -1/2 dB
at 15 kHz -13 3/4 dB

RELATIVE BIAS	99%	
RELATIVE SENSITIVITY (333 Hz)	-3/4 dB	
A-WEIGHTED NOISE (re 0 dB)	-53 1/4 dB	
MIDRANGE S/N RATIO (re 3% THD)	56 dB	
THD (at 333 Hz)	at 0 dB	at -10 dB
	0.98%	0.22%
C-90 PRICE	\$3.99	



BASF Professional I C-90 cassette tape (Type 1)

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



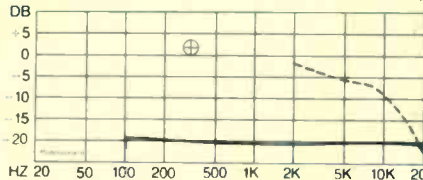
----- Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +4 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz 0 dB
at 15 kHz -12 1/2 dB

RELATIVE BIAS	95%	
RELATIVE SENSITIVITY (333 Hz)	-1/4 dB	
A-WEIGHTED NOISE (re 0 dB)	-53 dB	
MIDRANGE S/N RATIO (re 3% THD)	57 dB	
THD (at 333 Hz)	at 0 dB	at -10 dB
	0.72%	0.22%
C-90 PRICE	\$5.49	



BASF Professional II C-90 cassette tape (Type 2)

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



----- Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +3/4 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz -5 dB
at 15 kHz -15 dB

RELATIVE BIAS	107%	
RELATIVE SENSITIVITY (333 Hz)	-1 3/4 dB	
A-WEIGHTED NOISE (re 0 dB)	-59 1/4 dB	
MIDRANGE S/N RATIO (re 3% THD)	60 dB	
THD (at 333 Hz)	at 0 dB	at -10 dB
	2.46%	0.41%
C-90 PRICE	\$5.99	

Denon

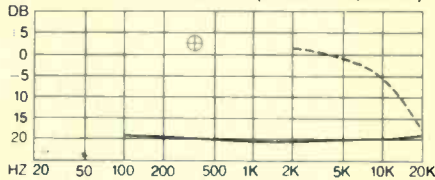
Among the equipment companies that manufacture (rather than just package) their own tape, Nippon Columbia's Denon line is characterized by its very fine finish and detailing and its full range of quality formulations. Distribution began here only recently, so the brand may still be scarce in some areas. DX-3 proves to be better than average, even among our test's relatively imposing list of Type 1 tapes. Among the metals, where there is relatively little variation from brand to brand, DXM holds its own. The Type 2 entry, DX-7, appears to be another example of a tape that would prefer a different tradeoff between bias and recording EQ than our reference deck is

prepared to supply; the bias required by DX-7 in our setup is the lowest in the group and, had it been higher (eliminating the slight peak at the extreme high end), 333-Hz distortion surely would have measured lower.



Denon DX-3 C-90 cassette tape (Type 1)

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



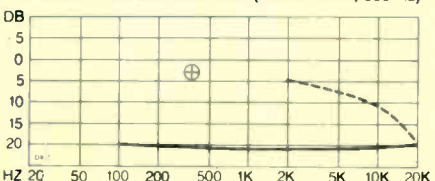
----- Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +3 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz -1/2 dB
at 15 kHz -12 dB

RELATIVE BIAS	103%	
RELATIVE SENSITIVITY (333 Hz)	-1/2 dB	
A-WEIGHTED NOISE (re 0 dB)	-54 dB	
MIDRANGE S/N RATIO (re 3% THD)	57 dB	
THD (at 333 Hz)	at 0 dB	at -10 dB
	1.00%	0.12%
C-90 PRICE	\$5.60	



Denon DX-7 C-90 cassette tape (Type 2)

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



AUDIO Cassette Tests

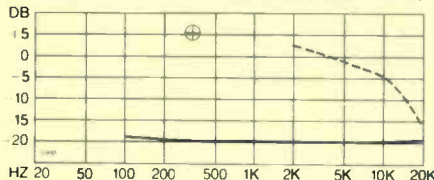
— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) -1½ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -6½ dB
 at 15 kHz -14¼ dB

RELATIVE BIAS	90%	
RELATIVE SENSITIVITY (333 Hz)	-1 dB	
A-WEIGHTED NOISE (re 0 dB)	-57½ dB	
MIDRANGE S/N RATIO (re 3% THD)	56 dB	
THD (at 333 Hz)	at 0 dB 4.31%	at -10 dB 0.52%
C-90 PRICE	\$7.00	



Denon DXM C-90
cassette tape (Type 4)

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



— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +5¼ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -½ dB
 at 15 kHz -10¼ dB

RELATIVE BIAS	106%	
RELATIVE SENSITIVITY (333 Hz)	-¾ dB	
A-WEIGHTED NOISE (re 0 dB)	-55½ dB	
MIDRANGE S/N RATIO (re 3% THD)	60¾ dB	
THD (at 333 Hz)	at 0 dB 0.85%	at -10 dB 0.20%
C-90 PRICE	\$12.00	

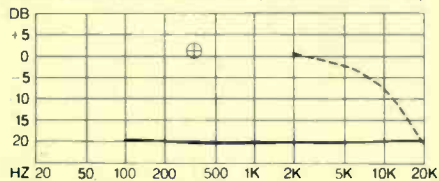
Fuji

Also sporting new shells, labels, and boxes in addition to updated formulations, the Fuji cassettes are much more attractive in their detailing than they were when they first appeared here. FX-I, Fuji's premier ferric, proves to be very good; of the less expensive tapes, FL is not as good, but it's still pretty close to the premium formulations. FX-II also acquits itself well in the Type 2 class. Fuji's metal tape has not been changed since our last test.



Fuji FL C-90
cassette tape (Type 1)

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



— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) 0 dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -1½ dB
 at 15 kHz -14 dB

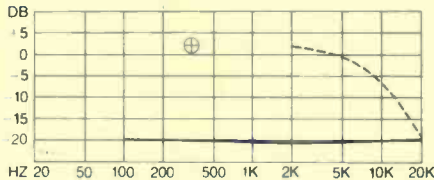
RELATIVE BIAS	95%	
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RELATIVE SENSITIVITY (333 Hz)	-1¾ dB	
A-WEIGHTED NOISE (re 0 dB)	-54¼ dB	
MIDRANGE S/N RATIO (re 3% THD)	54¼ dB	
THD (at 333 Hz)	at 0 dB 2.90%	at -10 dB 0.27%
C-90 PRICE	\$4.70	



Fuji FX-I C-60
cassette tape (Type 1)

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



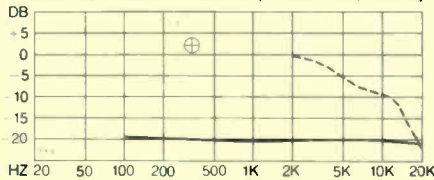
— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +1¾ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -¼ dB
 at 15 kHz -13½ dB

RELATIVE BIAS	95%	
RELATIVE SENSITIVITY (333 Hz)	-1¼ dB	
A-WEIGHTED NOISE (re 0 dB)	-55¾ dB	
MIDRANGE S/N RATIO (re 3% THD)	57½ dB	
THD (at 333 Hz)	at 0 dB 1.38%	at -10 dB 0.29%
C-90 PRICE	\$6.70	



Fuji FX-II C-60
cassette tape (Type 2)

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



— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +2 dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -3¾ dB
 at 15 kHz -15¼ dB

RELATIVE BIAS	104%	
RELATIVE SENSITIVITY (333 Hz)	0 dB	
A-WEIGHTED NOISE (re 0 dB)	-57 dB	
MIDRANGE S/N RATIO (re 3% THD)	59 dB	
THD (at 333 Hz)	at 0 dB 1.95%	at -10 dB 0.34%
C-90 PRICE	\$6.95	

Hitachi

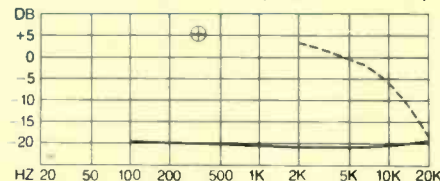
As Maxell's parent company in Japan, Hitachi presumably produces its tape in the same plant. The design of the shell and packaging does resemble that of some Maxell products, and the tape's magnetic quality is on a par with Maxell's—which is not faint praise. SR is distinctly better than average, even in our handpicked Type 1 collection. In terms of distortion and head-

room, SX stands out even more in the Type 2 category. C-90s are not yet available in the metal ME, but our C-60 sample proved typical of the Type 4 tapes we've tested (many also in C-60 or shorter lengths).



Hitachi SR C-90
cassette tape (Type 1)

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



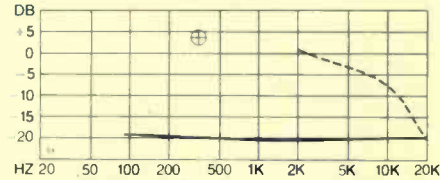
— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +5 dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz +¾ dB
 at 15 kHz -12 dB

RELATIVE BIAS	115%	
RELATIVE SENSITIVITY (333 Hz)	0 dB	
A-WEIGHTED NOISE (re 0 dB)	-53 dB	
MIDRANGE S/N RATIO (re 3% THD)	58 dB	
THD (at 333 Hz)	at 0 dB 0.44%	at -10 dB 0.24%
C-90 PRICE	\$6.95	



Hitachi SX C-90
cassette tape (Type 2)

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



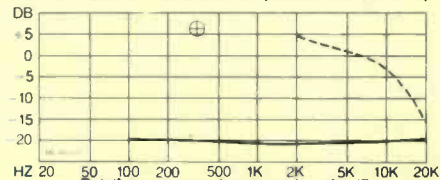
— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +3½ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -2¼ dB
 at 15 kHz -13¼ dB

RELATIVE BIAS	110%	
RELATIVE SENSITIVITY (333 Hz)	0 dB	
A-WEIGHTED NOISE (re 0 dB)	-57 dB	
MIDRANGE S/N RATIO (re 3% THD)	60½ dB	
THD (at 333 Hz)	at 0 dB 1.25%	at -10 dB 0.24%
C-90 PRICE	\$6.95	



Hitachi ME C-60
cassette tape (Type 4)

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



— Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +6 dB

-----	Maximum high-frequency output (3% IM)	
	at 4 kHz	+1½ dB
	at 15 kHz	-9 dB
RELATIVE BIAS		91%
RELATIVE SENSITIVITY (333 Hz)		0 dB
A-WEIGHTED NOISE (re 0 dB)		-54½ dB
MIDRANGE S/N RATIO (re 3% THD)		60½ dB
THD (at 333 Hz)	at 0 dB	at -10 dB
	0.65%	0.16%
C-60 PRICE		\$9.95

-----	Maximum high-frequency output (3% IM)	
	at 4 kHz	+2 dB
	at 15 kHz	-9½ dB
RELATIVE BIAS		98%
RELATIVE SENSITIVITY (333 Hz)		-¼ dB
A-WEIGHTED NOISE (re 0 dB)		-54¾ dB
MIDRANGE S/N RATIO (re 3% THD)		60¾ dB
THD (at 333 Hz)	at 0 dB	at -10 dB
	0.63%	0.15%
C-60 PRICE		\$12.00

		at 15 kHz	-12¾ dB
RELATIVE BIAS			109%
RELATIVE SENSITIVITY			-1¼ dB
A-WEIGHTED NOISE (re 0 dB)			-57½ dB
MIDRANGE S/N RATIO (re 3% THD)			60 dB
THD (at 333 Hz)	at 0 dB	at -10 dB	
	1.19%	0.11%	
C-90 PRICE			\$6.50

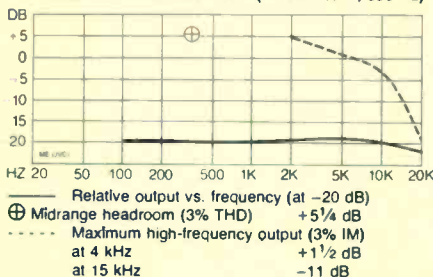
JVC

The Victor Company of Japan only recently began offering blank cassettes of its own manufacture, and only in metal formulations—two of them. (Again, only C-60s were available for these tests.) The standard model is ME; the superpremium version is ME Professional. Both have exceptionally finely detailed cases, but the oversize window of the Professional cassette may make for cramped labeling arrangements. In our test deck, the ME is fairly typical of Type 4 tapes, while ME Professional has somewhat better midrange headroom and, in consequence, lower midrange distortion.



JVC ME C-60 cassette tape (Type 4)

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

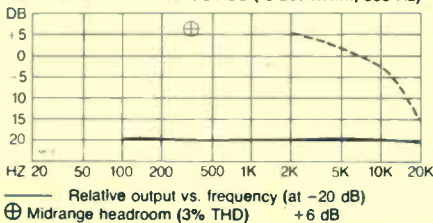


RELATIVE BIAS		113%
RELATIVE SENSITIVITY (333 Hz)		-1 dB
A-WEIGHTED NOISE (re 0 dB)		-55½ dB
MIDRANGE S/N RATIO (re 3% THD)		60¾ dB
THD (at 333 Hz)	at 0 dB	at -10 dB
	0.71%	0.17%
C-60 PRICE		\$8.20



JVC ME Professional C-60 cassette tape (Type 4)

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



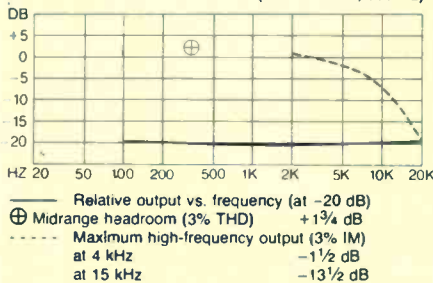
Kenwood

This is a new venture for the company. The cassette's construction is consistent with what we have come to expect from quality manufacturers (comparable, say, to TDK's), and the tapes themselves prove very good. Even the relatively inexpensive ferric, N, need make no apologies, and the premium ferric, ND, has noticeably lower noise and distortion measurements than average in the Type 1 collection. MD is characteristic of the Type 4 metals (though its distortion is a little lower than average), despite the C-90 length of our test sample.



Kenwood N C-90 cassette tape (Type 1)

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

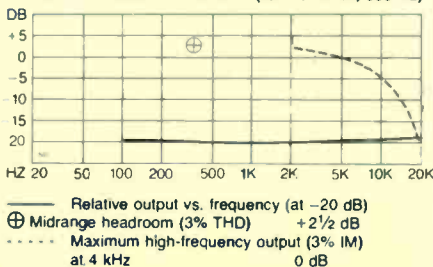


RELATIVE BIAS		95%
RELATIVE SENSITIVITY (333 Hz)		-1 dB
A-WEIGHTED NOISE (re 0 dB)		-52½ dB
MIDRANGE S/N RATIO (re 3% THD)		54¼ dB
THD (at 333 Hz)	at 0 dB	at -10 dB
	1.56%	0.19%
C-90 PRICE		\$4.50



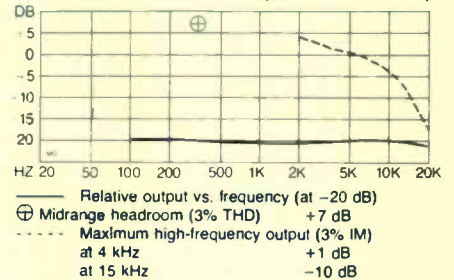
Kenwood ND C-90 cassette tape (Type 1)

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



Kenwood MD C-90 cassette tape (Type 4)

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



RELATIVE BIAS		108%
RELATIVE SENSITIVITY (333 Hz)		0 dB
A-WEIGHTED NOISE (re 0 dB)		-54¾ dB
MIDRANGE S/N RATIO (re 3% THD)		61¾ dB
THD (at 333 Hz)	at 0 dB	at -10 dB
	0.54%	0.14%
C-90 PRICE		\$15.00

Loran

The Loranger people, who have a background in precision plastic molding, have worked hard to publicize their unique shell, which is made of Lexan polycarbonate for excellent dimensional stability even under extremes of temperature. The shell's appearance doesn't have the superdetailed quality of some premium brands, but one particularly nice touch does confirm the care with which it has been designed: the erasure prevention. Instead of a knockout tab (which—being made of Lexan—might have been hard to snap off) there's a barrel hollowed out on one side and rotatable by means of a screwdriver slot in the shell's upper surface. With the solid side of the barrel facing the deck's sensor, recording can take place; with the hollowed side turned toward the sensor, it can't. If you change your mind about a recorded cassette, you don't even need to use sticky tape (let alone a small and easily lost plastic insert) to restore recordability. The Type 1 formulation performed well on the test bench, but the Type 2 appears to need higher bias and more pre-emphasis than our standard conditions dictated if it is to be at its best. Still, even measured this way, the distortion compares well with that of other Type 2 tapes, while the noise figures are

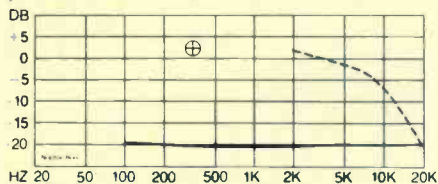
AUDIO Cassette Tests

better than average. High-frequency headroom is somewhat restricted however.



Loran Ferric Oxide C-90 cassette tape (Type 1)

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



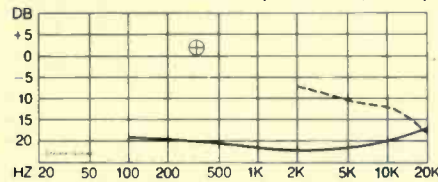
Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +2¼ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -1 dB
 at 15 kHz -13¾ dB

RELATIVE BIAS	95%
RELATIVE SENSITIVITY (333 Hz)	-¾ dB
A-WEIGHTED NOISE (re 0 dB)	-54¼ dB
MIDRANGE S/N RATIO (re 3% THD)	56½ dB
THD (at 333 Hz)	at 0 dB 1.20% at -10 dB 0.33%
C-90 PRICE	\$7.65



Loran Chrome C-90 cassette tape (Type 2)

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

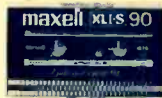


Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +1¾ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -9¾ dB
 at 15 kHz -14½ dB

RELATIVE BIAS	97%
RELATIVE SENSITIVITY (333 Hz)	0 dB
A-WEIGHTED NOISE (re 0 dB)	-59¾ dB
MIDRANGE S/N RATIO (re 3% THD)	61½ dB
THD (at 333 Hz)	at 0 dB 2.24% at -10 dB 0.44%
C-90 PRICE	\$7.95

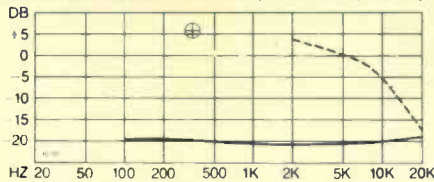
Maxell

Recently this company has kept itself among the leaders in cassette tapes by adding new formulations, rather than by changing those already available. The latest additions are XL-IS and XL-IIS, which represent the next steps beyond UDXL-I and UDXL-II, respectively. Both are distinctly above average among their peers, the Type 1 XL-IS particularly for its midrange headroom and the Type 2 XL-IIS especially for its generous headroom in the lower treble (or upper midrange, if you prefer).



Maxell XL-IS C-90 cassette tape (Type 1)

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



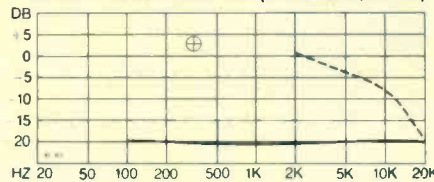
Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +5½ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz +1¼ dB
 at 15 kHz -11½ dB

RELATIVE BIAS	113%
RELATIVE SENSITIVITY (333 Hz)	+¼ dB
A-WEIGHTED NOISE (re 0 dB)	-52¾ dB
MIDRANGE S/N RATIO (re 3% THD)	58¼ dB
THD (at 333 Hz)	at 0 dB 0.48% at -10 dB 0.23%
C-90 PRICE	\$6.95



Maxell XL-IIS C-90 cassette tape (Type 2)

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



Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +2½ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -3 dB
 at 15 kHz -13¾ dB

RELATIVE BIAS	108%
RELATIVE SENSITIVITY (333 Hz)	0 dB
A-WEIGHTED NOISE (re 0 dB)	-57¼ dB
MIDRANGE S/N RATIO (re 3% THD)	59¾ dB
THD (at 333 Hz)	at 0 dB 1.62% at -10 dB 0.25%
C-90 PRICE	\$6.95

Memorex

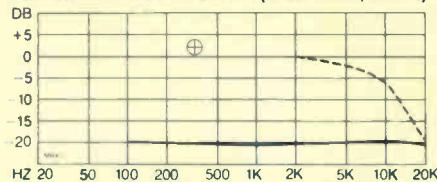
At this writing, there are trade reports that Memorex tapes may be separated from its financially ailing computer-products parent and operated independently under the ownership of Tandy/Radio Shack. Be that as it may, it appears that the tape operation itself will not be changed radically, so these three formulations should continue on the market. They are housed in the industry's most practical outer box (except for the smoked plastic, which can obscure faintly written titles) and redesigned shells that are both more practical and more handsome than the original Memorex design. The best marks, vis-à-vis its competitors, were gar-

nered by the Type 2 formulation. The metal tape is fairly typical of Type 4 (though it required unusually high bias in the setup procedure), as is MRX-I of Type 1.



Memorex MRX-I C-90 cassette tape (Type 1)

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



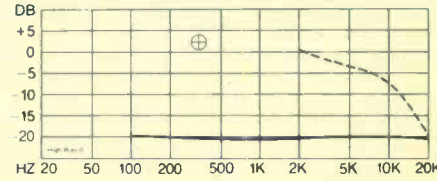
Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +1½ dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -1¾ dB
 at 15 kHz -13½ dB

RELATIVE BIAS	91%
RELATIVE SENSITIVITY (333 Hz)	-¼ dB
A-WEIGHTED NOISE (re 0 dB)	-56½ dB
MIDRANGE S/N RATIO (re 3% THD)	58 dB
THD (at 333 Hz)	at 0 dB 2.02% at -10 dB 0.65%
C-90 PRICE	\$4.99



Memorex High Bias II C-90 cassette tape (Type 2)

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



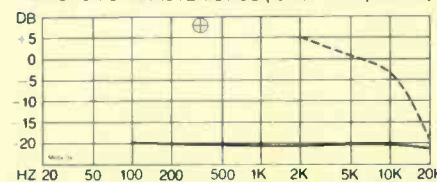
Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +2 dB
 - - - - Maximum high-frequency output (3% IM)
 at 4 kHz -3 dB
 at 15 kHz -13½ dB

RELATIVE BIAS	110%
RELATIVE SENSITIVITY (333 Hz)	-¼ dB
A-WEIGHTED NOISE (re 0 dB)	-58½ dB
MIDRANGE S/N RATIO (re 3% THD)	60½ dB
THD (at 333 Hz)	at 0 dB 1.80% at -10 dB 0.21%
C-90 PRICE	\$5.99



Memorex Metal IV C-90 cassette tape (Type 4)

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



Relative output vs. frequency (at -20 dB)
 ⊕ Midrange headroom (3% THD) +7¾ dB
 - - - - Maximum high-frequency output (3% IM)

at 4 kHz	+1½ dB	
at 15 kHz	-10½ dB	
RELATIVE BIAS	127%	
RELATIVE SENSITIVITY (333 Hz)	-¼ dB	
A-WEIGHTED NOISE (re 0 dB)	-54¾ dB	
MIDRANGE S/N RATIO (re 3% THD)	62½ dB	
THD (at 333 Hz)	at 0 dB 0.60%	at -10 dB 0.18%
C-90 PRICE	\$8.99	

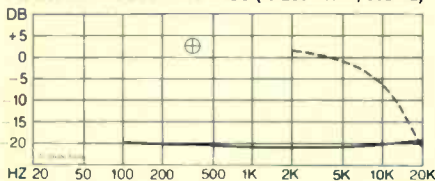
PD Magnetics

The company's name indicates its parents: Philips and Du Pont. No wonder, then, that the Type 2 entry is a true chromium dioxide formulation with Du Pont's Crolyn brand designation. It is better than average for that group, particularly in its midrange headroom. The other two tapes are fairly typical of their respective classes. Shells, labels, and packaging are characteristic of most nonpremium brands, though the pressure pad seems a little larger (and therefore less subject to misalignment) than average.



PD Magnetics Tri-Oxide Ferro C-90 cassette tape (Type 1)

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



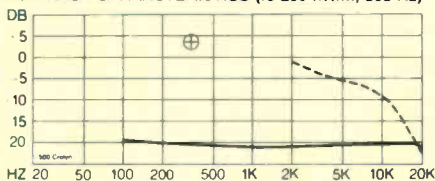
Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +3 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz -¼ dB
at 15 kHz -13½ dB

RELATIVE BIAS	87%	
RELATIVE SENSITIVITY (333 Hz)	0 dB	
A-WEIGHTED NOISE (re 0 dB)	-53 dB	
MIDRANGE S/N RATIO (re 3% THD)	56 dB	
THD (at 333 Hz)	at 0 dB 1.19%	at -10 dB 0.24%
C-90 PRICE	\$4.29	



PD Magnetics 500 Crolyn C-90 cassette tape (Type 2)

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



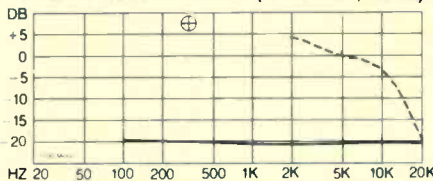
Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +3½ dB
----- Maximum high-frequency output (3% IM)
at 4 kHz -4¾ dB
at 15 kHz -15¾ dB

RELATIVE BIAS	102%	
RELATIVE SENSITIVITY (333 Hz)	-¼ dB	
A-WEIGHTED NOISE (re 0 dB)	-58½ dB	
MIDRANGE S/N RATIO (re 3% THD)	62 dB	
THD (at 333 Hz)	at 0 dB 1.38%	at -10 dB 0.41%
C-90 PRICE	\$5.79	



PD Magnetics 1100 Metal C-90 cassette tape (Type 4)

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



Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +7 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz +¾ dB
at 15 kHz -10¼ dB

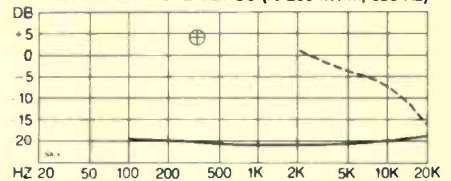
RELATIVE BIAS	118%	
RELATIVE SENSITIVITY (333 Hz)	-½ dB	
A-WEIGHTED NOISE (re 0 dB)	-54¾ dB	
MIDRANGE S/N RATIO (re 3% THD)	61¾ dB	
THD (at 333 Hz)	at 0 dB 0.77%	at -10 dB 0.32%
C-90 PRICE	\$11.99	

RELATIVE BIAS	112%	
RELATIVE SENSITIVITY (333 Hz)	-¼ dB	
A-WEIGHTED NOISE (re 0 dB)	-57½ dB	
MIDRANGE S/N RATIO (re 3% THD)	60½ dB	
THD (at 333 Hz)	at 0 dB 0.99%	at -10 dB 0.20%
C-90 PRICE	\$4.79	



TDK SA-X C-90 cassette tape (Type 2)

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



Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +4 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz -3 dB
at 15 kHz -12 dB

RELATIVE BIAS	108%	
RELATIVE SENSITIVITY (333 Hz)	-½ dB	
A-WEIGHTED NOISE (re 0 dB)	-57¼ dB	
MIDRANGE S/N RATIO (re 3% THD)	61¼ dB	
THD (at 333 Hz)	at 0 dB 0.78%	at -10 dB 0.16%
C-90 PRICE	\$6.99	

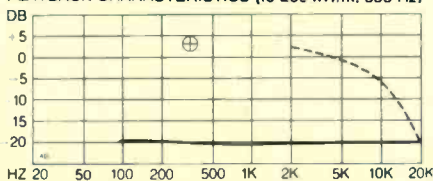
TDK

This is another brand that long has been among the industry leaders; it again offers excellent tapes. The newly reformulated AD is a little better than average among the Type 1 tapes and has shed its sometime idiosyncrasies to conforming to that group's standards. SA-X, which is sort of a super SA, scored high marks in all categories—particularly midrange distortion and headroom. The updated metal formulation (which we understand also is available now in the premium MA-R metal shells) is right on the Type 4 target. Finish and detailing, always good in TDK cassettes, are essentially unchanged.



TDK AD C-90 cassette tape (Type 1)

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

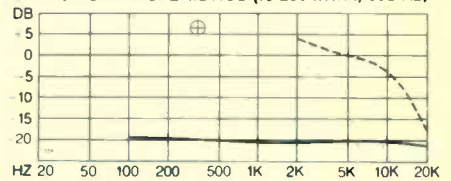


Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +3 dB
----- Maximum high-frequency output (3% IM)
at 4 kHz 0 dB
at 15 kHz -13 dB



TDK MA C-90 cassette tape (Type 4)

OUTPUT CHARACTERISTICS (re 250 nW/m, 333 Hz)



Relative output vs. frequency (at -20 dB)
⊕ Midrange headroom (3% THD) +6¼ dB
----- Maximum high-frequency output (3% IM)
at 4 kHz +½ dB
at 15 kHz -10¾ dB

RELATIVE BIAS	118%	
RELATIVE SENSITIVITY (333 Hz)	-½ dB	
A-WEIGHTED NOISE (re 0 dB)	-54¼ dB	
MIDRANGE S/N RATIO (re 3% THD)	60½ dB	
THD (at 333 Hz)	at 0 dB 0.68%	at -10 dB 0.19%
C-90 PRICE	\$11.49	

Sound Views

Opinion and comment on the changing audio scene by Robert Long

The High Price of Progress

EVERY TIME I HEAR the statistician's term "standard deviation" it strikes me afresh that there's something vaguely absurd about it. If deviation is a departure from some sort of standard course or condition, how can a deviation be standard? A sophistry, perhaps, but disturbingly similar to the situation in which the cassette medium finds itself, where some standards are honored more in the deviation than in the adherence and others suffer from a multiplicity of references, each deviating from the other.

We have, for example, received a few letters citing what the writers called the "nonstandardness" of Nakamichi decks and pointing to the International Electrotechnical Commission standards and to playback-response test tapes based on those standards to "prove" their point. And if you measure an old Nakamichi deck with an old test tape, you may well find that the response curve turns upward at the extreme high end. Why? Because Nakamichi followed the IEC standard, that's why.

How can this be, you ask. Well, the IEC wrote its primary specification in terms of flux density on the tape and playback-equalization time-constants. So far so good. But because there was no way of measuring flux densities directly (and still isn't for practical purposes), the IEC specified elsewhere what heads would be considered standard for playing back (and thus measuring indirectly) recorded flux densities. And in order to be "standard," test tapes were devised to give flat results with the existing heads. Meanwhile, however, Nakamichi had calculated head behavior for the standard flux densities and time-constants and was producing decks whose performance was flat on that basis. Because the calculations took head-gap losses into account and the progression by which the test tapes were arrived at didn't, there was a discrepancy between the end results. Yet each was "standard!"

There's actually a lot more to it than this résumé suggests. Addenda to the original IEC documents tend to confound any attempt to derive a clear picture of what the standards say, and time has made nonsense

of some of their specifics. (In fact, a tape-test standard is largely complete.) The IEC's standard heads, in particular, have become obsolete, and so have the tapes based on them. If you measure a current Nakamichi deck with a current test tape, you'll probably find a perfectly flat high end. That's because today's narrow-gap playback heads (including Nakamichi's) display little if any high-frequency loss within the audio band, so neither the deck's electronics nor the test tape need compensate substantially for such losses; both used to compensate for the *same* loss and thus turned it into a gain—which explains the

Improvement and standardization of the cassette medium are necessary but inhibit each other.

rising high end in the measured response of early Nakamichi decks.

One more example of how standards can trip us up, and then I'll get down to my real point. If you look at a lot of our cassette-deck playback-response curves, you've surely noticed many that turn down instead of up at the high-frequency end. The reason usually is a "disagreement" over cassette head azimuth. In fact, if the response begins to sag at frequencies below 8 or 10 kHz in any deck that is above the budget-price level, you can be fairly certain that its azimuth does not match that of the test tape; if the record/play response curves all stand up well to higher frequencies, the point can be considered proven.

Azimuth is the effective perpendicularity of the head gap to the tape path. If the playback head is rotated out of perpendicularity, one edge of the gap will read the recorded signal a little ahead of the other; as recorded frequency rises—and recorded wavelength consequently shrinks—some frequency eventually will be reached where the trough of the waveform is being read at one edge of the track while the peak is being read at the other, cancelling each other and reducing output. It sounds as though the cure is simple: Just make sure that all head gaps are perfectly perpendicular to the tape path. But it's not that easy. Depending on the drive mechanics, the tape doesn't nec-

essarily pass the heads in a perfectly straight line between tape guides, and its "bending" can introduce azimuth skew. Nor is the magnetic azimuth of a tape head necessarily dead straight along the centerline of the gap. So achieving perpendicularity is rather like trying to draw a square box with no aids except a rubber T-square and a French curve.

HIGH FIDELITY used to measure playback response—and, indirectly, azimuth—with Philips test tapes. We found them (like all brands, to some extent) a little inconsistent from sample to sample. But when we changed to the TDK test tape to get its greater reach into the high-frequency range and its modern bass equalization (the Philips tapes follow an older standard and hence represent yet another example of "standard deviation"), we found still larger inconsistencies between results with the two brands than we had with our various samples of the Philips tapes. And other tests suggested that neither brand would match the results with a Teac test tape. Of course, we might have come to different conclusions with different samples of these same test-tape brands, but the point remains that there is no unanimity of azimuth among quality brands and hence no standard—de jure or de facto—for azimuth adjustment!

All of which may sound like an elaborate way of introducing a plea for comprehensive, comprehensible, cast-iron standards for the cassette medium. Well, yes and no. In the scant decade that has passed since the cassette became a serious contender for grace in the high fidelity firmament, there have been many calls for more (or more useful) standards. There have also been complaints that the restrictions Philips incorporated into its licensing agreement were barriers to progress in the cassette format. Would the immense changes that have taken place in the last ten years have been possible with more comprehensive standards? I tend to think not—not entirely, at least. Yet obviously standards are needed and, in some areas, even overdue.

This dichotomy between the radical and the conservative is a fascinating paradox. Extremism in either direction exacts a heavy toll; improvement and standardization inhibit each other, yet each is a necessity to a healthy and viable cassette medium. The industry must continue to try to write "perfect" standards, but while one hand is codifying the past the other must always be reaching for the future. **HF**

New Equipment Reports

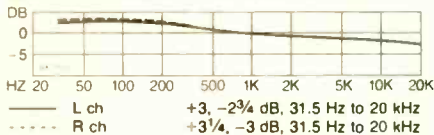
Preparation supervised by Robert Long, Michael Riggs, and Edward J. Foster.
 Laboratory data (unless otherwise noted) supplied by Diversified Science Laboratories.



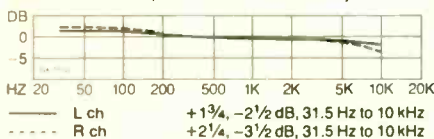
Akai's Extra-Efficient Open Reel

Akai GX-77 two-speed (7½ and 3¾ ips) open-reel deck with bidirectional recording and playback. Dimensions: 17¼ by 9¾ inches (front panel), 9 inches deep plus clearance for controls and connections. Price: \$775; optional RC-21 remote control, \$40. Warranty: "limited," lifetime for heads, one year for all other parts and for all labor. Manufacturer: Akai Electric Co., Ltd., Japan; U.S. distributor: Akai America, Ltd., 800 W. Artesia Blvd., Compton, Calif. 90224.

PLAYBACK RESPONSE AT 7½ IPS (forward; MRL 21T104 test tape; -10 dB re 200 nWb/m)



PLAYBACK RESPONSE AT 3¾ IPS (forward; MRL 21F101 test tape; -10 dB re 200 nWb/m)



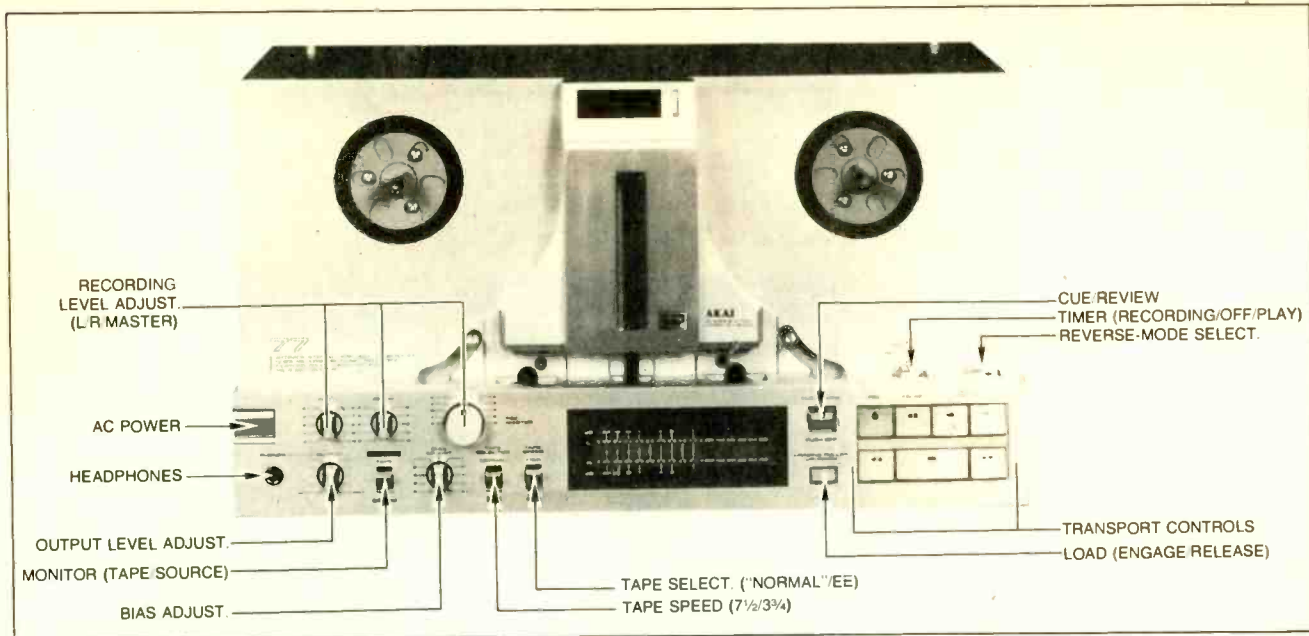
HISTORY HAS COME full circle. The compact cassette cut its commercial teeth dressed in hand-me-downs from open-reel technology. But the latest breakthrough in open-reel decks involves the ferricobalt particle technology from which many premium Type 2 cassette tapes are derived. For open-reel decks, this tape is known as EE (for "extra efficiency"), and the Akai GX-77 is among the first models to use it.

These formulations exhibit less treble loss than conventional ferric tapes, a feature that can be exploited to increase high-frequency headroom or to reduce noise. The newly devised standard for EE tapes hews to the course chosen years ago by cassette-deck makers, which reduces headroom to eke out a few dB better signal-to-noise ratio. And like modern cassette decks, the GX-77 has a switch for selecting bias and EQ for conventional or EE tapes.

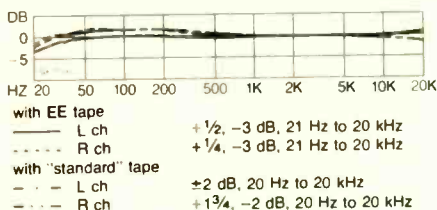
Akai has also attacked the supposed inconvenience of the open-reel format full force. The GX-77 reverses drive direction automatically in both recording and playback, sensing the end of a tape by means of metallic foil that is easily attached to the

tape's surface. Bidirectional recording and playback requires two complete sets of heads—not an easy thing to fit into a conventional transport. Akai's solution is to array them on either side of a slot between the two reels. (In normal use, they and the slot are hidden behind a flip-down cover, which can be lifted for head cleaning or making edit marks.) To thread the tape, all you do is place it below the tension arms and across the pinch rollers and hook the end of the tape into the take-up reel. At the touch of a button, a loading roller pushes the tape up the center of the slot and holds it in place, assuring good contact with the tape heads. Despite its mechanical elaborateness, this is one of the fastest, simplest tape-threading schemes we have ever used. The GX-77 will accept reels up to 7 inches in diameter.

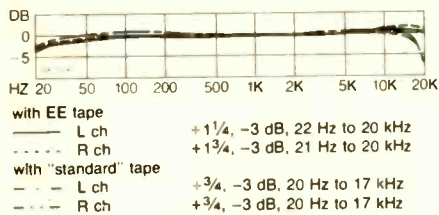
The automatic reverse is controlled by a three-position slide switch, which selects between out-and-stop, out-and-back, and continuous play. In addition, there is a socket on the back panel for connection of the optional RC-21 remote control and a jack for the optional MP-515 external pow-



RECORD/PLAY RESPONSE AT 7 1/2 IPS (forward; -10 dB re 200 nWb/m)



RECORD/PLAY RESPONSE AT 3 3/4 IPS (forward; -10 dB re 200 nWb/m)



S/N RATIO (re 200 nWb/m; A-weighted)

With EE tape	7 1/2 ips	3 3/4 ips
playback	67 dB	66 3/4 dB
record/play	62 dB	62 dB
With "standard" tape		
playback	65 dB	63 dB
record/play	60 dB	59 dB

METER READING FOR 200 NWB/M +3 dB

METER READING FOR 3% DISTORTION (400 Hz) +8 dB

DISTORTION (third harmonic; at -4 dB re 200 nWb/m)
 7 1/2 ≤ 0.58%, 50 Hz to 10 kHz, with EE tape;
 ≤ 0.35%, 50 Hz to 10 kHz, with "standard" tape
 3 3/4 ≤ 1.25%, 50 Hz to 5 kHz, with EE tape;
 ≤ 0.71%, 50 Hz to 5 kHz, with "standard" tape

ERASURE (400 Hz; re 200 nWb/m) ≥ 76 1/2 dB

CHANNEL SEPARATION (400 Hz) ≥ 63 1/4 dB

CROSSTALK (Track 3 recorded at 100 Hz) ≤ -50 1/4 dB

SPEED ACCURACY (forward direction)

	105 VAC	120 VAC	127 VAC
7 1/2	0.6% slow	0.5% slow	0.5% slow
3 3/4	0.5% slow	0.4% slow	0.4% slow

er supply, which can be used to keep the GX-77's real-time digital tape counter alive even when the machine is shut off. This timer, by the way, is far more useful than the traditional turns counter found on most other decks.

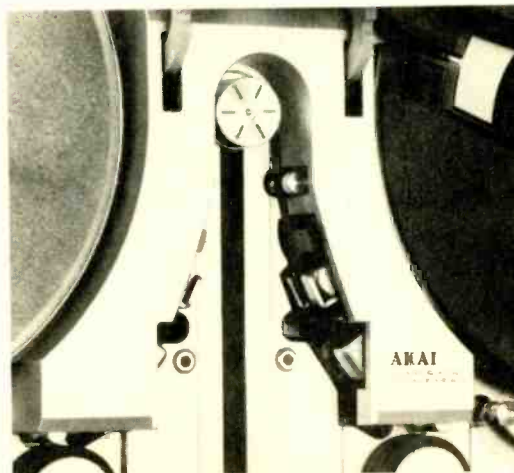
Other nods to the human factor include separate input-level controls for each channel, plus a separate master fader that controls both channels simultaneously. There's also a CUE/REVIEW that lets you listen to the output from a tape during fast winds (useful for spotting breaks between selections), built-in reel locks on the tape spindles, and a BIAS trim, for which the manual gives suggested settings for various brands of tape. The twin segmented fluorescent-bar meters are calibrated from -20 to +8 dB.

As suggested by the manufacturer, Diversified Science Laboratories used TDK SA tape for the EE bias/EQ setting and Maxell UD for the "normal" position. At both 7 1/2 and 3 3/4 ips, the EE tape has about 2 dB less noise A-weighted than the standard formulation; even at 3 3/4 ips, it is still better than regular tape at 7 1/2 ips. Overall

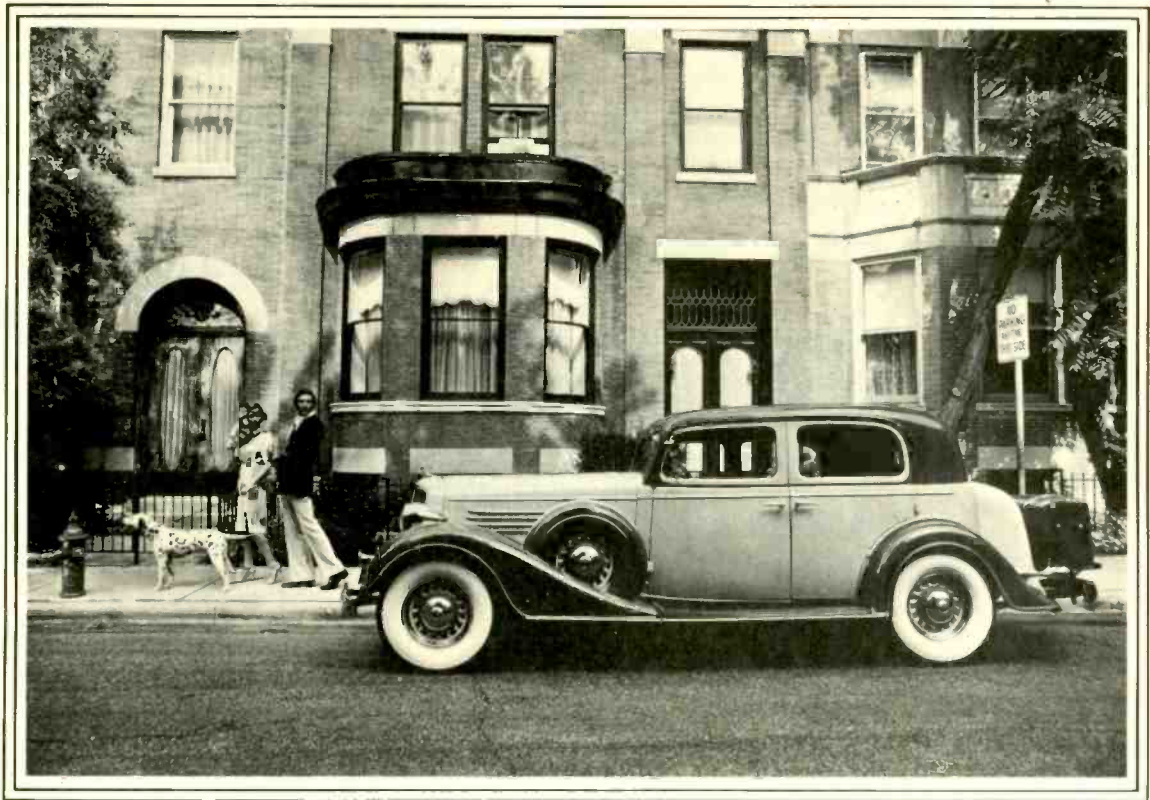
response is somewhat smoother with SA than with UD and, at 3 3/4 ips especially, more extended at the high end. Indeed, the response of a 0-dB recording with SA at 3 3/4 ips is nearly as good as that with UD at 7 1/2 ips—meaning that it is comparable to that possible on many cassette decks when recording at -20 dB. DSL did not find any significant differences in frequency response between the forward and reverse directions. (Only the forward direction is shown in the data; what differences there are produce better response in the reverse direction.)

The GX-77's metering is fairly conservative, reading off the scale before 3% distortion is reached at 400 Hz. And it is reasonably fast without being instantaneous: A 140-millisecond pulse comes within 3 dB of full reading; a 270-millisecond pulse is within 1 dB. As with most nonmechanical meters, these show no overshoot.

All of the controls work smoothly and predictably. The transport logic seems to be foolproof, and the PAUSE operates quickly and noiselessly. Taping high-quality



A loading roller (top center) pulls the tape up across the two complete sets of heads (there's one on either side of the slot), one set operates in the forward mode, the other in reverse.



“If it had a Jensen, it would be a classic.”

People who know sound know what it takes to make classic car stereo. Electronics like a Jensen® RE518 electronically tuned stereo/cassette receiver.

The RE518 features a Quartz Digital Synthesizer that electronically locks into a selected radio frequency.

Tuning is extremely accurate because there is no mechanical drift from temperature variations or vibrations.

Feather touch push

buttons on the RE518 control refinements like equalization for normal or metal and chrome tape playback. And conveniences such as electronic pre-set tuning, seek, scan, and digital readouts.

The RE518 has a universal sized chassis that fits most American and European

cars, as well as many other imports. So even if you don't own a 1934 Buick Club Sedan, with a Jensen RE518 you can have a classic.



JENSEN
CAR AUDIO

When it's the sound that moves you.

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Circle 33 on Reader-Service Card

AUDIO New Equipment Reports

WOW & FLUTTER (ANSI/IEEC weighted peak; record/play, forward direction)

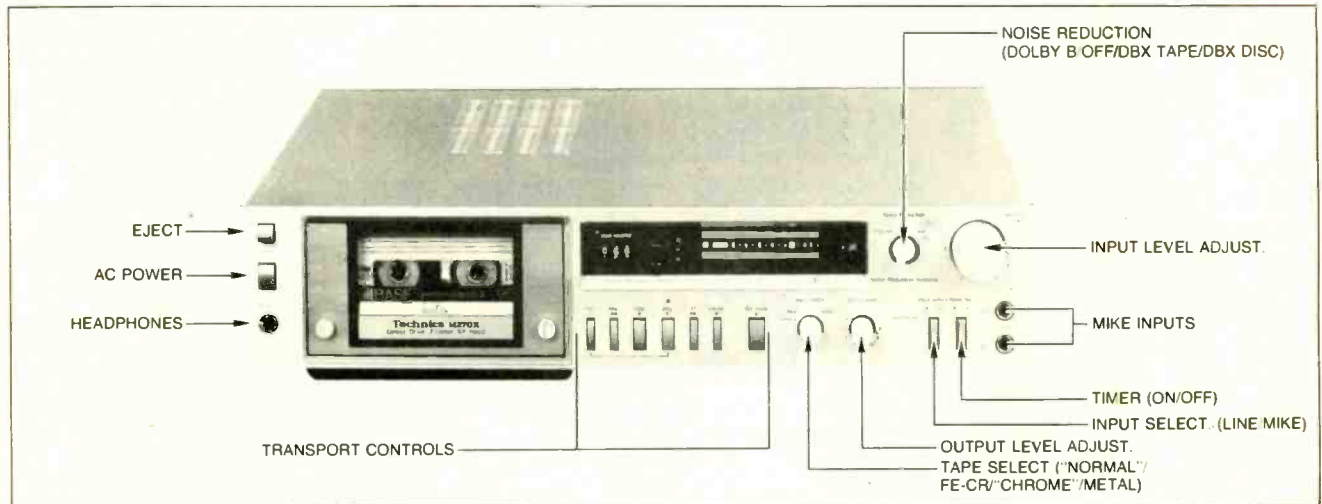
	average	maximum
at 7 1/2 ips	±0.045%	±0.055%
at 3 3/4 ips	±0.06%	±0.075%

SENSITIVITY (re 200 nWb/m at 7 1/2 ips; 1 kHz)
line input 89 mV

REWIND TIME (7-in., 1,800-ft. reel) 80 sec.

sources, we find that we can get copies that are virtually indistinguishable from the originals, save for a faint layer of added hiss, which is slightly more subdued when EE tape is used. We even find that we can record through a tape-direction reversal without creating more than a momentary lapse in the music.

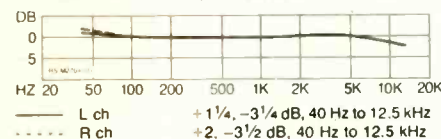
In short, we find a lot to like in the GX-77 and almost nothing to dislike. For its price, performance, and human engineering, it is a fine value—a product well worth investigating if you're looking for a maximum of open-reel performance with a minimum of open-reel fuss and bother.
Circle 135 on Reader-Service Card



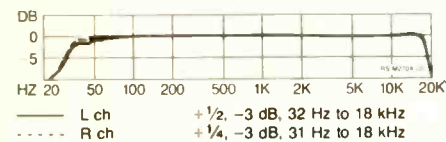
DBX Technics— for Tape and Disc

Technics RS-M270X cassette deck, with Dolby B and DBX noise reduction. Dimensions: 17 by 3 1/2 inches (front panel), 13 inches deep plus clearance for controls and connections. Price: \$500; optional RP-9645 wired remote control, \$35; optional SH-R808 Infrared wireless system (controls entire stereo system), \$290. Warranty: "limited," two years parts and labor. Manufacturer: Matsushita Electric Industries Co., Ltd., Japan; U.S. distributor: Panasonic Co., Division of Matsushita Electric Corp. of America, 1 Panasonic Way, Secaucus, N.J. 07094.

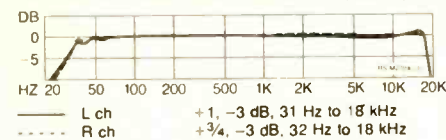
PLAYBACK RESPONSE (TDK test tape; -20 dB DIN)



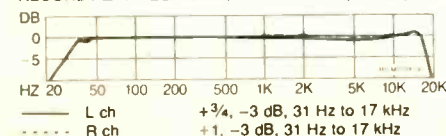
RECORD/PLAY RESPONSE, TYPE 2 TAPE (-20 dB)



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



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



TECHNICS WASN'T THE FIRST company to build DBX noise reduction into a cassette deck, but it was the first we know of to include DBX disc decoding—needed to play the ultraquiet DBX LPs that have staked a claim as the *ne plus ultra* of current phonography. In both applications—tape and disc—the DBX compansion system offers unique advantages, and its embodiment in a single component is certainly welcome news.

Simply put, DBX provides more noise reduction than any competing system. The "magnifying" characteristic of its relatively high compansion ratio (2:1:2) does put a premium on the deck's inherent quality (a requirement DBX shares with other high-ratio systems, including Dolby C), but the RS-M270X proves equal to the demand: Its two-motor direct-drive transport is fitted with a sendust record/play head that delivers remarkably flat response between about 50 Hz and 15 kHz with all tape/noise-reduction options. The 19-kHz multiplex filter that is inserted along with either noise-reduction system is very sharp; because DBX also reduces noise at the low end of the frequency scale (Dolby B doesn't), it also includes an infrasonic filter that rolls response off rapidly below about 30 Hz. The tapes suggested by Technics include Maxell XL-IS as the Type 1 (ferric) and two of Technics' own brand tapes: XA (a chrome-equivalent formulation) for Type 2 and MX metal for Type 4. Since the company added that these last tapes are interchangeable with TDK SA and MA, respectively, and since the TDK tapes enjoy much wider currency. Diversified Science Laboratories tested the deck with the TDK tapes as well as XL-IS.



Both Dolby B and DBX tape noise reduction are included on the RS-M270X, as is circuitry for decoding DBX discs.

The most spectacular results were obtained with the Type 4 tape, of course. With no noise reduction, response is just as good at -10 dB as it is at -20 (the curve shown in our data) and even holds up well at 0 dB. Whereas Dolby B has no effect at the 0-dB level, DBX continues companding regardless of either the frequency or the amplitude of the signal it's processing. At high levels, the compression acts downward during recording, reducing the signal level going onto the tape and hence forestalling tape overload. With an input at the equivalent of 0 dB (that is, without noise reduction the signal would be recorded at DIN 0 dB), DBX response remains substantially flat to beyond 10 kHz, and the DBX curve is better at +5 dB than the 0-dB curve without noise reduction.

In view of this, the meter calibration

Here's how we kiss the hiss goodbye.

BASF Chrome. The world's quietest tape.

With BASF Chrome, you hear only what you want to hear—because we “kissed the hiss goodbye.”

In fact, among all high bias tapes on the market today, only PRO II combines the world's lowest background noise with outstanding sensitivity in the critical high frequency range for superior dynamic range (signal-to-noise ratio).

PRO II is unlike any other tape because it's made like no other tape.

While ordinary high bias tapes are

Magnified
15,000 X

Perfectly shaped and uniformly sized particles of pure chromium dioxide provide a magnetic medium like no other tape in the world.

made from modified particles of ferric oxide, only PRO II is made of pure chromium dioxide. These perfectly shaped and uniformly sized particles provide a magnetic medium that's truly superior—so superior that PRO II was chosen by Mobile Fidelity Sound Lab for their Original Master Recording™ High Fidelity Cassettes—the finest prerecorded cassettes in the world.

PRO II—a tape so superior, a cassette so reliable, that it was the one chosen by Mobile Fidelity Sound Lab for their Original Master Recording™ High Fidelity Cassettes.

For the best recordings you'll ever make.



BASF

Audio/Video Tapes

And like all BASF tapes, PRO II comes encased in our new ultra-precision cassette shell that provides perfect alignment, smooth, even



BASF designed and developed the world's only Measurement Reference Tape Cassette. And our new ultra-precision cassette shell is the logical culmination of that development.

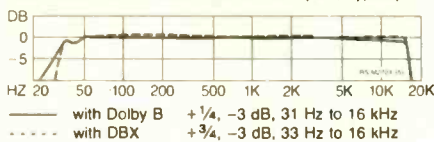
tape movement, and consistent high fidelity reproduction.

So when you want to hear all of the music and none of the tape, turn on to BASF Chrome. It's the one tape that kissed the hiss goodbye.



AUDIO New Equipment Reports

RESPONSE WITH NOISE REDUCTION (R/P; Type 2)



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

	Type 2 tape	Type 4 tape	Type 1 tape
without noise reduction	57 1/4 dB	55 dB	53 dB
with Dolby B	65 1/4 dB	63 1/2 dB	59 3/4 dB
with DBX	86 dB	83 3/4 dB	81 dB

METER READING FOR DIN 0 DB +8 dB

METER READING FOR 3% DISTORTION (333 Hz):

Type 2 or Type 4 tape	+8 dB
Type 1 tape	>+10 dB

DISTORTION (third harmonic; at -10 dB DIN)

Type 2 tape	0.14% at 500 Hz; ≤1.0%, 50 Hz to 5 kHz 0.22% at 500 Hz;
Type 4 tape	≤0.58%, 50 Hz to 5 kHz
Type 1 tape	0.33% at 500 Hz; ≤0.65%, 50 Hz to 5 kHz

ERASURE (333 Hz; re DIN 0 dB) ≥73 1/2 dB

CHANNEL SEPARATION 45 1/2 dB

SPEED ACCURACY 0.5% fast, 105-127 VAC

WOW & FLUTTER (ANSI/IEEE weighted peak)

	average	maximum
playback	±0.055%	±0.065%
record/play	±0.04%	±0.05%

SENSITIVITY (re DIN 0 dB; 333 Hz)

line input	130 mV
mike input	0.44 mV

may seem a little odd at first glance. The scale runs from -20 to +10, with 1-dB steps in the range around the indicated 0-dB point and 2-dB steps above that level. But that indicated "0" actually is 8 dB below DIN 0 (6 dB below it with the Type 1 tape), so the manual instructs you to set levels high enough to drive the meters into their +6-dB range on peaks. This makes good sense with respect to the actual midrange overload points measured by the lab with the noise reduction off. Somewhat more midrange headroom is needed when using DBX if there is to be no danger of high-frequency compression, and the lab measurements show that the headroom is there; actual midrange overload points are 13 1/2 dB above DIN 0 with the Type 2 and Type 4 tapes and 16 1/2 dB above it with the Type 1 tape! So in most respects everything falls together very neatly when you examine it closely. The one exception might be that the area of finest meter calibration falls a little below the critical area where the detailed information is most needed. We would also like to be able to see some meter

response for usable signals below the meters' present range (since DBX makes signals at much lower levels usable); but these are very minor points.

The recording mode can be entered by simply pressing RECORDING, which has the same effect as pressing the recording interlock plus the PAUSE on typical current decks; to begin recording itself you then need only press PLAY. There is a recording mute. Two accessory remote controls—a simple umbilically connected model and an infrared wireless one that's capable of delivering commands to an entire stereo system—can be plugged into a back-panel jack. Otherwise, the controls and features are complete, but unadventurous.

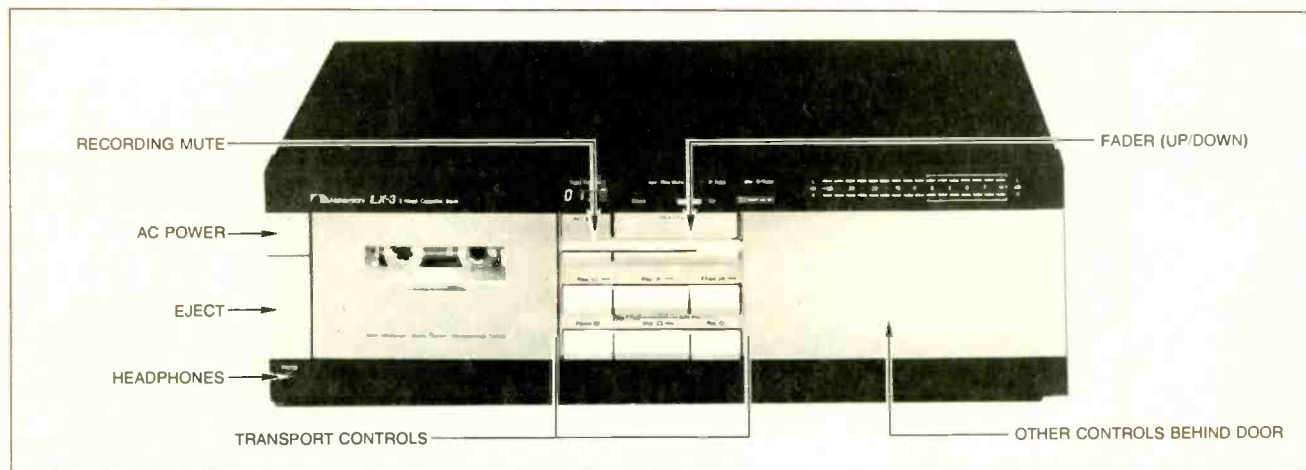
With one exception: The DBX-DISC feature is a very important plus for any audiophile, since it provides access to the DBX-encoded-disc catalog without requiring an outboard decoder. When you factor in the deck's sterling performance (and DBX tape capability), the price seems relatively modest.

Circle 133 on Reader-Service Card

MIKE INPUT OVERLOAD (clipping) 30 mV

MAX. OUTPUT (from DIN 0 dB) 0.60 V

*Without noise reduction; see text.



A "Budget" Nakamichi with Dolby C

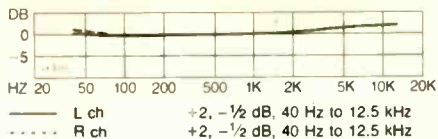
Nakamichi LX-3 cassette deck, with Dolby B and C noise reduction. Dimensions: 17 3/4 by 5 1/2 inches (front panel), 12 inches deep plus clearance for connections. Price: \$545; optional RM-200 remote control, \$45. Warranty: "limited," two years parts and one year labor except one year parts and labor on heads, capstan, and motor assembly. Manufacturer: Nakamichi Corp., Japan; U.S. distributor: Nakamichi U.S.A. Corp., 1101 Colorado Ave., Santa Monica, Calif. 90401.

WE'VE TESTED A LOT of Nakamichi products since 1973, when the company first went public, so to speak, with the original Model 1000. (Earlier, it had produced decks for distribution under the brand names of others.) But we realized recently that we have never tested a "budget" deck from the company. Granted that Nakamichi is not in the business of supplying low-end equipment and that its "midprice" models (where our testing has been concentrated) are sometimes more expensive than the flagships of the mass-market deck fleets, we nevertheless felt it was high time we took a close look at the minimum model to see just how minimal it is. As it happened, the LX-3 was being readied for market in

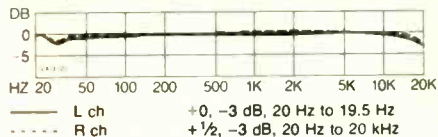
Japan (it was announced here only in January), so we found ourselves testing a brand-new model as well as a minimum one.

That hardly seems the proper word to use when we consider either the performance or the features of the LX-3, however. Among the features it retains from the 700ZXL we tested last August are separate tape-selector and recording-EQ switches, which enable you to second-guess standard practice (for example, getting greater high-frequency headroom with a Type 2 tape by using 120-microsecond EQ instead of the standard 70, though without the 700ZXL's automatic tape-matching system the results are bound to be a little more "iffy" here); provision for an optional remote control;

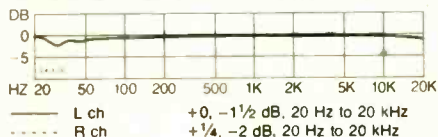
PLAYBACK RESPONSE (TDK test tape; -20 dB DIN)



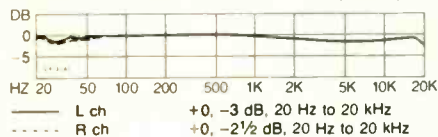
RECORD/PLAY RESPONSE, TYPE 2 TAPE (-20 dB)



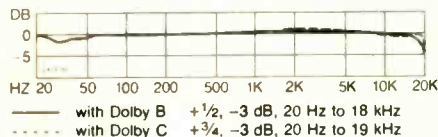
RECORD/PLAY RESPONSE, TYPE 4 TAPE (-20 dB)



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



RESPONSE WITH NOISE REDUCTION (R/P; Type 2)



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

	Type 2 tape	Type 4 tape	Type 1 tape
without noise reduction	57 1/2 dB	56 dB	54 3/4 dB
with Dolby B	65 dB	64 dB	62 3/4 dB
with Dolby C	71 dB	70 dB	68 dB

METER READING FOR DIN 0 DB +4 dB

METER READING FOR 3% DISTORTION (333 Hz)

	Type 2 tape	Type 4 tape	Type 1 tape
		+5 dB	+8 dB
		+7 dB	+7 dB

DISTORTION (third harmonic; at -10 dB DIN)

	Type 2 tape	Type 4 tape	Type 1 tape
	0.10% at 500 Hz; ≤ 0.63%, 50 Hz to 5 kHz	0.14% at 500 Hz; ≤ 0.24%, 50 Hz to 5 kHz	0.31% at 500 Hz; ≤ 0.50%, 50 Hz to 5 kHz

ERASURE (333 Hz; re DIN 0 dB) ≥ 69 dB

CHANNEL SEPARATION 46 1/2 dB

SPEED ACCURACY 0.1% slow, 105-127 VAC

WOW & FLUTTER (ANSI/IEEE weighted peak)

	average	maximum
playback	±0.06%	±0.09%
record/play	±0.08%	±0.11%

SENSITIVITY (re DIN 0 dB; 333 Hz)

line input 86 mV

MAX. OUTPUT (from DIN 0 dB) 1.25 V



All controls, other than those for the transport, are hidden behind a door on the LX-3's front panel. These include the recording and output level controls, bias and EQ selectors, and a fine-bias adjustment.

both Dolby C and Dolby B noise reduction; and separate multiplex-filter switching. There also are both memory stop and memory play functions—the latter activated by simultaneously pressing a fast-wind button and the recording interlock. New are a recording mute (which cuts the signal going to the tape, but not that to the monitor or the meters, for as long as the button is held in) and an ingenious two-speed automatic fader. Once you have set the recording levels, using separate knobs for each channel to adjust the balance as well, you can fade in or out, between mute and the preset levels, using the "master fader" bar in the center of the front panel. Touching the right end raises level, while the left end lowers it; a light touch or a quick tap delivers a gradual fade (about 7 1/2 dB per second, in Diversified Science Laboratories' measurements), while more pressure creates a quick fade (about 20 dB per second).

Among the most important features of any tape deck is the owner's manual, and that for the LX-3 is—typically, for a Nakamichi—superb. Because this model will attract owners less deeply committed to the tape medium than those willing to spend \$1,000 or more on a deck, the manual is even more important than that for, say, the 700ZXL, but it has been prepared with no less care. Its language, its organization, and its graphics all conspire to lead the reader—whatever his level of technical competence—to the information he wants with a minimum of fuss and effort and a maximum of clarity. We wish more manuals were like this one.

The explanation for the use of the bias adjustment is particularly critical because this is a two-head deck (preventing you from monitoring the playback output while you're recording) without an oscillator or other devices to aid in bias tuning. In this situation, many manufacturers will tell you,

in effect, to "turn the knob until you like what you hear." The LX-3 manual says that the deck is adjusted for use with Nakamichi's own tapes (DSL used SX ferricobalt for all the Type 2 measurements, EX-II as the Type 1 ferric, and ZX as the Type 4 metal) and will give best results with these tapes when the bias control is at its center detent. If you want to try other tapes, there is a list of recommended settings for starters and the admonition that you should record a little on the tape, rewind, and compare the recorded sound to the source. If the tape is bright, add bias; if it's dull, reduce bias. Many manuals don't tell you how to judge whether the bias should be raised or lowered and, worse, never bother to introduce the concept of *matching* the source sound. Bias tuning on a two-head deck with no oscillator is always a bit chancy; Nakamichi's approach is the sanest we've seen.

Aside from the combination record/playback head in the LX-3, there are several things the fancier Nakamichis offer that you won't find here. There are no mike inputs; you must use an outboard mixer/preamp if you want to do live recording—which many recordists don't. The meter range is as broad as we've come to expect on Nakamichis (from -40 to +10 dB), but there are fewer subdivisions than on the 700ZXL, and there is no peak-hold cursor. We'd still judge the metering more useful than average in the LX-3's price class, but we do miss the peak-hold feature. Though there's a bias adjustment, there's no tape-sensitivity trimmer to keep the Dolby tracking exact. Sensitivity varies less from brand to brand these days than once was the case (unless you buy off brands), so the trimmer is less important than it used to be—at least for Dolby B. Dolby C's greater expansion factor in playback can exaggerate any mismatch that exists, making it important that you stay with quality tapes (if not Nakami-

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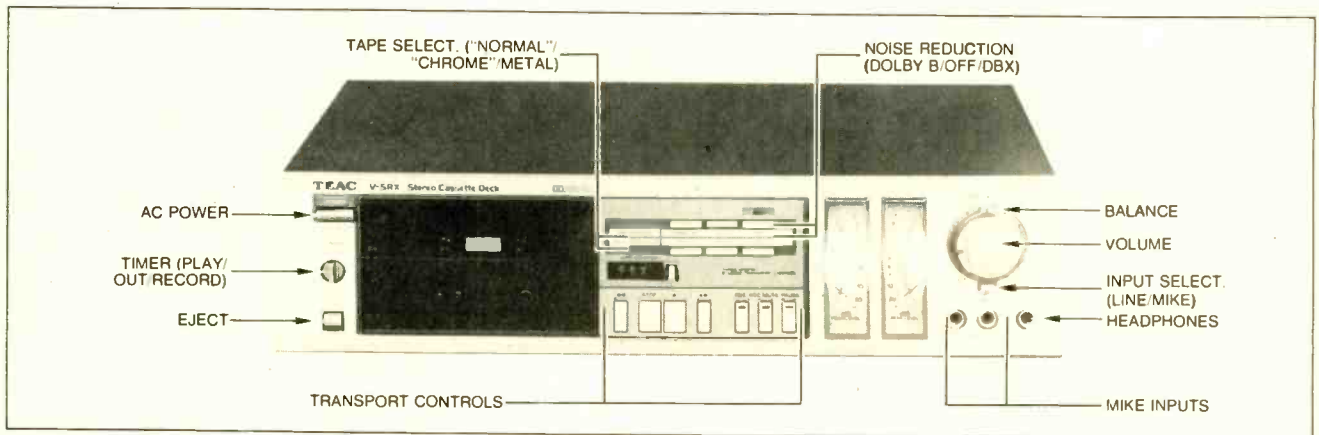
chi's own) for good results with this deck. And, of course, there's nothing here like the elaborate random-access system of Nakamichi's top models.

The lab measurements range from good to excellent. Response in this class would have been considered excellent in a three-head deck and virtually impossible in a two-head model only a few years ago. Most startling are the high-level curves (at DIN 0 dB, in particular) made on the DSL test bench. With Type 2 tape, the results are better than average (and are improved by Dolby C, of course). With metal tape, response remains flat almost to 10 kHz with no noise reduction and almost to 20 kHz

with Dolby C. Although response as such is less important than compression characteristics at these high levels and high frequencies, these curves are impressive.

No deck can be all things to all users, and some features must be curtailed if a deck's price is to remain reasonable. The curtailment in the LX-3 strikes us as very canny, resulting in a design of very wide appeal. To put it another way, it's surprising how many of the attributes of Nakamichi's top models have been retained in this relatively modest deck. And because many recordists can't afford the top models, this is good news, indeed.

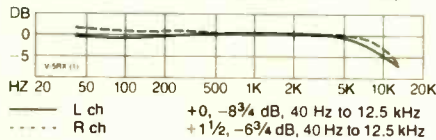
Circle 134 on Reader-Service Card



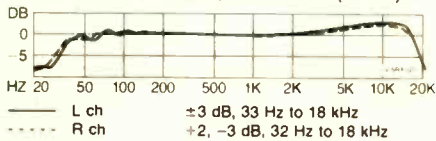
Teac's Latest DBX Deck

Teac V-5RX cassette deck, with DBX and Dolby B noise reduction. Dimensions: 17¼ by 4¼ inches (front panel), 10½ inches deep plus clearance for controls. (AC and signal leads are permanently attached at back panel, requiring minimal clearance.) Price: \$410. Warranty: "limited," one year parts and labor. Manufacturer: Teac Corp., Japan; U.S. distributor: Teac Corp. of America, 7733 Telegraph Rd., Montebello, Calif. 90640.

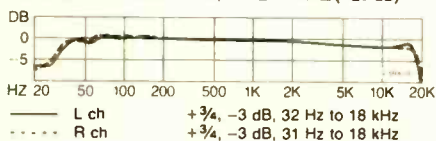
PLAYBACK RESPONSE (TDK test tape; -20 dB DIN)



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



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



THE FIRST COMPANY TO OFFER DBX noise reduction as an adjunct to consumer tape decks, Teac also holds the record for offering by far the largest number of DBX decks of one sort or another. The V-5RX is, as its styling proclaims, a recent entry, with built-in DBX circuitry; it was an outboard option on the C-3X, which we tested just one year ago. There is Dolby B noise reduction as well, of course; it's virtually a necessity both to play back many prerecorded tapes and to make tapes that will be played on other, more conventional decks. The three-motor transport system uses a DC servo motor to drive the capstan. Among its nice control touches are separate balance and master recording-level controls.

Because it is a two-head deck, the V-5RX offers no opportunity for direct comparison between source and playback signals while you are recording. Consistent with this fact, there are no recording "fine tuning" adjustments (which, as we've frequently noted, we find problematic in such decks, though there seems to be an increasing tendency to provide them). Instead, Teac relies on a table of recommended tapes in the distinctly above average owner's manual. The manual's general approach, plus the choice and style of the deck's various features, strongly suggests that Teac took pains to avoid alienating relatively unsophisticated users who, nevertheless, know enough about the subject to value the wide dynamic range afforded by

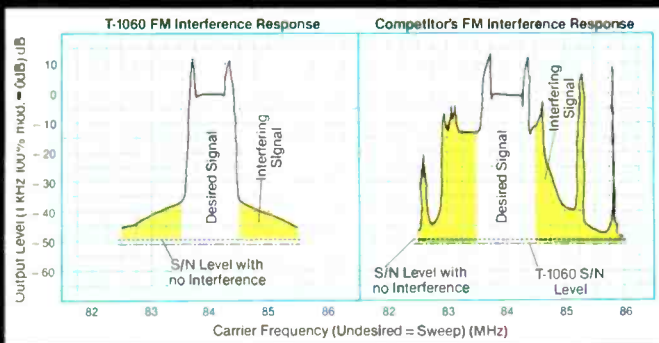
the DBX circuit. At the same time, of course, the DBX will commend the V-5RX to the attention of serious recordists, and the manual includes an interesting supplement on the basics of recording technology that may well help to convert casual users into hobbyists.

The meters may also help. Their vertical movement and side-by-side placement make it relatively easy to see what's going on in both channels at once, and the mechanical action is both brisk (responding to within 3 dB of true values for pulses lasting only 14 milliseconds) and damped to overshooting by a maximum of 3 dB, for pulses of about 100 milliseconds. They may not be quite as quick or as easily read as a really good "bar graph" display, but they're much easier to use than a mediocre one—partly because they are meters and thus read continuously, rather than in discrete steps. They're calibrated from -20 to +5 dB, with the Dolby symbol shown at the 0-dB mark, which appears to be substantially accurate. The manual tells you not to drive the meters beyond the 0-dB point, but suggests that this rule may be broken with tapes (metals, specifically) that can accept higher levels. And the data (made, at Teac's suggestion, with TDK SA as the Type 2 ferricobalt plus Maxell MX for the Type 4 metal and UD for the Type 1 ferric) show midrange headroom (above meter zero) of about 2 dB for Type 2 and Type 1, but of 5 dB for Type 4. With the DBX cir-

Yamaha. Clarity plus clout.

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You've probably heard a lot of noise about quartz-crystal tuners. Well, we don't make one. Instead, we developed a new tuner that's clearer



than crystal—the Yamaha T-1060. Its Computer Servo Locked tuning system has a super-accurate micro-fork oscillator, rather than a crystal oscillator, to lock on the desired reception frequency. This unique system eliminates the RF (radio frequency) signals that crystal oscillators produce within the tuner itself. The result is less distortion, less interference and better S/N ratio. And remarkably clearer music.

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Special high-f_r power transistors that eliminate switching distortion and a unique linear bias transfer system that virtually eliminates crossover distortion are further examples of Yamaha's commitment to music reproduction purity.

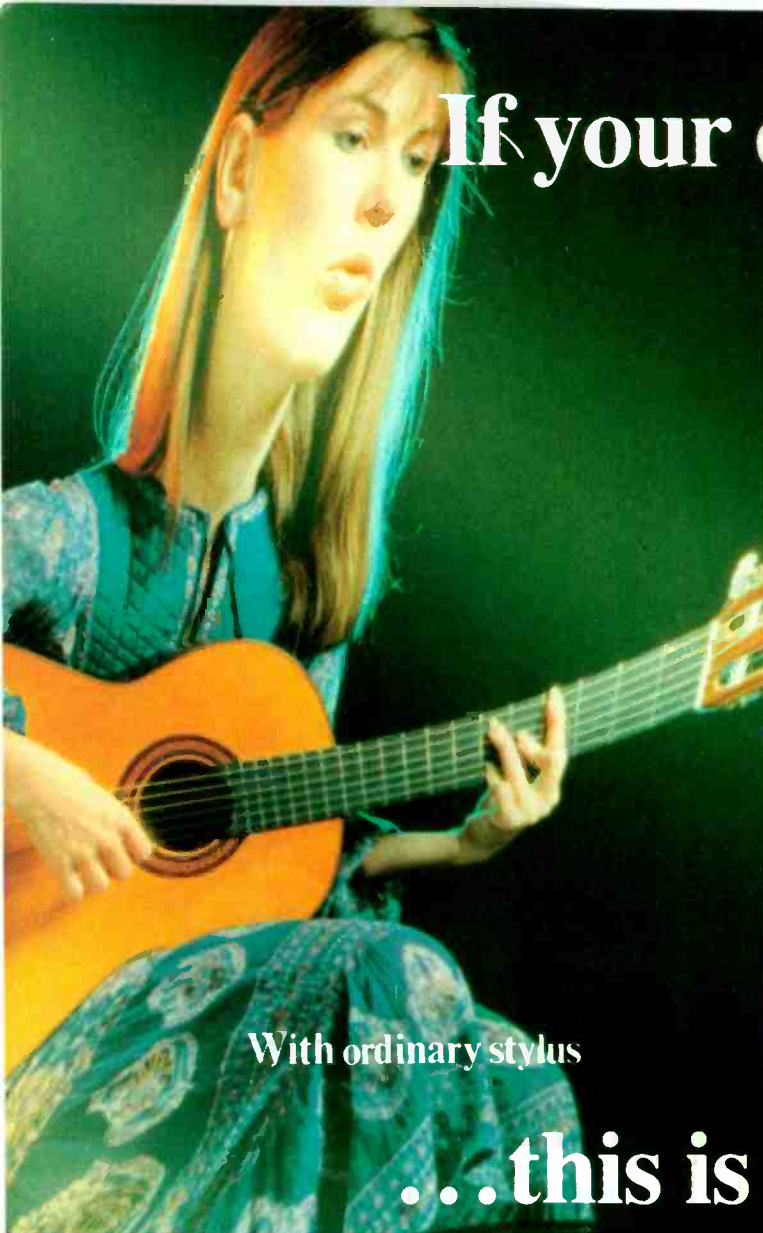
If that's what you listen for—the music and nothing but the music—these new separates are your clear choice. At your Yamaha dealer now. Or write: Yamaha Electronics Corporation, USA, P.O. Box 6660, Buena Park, CA 90622.

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YAMAHA

If your ears had eyes...



With ordinary stylus



With HE stylus

...this is what they'd see

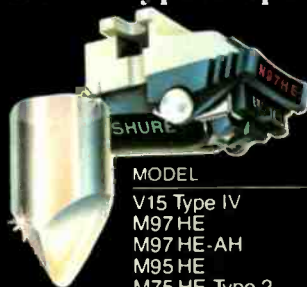
Distortion is tough to explain—but you can see it, and you can hear it. For instance, if a poor lens on a fine camera distorts the original image, you end up with a bad picture, even though the rest of the camera does its job. The same with a stereo system: if the stylus creates distortion, the rest of the system can't make up for it, no matter how good the other components might be.

Shure's Hyperelliptical (HE) stylus tip reduces distortion dramatically because it has longer, narrower contact areas (the two areas where the stylus tip actually touches the record groove walls) which closely simulate the shape of the stylus used to cut the master record. The HE tip provides an audible advantage over spherical and elliptical stylus tips, giving you pure natural musical sound *without the distortion*.

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M95 HE	$\frac{3}{4}$ — $1\frac{1}{2}$ Moderately priced
M75 HE Type 2	$\frac{3}{4}$ — $1\frac{1}{2}$ Top value
M75 HE-J Type 2	$1\frac{1}{4}$ — $2\frac{1}{2}$ Heavier tracking force

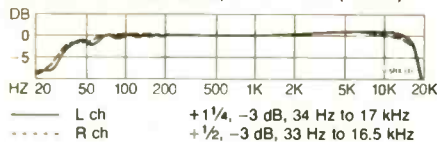
THESE
HE CARTRIDGES
ON SALE AT YOUR
PARTICIPATING DEALERS



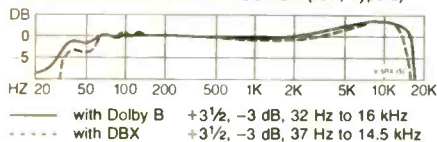
Shure Brothers Inc.
222 Hartrey Ave., Evanston, IL 60204
In Canada: A. C. Simmonds & Sons Limited

Manufacturer of high fidelity components, microphones, loudspeakers, sound systems and related circuitry.

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



RESPONSE WITH NOISE REDUCTION (R/P; Type 2)



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

	Type 2 tape	Type 4 tape	Type 1 tape
without noise reduction	59¼ dB	59 dB	58 dB
with Dolby B	66¾ dB	66 dB	65¾ dB
with DBX	79¾ dB	84 dB	80¾ dB

METER READING FOR DIN 0 DB

METER READING FOR 3% DISTORTION (333 Hz)	
Type 2 tape	+2¾ dB
Type 4 tape	+5 dB
Type 1 tape	+2¼ dB

DISTORTION (third harmonic; at -10 dB)

Type 2 tape	0.12% at 500 Hz; ≤ 0.75%, 50 Hz to 5 kHz
Type 4 tape	0.13% at 500 Hz; ≤ 0.37%, 50 Hz to 5 kHz
Type 1 tape	0.15% at 500 Hz; ≤ 0.45%, 50 Hz to 5 kHz

ERASURE (333 Hz; re DIN 0 dB)

CHANNEL SEPARATION	47¼ dB
--------------------	--------

SPEED ACCURACY

0.9% fast at 105 VAC;
1.0% fast at 120 & 127 VAC

WOW & FLUTTER (ANSI/IEEE weighted peak)

	average	maximum
playback	±0.05%	±0.07%
record/play	±0.04%	±0.05%

SENSITIVITY (re DIN 0 dB; 333 Hz)

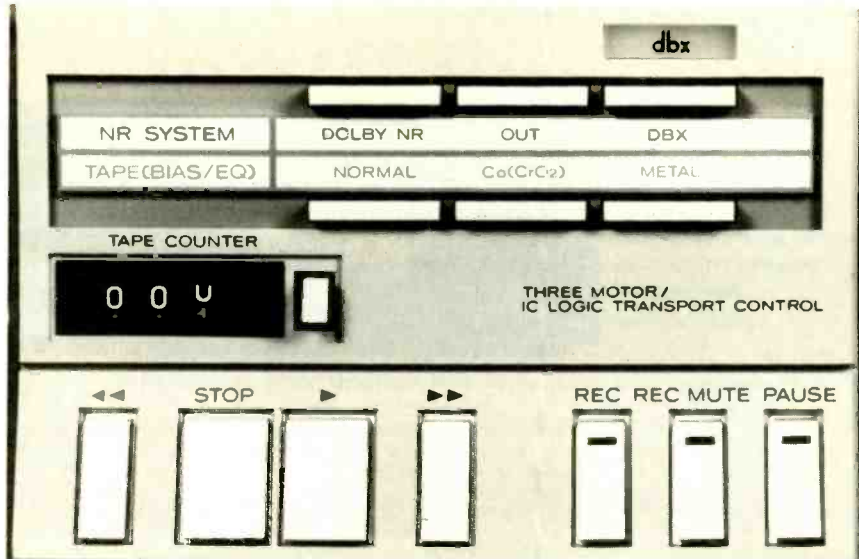
line input	100 mV
mike input	0.40 mV

MIKE INPUT OVERLOAD (clipping)

22 mV

OUTPUT (from DIN 0 dB)

0.48 V



The Teac's controls are grouped compactly in the middle of the front panel. The transport controls, which run along the bottom of the cluster, are further divided into logical sections, with recording-related functions together to the right.

cuit turned on there is about 10 dB greater midrange headroom (as mandated by DBX to avoid high-frequency headroom problems), so the combination of meter calibration and manual recommendation for its use seems particularly well chosen.

Elsewhere in this issue [page 24] you'll find a discussion of cassette standards, suggesting that the medium is in need of a more useful azimuth reference. The V-5RX's apparent droop in high-frequency playback response, which is not mirrored in the record/play curves, is a case in point. Suffice it to say here that this degree of "rolloff" (which actually is a disagreement in azimuth angle between head and test tape) is representative of the results we get when TDK test tape is used with decks from manufacturers that employ the Teac test tapes. With the average prerecorded tape, the azimuth disagreement probably will be smaller (and the high-frequency response therefore flatter), and with tapes made on the V-5RX there will be no disagreement (and hence no "rolloff") at all, of course.

In fact, some rise shows up at the top end of the record/play curves, though it is not pronounced. With the DBX circuit turned on, we found the rise essentially inaudible in the listening room. Such effects are exaggerated by the sweep-tone measurement technique, because all of the energy at any given instant is—unlike music—at a single frequency, causing the expander control to "overreact" to a local level change that would be lost in the shuffle when signal energy is scattered about in frequency.

In sum, then, we find the V-5RX's performance very fine, with response that is better than the measurements would otherwise indicate, especially in the areas where those measurements are least impressive. In addition, we like the crisp layout and the functional interrelationship of the controls, which include a recording mute and a timer switch (for either recording or playback). Also among the practical design features are the visibility of the cassette in use and the accessibility of the heads for cleaning. We think it's a dandy deck.

Circle 136 on Reader-Service Card

Automatic Bias and Dolby C from Onkyo

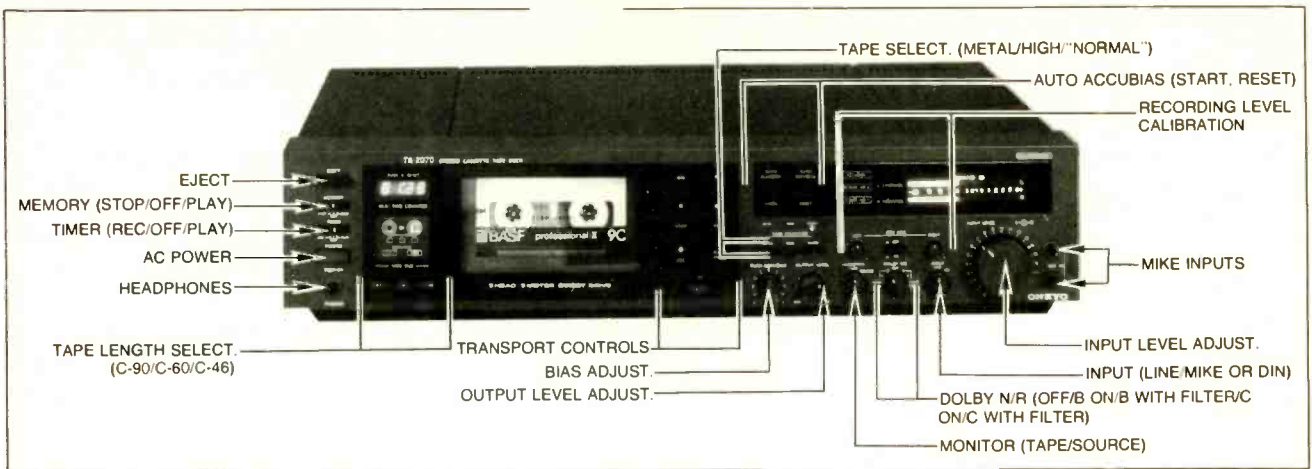
Onkyo TA-2070 cassette deck, with Dolby B and C noise reduction. Dimensions: 17¾ by 4 inches (front panel), 14½ inches deep plus clearance for controls and connections. Price \$700; optional RC-55 remote control, \$50. Warranty: "limited," one year parts and labor. Manufacturer: Onkyo Corp., Japan; U.S. distributor: Onkyo U.S.A. Corp., 200 Williams Dr., Ramsey, N.J. 07446.

STRIKING, BUT NOT OVERPOWERING, is one way of describing the look of Onkyo's newest cassette deck, the TA-2070. Much of this effect can probably be attributed to the unit's wide use of transparent soft-touch pushbuttons with legends and indicator lamps that show through from below the rectangular plastic pads. The result is a clean, uncluttered appearance that few recorders with as many features as this one can match.

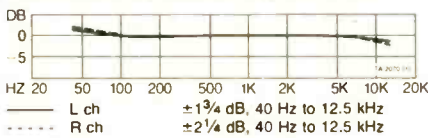
Foremost among these features is Dolby C noise reduction, which adds approximately 10 dB of noise reduction above 5 kHz to that already provided by the now-standard Dolby B system. (Naturally, the

deck also includes Dolby B.) The considerable high-frequency compansion used in the Dolby C process makes it especially important that frequency response be very flat and that the Dolby recording circuits be accurately calibrated to the sensitivity of the tape being used: Dolby C will greatly exaggerate any errors here. To achieve these ends, Onkyo has included both a built-in oscillator and recording calibration controls for setting Dolby levels and its Accubias system for setting the optimum bias for each tape used.

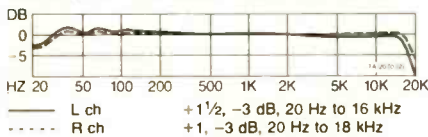
The cleverly designed Accubias feature is simple to operate. The TA-2070 has tape selectors for Type 4 (metal), Type 2



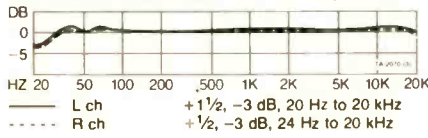
PLAYBACK RESPONSE (TDK test tape; -20 dB DIN)



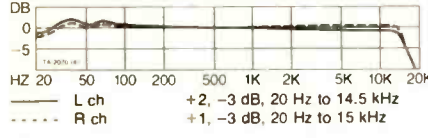
RECORD/PLAY RESPONSE, TYPE 2 TAPE (-20 dB)



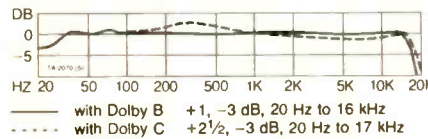
RECORD/PLAY RESPONSE, TYPE 4 TAPE (-20 dB)



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



RESPONSE WITH NOISE REDUCTION (R/P; Type 2)



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

	Type 2 tape	Type 4 tape	Type 1 tape
without noise reduction	59 $\frac{3}{4}$ dB	58 dB	56 dB
with Dolby B	66 $\frac{1}{2}$ dB	65 dB	64 dB
with Dolby C	72 dB	71 dB	68 $\frac{3}{4}$ dB

METER READING FOR DIN 0 dB +2 dB

METER READING FOR 3% DISTORTION (333 Hz)

Type 2 or 4 tapes	+3 dB
Type 1 tape	+5 dB

DISTORTION (third harmonic; at -10 dB DIN)

Type 2 tape	0.21% at 500 Hz; $\leq 1.04\%$, 50 Hz to 5 kHz
Type 4 tape	0.29% at 500 Hz; $\leq 0.63\%$, 50 Hz to 5 kHz
Type 1 tape	0.29% at 5 kHz; $\leq 0.80\%$, 50 Hz to 5 kHz

ERASURE (333 Hz; re DIN 0 dB) ≥ 65 dB

CHANNEL SEPARATION 44 $\frac{3}{4}$ dB

(chrome or chrome-equivalent), and Type 1 (ferric) tape. These set the correct recording and playback equalization for their respective tape types and the appropriate bias for selected representatives of those types. If you use only tapes for which the machine has been prebiased (Maxell MX, UDXL-II, and UDXL-I), you shouldn't need the Accubias. If you do want to use some other tape, however, just slip in the cassette, press the appropriate tape selector, press the recording interlock and PAUSE simultaneously, and press AUTO ACCUBIAS START. The deck records a series of tones, determines the optimum bias for the tape, re-winds the tape, and lights a green LED. To cancel the Accubias setting, you press AUTO ACCUBIAS RESET; to memorize it, you just push the ACCUBIAS knob (below the tape selector switches) and rotate it to the right until the indicator LED turns from green to red. When you release the knob, the LED will turn green again, and the deck will remember the bias setting. Because the memory is mechanical, being determined solely by the position of the Accubias knob, the setting is retained even when the deck is turned off and needs no battery to keep it alive. Returning the knob to its center position clears the memory and restores the bias to the factory-preset level.

Something else we like very much about the TA-2070 is its tape counter, which actually keeps track of elapsed recording or playback time. Or you can push one of the three tape-size buttons (for C-90, C-60, and C-46 cassettes) located under the counter display, and the display will begin showing time remaining instead of time elapsed. (By pressing various combinations of these buttons at once, you can also set the time-remaining indicator for C-50, C-80, and C-120 cassettes.) This kind of indicator is far more useful than a conventional turns counter.

To the left of the counter display are the MEMORY and TIMER switches. The former works in conjunction with the counter, so that when you press the REWIND with the MEMORY engaged, the tape shuttles back until the counter reaches "0:00," at

which point the deck either stops or goes into play, depending on the MEMORY setting. (The counter can be set to "0:00" at any point on a tape.)

The timer switch enables you to use an external timer to start recording or playback automatically at a preset time. In addition, there is a socket on the deck's rear panel for connection of an optional RC-5T remote-control unit, which enables you to operate the transport controls from the comfort of your easy chair.

One feature usually found only in conjunction with random-access features is AUTO SPACE, which inserts a five-second blank into a recording when you press the button. You can make the space shorter by activating PAUSE or PLAY before the five seconds is up, or you can make it longer by holding AUTO SPACE down.

The basic technical particulars of the TA-2070 are similar to those of many other top cassette decks. It has a three-motor direct-drive dual-capstan transport and three heads, with the sendust recording and playback heads contained in a single housing. Its meters are of the peak-reading LED variety, calibrated from -20 to +8 dB.

Diversified Science Laboratories' measurements show the Onkyo to be an excellent performer with especially fine noise and flutter figures. The fact that the wow and flutter in record/play is lower than that in playback alone suggests that the limiting factor in the latter measurement was the test tape itself rather than the deck's transport.

The record/play response curves are admirably flat both without noise reduction and with Dolby B. (All measurements were made with the bias set by the Accubias system and Dolby levels set according to the manual's directions.) Predictably, metal tape yields wider response at high levels, giving evidence of its superior high-frequency headroom. However, based on DSL's measurement of the midrange 3%-THD point, we are a little dubious of Onkyo's suggestion that the meters be allowed to peak at +8 when recording on metal; levels closer to those recommended

...and then came the "Z" Receivers.

There was a time when you had to buy separate components to enjoy the control flexibility and power needed for true high fidelity music reproduction.

Not anymore. Sansui now has developed its "Z" series receivers.

Whether you choose the super-powered 9900Z, the modestly-sized 3900Z, or any of the four models in between, you get the full-frequency benefits of Sansui's DC-servo amplifier technology. And distortion-free FM is assured by genuine digital-synthesized tuning, with the

added accuracy of quartz PLL circuitry in our three top models. Twelve convenient instant-tune presets bring in your favorite FM or AM stations (6 of each) at a button's touch.

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bing facilities, dual phono capability and multi-system speaker switching are all to be found, in various combinations, in the "Z" receivers. You'll also find all the additional features you've come to expect from a company that has pushed high fidelity to its limits from its beginnings.

And for all their technological sophistication the six Sansui models in the "Z" series will appeal to your eye no less than to your ear. Visit your nearest authorized Sansui dealer. He'll show you why "Z" stands for the last word in high fidelity receivers.



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Sansui Electric Co., Ltd., Tokyo, Japan

Sansui



The Blaupunkt CR-2010. Richer, purer sound than you ever thought possible in a moving vehicle.

Autosound is only as good as the equipment it passes through. Which means that, in the case of the Blaupunkt CR-2010, the sound is exceptional.

The CR-2010 cuddles and shapes highs and lows into a sound as full-bodied, as richly-textured, as anything you'll hear from a home stereo.

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Blaupunkt increased the conventional two channels to four, each with a maximum output of 7.5 watts. Even when hooked up to a front



The essential controls are fully illuminated. end, two-speaker system, the CR-2010's crisp reproduction will surprise you. Add two rear speakers and the home stereo effect is complete—sound that surges to new heights of clarity

and richness while holding its delicate balance through the magic of a built-in front-to-rear fader.

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Drive away from the signal source of your favorite stereo station and what happens? Reception breaks up into a barrage of crackles and hisses. Not with the CR-2010. Thanks to the "Soft MPX" feature your Blaupunkt automatically shifts reception from stereo to mono *before* the hissing sets in.

Higher Volume without Distortion

The CR-2010 has a pre-amp output jack that lets you bypass the built-in amp and plug directly into a high power amplifier. Yet the boost in volume doesn't come at the expense of distorted sound. And at lower volume the clarity is actually enhanced.

Of course, you get Dolby Noise Reduction—but for FM reception

as well as tape. A Sendust Alloy tape head reproduces a fuller range of recorded frequencies.

Hear the Full Blaupunkt Line

The CR-2010 retails for only \$396.00** and is the latest in a full line of Blaupunkt AM/FM stereo cassette radios priced from \$290.00**

CR-2010 Features

- 4 channel (4 x 7.5W)
- Autoreverse Cassette
- Sendust Alloy Tape Head
- Auto Hi-Cut Filter
- Soft Mute
- Soft MPX
- Night Illuminated Controls
- Dolby Noise Reduction Circuit

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Blaupunkts can be installed in virtually any car, import or domestic. For more information, write:

Robert Bosch Sales Corporation
2800 South 25th Avenue
Broadview, IL 60153

Robert Bosch Canada, Ltd.
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Mississauga, Ontario L5N 1R1

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AUDIO New Equipment Reports

SPEED ACCURACY	0.8% fast, 105–127 VAC	
WOW & FLUTTER (ANSI/IEEC weighted peak)	average	maximum
playback	±0.06%	±0.075%
record/play	±0.05%	±0.065%
SENSITIVITY (re DIN 0 dB; 333 Hz)		
line input	84 mV	
mike input	0.52 mV	
MIKE INPUT OVERLOAD (clipping)	115 mV	
MAX. OUTPUT (from DIN 0 dB)	1.1 mV	

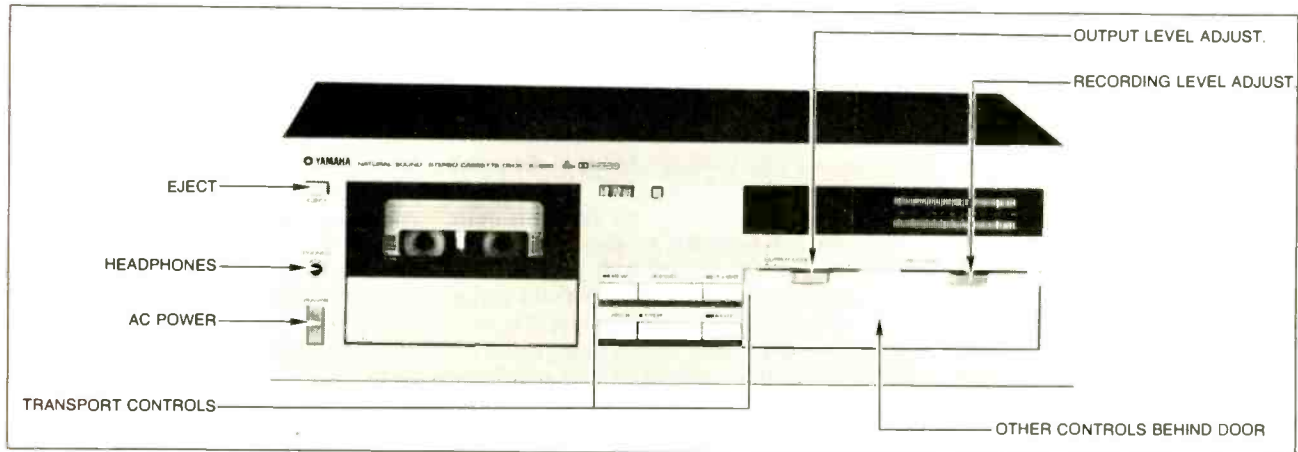
for other tapes might be more prudent for most material.

We were also a little concerned about the Dolby C response curves, which show a hump of a couple of dB centered on about 300 Hz and a droop of similar magnitude in the treble. On the sample we used for auditioning, we were not able to hear any evidence of such an irregularity, suggesting that the factory Dolby calibrations on the measurement sample may be less accurate than those on our other unit. In fact, we find ourselves very pleased with the action of the Dolby C. It yields a welcome additional

measure of silence above and beyond that already supplied by the venerable B system (although the contrast between C and B does not seem quite as striking as that between B and no encoding at all).

The Onkyo comports itself well in all other respects. The controls are easy to use and sensibly laid out, and the special features seem calculated for maximum utility rather than mere flash. That, plus the fine performance, the handsome styling, and the benefits of Dolby C noise reduction, adds up to a very appealing cassette deck.

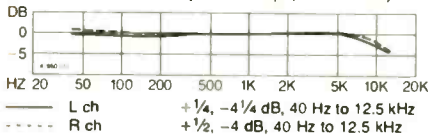
Circle 131 on Reader-Service Card



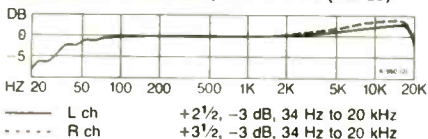
Yamaha Goes DBX

Yamaha K-960 cassette deck, with Dolby B and DBX noise reduction. Dimensions: 17 by 5½ inches (front panel), 11½ inches deep plus clearance for controls and connections. Price \$495. Warranty: "limited," one year parts and labor. Manufacturer: Nippon Gakki Co., Ltd., Japan; U.S. distributor: Yamaha Audio Div., Yamaha International Corp., 6600 Oglethorpe Ave., Buena Park, Calif. 90620.

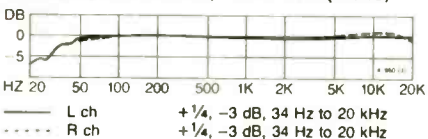
PLAYBACK RESPONSE (TDK test tape; -20 dB DIN)



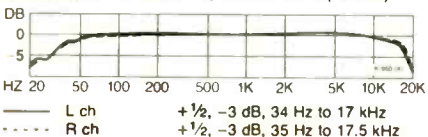
RECORD/PLAY RESPONSE, TYPE 2 TAPE (-20 dB)



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



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



IT IS NO SURPRISE that Yamaha, a company whose design goals have long included the banishment of noise, has incorporated the DBX noise reduction system in its K-960 cassette deck. This unit, like others that we have tested from Yamaha in the past, takes a distinctly individual approach to the problem of deck design. As usual, it demands extra-close examination.

The DBX system compresses all signals entering the machine by a factor of two, thereby halving their dynamic range. This makes it far easier to put them on tape at levels high enough to drown out the medium's inherent noise, but still low enough to avoid tape saturation and the distortion that comes with it. When a DBX-encoded cassette is played back, complementary expansion is applied to restore the original dynamic range and to push the tape noise well below audibility.

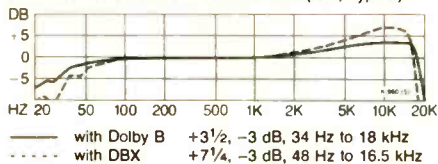
The K-960 also includes Dolby B (as do all other high fidelity decks) and a number of other interesting features, most of them with controls hidden in a recess behind a flip-down panel below the meters. When the panel is closed, the deck has a very spartan, characteristically Yamaha look about it. Only the basics remain visible. Among the "esoteric" controls lurking behind the flip-down panel, we consider the infrasonic input filter a particularly thoughtful touch. We receive many letters from readers who have trouble with their decks being overloaded by strong infrasonic signals generated by warped records; with the K-960, the problem can be made to

vanish at the touch of a button.

Another feature we like very much is the recording-balance control. In most situations such a control makes setting channel balance far easier than it is with the more usual twin input-level faders. We are somewhat less happy, however, with the bias-adjustment control. Since this is a two-head deck, the adjustment (for which there is no oscillator or other built-in means of calibration) evidently is intended for those with both golden ears and patience. While the relatively casual user might have preferred fixed settings, the manual recommendations provide substantially the same thing and were used by Diversified Science Laboratories in making the measurements—with TDK SA as the Type 2 ferricobalt, TDK MA as the Type 4 metal, and Maxell UDXL-1 as the Type 1 ferric tape. The response graphs with noise reduction demonstrate that a somewhat higher bias setting might have been desirable. (The curves were made on the right channel with Type 2 tape—our current standard practice for noise reduction curves—in which the tendency toward a high-frequency peak is more exaggerated than in any other data on the deck, making it appear more pronounced than it is.)

A feature unique with Yamaha is called FOCUS. It has two positions: SHARP, for more emphasis of high-frequency response, and SOFT, for better phase response and slightly reduced treble output. Yamaha's instructions for its use and DSL's data suggest that FOCUS affects only play-

RESPONSE WITH NOISE REDUCTION (R/P; Type 2)



S/N RATIO (re DIN 0 dB; R/P; A-weighted)			
	Type 2 tape	Type 4 tape	Type 1 tape
without noise reduction	58 dB	56 1/2 dB	55 3/4 dB
with Dolby B	65 dB	63 3/4 dB	63 1/4 dB
with DBX	79 1/4 dB	82 1/4 dB	80 1/4 dB

METER READING FOR DIN 0 DB

Type 2 and 4 tapes	-4 dB
Type 1 tape	-6 dB

DISTORTION (third harmonic; at -10 dB DIN)

Type 2 tape	0.23% at 500 Hz; ≤1.6%, 50 Hz to 5 kHz
Type 4 or 1 tapes	0.31% at 500 Hz; ≤0.74%, 50 Hz to 5 kHz

ERASURE (333 Hz; re DIN 0 dB) ≥73 dB

CHANNEL SEPARATION 50 dB

SPEED ACCURACY 1.2% fast, 105-127 VAC

WOW & FLUTTER (ASN1/IEEE weighted peak)

	average	maximum
playback	±0.05%	±0.07%
record/play	±0.05%	±0.18%

SENSITIVITY (re DIN 0 dB; 333 Hz)

line input	58 mV
mike input	0.50 mV

MIKE INPUT OVERLOAD (clipping) 65 mV

MAX. OUTPUT (from DIN 0 dB) 0.57 V



Flip-down panel conceals the K-960's "set-and-forget" controls, which include a tape-type selector, a fine-bias adjustment, a recording balance control, noise reduction selectors (Dolby B or DBX), and Yamaha's unique Focus switch.

back. In our listening tests, we found that the effect of the switch matched its labeling: The sound is slightly brighter at SHARP and slightly duller at SOFT. (The response curves are shown in the SHARP position, which tends to add to any high-frequency response rise.) The effect is not pronounced, however, and we can detect no change in the sound other than a mild alteration of tonal balance.

The average wow and flutter is quite good, although DSL did note instantaneous surges to higher levels. (We have not been able to detect any audible instability during our listening evaluations.) The K-960's signal-to-noise ratio is also excellent, even without DBX; with DBX engaged, it jumps more than 20 dB to values in the 80-dB range—more like what one expects from an amplifier than from a cassette deck.

DBX also demonstrates its worth in the frequency-response tests, which show more extended high-frequency response at high recording levels than is possible with no noise reduction or with Dolby B. Naturally, DBX does exaggerate any frequen-

cy-response errors that are already present, and the process does roll off the bass slightly to reduce the effect of head bumps and infrasonics on tracking accuracy.

That Yamaha expects critical recordings to be made with DBX encoding is clear from the meter characteristics. With DBX on, the 3% distortion level is reached about 10 dB above the meter's zero mark. That is conservative enough to compensate for the DBX treble pre-emphasis, so that if you record to 0 dB on the meters you will get low noise without high-frequency tape saturation. (For non-DBX recording, the meters tend to underread, and if you record all the way up to 0 dB you may get distortion and dulling of the high frequencies.)

Using the DBX noise reduction, we found that we could make clean, quiet recordings without any difficulty, even from the most dynamic sources. For both the dedicated audiophile and the first-time buyer, the K-960 would seem to be a choice well worth considering.

Circle 132 on Reader-Service Card

A Quick Guide to Tape Types

Our tape classifications, Type 0 through 4, are based primarily on the International Electrotechnical Commission measurement standards.

Type 0 tapes represent "ground zero" in that they follow the original Philips-based DIN spec. They are ferric tapes, called LN (low-noise) by some manufacturers, requiring minimum (nominal 100%) bias and the original, "standard" 120-microsecond playback equalization. Though they include the "garden variety" formulations, the best are capable of excellent performance at moderate cost in decks that are well matched to them.

Type 1 (IEC Type I) tapes are ferrics requiring the same 120-microsecond playback EQ but somewhat higher bias. They sometimes are styled LH (low-noise, high-output) formulations or "premium ferrics."

Type 2 (IEC Type II) tapes are intended for use with 70-microsecond playback EQ and higher recording sort used chromium dioxide; today they also include chrome-compatible coatings such as the ferricobalts.

Type 3 (IEC Type III) tapes are dual-layered ferric-chromes, implying the 70-microsecond ("chrome") playback EQ. Approaches to their biasing and recording EQ vary somewhat from one deck manufacturer to another.

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

Manufacturer's Comments

We invite rebuttal from those who produce the equipment we review. The comments printed here are culled from those responses.

BML Tracer 120-II loudspeaker system, October 1981. Our engineers were surprised to learn that some of Diversified Science Laboratories' data did not agree with our specifications. In specific, the upper-midrange response dip is not typical of a Tracer 120-II. We were all surprised that the panel did not feel that the speakers have good depth imaging, as this is their forte and was an aspect of the 120 that led you to request the test samples.

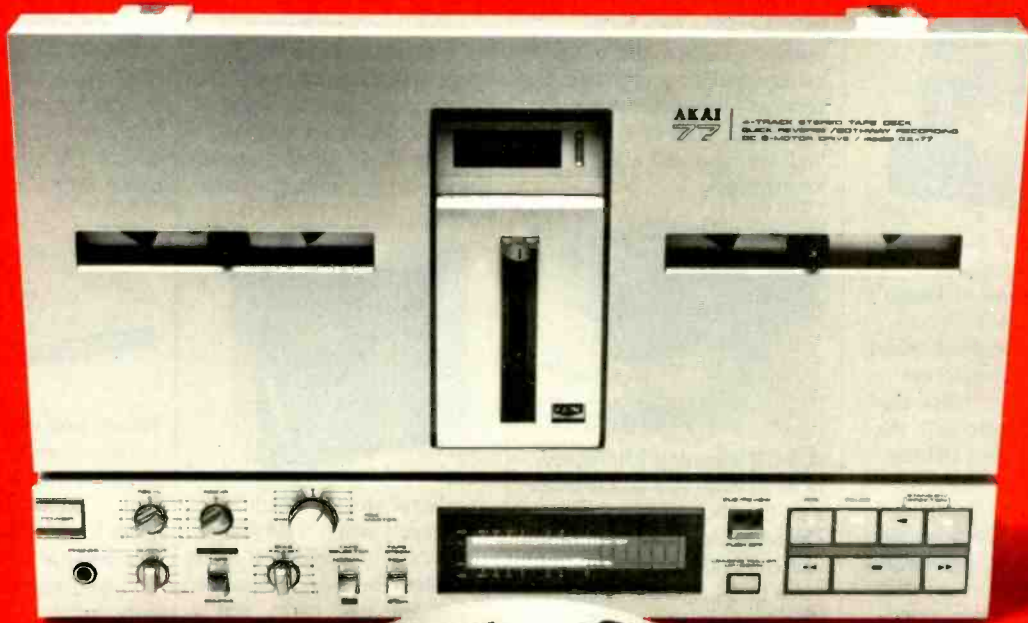
When the samples were returned, our engineers discovered that they had been subject to severe impact in transit. Listening and measurement confirmed your findings, but these speakers were notably inferior to production Tracer 120s. The shipping impact had resulted

in a shift in the iron cores of the transformer used in the frequency-dividing/phase-compensating network, which caused the transformers to change value, altering the frequency contour of the network and destroying the phase integrity of the signal. Unfortunately, these audible flaws would only be detected by someone who was familiar with the performance of the Tracer 120.

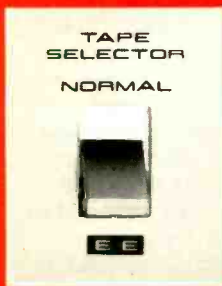
In consequence, we are ordering a national recall on Tracer 120s to upgrade them to the new ferrite-core chokes used in all Tracer 120s built since April 1981. This upgrade will be performed free of charge.

George Commons
 Vice President
 BML Electronics, Inc.

THE ONLY THING MORE REVOLUTIONARY THAN AKAI'S NEW GX-77 IS THE TAPE IT PLAYS.



The new GX-77 is the world's first open-reel machine with a special setting for the new ultra-high-density "EE" tapes.



For the uninitiated, "EE" simply stands for extra efficiency. And the innovators at both Maxwell and TDK are committed to it.

For some very sound reasons. **Numbers don't lie.**

And what the numbers are saying is this. You don't have to sacrifice performance for economy. Not with a GX-77 and "EE" tape. Because at an efficient 3 $\frac{3}{4}$ ips, you'll still get the same frequency response, S/N ratio and dynamic range of conventional tape played at 7 $\frac{1}{2}$ ips.

But see for yourself, below. The specs are spectacular at any speed.

There's sound engineering, too.

The GX-77 also features quick-reverse playback/record, 3 motors, 4 AKAI GX heads and



an optional dustcover that's the ultimate cover-up.

Plus a unique, motorized tape-loading mechanism that guarantees virtually perfect tape-to-head alignment. All at the touch of a button.

And all for a relatively modest \$775, suggested retail price.

Or, if you prefer the benefits of "EE" tape on a grander scale (including 10 $\frac{1}{2}$ " reels), consider the new AKAI GX-747.

Better yet, audition both at your AKAI dealer's soon. Or write: AKAI, P.O. Box 6010, Compton, CA 90224.

We'd hate to start the revolution without you.

AKAI GX-77 with:	Dynamic Range	Frequency Response	S/N Ratio
EE Tape (3 $\frac{3}{4}$ ips)	70 dB	25-25000 Hz	63 dB
Conventional Tape (7 $\frac{1}{2}$ ips)	70 dB	25-25000 Hz	63 dB
EE Tape (7 $\frac{1}{2}$ ips)	76 dB	25-33000 Hz	68 dB

A K A I

YOU NEVER HEARD IT SO GOOD

VIDEO TODAY & TOMORROW

VideoFronts

Latest video news and products by Dawn Gordon



A high-contrast picture tube and provisions for stereo sound are features of Philco's RPC-2500 50-inch "Vivid-screen" rear-projection television set. According to the company, the new black-matrix screen, coupled with the tri-tube lens system (which uses rare earth phosphors), provides superior clarity and contrast. The \$3,495 system has a 105-channel cable-ready digital tuner and an infrared remote control. Front-panel audio and video jacks accompany a full set of audio controls. Each audio channel has an 8-inch woofer and a 3-inch tweeter; the cabinet incorporates a shelf for a VCR or disc player.



A battery pack that can be used to power either a 100-watt portable light for video taping or a VCR is available from Acme-Light Manufacturing Company. The \$225 PML system includes a sealed, lead-acid power pack with a 110-volt AC charger and a carrying case with shoulder strap. Also part of the package is a 100-watt, 50-hour quartz lamp in a housing that can be mounted on top of a video camera. The optional PBL booster pack (\$175) comes with a separate AC charger and a Y-connector cord, which enables the two power packs to be joined to-

gether, thus doubling the battery operating time to 45 minutes. Tandem use of the battery packs permits them to serve as a ten-hour source for a portable VCR or to power both the light and a VCR simultaneously.



A VCR cleaning kit housed in a cassette-type box is available from Radio Shack. Designed to clean heads, rollers, and capstans, the Model 44-1172 (\$10) includes four reusable chamois-tipped cleaning tools, a bristle brush, a mirrored probe, a recorder cleaning cloth, and a half-ounce bottle of Freon TF cleaning solution.



Switching RF signals from any of five inputs to any of four outputs is a snap with the \$200 Model SW-5x4 Video/RF Switcher from Rhoades. As many as three VCRs can be used as inputs or outputs; multiset homes can feed signals to up to three receivers. Minimum isolation between inputs and outputs is rated at 55 dB, insertion loss at a maximum of 7½ dB (11 dB for cable).



Designed to withstand constant use, the new portable VCR carrier from Video Ac-

cessories, Ltd., is constructed of padded polyurethane and has a detachable shoulder strap. The VID-202 bag is said to accommodate a portable VCR and either a tuner/timer or an AC power-supply/battery-charger unit. The cost is \$70.



Two-level storage characterizes Teac's new CS-34VU video cassette cabinet. It holds thirty-four Beta or VHS tapes, has sliding glass doors, and is finished in rosewood veneer. The price is \$60.



Incompatible VCRs and video cameras now can be linked by a pair of new 18-inch adapter cables from Cable Works. The \$90 Porta Cam Camera Adaptors have fittings for specific cameras, while the identically priced Porta Cam Porta Paks match the pin configurations of various VCRs. Each adapter terminates in a universal connector; when the two are joined, the signal path between camera and recorder is completed, preserving all viewfinder, pause-control, and tally-light functions.



A new RF modulator combines separate audio and video signals (from a VCR, a camera, and an enhancer or other add-on equipment) into an RF

signal that can be viewed on any television receiver. Signals from the compact RF-200 (\$70) from Total Video Supply can be fed through either Channel 3 or 4. The unit uses 12-volt DC power and includes an AC adapter.

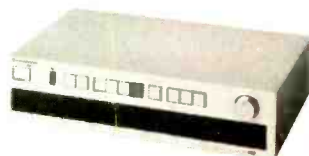


Image and sound integration is the design goal of a new combination audio amplifier and video switcher/processor from Kenwood. According to the manufacturer, the KVA-502 will reproduce stereo signals and also simulate stereo from a monaural source via a phase-shift circuit. The stereo output from a video disc player or VCR can be connected to the amplifier's auxiliary input to provide discrete stereo from video sources. A denoiser circuit is included to improve the signal-to-noise ratio of video sound.

The amplifier is rated at 50 watts (17 dBW) per channel and permits video dubbing, combining video and audio feeds from separate sources. The unit also has a picture-quality control, which adjusts image sharpness during dubbing and playback. The \$400 KVA-502 has three audio and three video inputs, provisions for two sets of speakers, and microphone mixing for making voice-over soundtracks.

For more information, circle the appropriate number on the Reader-Service Card.

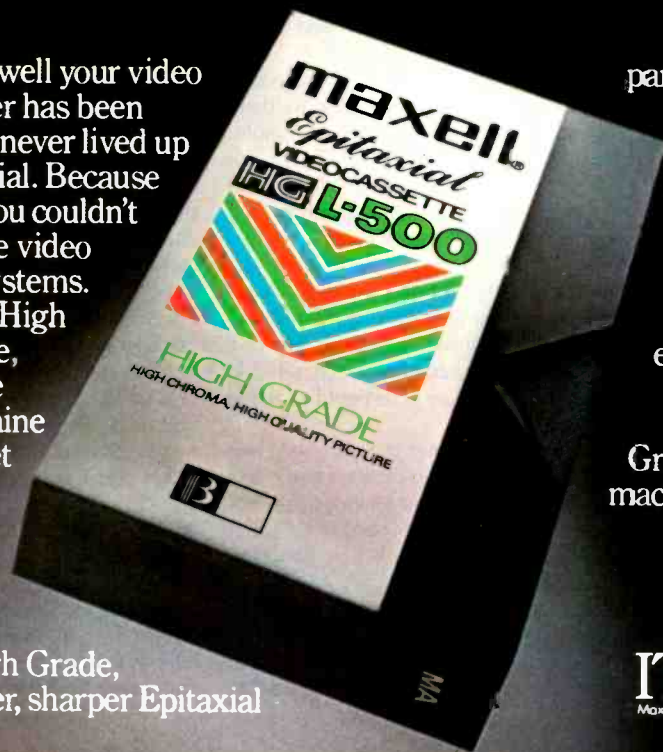
Philco RPC-2500	151
Acme-Light PML	152
Radio Shack 44-1172	153
Rhoades SW-5x4	154
Video Accessories VID-202	155
Teac CS-34VU	156
Cable Works Porta Cam	157
Total Video Supply RF-200	158
Kenwood KVA-502	159

NOW YOUR BETA MACHINE CAN PERFORM EVEN BETTER THAN WHEN YOU BOUGHT IT.

No matter how well your video cassette recorder has been performing, it's never lived up to its full potential. Because until recently, you couldn't buy High Grade video tape for Beta systems.

With Maxell High Grade Beta tape, you'll finally see what your machine can do. You'll get better color resolution, sharper images and clearer sound.

To create High Grade, Maxell uses finer, sharper Epitaxial



particles and a unique binding process. The resulting tape not only produces a better picture than ordinary video tape, it's a lot more durable. This drastically reduces video recorder head wear and lets you enjoy a better picture longer.

So if you own a Beta recorder, try Maxell High Grade. You'll discover that the machine you own is even better than the one you bought.

maxell
IT'S WORTH IT.
Maxell Corporation, 60 Oxford Drive, Moonachie, N.J. 07074

Buying a Video Camera?

Make more satisfying video tapes by choosing one with the most functional array of controls.
by Dawn Gordon



(This is the second in a series of articles on the important factors you should consider when buying a video camera.)

VIDEO TAPE HOME MOVIES are no longer a technological daydream. With today's portable decks, you can record your own events—as long as you have a camera. But which camera? Which features should you look for? Some are standard necessities—much like the contrast control on your television receiver. Others are highly sophisticated options that increase the price of the camera. Let's face it, these units are expensive. You don't go out and buy one every few months. Given the size of the investment, it's important to know which video camera features you'll need and why before you make your purchasing decision. In December we explored such basic parts as the lens and the viewfinder. This month we'll take a look at controls.

Light and Contrast Controls

As in its film-based counterpart, light plays an important role in video photography. The amount of light falling on the camera's imaging tube must be regulated for good picture quality. That is the function of the iris diaphragm. When it is all the way open, maximum light falls on the tube; from there, it can be "stopped down" to decrease the percentage of light reaching the tube. The diaphragm opening, expressed as a function of the lens's focal length, is measured in *f/stops*. If you want to open the iris to admit more light, you turn the ring two stops from, say, *f/11* to *f/5.6* (the smaller the number, the wider the lens opening). Since every time you open the

iris one stop you double the amount of light reaching the imaging tube, you have just increased the light fourfold. (See December 1981, page 54.)

In some of the less expensive cameras, where the iris aperture is set manually, a meter (or LED display) indicates what setting to use for the correct exposure. Many moderately priced or expensive cameras have an automatic iris, which measures the amount of light entering the lens and adjusts the *f/stop* accordingly. If you want to use light in a creative manner, make sure the camera you buy has a manual override switch. This will enable you to select your own *f/stop* for intentional over- and under-exposure effects.

Although the automatic iris responds correctly to most lighting situations, there are some that it may not be able to handle. In backlighting, for instance, the light coming from behind the object can "fool" it to stop down too far, thus darkening and obscuring detail in the subject itself. Here's another instance where you'd want the manual override option. Some cameras even have a backlighting compensation circuit. It may be automatic, or there may be a manual switch that activates the circuitry; in any case, it's a feature you should take into consideration.

Proper light is not the only requirement for a good picture; contrast also plays an important role. Almost all video cameras have an automatic gain control (AGC) that adjusts the white level. When you stop down the lens, for instance, the AGC compensates for the reduced light by bringing the white level back up. The AGC also controls color saturation. If too much light reaches the imaging tube, the color washes

out; if too little reaches it, the color will be muddy. The AGC compensates for these situations as well.

Color Controls

Color characteristics of different light sources affect the color balance of your picture. For example, color temperature, or the color quality of light, is defined by a series of points along a continuum between blue (or hot) light and red (or cool) light. The color temperature of daylight averages over 5000° Kelvin; that of incandescent light is 3200° K. The video camera uses filters and electronic circuitry to accommodate these different light temperatures. It does this by means of a three-position color balance dial, adjustable for indoor, outdoor, and fluorescent light. When you choose a particular setting, the camera either rotates a different filter into place or changes the color electronically. (Both systems work equally well.) A color-correction switch can also be used for creating your own color effects, so it's important to know the different colors associated with these three lighting conditions: Indoor tungsten light has a reddish tint, outdoor light is bluish, and typical fluorescent light is greenish. You may want to use a separate color video monitor linked to your VCR to judge which effect you want before you shoot.

Temperature is not the only consideration in achieving accurate color. The balance between colors must be correct to ensure natural hues, including flesh tones. Almost all video cameras have a white-balance control, which, when activated, adjusts the three primary colors (red, blue, and green) for perfect balance. (This circuit

is similar to the automatic color switch on your television, which adjusts flesh tones.) Hold a white card in front of the lens and turn on the switch; everything else is done automatically. Color balance is often unstable, so it is a good idea to use this control every time you shoot. A video monitor would also be helpful, particularly if you're using the camera for the first time. (Use your television screen if you don't own a monitor.) That way you'll be able to see what is happening, both as you adjust the camera and as you shoot. (See September 1981, page A9.)

If you want to adjust the color for a special effect, you'll need a color balance control. Usually found on the relatively expensive cameras, it facilitates fine tuning of the color balance, much like the tint control on your television receiver. You operate it manually, using a white card and viewing the results on a monitor.

The color balance control is available in two varieties. One is a single knob continuously adjustable between red and blue: It is often used in conjunction with the automatic white balance for fine tuning. The second type has two knobs, one for red and one for blue. When used together, the two knobs also influence the amount of green in the picture. Rotating both red and blue counterclockwise (to their reduced positions) decreases the green; rotating them clockwise increases it. Comparing these controls to those in audio, the continuously

Manual controls let you precisely adjust the "feel" of a scene to meet your needs.

adjustable color balance is similar to a single tone control knob in a car radio, while the separate red and blue controls are like the bass and treble knobs on your receiver. Though not a necessity, this is a nice feature to have. It is more for the creative hobbyist than for the family chronicler.

Other Features

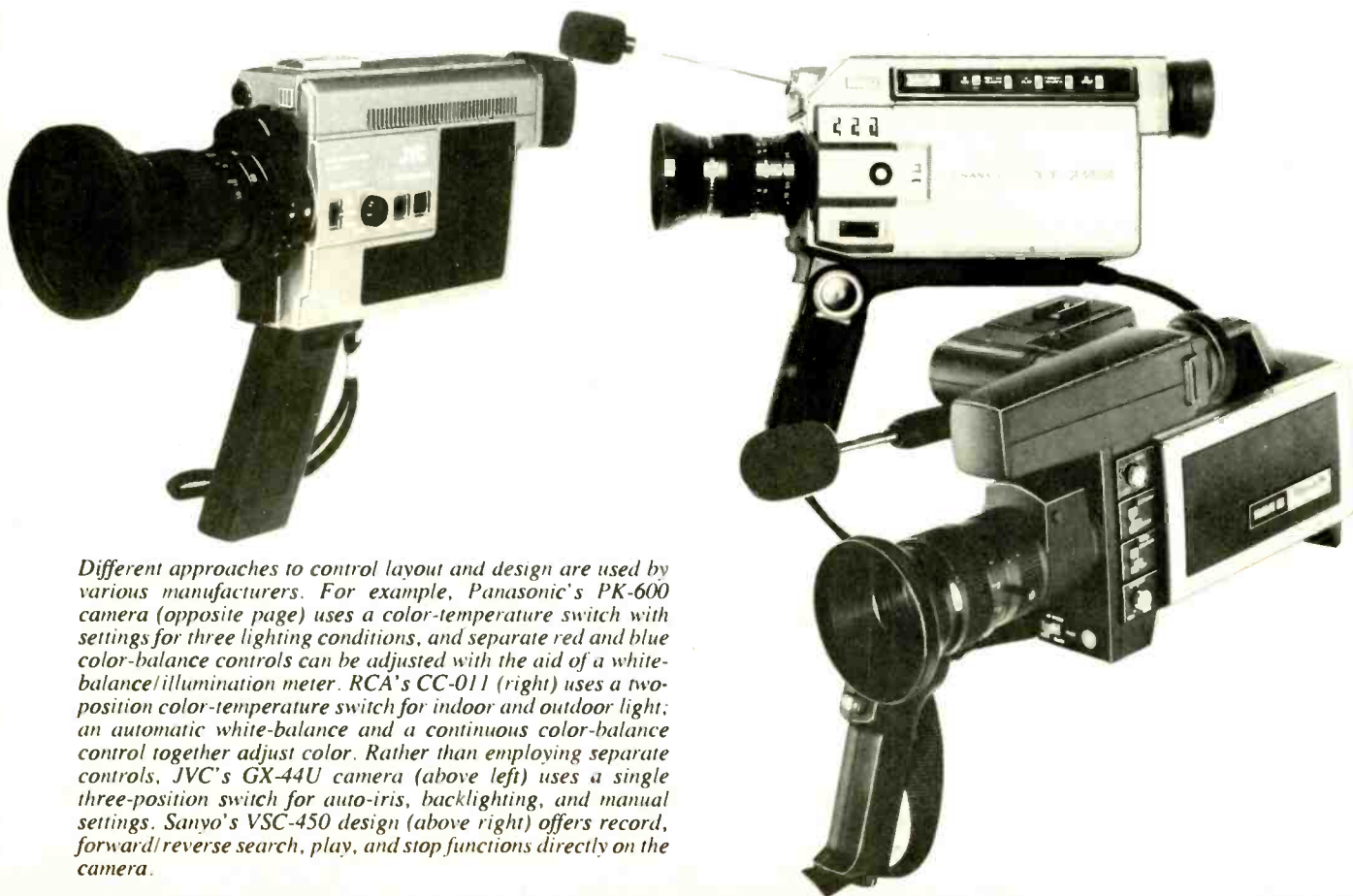
For those who like versatility and the ability to make a more "professional" program, a fade control enables you to move to and from a blank (gray) screen. The effect can be achieved either optically (with the iris diaphragm) or electronically (with a gain control). Many cameras offer this feature, which can be very effective if not over-used.

Many videophiles have been faced with the unpleasant task of replacing their cameras' imaging tubes because of the infamous tube burn-in syndrome. This occurs when a bright light burns a spot on the tube. The "hot spot" that results usually doesn't

go away, sometimes showing up on the screen as a remnant of the image that burned it. The more expensive cameras have auto closure, which automatically closes the iris when the camera is turned off or put in a standby mode; even if you accidentally point the camera at a bright light, you won't burn the imaging tube. Some models have a shutter switch that enables you to close the iris manually.

Let's say you are shooting your child's birthday party, and you're called to the phone. You don't want to stop the tape transport because there will be a momentary glitch in the picture, so you hit the pause switch, thereby halting the tape without introducing interference. Most cameras have PAUSE, which, being connected electronically to the VCR, enables you to stop and start the tape directly from the camera. One camera also has buttons for all the other transport functions (FAST FORWARD, REWIND, RECORD, and so forth), so you can play back another segment in the camera's electronic finder without having to go back to the VCR. Admittedly, this feature puts a premium on choosing a camera and a VCR from the same manufacturer, since they are designed to work together.

As you can see, there are a number of controls that are important to your final decision when you buy a camera. Equally important is a camera's audio capability, which we'll have a close look at in the next article in this series. **HF**



Different approaches to control layout and design are used by various manufacturers. For example, Panasonic's PK-600 camera (opposite page) uses a color-temperature switch with settings for three lighting conditions, and separate red and blue color-balance controls can be adjusted with the aid of a white-balance/illumination meter. RCA's CC-011 (right) uses a two-position color-temperature switch for indoor and outdoor light; an automatic white-balance and a continuous color-balance control together adjust color. Rather than employing separate controls, JVC's GX-44U camera (above left) uses a single three-position switch for auto-iris, backlighting, and manual settings. Sanyo's VSC-450 design (above right) offers record, forward/reverse search, play, and stop functions directly on the camera.

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Video Q.&A.

by Edward J. Foster

Q. While using the high-speed cue and review picture search, is there any increase in stress or wear to the tape head or tape compared to normal playback?—Raymond Schwartz, Chicago, Ill.

A. The difference in tape and head wear between normal and high-speed cue and review operation should be fairly negligible. You're more likely to run into wear problems in slow-motion and freeze-frame operation, which can be pretty tough on the tape, though not necessarily on the heads. At slower speeds, the rapidly rotating head remains in contact with the same portion of the tape for a longer time, which may cause flaking of the oxide coating. That's the reason most VCRs automatically go into STOP or PLAY or RECORD if you leave them in PAUSE for too long.

Q. I've been the proud owner of a Heathkit GR-2000 TV receiver for several years. Connecting a new Sony SL-5800 Betamax to the Heath has resulted in what I can only describe as a "tearing up" of the picture. The problem, by the way, is most severe when playing tapes.

My original hookup was: outdoor antenna to the Betamax, Betamax to a splitter, and splitter to both Heath and

Toshiba TV sets. (I've had no problem with the Toshiba.) I bought 5-, 10-, and 20-dB attenuators and tried each, both with the hookup I've described and with the signal routed from the Betamax to the Heath directly. The original arrangement was the best, but the picture still tore.

Have you any recommendations? The thought of replacing a 25-inch receiver that works perfectly in all other respects is not easy to live with.—Ray Watkins, Port Chester, N.Y.

A. Having used the Sony SL-5800 very successfully with the Heath GR-2000, I was intrigued by your problem. After checking with Heath, I learned that some early sets have had difficulty working with some VCRs. The solution to the problem is simple and consists of changing two components on the AGC/sync circuit board. Resistor R-506 should be 1.2 megohms (brown-red-green) rather than the original 470 kilohms (yellow-violet-yellow), and capacitor C-507 should be 2.2 microfarads instead of the original 0.68. Recent sets (including mine, which is several years old) include the modification.

I suggest you check those two parts and change them if necessary. If your set already has the modification and you still have a tearing picture, the RF bias or AGC controls may be set incorrectly. The RF bias control is found on the AGC/sync board; the AGC control is up front on the tuning board. Follow the procedure described in the manual to readjust them. The RF bias setting is quite important and must be adjusted for the signal strength in your area. Connecting the extra TV and the VCR may have changed matters sufficiently to require a readjustment.

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What Makes an Opera "Good"?

To judge the worth of the work, we have to get past the banality of the performance.

by Kenneth Furie

NOT SO LONG AGO, I reviewed a coupling of *I Pagliacci* and *Cavalleria rusticana* in these pages [Angel SZCX 3895, September 1980] and felt obliged to explain why I was making such a fuss over what was after all merely a rather poor recording. One of the reasons was:

"Given the performers' standing, many people are likely to assume that the artistic ambitions of Leoncavallo and Mascagni are in some manner on display here. This assumption not only slanders those gentlemen, but perpetuates a dangerous misconception of performance as a passive activity, in which performers merely execute given material and in so doing unleash its greatness—or ungreatness—on a compliant audience."

With other issues of more immediate importance to attend to, I never really explored this proposition, but in the interim a number of other recordings have come along that in one way or another bring me back to it. Among them, coincidentally, are six Bavarian Radio coproductions, which I'd like to use as illustrations in looking more closely at what we mean when we say that such-and-such an opera is "good" or "bad."

To many of you, this question is so

obvious that you'll wonder how it can even be asked. So let me pose it more specifically. Offered in evidence is Exhibit A, CBS's premiere recording of Korngold's *Violanta*. The question: Is it any good?

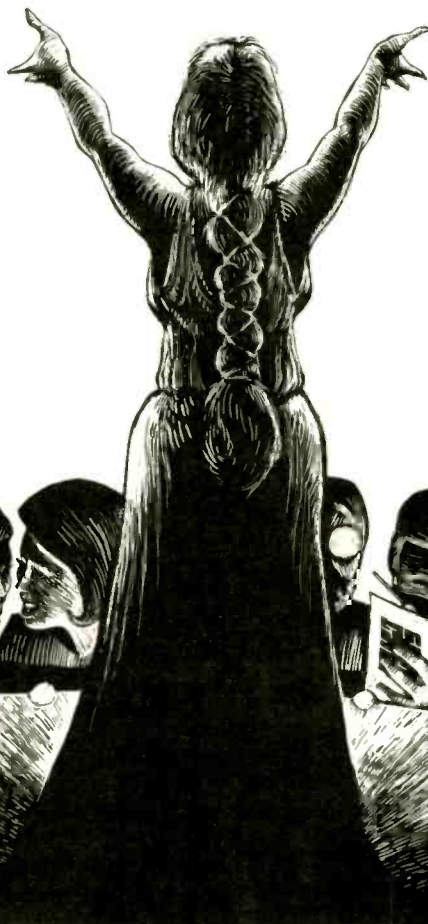
You may object that the question is too vague. By "it" do I mean the opera itself or the recorded performance? Well, yes.

The usual critical method of han-

dling such a situation is to attempt to draw distinctions. And drawing on a certain amount of listening experience, I can make some observations about the performance. Eva Marton, in the title role, sounds terrible: scurrying frantically to get out notes that usually aren't well focused. The orchestral playing, after a stormy, atmospheric overture, sounds halfhearted. For that matter, the singing is fairly listless too, and on the whole unattractive.

But am I talking about the performance or the piece itself? Here's where I use that listening experience. I can hear abundant indications in the vocal writing, especially the soprano's, that it lies badly. Apart from the hopping about, much of the writing is placed in areas of the voice where most singers will not be able to control it easily. Although Korngold doesn't appear to be giving the tenor as hard a time as he would a few years later in *Die tote Stadt*, the soprano writing seems pretty crazy.

But, having said this, have we really said anything about the opera? Applying a bit of historical knowledge, we can say that in the teenaged Korngold's time and place (Vienna on the brink of World



DAVID G. KLEIN

War I) such craziness was within the capability of certain singers. If we guess that the precocious composer's mind was a sort of sponge, absorbing the sounds of Mahler and Strauss and their less talented contemporaries, we may not be surprised that he also absorbed the sounds of the singers they wrote for.

So maybe what we have here is a secondhand mishmash. The libretto certainly qualifies: It's carnival time in Venice, and this woman cooks up a scheme to avenge her dead sister by seducing the sister's seducer so that her own husband can kill him, only of course she really loves the guy, and she winds up dying instead, on with the carnival, curtain. And the score sounds pretty warmed-over too. If the performers are a mite embarrassed, I don't blame them. What can you do with such stuff?

Not perform it, is what. In a better world, the answer would be simple: If you don't believe in a piece and have a clear idea of the circumstances under which some expressive content may be released, don't perform it.

The fact is that, however foolish and boring *Violanta* may appear to me (on the basis, remember, of this particular exposure), in its time it excited a lot of audiences. And while it may be that this excitement was tied to a host of factors inseparable from that time and place, and thus beyond recapture, it remains true that at one time the opera made emotional contact with live audiences.

Which amply justifies making *Violanta* a candidate for revival. But under what circumstances might it actually be worth reviving?

What if you had a soprano who not only could sing the title role but believed in it? Who found in the text and music the basis for dramatic actions that resonated in her soul—actions connected to some aspect of *Violanta's* reality which she believed she could make real and urgent for her audience.

I may say that, on present evidence, I believe hardly a word or note of *Violanta*. I may even doubt that any performers could make me believe. What I can't say is that the opera is, pure and simple, unbelievable.

When it comes to works of art, we have a habit of applying standards of believability that would put all newspapers and the news divisions of the television networks out of business. Just take a look at your morning paper and ask yourself how much of the front page is any more probable than the fix *Violanta* gets herself into.

I'm not saying that all works of art are equal, that there's no valid way of making distinctions among them. What I am questioning, I guess, is the usefulness of the distinctions we can make.

I don't think anyone would argue if I were to assert that Strauss was a "better" composer than Korngold. I think that even admirers of *Violanta* will agree that *Elektra* is a "better" opera. Yet the last time I saw *Elektra*, when the Met squeezed it into the schedule to take advantage of Birgit Nilsson's sudden availability, I didn't believe a word or note of it either.

Just because Hofmannsthal and Strauss have provided *Elektra* performers with much readier access to our belief doesn't mean that our belief comes automatically. In Strauss's music, the singer will find *Elektra's* humiliation and rage located and sized in a way that Korngold's music doesn't seem to do for *Violanta*. But *Elektra* still has to make us believe and care, just as the morning paper has to make us believe in and care about the absurdities it is peddling.

Speaking of peddling absurdities, when was the last time anyone thought

What can you do with such stuff? If you don't believe in it, don't perform it.

of taking Flotow's *Martha* seriously? Most people who know the opera have a safe and settled opinion: a modestly tuneful piece of sentimental fluff. Outside Germany its best use has generally been for lyric sopranos interested in exercising their charms on "The Last Rose of Summer." On records, the title role has produced some very pretty work by Erna Berger (in a 1944 recording available as Acanta 22 21997-6), Anneliese Rothenberger (first in a disc of excerpts, Angel S 36236, and then in a complete recording, SCL 3753), and now Lucia Popp.

They can all be enjoyed if we ask for little more than a shot of sugar water. Which of course is all the opera is good for. If there were something else to be found, surely as sensitive an artist as Victoria de los Angeles would have found it, and yet in an interview last year she made a point of noting that Lady Harriet was not one of the great benefactions Rudolf Bing had bestowed on her.

Anyone who has seen the Met *Martha*, which seems mercifully to have faded from sight in the Levine regime, can understand why even De los Angeles was buffaloed. It would be hard to imagine a less wholesome wallow in folksy cuteness.

This is the trap of performing one's

opinion of a piece. Is it necessary to prove that *Martha* is a masterpiece to suggest that it contains links to our emotional reality worth searching out? Is the numbing boredom that drives Lady Harriet to her fateful prank really so remote from our experience? Can we find no connection to Lionel's powerful affection for his foster family, in particular for the foster mother who showered more love on him than on her own son? Are we total strangers to the dizzying innocence that makes Lionel unable to understand how anyone could behave as cruelly as Lady Harriet does? And wouldn't any of us love to have a big brother as strong and protective as Plunkett, who takes his foster brother's pain even more personally than Lionel himself does?

Whether or not *Martha* is a masterpiece, Flotow has provided an abundance of opportunities for performers to reach into our feelings of loneliness and deprivation, as well as our belief in the possibility of enriching relationships. Unfortunately, this isn't going to happen if the performers take the text as a self-contained given, which needs only to be "rendered" to release whatever qualities it happens to contain.

If you want to hear what can happen when a performer finds how his music can be made to express the urgencies of a real human being, listen to Fritz Wunderlich's Lionel on the Angel excerpts disc. I'm not referring simply to the beauty and seeming ease of his singing, impressive as these are. Throughout these excerpts, though, Wunderlich finds phrases that he can make the necessary expression of Lionel's reality, as for example: in Act I, the sudden recollection of his foster mother ("*Segen, ja Segen ihrem Angedenken*"); in Act II, the innocent ardor of the duet before "*Letzte Rose*" (especially the phrase "*singen sollst du, fröhlich sein . . .*"); the hurt in "*Sie lacht zu meinen Leiden*," and the benevolence of the "*Mitternacht*" quartet; in Act III, the stunned betrayal of "*Mag der Himmel euch vergehen*."

Eurodisc's Siegfried Jerusalem sings through this music tolerably well, or at any rate as well as can be expected with a voice this uncertain near the break, around which so many of Lionel's most personal utterances are wrapped. Listen to Wunderlich's final "*Schlafe wohl, und mag dich reu'n*" in the "*Mitternacht*" quartet: the easy reach from D flat and F up to A flat ("*mag*") followed by a triplet curling back down and around the break ("*dich reu'n*"). Neither Jerusalem nor Nicolai Gedda (in the Angel set), nor for that matter such illustrious heavier-weight predecessors as Peter Anders (in the 1944 recording) or Caruso (in his series of recordings of quartet excerpts from Act II), has this kind of vocal

control, and so none can bring Lionel so movingly to life.

Since works like *Martha* are recorded, when they're recorded at all, primarily for the home market, they almost inevitably fall into certain performance traps, such as the assumption that Plunkett must be treated as a buffoon. Karl Ridderbusch's presence in the Eurodisc set would seem to promise something better, but it doesn't work out that way—first because his voice by the time of this recording had lost its former richness and sheen, and second because he accepts the standard buffo-stück approach.

Ridderbusch falls into this same trap as the bumbling mayor Van Bett in Lortzing's *Zar und Zimmermann*. While I wouldn't claim that Lortzing's operas are anywhere near as exportable as *Martha*, I find myself wondering whether they have to be as irritating as they always seem to be. Is cloying cuteness built into the scores?

No, of course it isn't. So why do performers insist on behaving as if they had no alternative to the attitudes and poses enumerated in the Comic Opera Cliché Handbook? Ridderbusch doesn't need to announce in every phrase that Van Bett is a monkey. If he were to take the big aria absolutely seriously, for example, and base his choices solely on why a man of this standing in the community would express himself this way, it would be a whole lot funnier, and would also make it possible for us to connect the man to pompous boors we have known.

CBS has solved one problem of *Zar und Zimmermann* by removing all the spoken dialogue, thus sparing American listeners all that talk and squeezing the opera onto two discs. Eurodisc's new *Abduction from the Seraglio* takes another traditional approach to the dialogue problem: separate singing and speaking casts. This is a solution that has never worked terribly well, and a moment in the performance suggests what might happen if we treated the dialogue as an opportunity rather than an obstacle.

The dialogue that precedes "*Solche hergelaufne Laffen*" concludes with the speaking Osmin snarling in high theatrical dudgeon that he can't stand Pedrillo. Whereupon the orchestral strings sound a pretty, neatly balanced F major chord, and then Roland Bracht, the singing Osmin, begins the aria prettily and neatly.

I'm not saying that I approve of the staginess of the dialogue reading. But at least *something* is happening there. Meanwhile, the musical performers, so accustomed to thinking of the spoken portions of the text as an irrelevant nuisance, have bypassed vital information. It is precisely this spoken expression of contempt for Pedrillo which drives Osmin into song. Find the actions of the dialogue, and you have the action that includes the orchestral chord as well as Osmin's eruption into song. Ignore the dialogue, and you've got a concert performance of the aria.

Most of us would probably agree that *Abduction* is a work of considerably

Do Lortzing's operas have to be as irritating as they seem to be?

greater stature than the other operas in this group. The acknowledged greatness of much of its music doesn't, however, make it any easier to perform; in fact, it is notoriously difficult. Its difficulties are usually discussed in such terms as the stylistic split between its serious and comic elements, and I'd like to suggest again that, real as this split may be, the solution doesn't lie in finding an intellectual bridge between the disparate elements.

The solution lies in finding out what the characters want, what's in their way, and what they do to get what they want. Somewhere in Constanze's objectives, obstacles, and actions, the performer

must find the explanation of why she sings those long, tortuous arias: from that base, she has a fighting chance of making them real both to herself and to an audience.

What we're talking about isn't necessarily an elaborate intellectual process. It's quite possible, in fact, to indulge in enormously involved intellectual inquiries that never wind up feeding the performance, just as a performer with an active imagination may find life in a role by simply following his or her instincts, provided those instincts are honest human responses rather than ingrained attitudes.

I suspect that Wunderlich's greatness owed more to healthy instinct than to textual exegesis, and much the same is probably true of a pair of performances I rather enjoyed in our two remaining recordings: Edda Moser's *Merry Widow*, and Julia Varady's *Antonia* in the German-language *Tales of Hoffmann*. Otherwise, despite Heinz Wallberg's unfailingly musical and sympathetic conducting, what we get in these performances are mostly sets of attitudes toward these works, perhaps best exemplified in the arch Danilo of Hermann Prey and the vocal wreckage of Dietrich Fischer-Dieskau's assumption of Hoffmann's nemeses.

Before concluding, we ought to fill in a few consumer notes. With all my reservations, the Eurodisc *Martha* and *Abduction* still seem to me worthy of purchase consideration, the latter boasting quite an attractive Belmont in Francisco Araiza. On balance, though, I would incline to the Angel *Martha* (see above) and to Karl Böhm's *Abduction* (DG 2709 051). The CBS *Zar und Zimmermann* now has the catalog to itself but still seems to me uncommendable, if only because it sounds as if it was recorded on a portable cassette machine that equalizes all dynamic levels. Finally, Angel's earlier stereo *Merry Widow*, starring Elisabeth Schwarzkopf and Eberhard Wächter and conducted by Lovro von Matačić, remains a fine choice. **HF**

The Recordings

All six recordings discussed here feature the Bavarian Radio Chorus and Munich Radio Orchestra. *Violanta* is conducted by Marek Janowski, all the other works by Heinz Wallberg. Only the CBS and Angel booklets include English texts.

KORNGOLD: *Violanta*.

Eva Marton, Siegfried Jerusalem, Walter Berry, et al. CBS M2 35909 (two discs, manual

sequence) [price at dealer's option].

FLOTOW: *Martha*.

Anneliese Rothenberger, Doris Soffel, Siegfried Jerusalem, Karl Ridderbusch, et al. EURODISC 25 422, \$29.94 (SQ-encoded; three discs, manual sequence).

LORTZING: *Zar und Zimmermann*.

Lucia Popp, Werner Krenn, Adalbert Kraus, Hermann Prey, Karl Ridderbusch, et al. CBS M2 35904 (two discs, automatic sequence) [price at dealer's option].

MOZART: *Die Entführung aus dem Serail*.

Edita Gruberová, Gudrun Egel, Fran-

cisco Araiza, Norbert Orth, Roland Bracht. EURODISC 300 027, \$29.94 (three discs, manual sequence).

LEHAR: *Die lustige Wittwe*.

Edda Moser, Helen Donath, Siegfried Jerusalem, Hermann Prey, et al. ANGEL SZBX 3906, \$19.96 (two discs, automatic sequence).

OFFENBACH: *Les Contes d'Hoffmann* (in German).

Siegfried Jerusalem, Dietrich Fischer-Dieskau, Jeanette Scovotti, Norma Sharp, Julia Varady, Ilse Gramatzki, et al. EMI GER-MANY 1C 157 45351/3, \$32.94 (SQ-encoded; three discs).

A Great Pergolesi Mystery Solved

Six concertos find an author (at last), while Pergolesi's most famous (genuine) work continues its brilliant career.

Reviewed by Nicholas Kenyon

FOR ANYONE WHO LOVES musicological mysteries, the Case of the Pseudo-Pergolesi Concertinos has long been a winner. We've known for many years that the six popular and oft-performed concertinos published in the infamously unreliable Italian edition of Pergolesi's *Opera omnia* in 1940 are not that composer's work. The attribution rested on very slender evidence: One nineteenth-century copy, now in Washington, gave Pergolesi's name; two further copies, derived from that, supported it. The authenticity of the claim in the Washington manuscript was not enhanced when, in 1952, someone unstuck the title page and found an (equally unlikely) attribution to Handel underneath. As a composer whose works were very widely disseminated after his death, Pergolesi (like Haydn) attracted a host of misattributions and some downright forgeries; the only surprise in the case of the concertinos was that a 1940 publication should have canonized the mistake.

So who wrote them?

It was the English musicologist Charles Cudworth, a specialist in uprooting "spuriousities,"* who first noticed that these six works are identical (though in a different order) to six "*Concerti armonici*" published in The Hague by Carlo Ricciotti in 1740. These works were anonymous, and a pall of mystery hung over them because Ricciotti claimed in a dedication to one Count Bentinck that they came "from an illustrious hand" who did not wish to be named. Cudworth concluded—with great perspicacity—that the works should be attributed for the moment to "that most prolific of all composers, Signor

*It was Cudworth who unearthed the hilarious explanation of the Bach-Gounod *Ave Maria*, given in a nineteenth-century periodical, that "this sublime melody, dictated by Bach on his deathbed, was with his dying breath entrusted to Gounod, who provided the accompaniment."

Anonimo," but added that he would not be surprised to hear any day that they had been discovered in a library to be the work of "some otherwise unknown nobleman."

However, some scholars, misled by Ricciotti's claim that the works were his (surely he meant that he owned the publication rights) and by John Walsh's pirate publication of them in London in 1755 under Ricciotti's name, added the latter name to the confusion. The Bärenreiter practical edition of the 1950s, widely used, ascribed them to "Ricciotti (Pergolesi?)"—a ridiculous compromise. Other scholars followed up Cudworth's lead; the Dutchman Albert Dunning came closest to acceptance with his candidate Fortunato Chelleri, an Italian who was connected with Count Bentinck and had noble status. (This hypothesis is followed in the *New Grove*; see the Chelleri and Ricciotti entries and the Pergolesi work list.)

But Dunning has since been able to ace his king. Chatting one day in December 1979 to some art historians about the problems of reliable attribution, he told the story of these concertos. The scholar Walter van Leeuwen related that, while cataloging the library of a Dutch castle at Twickel, he had seen something that might be relevant. He led Dunning to the manuscript—and there were the six concertos, neatly copied. As a preface, an autograph note explained the circumstances of their composition and publication; Dunning was able to show that it was written by the composer, one Unico Wilhelm, Count van Wassenaer.

Dunning has now amassed an impressive number of facts about Wassenaer, his distinguished diplomatic career and musical background, and has published them with a facsimile of the Twickel manuscript (and a motet that may also be the count's) in a handsome book: *Count Unico Wilhelm van Wassenaer (1692-1766): A Master Unmasked,*

or the Pergolesi-Ricciotti Puzzle Solved (Frits Knuf, Buren; American agent, Pendragon Press, 162 W. 13th St., New York, N.Y. 10014, \$47.50 paper, \$65 cloth).

It is especially interesting to learn that Wassenaer spent two years as a teenager at the glittering musical court of Düsseldorf, with which Steffani, Corelli, and Handel were connected, and that he later undertook a grand tour of Europe. The solid baroque foundations of his concertos are overlaid with an extraordinary richness and expressiveness. They are scored in an unusually flexible format that uses four violin parts and chooses varying solo groups from the orchestra. The idiom has puzzled commentators: There are some passages that Vivaldi, and some that Handel, might have written, now and then interrupted by an utterly individual bar or two. The works are the somewhat eccentric products of a most talented amateur; their slight lack of proportion and of aesthetic unity is easily understandable. Wassenaer says in his note that he composed them between 1725 and 1740 for concerts at The Hague (organized by Bentinck, hence the dedication), and that Ricciotti (who played first violin at the concerts) talked him into publishing them. He also says he never had time to revise them, and he added some deprecating notes in the score in French: "This section is too long"; "some first violin passages are difficult for the hand"; "I prefer this concerto to all the others." What a nice man!

Three new recordings have now appeared that credit the works to Wassenaer—by the Württemberg Chamber Orchestra on Vox, by Camerata Bern on Archiv, and by I Musici on Philips. Pergolesi is still firmly and regrettably in the picture, however. Vox and Philips present the works in boxed sets alongside both genuine and spurious Pergolesi



Unico Wilhelm, Count van Wassenaer, in an oil portrait by Jan Palthe

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pieces, thus keeping his name prominent. Vox misspells the count's name and still calls the pieces "concertini." Philips is clear on the back of its box, but the front seems to imply that Pergolesi and Wassenaer jointly composed works attributed to Ricciotti. Archiv puts "Pergolesi Ricciotti" on the spine and in bold type on the front, and adds only, "according to the latest research, by . . . Wassenaer." The obvious billing should surely be *Concerti armonici*—let's keep Ricciotti's title—"by Count Unico Wilhelm van Wassenaer (formerly attrib. G.B. Pergolesi)."

The liner notes are more satisfactory: Philips has a good account by Dunning himself, and Archiv a fair summary of the discovery; only Vox has been taken by surprise, for Joseph Braunstein's exhaustive survey peters out with his tantalizing discovery of an advertisement for Dunning's new book, and perplexed ignorance as to its contents!

The basic question, however, is whether these performances reflect the authentic tradition of the Twickel manuscript and the Ricciotti print, or the inauthentic tradition of the Washington manuscript and the *Opera omnia* publication. The answer is, unfortunately, that they follow the latter: These are just traditional performances with a new name stuck on. All three sets present the works in the same aural order, but each is numbered differently; only the First Concerto is numbered the same in all three recordings!*

*The order of the recordings is that of the *Opera omnia*, but this has been confused by the Bärenreiter edition, which idiotically switched Nos. 5, in E flat, and 6, in B flat. In numbering the pieces, Archiv follows Bärenreiter, not realizing the conflict with *Opera omnia*; hence, its cross-index to the Twickel numbering is wrong. Vox follows *Opera omnia*, so the last two works are No. 6 followed by No. 5 (though No. 5 is given on the box as in B flat, *recte*,

More significantly, it appears that no account is made in these recordings of textual variants in the Twickel manuscript. (The Vox performances actually predate the Twickel discovery, and so may the Philips.) Two examples must suffice: In the first solo passage of the third movement in Twickel No. 4 (*Opera omnia* No. 2), in G major, the violin solo has trills on five successive ascending notes—a delightful effect. But all three ensembles take just the one trill given in *Opera omnia* and Bärenreiter, or else omit it. In the first movement of No. 5 (*Oo* 4), in F minor, I Musici's violas play heavy staccato notes, following *Opera omnia*; the Twickel manuscript gives slurs, obviously preferable. Several choices of ornaments and articulations suggest that the Twickel manuscript has not been consulted.

The musical characteristics of the three accounts may be rapidly summarized: Württemberg (Vox) is heavy, warm, and romantic; Camerata Bern (Archiv) is light, deft, and clean; I Musici (Philips) is lugubrious, pounding, and insistent.

Let's dispose of I Musici first. The players seem to be allotted one to a part, which negates the solo/tutti markings in the score. They sound scrawny on top, with edgy vibrato. They capture a certain solidly brilliant effect in the fast movements, but the slow movements are terribly sluggish; the openings of Nos. 4 (*Oo* 2) and 5 (*Oo* 4) are unbearable.

The Camerata Bern, playing two to a part plus a single bass, are unfailingly elegant. Articulation is light, all the movements flow well, and tempos are brisk. By comparison, the Württemberg group is very noisy and ponderous, with a clanking harpsichord and poor recording quality. Yet ultimately this group draws out more from the music than does the Camerata Bern's rather bland approach. In the great F minor Concerto (No. 5, *Oo* 4) that Wassenaer labeled his favorite, the Württembergers plod in the first movement and are too stolid in the first Allegro; yet they find more depth in the slow movement than does the Camerata Bern, which sounds merely ethereal. Then the extraordinary final Tempo giusto—with its almost Beethovenian chords and a screeching top F at the climax—is pounded most effectively by Württemberg; Bern races through it.

The choice really depends on your view of the originality of this music. If you hear in these concertos baroque convention, Bern reflects this admirably; it presents the texts cleanly, without frills. But if you hear a fantasy and a fire that

E flat). Philips rennumbers them as in Twickel/Ricciotti, producing the sequence 1, 4, 3, 5, 2, 6. I now leave this indescribable confusion for the scholars to sort out quickly, before concert programmers go mad.

are distinctively of a later generation—in those rich inner parts, solo cello melodies and yearning viola themes that thread their way through the counterpoint—you may well prefer Württemberg.

There is still room for a recording that reflects faithfully the Twickel manuscript, collated with the Ricciotti print. Perhaps a new version could let us hear these splendid textures on original instruments; a baroque orchestra from Holland should surely make a disc that celebrates the nation's newly discovered master composer.

Poor Pergolesi. All our attention goes to works he did not compose; he seems to have written less and less in his short life. (He died at 26, reportedly of tuberculosis of the spine.) But that's true only in the field of instrumental music, because we keep hearing how much of *Pulcinella* is not his. His vocal music, both sacred and secular, still commands attention. Scholars are now beginning to establish firm criteria for recognizing his autograph hand (an important study by Barry Brook and Marvin Paymer will appear soon in *Notes*), and the City University of New York's Graduate Center is currently engaged in the preparation of a New Pergolesi Edition under Brook's direction, which will supersede the appalling *Opera omnia*.

Pergolesi's *Stabat mater* has always been his most famous genuine work; we have a well-attested manuscript source that provided Brook and Paymer with some identifiable Pergolesi handwriting quirks. But its fame in the eighteenth century was even greater. It was, says Helmut Hucce in *New Grove*, the most often-published single piece of music by any composer. Read that again! Following its appearance in 1735, any number of composers adapted it. J.S. Bach—

again disproving our notion of his disinterest in up-to-date music—turned it into a German psalm. Hiller fitted it to a German poem by Klopstock. It was published in England to an ode by Alexander Pope, with the movements hopelessly switched around to fit the mood of the words. Later it appeared in inflated orchestrations, with parts for full chorus.

Pergolesi attracted many misattributions and downright forgeries.

What was its attraction? Serenity and an acceptable, but not dour, religiousness, mixed with a touch of decadent display: The intertwining solo voices of two castratos, with their sustained dissonances and florid melismas, must have sent shivers up eighteenth-century spines. We can't, alas, recapture that mode of authentic performance.

Of these three new recordings, only one reflects a tradition that is clearly corrupt: Conductor George Guest, on Argo, uses a chorus of boys in some movements. You have only to hear the measured choral trills (for example, on the first "*lacrymosa*") and pert staccatos to realize that it doesn't work; soloists are essential throughout. Both the Argo and Candide recordings have stern, strong soloists, in the oratorio tradition. Alfreda Hodgson is the warm but unfocused alto on both discs; the choice of sopranos is between Felicity Palmer, well-tuned, precise, with a hard edge that ill suits the music, on Argo, and Margaret Marshall, very pure and proper, on Candide.

Argo's orchestral sound is buried in an acoustical mush; Candide's is far stronger, with a good bass balance to compensate for the absence of bass in the vocal parts. But Candide's recording is bad, and the surfaces on my copy are dreadfully noisy; there are also a couple of suspect edits: Hodgson loses a "t" in No. 9, bar 27, and the final duet cuts into a different tempo at bar 70.

The orchestral playing on the Musical Heritage recording (from Erato) is thin and sometimes scrappy; but this disc has the inestimable benefit of Ileana Cotrubas and Lucia Valentini-Terrani as soloists. Cotrubas (who doesn't even get a biography on the sleeve) floats through the music, swooping around the notes with an effect of delicious sensuality that, if not as direct as the effect of a castrato, captures the sultry warmth of the music. Valentini-Terrani, much fruitier, complements her admirably, and the duets are noble yet supple. Claudio Scimone conducts flexibly.

A final note about fillers. Archiv crams its six concertos onto one disc—a strong plus for this version. Philips adds a violin concerto (perhaps by Pergolesi) and a *Concerto à cinque* (definitely not). Vox gives both of these, plus two "anonymous" flute concertos that really aren't worth having.

Candide's *Stabat mater* comes unadorned. Argo offers a concerto from the Wassenauer set, No. 4 (*Oo 2*), in G. Musical Heritage includes a solo soprano *Salve regina*, which—like the *Stabat mater*—was composed at the end of Pergolesi's short life; Cotrubas sings it ravishingly.

My thanks to Professor Barry Brook for information on the New Pergolesi Edition and for an advance copy of his article in Notes.—N.K.

WASSENAER (attrib. Pergolesi): Sei Concerti armonici.

Camerata Bern, Thomas Furi, dir. [Gerd Ploebusch and Andreas Holschneider, prod.] ARCHIV 2533 456. \$10.98. Tape: 3310 456. \$10.98 (cassette).

Concertos: No. 1, in G; No. 2, in B flat; No. 3, in A; No. 4, in G; No. 5, in F minor; No. 6, in E flat.

WASSENAER: Sei Concerti armonici. PERGOLESI: Instrumental Works and Attributions.

Georg Egger, violin*; Michael Flaksman, cello*; Robert Dohn, flute*; Württemberg Chamber Orchestra, Jörg Faerber, cond. [Heinz Jansen, prod.] Vox SVBX 5154. \$13.98 (three discs, manual sequence).

PERGOLESI: Concerto for Violin and Strings, in B flat*; Sinfonia for Cello and

Strings, in F*. PERGOLESI (attrib.): Concertos for Flute and Strings: in G; in D.* Concerto à cinque, in F.

WASSENAER: Sei Concerti armonici. PERGOLESI: Concerto for Violin and Strings, in B flat. PERGOLESI (attrib.): Concerto à cinque, in F.

I Musici, Pina Carmirelli, dir. PHILIPS 6768 163. \$21.96 (two discs, manual sequence). Tape: 7699 146. \$21.96 (two cassettes).

WASSENAER: Concerto armonico No. 4, in G. PERGOLESI: Stabat mater.*

Felicity Palmer, soprano*; Alfreda Hodgson, alto*; boys of St. John's College

Choir, Cambridge.* Argo Chamber Orchestra, George Guest, cond. [Chris Hazell, prod.] ARGO ZRG 913. \$10.98.

PERGOLESI: Stabat Mater*; Salve regina in C minor.

Ileana Cotrubas, soprano; Lucia Valentini-Terrani, alto*; I Solisti Veneti, Claudio Scimone, cond. MUSICAL HERITAGE SOCIETY MHS 4373. \$7.75 (\$4.95 to members) (add \$1.60 for shipping; Musical Heritage Society, 14 Park Rd., Tinton Falls, N.J. 07724).

PERGOLESI: Stabat Mater.

Margaret Marshall, soprano; Alfreda Hodgson, alto; Mainz Chamber Orchestra, Günther Kehr, cond. [Heinz Jansen, prod.] CANDIDE CE 31118. \$5.98. Tape: CT 2274. \$5.98 (cassette).

Music from Czech Chambers

Dvořák from various current sources,
Suk and Smetana from the
legendary Bohemian Quartet
Reviewed by Harris Goldsmith

DVOŘÁK WAS A LATE BLOOMER. His earliest compositions show enormous talent but also certain gaucheries and the decided influences of Beethoven, Schubert, and Wagner. These youthful efforts did help him make his mark locally; yet when Brahms "discovered" him in 1874, Dvořák was still playing violin in the Prague Provisional Theater orchestra. The conductor there—a pretty fair composer in his own right—was also helpful in putting our young man on the map; his name: Bedřich Smetana.

Once established as an international celebrity, Dvořák abandoned his youthful influences and became far more nationalistic in his music, using the idiom, if not the actual material, of his rich Bohemian heritage. He also had a bit of a hassle with his publisher, Fritz August Simrock, when that gentleman, with typical Germanic arrogance, insisted on giving Dvořák "respectability" by Teutonizing "Antonín" into "Anton" and publishing his music with German titles. A compromise of sorts was finally reached: Simrock agreed to identify his client as "Ant."! And at least some of the works were published with the composer's Bohemian titles.

Dvořák's identification with chamber music began early and lasted until late in his career. Only in his last few active years did he stop writing symphonies and quartets; having forsaken his early Wagnerian influences in favor of the "pure music" ideals of his benefactor (and by now, good friend), Brahms, he suddenly reversed course again. Inexplicably, he began a series of tone poems constructed in the tradition of Liszt and Wagner—the so-called *Neue Musik* of the anti-Brahms faction.

The works contained in this generous harvest of new recordings range in time from the period of the first boost

from Brahms to the last string quartet, written twenty years later. The double-bass quintet, composed in 1875, is one of the earliest; the misleading designation "Op. 77" (it should really be Op. 18) is but one more example of Simrock's duplicity—a misguided attempt to con the public into thinking the work a more recent (and thus, representative) effort of the newly popular composer. But Simrock's original edition damaged the music in a more significant way: It omitted the Intermezzo (*Nocturno*) second movement. Fortunately, the Sequoia/Levine edition restores it (as did the Boston Symphony Chamber Players in their deleted DG recording).

In view of a superheated, machine-driven interpretation of Mozart's *Dissonant* I heard the California-based Sequoia Quartet give some years ago, its recent Tully Hall concert came as a pleasant surprise; the new Nonesuch recording confirms the group's enormous spiritual growth, its increased comprehension of phrase structure, its acquisition of a truly loving, nuanced style. In fact, some may initially find this reading of the basically jolly, rugged quintet a shade *too* loving.

Discussing a recording of Schubert's *Trout* Quintet in HF more than twenty years ago, David Johnson praised double-bass player Stuart Sankey for fulfilling "the great requisite for that thankless post. discretion." Julius Levine obviously views his role in a more activist light, shaping his forwardly balanced line with all sorts of elaborate melodic rises and swells. With such a strong-willed, soloistic personality involved, the Sequoians, whether by choice or coincidence, are furnished with a strong counterbalance. The result is a superb performance—if not one for all tastes. In truth, there are times when I would pre-



Bohemian Quartet (from left): violinists Karel Hoffmann and Josef Suk, violist Jiří Herold, cellist Ladislav Zelenka

fer a more elemental, thicker-skinned kind of interpretation, with less subdivision of phrases and a more sustained forward drive. The two waltzes receive similar treatment. Nonesuch provides tender, intimate recorded sound, but the surfaces on my review copy are a bit crackly.

Remembering only too well the disastrously stiff Firkusny/Juilliard recording of the piano quintet (CBS M 34515)—reproduced with acid, tacky sound—I am happy to report that the players more than make amends in the two piano quartets. With the Juilliard's first violinist, Robert Mann, doing the honors in the 1875 Op. 23 and second violinist, Earl Carlyss, playing in the more familiar (but still insufficiently well-known) 1889 Op. 87, the performances are big, bluff, and hearty—perhaps not as refined as the Beaux Arts/Trampler edition (Philips 6500 452), yet with a freewheeling openness that appealingly captures Dvořák's homespun qualities. CBS, spreading the music over two discs (at reduced cost), provides an exposition repeat in Op. 23 and a higher recording level than Philips (which gets both works on a single record). The Guarneri/Rubinstein account of Op. 87 (RCA LSC 3340—also two sides, not cut-rate) still has a unique appeal, yet no music lover will go seriously wrong with any of these offerings.

Dvořák's piano trios comprise two popular ones, the large-scaled Op. 65, in F minor, and the *Dumky*, Op. 90, and two practically unplayed early works, Opp. 21 and 26. The Beaux Arts recorded the cycle some years ago (Philips 6703 015), and now Supraphon has released an alternative edition by the Suk Trio, named after composer Josef Suk (Dvořák's son-in-law) and populated by that composer's violinist namesake (his

grandson and, thus, Dvořák's great-grandson), cellist Josef Chuchro, and pianist Jan Panenka. These recordings, coproduced by Japanese Nippon, have also been issued digitally on single discs by Denon.

One noteworthy feature of native Czech performances is the frequent underplaying of "ethnic" features in the interest of a steady sobriety. And so it is here. The Suk Trio tends to be a little squarer rhythmically than the Beaux Arts, a bit more sparing of nuance. The differences in recorded sound tend to accentuate this dichotomy: Philips' sound is a little drier, more intimate. Supraphon's more spread out in a big hall (but with far more ample impact and warmth than in the trio's Brahms cycle). While both recordings offer elegant, sensitive musicianship and virtuoso ensemble expertise, I slightly prefer the Czechs; they capture many of the music's big moments more convincingly.

Here is an appropriate place to register a dissent as to the relative merits of the big F minor Trio and the sometimes maligned *Dumky*. Though Op. 65 is undoubtedly impressive, it gets a bit long-winded in places and reflects more the Brahmsian influence than the quintessential Dvořák. The *Dumky*, on the other hand, teems with piercing originality: its six-movement format and constant mood changes ultimately provide a more positive and meaningful contribution to the chamber music literature.

The Nonesuch Op. 65 by the Raphael Trio was produced and originally issued by Sonar Records; it will now un-

Quintessential Dvořák, the *Dumky* teems with originality.

doubtedly gain wider distribution. This trio of young Americans (Charles Castleman, violin; Susan Salm, cello; Daniel Epstein, piano) adopts a more assertive, less subtle approach than does either the Suk or the Beaux Arts, and its forthright efforts are seconded with closer, "hotter," more impactful sound. It's a very good, serviceable reading; still, I prefer the Beaux Arts and Oistrakh/Oborin/Knushevitzky (Monitor S 2070) for their greater wistfulness and the Suk for its burnished, well-regulated sobriety.

Marlboro Recording Society, an offshoot of the Vermont festival run by Rudolf Serkin, offers a *Dumky* taped at a concert some summers ago. It fares much the same as the Raphael performance in relation to those of the Suk and Beaux Arts. Violinist Daniel Phillips, cellist Jerry Grossman, and pianist Bruno Canino may be even better instrumentalists than their Raphael counterparts, but their alert, sensitive playing, too, appears clipped and unsubtle alongside the more temperate readings by the permanent ensembles. The Boccherini quintet that fills out the Marlboro disc is played attractively and with high relish. The sound is excellent despite the recording's live origins; audience noise is

practically nonexistent save for applause.

An extremely promising new ensemble debuts in the popular F major *American* Quartet, Op. 96. As heard on this sumptuously recorded Philips disc, the Orlando Quartet reminds me of the Amadeus Quartet as it first appeared on mono EMI discs in the early 1950s: the same lively, supple rhythms; a similar musical cultivation and proportion; and from first violinist István Párkányi, a slightly spread vibrato that recalls the young Norbert Brainin. Mendelssohn's E flat Quartet, Op. 12—the popular one, with the famous Canzonetta movement—gets an equally elegant, jewel-like presentation on this superbly processed disc. Strongly recommended; we should be hearing much more from the Orlando.

Dvořák's G major Quartet, Op. 106, completed in a final surge of chamber music inspiration just after his return to his native soil, is far more ambitious than the *American*. (The companion A flat Quartet, Op. 105, begun just before he departed from America and completed immediately following the G major's one-gulp gestation, is shorter and more accessible.) Here one begins to see why the composer stopped writing quartets; for all its excellence, the G major often falls victim to its own complexity. The serpentine chromaticism, the rhythmic elaboration, and the sheer stamina required to play this music with accuracy and authority put it out of reach of most listeners and interpreters. The detail for detail's sake tends to cancel itself out, and in the last movement, Dvořák appears almost to run out of steam. (He ends the work by returning to material from the first movement.)

The Guarneri Quartet stresses (I use the word advisedly) the atypical harmonic elements—Dvořák à la Richard Strauss—and often achieves its power by shunting certain subtler dynamic markings to the rear (albeit not very far back in this overamplified recording); yet this version poses an impressive alternative to my favorite account, by the Berg Quartet (Telefunken 6.41933).

The once legendary Bohemian Quartet, which gave the premiere of Dvořák's Op. 106, is resurrected for modern audiences in an absorbing reissue from Parnassus Records. Its performances of Smetana's *From My Life* and Suk's Quartet No. 1 were recorded by Polydor in 1928, after two of the group's original members had departed; even so, this is a musical document of the first order—particularly for the presence of Josef Suk (this time, the grandfather/son-in-law) as the ensemble's second violinist. (He was one of the founding members.)

(Continued on page 81)

DVOŘÁK: Quintet for Strings, in G, Op. 77; Two Waltzes, Op. 54.

Sequoia String Quartet; Julius Levine, double bass. [Mel Powell and Keith Holzman, prod.] NONESUCH D 79012. \$11.98 (digital recording). Tape: D1 79012. \$11.98 (cassette).

DVOŘÁK: Quartets for Piano and Strings: in D, Op. 23; in E flat, Op. 87.

Rudolf Firkusny, piano; Juilliard Quartet. [Steven Epstein, prod.] CBS MASTERWORKS MG 35913 (two discs, manual sequence) [price at dealer's option].

DVOŘÁK: Trios for Piano and Strings (4).

Suk Trio. [Eduard Herzog, prod.] SUPRAPHON 1411 2621/3. \$29.94 (SQ-encoded; three discs, manual sequence).

Trios: in B flat, Op. 21; in G minor, Op. 26; in F minor, Op. 65; in E minor, Op. 90 (*Dumky*).

DVOŘÁK: Trio for Piano and Strings, in F minor, Op. 65.

Raphael Trio. NONESUCH H 71397. \$5.98. Tape: N5 71397. \$5.98 (cassette).

DVOŘÁK: Trio for Piano and Strings, in E minor, Op. 90 (*Dumky*).

BOCCHERINI: Quintet for Guitar and Strings, in D, G. 449.

Various performers. [Mischa Schneider, prod.] MARLBORO RECORDING SOCIETY MRS 13. \$7.50 (add \$1.50 for shipping; Marlboro Recording Society, 5114 Wissoming Rd., Washington, D.C. 20016).

DVOŘÁK: Quartet for Strings, in F, Op. 96 (*American*). MENDELSSOHN: Quartet for Strings, No. 1, in E flat, Op. 12.

Orlando Quartet. PHILIPS 9500 995. \$10.98. Tape: 7300 995. \$10.98 (cassette).

DVOŘÁK: Quartet for Strings, in G, Op. 106.

Guarneri Quartet. [John Pfeiffer, prod.] RCA RED SEAL ARL 1-4051. \$9.98. Tape: ARK 1-4051. \$9.98 (cassette).

SMETANA: Quartet for Strings, No. 1, in E minor (*From My Life*). SUK: Quartet for Strings, No. 1, in B flat, Op. 11.

Bohemian String Quartet. [Leslie Gerber, reissue prod.] PARNASSUS 1001. \$10 (mono; from Polydor originals. 1928) (add \$1.50 for shipping; Parnassus Records, P.O. Box 493, Woodstock, N.Y. 12498).

2001: A Space Oddity

by John Culshaw

This is the second of three edited selections from John Culshaw's autobiography. Putting the Record Straight, scheduled for publication this month by Viking Press. Culshaw, a columnist for HF from 1976 until his death in 1980, was a producer for Decca/London at the times described. The Zarathustra cast of characters includes Maurice Rosengarten, Decca/London's prime mover on the Continent, and Leon Felder, Rosengarten's brother-in-law and assistant. Again, we close with Culshaw twitting the critics.

The sessions for Strauss's *Also sprach Zarathustra*, with Herbert von Karajan leading the Vienna Philharmonic, were to begin on March 9, 1959. We hit an immediate snag, for there is no organ in the Sofiensaal. The instrument does not have much to do in the piece, but a minute or two after the opening it joins the orchestra at full power in what should be a shattering C major chord, which the organ has to sustain after the orchestra has stopped. There is no way of faking the organ, and even the finest of the electronic instruments at that time could not begin to produce the right sound.

Karajan, interestingly, did not seem to care. He knew that somehow an organ would have to be added at some later time and simply left it at that; yet as a rule he enjoyed things on the periphery of music. Toward the end of *Zarathustra*, Strauss calls for the sound of a large bell and obviously was thinking of something deeper and more resonant than an ordinary tubular bell. We rigged up an enormous church bell on the stage of the Sofiensaal, and it was greatly to Karajan's liking. "When are you going to bring in the rest of St. Stefan's?" he asked on the first morning it appeared, and he spent most of that session playing with it; but he still ignored the question of the organ, which was far more important.

We could not find a suitable organ in Vienna. They were all too flat to blend with Philharmonic pitch, and most of them were in buildings subject to external noises of one kind or another. Eventually we found a suitable organ in a military chapel at Wiener Neustadt, some distance away from the city, but the discovery did not solve our problems at a stroke. Permission had to be obtained from the military authorities, which Adolf Krypl, the ever resourceful electrician and overseer of the Sofiensaal,

achieved after long negotiations, and even then the organ was too flat for our purposes.

We found an organ tuner, who, given sufficient money, was prepared to shorten the organ pipes to our requirements, but on condition that the military authorities should never find out. In one sense that was easy, because the academy did not have a regular organist (who would have noticed at once) and the chapel was used only briefly on Sundays and for funerals and the like; but the problem was to find an organist discreet enough not to talk about what we had done—and in Vienna that was, of course, an impossibility.

In the end, the part was played by my assistant on *Zarathustra*, Ray Minshull, who had studied the organ during his university days, but none of us really reckoned with the difficulties of overlaying the organ part without the facilities of a multitrack tape machine. To do the job at all meant working in the early hours of the morning when there would be neither traffic nor bird noise; and the chapel was, of course, unheated. At a guess I would say that the music requiring an organ runs for less than two minutes, but the job took us nearly six hours, during which time the organ was slowly but steadily drifting out of tune again. We vowed never again to undertake a work involving an organ in Vienna, or if we were forced to do so, to find a different solution to the problem.

I snatched an hour's sleep back at the hotel, and then Maurice Rosengarten was on the telephone. I tried to explain why I was at less than my brightest, but it was hopeless to discuss such matters with him. "I told you," he said, "that you'd be disappointed in Karajan," which was, as things stood, neither true nor helpful. I just felt convinced that *Zarathustra* would never justify the time and money that had been spent on it; but I reckoned without something that nobody could have dreamed of at the time, which was that some seven years later Stanley Kubrick was to choose the opening of *Zarathustra* as the recurring element in his film *2001: A Space Odyssey*, and that of all the versions available to him the one he selected was Karajan's.

The ultimate irony was that Decca's condition for releasing the tape to Kubrick was that no credit should be given to either Decca or Karajan on the film itself, which meant that other com-

panies were able to reap the benefit by rushing out recordings of *Zarathustra* as soon as the film became a success. Karajan was understandably furious and threatened to sue both Decca and MGM, but Rosengarten managed to soothe him by one means or another. The odd thing was that nobody seemed to care about the loss of sales. Other companies—notably Deutsche Grammophon—were delighted to receive screen credits for the rest of the music in *2001*, but the *Zarathustra* extract (including, incidentally, our organ chord) with which the film started and concluded, and which was played over Kubrick's famous "jump-cut" from the ape who has discovered the meaning of a weapon to a spaceship cruising in the void, remained anonymous.

Decca's timid copyright man regarded this as a triumph of discretion; Rosengarten didn't know what anyone was talking about, because he would not see the movie and was terrified by the thought of legal action. Had we but known, it was an example of Decca's decline: a trivial incident in itself, but a pointer to an era of inertia ("Don't do nothing!", in the sense of don't do anything, had by then become Leon Felder's all-purpose answer to everything), which was to lead to the collapse and takeover of the company by Polygram almost precisely twenty years later.

In 1961, our American office wanted a recording from Karajan of Adam's unspeakably boring ballet music, *Giselle*, which he had never so much as seen in his life. The music arrived from Paris in a state of utter disarray. The pages either were not numbered or did not follow in any kind of meaningful sequence; the instrumentation had been changed by heaven knows how many hands, and the orchestral parts did not match the score. But Karajan hugely enjoyed the sessions we spent messing about to produce a completely unauthentic *Giselle*. He would start at what looked like the beginning of something and then sight-read it until it either stopped or collapsed; then he would jump to the next bit that was legible.

We ended up with a pile of bits of tape, which we pieced together by duplicating this bit or that to make it sound like a recapitulation. Nobody took a note of it seriously, and yet to my extreme amusement, not a year passes but that some young critic, faced with the task of reviewing a new and properly authentic version of *Giselle*, refers his readers back to Karajan's definitive, if regrettably incomplete, version. **HF**

Next month—*Tempest in a Tape Loop*

CLASSICAL Reviews

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COURTESY KURT WEILL FOUNDATION

The "unknown" Kurt Weill: David Hamilton reviews the songs on page 68.

BEETHOVEN: Concerto for Violin and Orchestra, in D, Op. 61.

Izhak Perlman, violin; Philharmonia Orchestra, Carlo Maria Giulini, cond. [Suvi Raj Grubb, prod.] ANGEL DS 37471, \$10.98 (digital recording). Tape: 4XS 37471, \$10.98 (cassette).

The new technological age has arrived. In England, one can buy this performance on video cassette as well as in the purely audio forms available here. Well, not quite *this* performance. Though I haven't seen it, I've read (in a *Gramophone* interview with Perlman) that the artists recorded the work and then mimed it for show!

In strictly musical terms, this interpretation reminds me in some ways of such past recordings as those by the Busch brothers, and the Menuhin/Klemperer (Angel S 36369): Although tempos are quite broad, a certain rigor keeps the rhythms square and the pace firm. Nor is there any attempt to prettify the prevailing sonority; the *tutti*s have a gritty force, and there is a bright, forthright attack from the solo instrument when such vitality is called for in the music. Close microphoning emphasizes this vigor and perhaps contributes a bit of overloading in the orchestra. Unlike the Chung/Kondrashin (London LDR 10010) and Mutter/Karajan (DG 2531 250) performances, which delight in a finely drawn-out lyricism, Perlman and Giulini are altogether brusquer and more sober. Yet warmth and compassion

accompany the strength. Perlman plays Kreisler's cadenzas, as do most recording violinists nowadays.

Traditionalists need not fear. The solid orthodoxy of this performance is—premium price notwithstanding—partnered with good old-fashioned scratches on the review copy. You had better check yours before buying! **H.G.**

BENDA, Georg: Concertos for Harpsichord and Strings (5); Divertimento in G.

Josef Hála, harpsichord; Antonín Novák and Vojtěch Jouza, violins; Karel Spelina, viola; František Sláma, cello; František Pošta, violone. [Jan Vrána and Libor Mathauser, prod.] SUPRAPHON 1111 2761/2, \$19.96 (two discs, manual sequence).

Concertos: in G; in D; in C; in G minor; in F.

Every known generation of the Benda family had several members endowed with musical talents, and two of them, Franz and Georg, occupy important positions in the history of music. "Benda" is a corruption of Ben David, but by the start of the seventeenth century, the clan had become Christian through conversions and intermarriages. The Czechs, touchy about these (and the many other) Germanized composers, insist on calling the two František and Jiří, yet a birth certificate is hardly a stylistic document. (Or was the Florentine Lully an Italian composer?)

Georg/Jiří (1722–95) spent fifty-

three years—his entire maturity—in Germany, died there, and has always been regarded as a bona fide member of the North German school of the preclassical era: His fame rests on his dramatic compositions, admired by Mozart, which, with their innovative experiments, helped considerably to extricate opera from the waning baroque. A capable harpsichordist, he also composed a great deal for his instrument. The concertos recorded here, interesting and enjoyable, contributed to the stylistic transition, too; bright, virtuosic, and in many ways pathbreaking, they paved Mozart's way to the genre.

There are still baroque elements here, asymmetric thematic materials and rhythms, but the new four-measure symmetrical articulation is pleasantly and skillfully mixed with the old style. The essential change from the baroque concerto, however, is the extent to which solo and orchestra become partners, sharing the thematic material. If the melees they engage in are not yet as lively as in later concertos, they are there, and all musicians took notice. Two or three of these works deserve to join the living repertory. The G minor, a dark, passionate *Sturm und Drang* piece, rivals the best of Emanuel Bach, Benda's colleague at the Prussian court.

The recording, though enjoyable for long stretches, suffers from a basic misconception in performance—the now frequent enforcement of "historical authenticity," exacerbated by the consequent bafflement of the recording engineers. In the North German tradition, these concertos are accompanied by a solo quartet plus a bass fiddle; yet the texture is clearly orchestral, and today the task should be entrusted to a small orchestra. In a recording, it is practically impossible to establish a fair balance between the solo harpsichord and the string quintet, alias orchestra. Here the engineers, realizing the thinness of the accompaniment, place the "orchestra" in the foreground, miking it closely, with a resultant roughness and shrillness. The harpsichordist, unable to execute dynamic nuances on his instrument, must compensate by articulation and phrasing, which in good hands does give the

impression of a gradual rise and fall of dynamics. Josef Hála often does this well (though he resorts too frequently to the lute stop, unwelcome in this protosymphonic style), but when the sonically beefed-up accompaniment starts on a real crescendo, the soloist is inevitably left behind, and things become lopsided. Hála copes nicely with the virtuoso solo part; he has nimble fingers, yet he plays too many cadenzas of his own making, and he is helpless when the string players are made to assert themselves like an orchestra.

Still, this is an interesting and informative recording. The original German notes are not bad, but when the type was broken, the printers misplaced many paragraphs, and one must hunt all over the place to restore continuity. The English translation, very poor, has some first-class boners; the best is the rendering of the German "long-breathed melodies" as "long-winded melodies." P.H.L.

BOCCHERINI: Quintet for Guitar and Strings, G. 449—See page 55.

DELIUS: The Fenby Legacy.

Felicity Lott, soprano*; Anthony Rolfe Johnson, tenor*; Thomas Allen, baritone†; Julian Lloyd Webber, cello**; Ambrosian Singers*, Royal Philharmonic Orchestra, Eric Fenby, cond. [Christopher Palmer, prod.] UNICORN-KANCHANA DKP 9008/9, \$28 (digital recording; two discs) (distributed by Euroclass Record Distributors, Ltd., 155 Avenue of the Americas, New York, N.Y. 10013).

Caprice and Elegy.** Cynara.† Fantastic Dance. Idyll.* Irmelin: Prelude. A Late Lark.† A Song of Summer. Songs of Farewell.* DELIUS (arr. Fenby): Two Aquarelles. La Calinda.

One of the most moving stories in music history is that of the relationship between Frederick Delius and the young English musician Eric Fenby, who offered his services as amanuensis to the blind and paralyzed composer in the correct belief that Delius still had music within him. Thus began the frustrating, stormy, ultimately triumphant collaboration described so vividly by Fenby in his book *Delius as I Knew Him*, which served as the basis for Ken Russell's superb BBC television film *A Song of Summer*.

Christopher Palmer, who produced and annotated this set, and John Goldsmith, head of Unicorn-Kanchana (What is a Kanchana?), conceived the inspired idea of inviting Fenby, now seventy-five, to record the works Delius dictated to him, which would otherwise have remained unwritten. It can safely be stated that Fenby knows better than anyone else alive the secrets of performing Delius successfully, the importance of the music's ebb and flow, the expressivity of the upbeats. Not a practicing

conductor, he is nevertheless able to clarify the often complex textures, assisted by the marvelously clear and natural digital recording, as has no one since Sir Thomas Beecham. In so doing, he never loses sight of the music's structure; he enables us, as do all the very best conductors, to see the forest and the trees simultaneously.

Four of these works are decidedly major efforts, in either size or content. Most striking is the hauntingly beautiful *Songs of Farewell* for double chorus and orchestra, to words from *Leaves of Grass* by Walt Whitman—a favorite poet of Delius'. (Cf. *Idyll*, also included, and *Sea Drift*.) Like many of his other works, this is a sea piece, and Fenby captures the atmosphere perfectly, aided by the sensitivity of the Ambrosian Singers. True, many words can't be clearly discerned, but this is not so critical with Delius as it is with other composers; in spite of his

Fenby gives us Delius worthy of putting next to Beecham's.

admiration for Whitman and other poets, he was more concerned with the sound and color of the voices than with what they sing. In any event, one can always follow the text sheet while listening.

The *Idyll* ("Once I passed through a populous city"), also from Whitman and based on music from the early one-act opera *Margot la rouge*, is a successor to the great orchestral nocturne *Paris: The Song of a Great City*. That work is a tribute to the city itself; the *Idyll* is an extended and intimate love duet between two people whose lives briefly intertwine with it. Two soloists more ideally suited to this lyrical score than Felicity Lott and Thomas Allen would be hard to imagine. Their voices soar effortlessly and passionately over Delius' evocative orchestra. Allen also distinguishes himself in *Cynara*, another Paris piece, a setting of Ernest Dowson's famous poem, each verse of which ends "I have been faithful to thee, Cynara, in my fashion."

Of the purely orchestral works, *A Song of Summer* must surely be numbered among Delius' masterpieces; if the Fenby collaboration had produced only this gem, it could still have been counted a success. This is at once a nature piece and a sea piece (with gentle birds) but more a recollection than an actual depiction. Here is Delius at his most personal and imaginative. Sir John Barbirolli gave a more expansive performance (Angel S 36415), yet Fenby's reading

presents the score simply and without exaggeration, as the exquisitely beautiful thing it is. (The authenticity of the 7/4 section was disputed by Beecham, who said Delius had never before written in that meter. Perhaps not, but he did so here.)

A Late Lark, to a poem by W. E. Henley, was largely completed by Delius before blindness overtook him. Anthony Rolfe Johnson is the sensitive tenor soloist in this poignant acceptance of the serene advent of death. The *Caprice and Elegy* was written in 1930 for the English cellist Beatrice Harrison; she recorded it that year with Fenby conducting—his recording debut. Julian Lloyd Webber (brother of the composer of *Jesus Christ, Superstar*, and *Evita*) plays it here in an overly assertive manner, with frequent unnatural accentuations of unimportant notes and glissandos that, while perhaps stylistically appropriate, sound more the result of technical shifts than of musical decisions.

La Calinda and *Two Aquarelles* are not, strictly speaking, new works dictated to Fenby, but Fenby's arrangements of material that already existed in other forms. The charming *Calinda* should be familiar to most listeners, as should the beautiful *Prelude to Irmelin*, once in the repertoires even of such non-Deliusians as George Szell and Fritz Reiner. Fenby's readings are truly cherishable. *Fantastic Dance*, a kind of musical postscript to *Paris*, dedicated to Fenby, is one of the few Delius works to end loudly and brilliantly.

Unicorn should not stop here, but should invite Fenby to record the rest of Delius, thus giving us truly definitive modern versions worthy of putting next to Beecham's classics. The participation of the Royal Philharmonic, founded by Sir Thomas, is indeed fitting. However many members remain from the Beecham days, the Delius tradition obviously does, evoked by Fenby's firmly guiding hand. My only reservation relates to some thinness of string tone, for Delius could use a bit more opulence.

British purchasers of this set also receive Fenby's book, a bonus denied Americans for contractual reasons. Palmer's excellent and copious notes (albeit in rather minute type) and a front-and-back-cover reproduction of John Brett's *Brittania's Realm* combine to make this one of the most handsomely produced albums to appear in recent years. The performances make abundantly clear why Beecham called Delius "the last great apostle in our time of romance, emotion, and beauty in music." J.C.

Fenby's Delius as I Knew Him, published in this country by Cambridge Univ. Press (\$6.95, paperback), will be available sepa-

Critics' Choice

The most noteworthy releases reviewed recently

BARTÓK: *String Quartets (6)*. Tokyo Quartet. DG 2740 235 (3), Nov.
BEETHOVEN: *Piano Concertos (5)*. Schnabel, London Symphony, London Philharmonic, Sargent. ARABESQUE 8103-4 (4), Oct.
BEETHOVEN: *String Quartet No. 1 (orig. version)*. Pro Arte Quartet. LAUREL LR 116, Jan.
BERLIOZ: *Requiem*. Tear. London Philharmonic, Previn. ANGEL DSB 3907 (2), Jan.
BIRTWISTLE: *Punch and Judy*. Roberts, Wilson-Johnson, Atherton. DECCA HEADLINE HEAD 24/5 (2), Dec.
GLAZUNOV: *Orchestral Works*. Bamberg Symphony, Ceccato. ARABESQUE 8091, Dec.
GRIEG: *Piano Works (complete), Vols.*

1-14. Knardahl. BIS LP 104/17 (14), Aug.
LISZT: *Hungarian Coronation Mass*. Hungarian Radio Chorus, Budapest Symphony, Lehel. HUNGAROTON SLPX 12148, Dec.
MAHLER: *Symphony No. 5*. STRAUSS: *Tod und Verklärung*. Mitropoulos. NEW YORK PHILHARMONIC 881/2 (2), Nov.
MAHLER: *Symphony No. 9*. Berlin Philharmonic, Karajan. DG 2707 125 (2), Nov.
MENDELSSOHN: *Chorale Cantatas (5)*. Ostertag, Wehnert. FONO FSM 68 101, Nov.
MOZART: *Flute Concertos (2)*. Bennett, Malcolm. ARGO ZRG 910, Dec.
MUSSORGSKY: *Orchestral and Choral Works*. London Symphony, Abbado. RCA ARL 1-3988, Jan.
ORFF: *Carmina burana*. London Symphony, Mata. RCA ATC 1-3925, Jan.
PROKOFIEV: *Film Music*. St. Louis Symphony, Slatkin. VOX CUM LAUDE VCL 9004X (3), Jan.
SCHUBERT: *Piano Trios (2)*. Les Musiciens. HARMONIA MUNDI FRANCE HM 1047/8

(2), Sept.
SCHUMANN: *Symphonies (4)*. Philadelphia Orchestra, Levine. RCA ARL 3-3907 (3), Oct.
TCHAIKOVSKY: *Manfred*. Concertgebouw, Haitink. PHILIPS 9500 778, Dec.
TCHAIKOVSKY: *Piano Trio*. Oliveira, Rosen, Pletnyov. CBS M 35855, Nov.
TELEMANN: *Instrumental Works*. Aulos Ensemble. MUSICMASTERS MM 20009, Dec.
WOLF: *Songs (138)*. Various (Wolf Society recordings, 1931-38). EMI RLS 759 (7), Nov.
GERMAN CHAMBER MUSIC BEFORE BACH. Cologne Musica Antiqua, Goebel. ARCHIV 2723 078 (3), Jan.
LILI KRAUS PLAYS KEYBOARD FANTASIES. VANGUARD AUDIOPHILE VA 25003, Jan.
THE WALTZ PROJECT. Moran, Cobb, Feinberg, Mikhashoff. NONESUCH D 79011, Sept.
HEAVY METAL. Film score by Elmer Bernstein. FULL MOON/ASYLUM 5E 547, Jan.

rately in some record stores. In addition, Euroclass will offer the records and book by direct mail for a package price of \$32, plus \$1.50 for shipping.—Ed.

DVOŘÁK: Chamber Works—See page 55.

DVOŘÁK: Concerto for Cello and Orchestra, in B minor, Op. 104; Silent Woods, Op. 68.

Heinrich Schiff, cello; Concertgebouw Orchestra, Colin Davis, cond. PHILIPS 6514 071, \$10.98. Tape: 7337 071, \$10.98 (cassette).

COMPARISON:
 Gendron, Haitink Phi. Fest. 6570 112

A few years ago, Philips reissued its aristocratic Gendron/Haitink performance of the Dvořák cello concerto and *Silent Woods* at midprice (with yet another bonus, the little Op. 94 Rondo). This new performance in Colin Davis' unfolding Dvořák cycle with the Concertgebouw is very different—craggy, weighty, and roughhewn, qualities apparent in both the sonority of the orchestra and the playing of the soloist. It works better in the orchestra: Davis obtains careful balances and lingers over some details without losing sight of the overall shape (unlike Giuliani, in his recording with Rostropovich, Angel S 37547). Schiff's contribution is less convincing; the young German cellist occasionally sounds stentorian, and his wide vibrato sometimes seems distinctly under the note in moments of stress. Still, there is an admirable integrity and a sense of selflessness to the collaboration.

Philips puts a wide ambient frame around the orchestra and places the soloist at a greater distance than usual in recordings of standard concertos; it

sounds like a concert perspective. But Gendron is a better buy. H. G.

FAURÉ: Orchestral Works.

Frederica von Stade, mezzo-soprano*; Nicolai Gedda, tenor*; Yan-Pascal Tortelier, violin**; Jean-Philippe Collard, piano**; Paul Tortelier, cello†; Alix Bourbon Vocal Ensemble†, Orchestra of the Théâtre du Capitole (Toulouse), Michel Plasson, cond. [Eric MacLeod, prod.] EMI FRANCE 2C 167-73071/3, \$41.98 (three discs) (distributed by International Book and Record Distributors, 40-11 24th St., Long Island City, N.Y. 11101).

Les Djinns, Op. 12†; Berceuse, Op. 16**; Ballade, Op. 19**; Elégie, Op. 24†; Caligula, Op. 52†; Shylock, Op. 57†; Pelléas et Mélisande, Op. 80*; Fantaisie, Op. 111**; Masques et bergamasques, Op. 112**; Penélope: Prélude.

Fauré's orchestral music, rightly, has never achieved the reputation of his songs, his piano and chamber music—or even his opera *Pénélope*. It's not hard to hear why. His music—positioned as it is squarely between the earlier Gounod and Saint-Saëns and the later Debussy—has a liquidity and charm that did not find a natural outlet in orchestral sound. Many of his orchestral works were originally written for solo piano and orchestrated later, and others were commissioned as incidental music for plays. The famous *Ballade* for piano is practically self-sufficient without its orchestral backing, as is the late *Fantaisie*. Since the orchestra never much interested Fauré, in either its weight and scope or its timbral and coloristic possibilities, it's not surprising that he relied on others, on occasion, to help out in the orchestration. Jean-Michel Nectoux, today's leading expert on Fauré's music, puts that case in its best light in his extensive notes to this

recording (time pressures, the fact that others also farmed out orchestrations), but I think he kindly overstates: Fauré's quite evident distaste for the task tells us something about his priorities.

My favorite orchestral pieces have always been the *Ballade*—that apotheosis of filigree—and the two suites *Pelléas et Mélisande* and *Masques et Bergamasques*; particularly the latter with its evocations of the past so radically different from Ravel's roughly contemporaneous excursions into the antique.

Here the two suites are given in their fullest form, with three songs included in *Masques*—one an orchestration of Fauré's setting of Verlaine's poem *Clair de lune*. A notable omission in the set is Fauré's suite *Dolly*, which, though orchestrated by Henri Rabaud, is nonetheless one of his most charming.

The lesser pieces—the choral setting of Hugo's onomatopoeic warhorse *Les Djinns* (known to every French schoolboy) and the incidental music to *Shylock* and *Caligula*—are primarily for Fauré enthusiasts. There are no hidden treasures here, and indeed, *Caligula* would not have been out of place in a Hollywood movie of the same title.

The best performances are those that depend on the soloists: an expressively molded *Ballade* from pianist Jean-Philippe Collard and a commanding *Elégie* from cellist Paul Tortelier. Conductor Michel Plasson is a forthright, meat-and-potatoes leader, and his orchestra, closely miked and with plenty of presence, sounds solid, but he doesn't shape the composer's phrases or examine the subtleties of his writing. Thus, a good deal of the essential Fauré is ignored, such as the suppleness of his writ-

ing and the fragility and mystery of the music to *Pelleas*. Nicolai Gedda does well by his songs; Frederica von Stade's one song is sweetly put forward but unintelligible, as is the work of the chorus. P.J.S.

GRIEG: Symphony in C minor.

Bergen Symphony Orchestra. Karsten Andersen, cond. [Paul Myers, prod.] LONDON LDR 71037, \$12.98 (digital recording).

Collectors awake! Here is a symphony by Grieg, a work not heard since its first performance well over a century ago, never published and never recorded—virtually a phonographic incunabulum. The trouble is that the twenty-year-old composer, whose first and only symphonic essay this was, himself disowned it, directing on the manuscript that it should never again be performed. Grieg was a fine, sensitive musician and a master of Norse mood pictures, with an attractive melodic invention and a sweetly melancholic harmonic sense. But he was essentially a miniaturist, and the symphony was not a congenial genre for him—a fact that, to his credit, he immediately realized.

When the nationalist movement hit the North, much pleasant music was composed in the Scandinavian countries; Grieg's piano pieces, as well as his theater music and orchestral suites, are easily the best of the lot. But the Romantic Vikings did not know what to do with the symphony. Most of them, including Grieg, spent years studying in Germany, yet they could not convert the German symphonic tradition to their national aims. Yes, some of the other "nationalists," like Dvořák, did write bona fide symphonies, but his were good Central-European symphonies with his own ethnic coloring—apparently the only way out of the dilemma until the appearance of Nielsen and Sibelius.

Grieg has some very nice ideas here, and some of the tunes, especially in the third movement, are destined to be made into movie scores if the Hollywood arrangers discover them. Unfortunately, though, the work is too episodic to hang together, the old symphonic clichés are numerous, and the Wagnerian brass perforations are not becoming to this quiet lyricist.

The performance is good if a little bland, but some of the digits in the recording must have slipped; there is a good deal of rumble and tubbiness, the timpani lording it over all the rest. P.H.L.

HANDEL: Concerti grossi, Op. 3 (6).

English Baroque Soloists. John Eliot Gardiner, cond. ERATO STU 71367, \$8.98 (distributed by RCA).

Concertos: No. 1, in B flat; No. 2, in B flat; No. 3, in G; No. 4, in F; No. 5, in D minor; No. 6, in D.

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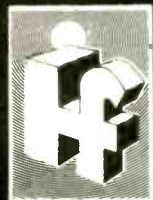
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CLASSICAL Reviews

HANDEL: Concerti grossi, Op. 3 (6); Concerto grosso in F, Op. 3, No. 4 (orig.) (attrib.).

Smithsonian Chamber Players. James Weaver, dir. [Charles Fisher, prod.] SMITHSONIAN N 1023. \$13.98 (\$12.58 to members) (two discs, manual sequence) (add \$1.50 for shipping; Smithsonian Recordings, P.O. Box 10230, Des Moines, Iowa 50336).

HANDEL: Concerti grossi, Op. 3 (7); Alexander's Feast: Concerto in C.

German Bach Soloists. Helmut Winschermann, cond. [Wolf Erichson, prod.] ARABESQUE 8089. \$13.96 (two discs, manual sequence). Tape: 9089. \$15.96 (two cassettes).

HANDEL: Concerti a due cori: No. 1, in B flat; No. 2, in F; No. 3, in F.

Academy of St. Martin-in-the-Fields. Neville Marriner, cond. PHILIPS 9500 765. \$10.98. Tape: 7300 837. \$10.98 (cassette).

HANDEL: Water Music.

Los Angeles Chamber Orchestra, Gerard Schwarz, cond. DELOS DMS 3010. \$17.98 (digital recording).

Handel's Op. 3 Concertos are, let's face it, a bit of a mess. They were assembled hurriedly for publication—perhaps by publisher John Walsh himself: it is difficult to know how much Handel had to do with the process. The Fourth Concerto, which may be spurious, was subsequently replaced, and three movements were added to the Fifth. The First still veers oddly from a B flat opening to a G minor close. There are other inconsistencies, including a nonsensical misprinting of a couple of bars in the Third.

Nevertheless, there are some marvelous individual movements, and the whole set, for all its weaknesses, has an extroverted liveliness that makes it well worth having complete on disc. But how much do you want? John Eliot Gardiner and his English Baroque Soloists, on a single well-filled record, include only one of the alternative Fourth Concertos (as did George Malcolm on Nonesuch H 71376). James Weaver and the Smithsonian Chamber Players, occupying two discs, offer the two Fourths, but no other fillers. Helmut Winschermann and the Deutsche Bach Solisten, also on two discs, add the Concerto in C from *Alexander's Feast*.

The most pertinent choice that has to be made, however, is between original and modern instruments. That pits Gardiner (one disc) and Weaver (two) against Malcolm (one) and Winschermann (two).

The two new original-instrument versions, completely different, give the lie to the outdated notion that "old instruments" produce just one style of performance. The basic outlines are easy to draw: Gardiner's performances are sophisticated, exciting, and rather plush, the Smithsonian's less confident, more original in approach, and generally more interesting. The English players are skilled and experienced, more so than

their American counterparts. Gardiner's soloists are generally excellent. His first violinist, Simon Standage, is brilliant and crisp; the Smithsonian's Marilyn McDonald has an acid edge to her playing that is not always pleasing. The English oboist, Sophia McKenna, is plangent and eloquent; the Americans, James Caldwell and Stephen Hammer, are more variable, the first less attractive in tone than the second.

Gardiner sweeps his ensemble along with great rhythmic exuberance in a way that obliterates many of the most characteristic features of baroque string playing—its varied bow strokes and deft articulation. And it's depressing to hear an original-instrument orchestra adopting the habits of its modern counterparts—slurring dotted rhythms at cadences, sliding into final notes instead of keeping every move clear and sharp. Weaver does not achieve such powerful

Handel's Op. 3 Concertos are, let's face it, a bit of a mess.

rhythmic unity (chordal attacks often lack unanimity), but he does let the instruments speak. His opening movements are clipped and jerky, whereas Gardiner races along. But there are enough technical problems in the Smithsonian's playing, allied to a tendency to let the rhythms go dead after the first few bars of any movement, to make me suggest that you try both versions before deciding which to buy.

The Arabesque version is, if anything, cleaner and sprightlier than either of the old-instrument accounts. The acoustic is dry, and Winschermann applies his perky, detached style throughout, bouncing off every sixteenth with a jollity that gives welcome lightness to the playing. Eventually, though, the repetitiousness becomes wearing. Malcolm's version, full of strength and life and very expressive, remains the choice for modern-instrument lovers.

A few miscellaneous points: Gardiner uses a theorbo continuo at times, which, though effective in the dance movements, sounds most strange strumming around in the ceremonial opening of the Third Concerto. All versions use flute solo in this concerto. Also unanimous is the resolute fidelity to the notated single-dotting of the Fifth's opening (score one for Frederick Neumann), but I remain unconvinced. Cadenzas are supplied erratically, often by the wrong instruments, and there are painful silent gaps in some versions (e.g.,

the end of the Andante in the first movement of No. 4). Original instruments win hands-down in the lovely duet for two solo cellos in the Second and the delicious bassoon melody in the Minuet of the Fourth.

Neville Marriner's new version of the *Concerti a due cori* is the best thing I've heard from the Academy of St. Martin in some time. The performances have real springiness and freshness, like the fine old recording of the *Alcina* and *Ariodante* ballet music (Argo, deleted). The music is simply glorious. The occasional *Messiah* chorus crops up. (Unfortunately, the Academy retains its silly jazzed-up rhythm in "And the glory of the Lord" from its recording of the oratorio.) And there is a ground-bass movement in No. 2 that is as fine as anything Handel wrote; there's something to be said for the large-scale treatment of this concerto by Charles Mackerras and the London Symphony (Angel S 37404), which fairly bounds with energy, but Marriner's clarity and poise are preferable for repeated listening.

Gerard Schwarz's new digital recording of the *Water Music* is brilliant sonically, slick in style, and utterly misconceived. It attempts to make the music more interesting by injecting little twiddles for the horns and oboes: but these additions, not in the least improvisational in character, are miles removed from any concept of baroque ornamentation and typically twentieth-century in their pertness. The notion of Handel's horn players' cooking up such tricks is frankly absurd. A pity, because on the whole the playing is direct and vigorous.

N.K.

HAYDN: Miseri noi . . . Funesto orror; Arias.

Edith Mathis, soprano; Lausanne Chamber Orchestra, Armin Jordan, cond. PHILIPS 9500 929, \$10.98. Tape: 7300 929, \$10.98 (cassette).

Arias: Chi vive amante; D'una sposa meschinella; Infelice sventurata; Solo e pensoso; Sono Alcina; Son pietosa, son bonina; Vada adagio, signorina.

In the eighteenth century, the resident maestro of an opera house wore three hats: conductor, editor, and composer. Since the parts for individual roles were custom-composed, usually on the spot and with the "assistance" of the singers, they had to be redesigned whenever an opera migrated to another town; and since the pitch was different in every opera house, transpositions were often needed to accommodate the singers. Even more radical remedies were resorted to when a singer disliked or could not cope with an aria; the piece was excised, and the maestro had to deliver a substitute aria, usually of his own composition. Haydn, responsible for the

little opera house at the Esterházy court, must have been busy editing and doctoring scores, because Prince Nicholas liked to attend the opera several times a week.

To complete its most welcome plan of recording all of Haydn's operas, Philips evidently intends to record the substitute arias Haydn composed for operas by Guglielmi, Cimarosa, Paisiello, Gazzaniga, and others of the age. And a delightful collection this first installment is. The pieces range from little buffo cavatinas to elaborate scenes in the grand opera-seria vein, with highly dramatic accompanied recitatives; there are also

two works composed for London, a fine solo cantata (*Miseri noi*) and the setting of a Petrarch sonnet (*Solo e pensoso*).

These are not just crumbs from a great master's table, but perfectly viable compositions. They would make excellent concert pieces, not unlike Mozart's detached concert arias, and are recommended to performers and the public alike. As one listens to these fine songs, one wonders both at the long neglect of Haydn as opera composer and at his consummate knowledge of the style and techniques of Italian opera of the period.

Soprano Edith Mathis, who knows

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CLASSICAL Reviews

this style and possesses the musicality and the voice for it, gives fine performances. Armin Jordan's accompaniments with the Lausanne Chamber Orchestra, though secure, have little eighteenth-century elegance. The sound is a bit forward but kind to the singing voice. **P.H.L.**

MAHLER: Symphony No. 8, in E flat.

Faye Robinson, Judith Blegen, and Deborah Sasson, sopranos; Florence Quivar and Lorna Myers, mezzo-sopranos; Kenneth Riegel, tenor; Benjamin Luxon, baritone; Gwynne Howell, bass; Boston Boy Choir, Tanglewood Festival Chorus, Boston Symphony Orchestra, Seiji Ozawa, cond. PHILIPS 6769 069. \$25.96 (digital recording; two discs, manual sequence). Tape: 7654 069. \$25.96 (two cassettes).

COMPARISONS:

Bernstein/N.Y. Phil. CBS M2S 751
Solti/Chicago Sym. Lon. OSA 1295
Kubelik/Bavarian Radio DG Priv. 2726 053
Abravanel/Utah Sym. Van. Ev. SRV 276/7

In his San Francisco Symphony program note, reprinted in the Philips booklet, Michael Steinberg says of the Mahler Eighth: "The symphony, like *Faust* itself, is something to be lived with a long time in order that the richly intricate network of references and allusions might take on clarity." Although I'm not sure I would make clarity the issue, I quite agree that the power of the piece grows enormously with exposure, and I might add that the multiplicity of recordings helps too.

Each approaches it from a different angle, and each has its own interpretive and technical strengths. I enjoyed re-hearing all the stereo versions (all except the Wyn Morris still listed in SCHWANN), though I'm not sure I'd be so happy with any one *without* the others, the flip side of this coin being that each has its limitations.

The new version is probably the one I'd keep if I could have just one. I have only two grounds for hesitation in recommending it: a lack of bloom in the recorded sound, and a certain feeling of inhibition.

The two may be related. In the Carnegie Hall concert performance, the vibrant colors of the choral and orchestral work provided some of the momentum that is less evident in the recording. The rapt orchestral introduction to Part II, for example, had an intensity that was linked to the luster of the playing. Philips' digital recording, although outstanding in every other way (the balances could hardly be better), just doesn't capture that luster.

At the same time, Ozawa's reading isn't the most propulsive imaginable. It's sane, cohesive, and involved, but tension isn't maintained at the level of, say, the Bernstein recording. Of course Bernstein

takes so many chances that he risks everything: Either the performance works, or he winds up looking foolish. (Those were the days before he discovered that he could look foolish even *without* taking chances.) For me, it works: Played for these life-or-death stakes, the symphony exerts a force unmatched in any of the other recordings. Even Solti seems to have gone cautious in the face of this colossal challenge, though the London engineering still packs a wallop.

Ozawa has a big plus in his roster of soloists. Faye Robinson is glorious, her big, bright soprano not only encompassing the lower reaches of the writing, but rising powerfully and seemingly effortlessly above the staff. Those pealing high Cs in the climaxes of the "*Veni, Creator*" are *not* electronically managed; that's the sound of a healthy voice riding an ensemble. Florence Quivar is almost as good in the first alto's various parts; again, Mahler has the nasty habit of de-

Mahler's Eighth has so far defied a single solution.

manding from his singers power and expressiveness at both ends of their ranges, and Quivar supplies them in good measure.

Kenneth Riegel's tenor certainly isn't a pretty one, but its cutting edge projects Dr. Marianus' loony writing (which is more or less centered around the break, in the fifth from D to A, though it reaches above too) quite well. Gwynne Howell, who was also Morris' bass, sings Pater Profundis' fiendish solo better than anyone on records except Kubelik's Franz Crass. The other singers are less distinctive, but they're also less important. Solti, for example, has a slightly stronger female lineup overall (Lucia Popp and Helen Watts outpoint Judith Blegen and Lorna Myers as Gretchen and Maria Aegyptica), and yet Ozawa's women, because of their strategic strengths, are more effective. Bernstein's soloists are so-so, with an uncommonly big-voiced second soprano (Gwyneth Jones) but—shame!—a baritone Profundis (Donald McIntyre).

For the economy-minded, Kubelik's solid performance, with some excellent (and some not so excellent) singing, comes at DG Privilege price, neatly fit on three sides with the Adagio of the Tenth Symphony as a filler. For that matter, Abravanel has the measure of the Eighth at Vanguard Everyman price, and David Clatworthy may be the best Pater Ecstasticus to date. You can also save money by buying Bernstein's recording coupled

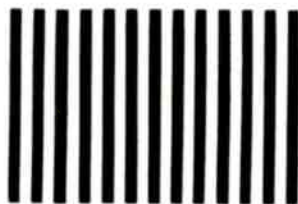
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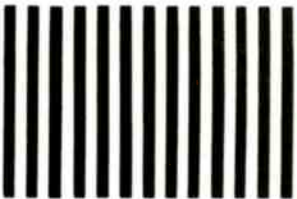
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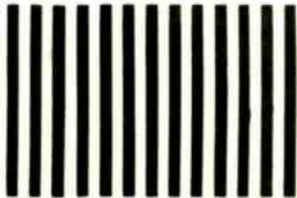
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with his equally desirable Seventh (M4X 31441).

This is not to minimize the achievement of the Ozawa recording, which probably does more things better than any of the others. It's just that, so far at least, the piece has defied any single solution. K.F.

MENDELSSOHN: Quartet for Strings, Op. 12—See page 55.

PERGOLES: Instrumental Works and Attributions; Stabat mater; Salve regina—See page 52.

RAVEL: Daphnis et Chloé.

Montreal Symphony Chorus and Orchestra, Charles Dutoit, cond. [Ray Minshull, prod.] LONDON LDR 71028, \$12.98 (digital recording). Tape: LDR5 71028, \$12.98 (casette).

COMPARISON:
Mata/Dallas Sym. RCA ARC 1-3458

I don't know how many of the Montreal performers are French-Canadians, but in their Decca/London recording debut, under a Swiss conductor, they certainly *sound* more stylistically Gallic than any other North American ensemble I know. Dutoit himself, most of whose previous recordings have been made with British orchestras, stimulates his forces to their best efforts and has planned and integrated his reading of Ravel's often loosely episodic ballet score with scrupulous care. Moreover, the recording is, even by current digital standards, exceptionally vivid and transparent—so vivid indeed that there are some suggestions of gimmicky solo "spotlighting," and the acoustical ambience is decidedly less warm and expansive than one would expect in Montreal's Eglise de St. Eustache.

The performance misses one of the work's great virtues, however, in its lack of rhapsodic flexibility, and the striking sonic clarity and almost palpable presence (together with something less than true tonal elegance on the part of both the instrumental soloists and the wordless choir) prevent this version from matching the more magically impressionistic first digital *Daphnis*, Mata's on RCA. For that matter, and quite regardless of the latest technological refinements, no Ravel connoisseur is likely to discard his favorite analog version by any one of the great French 3Ms—Monteux (London Treasury STS 15090, 1959), Munch (RCA AGL 1-1270, 1961), and perhaps best of all, Martinon (Angel S37148, 1976). R. D. D.

SMETANA: Quartet for Strings, No. 1 (*From My Life*)—See page 55.

SUK: Quartet for Strings, Op. 11—See page 55.

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WASSENAER (attrib. Pergolesi):
Sei Concerti armonici—See page
52.

WEILL: Songs (14).

Teresa Stratas, soprano; Richard Woitach, piano. [Eric Salzman, prod.] NONESUCH D 79019, \$11.98 (digital recording). Tape: D1 79019, \$11.98 (cassette).

Nannas Lied. Complainte de la Seine. Klops-Lied. Berlin im Licht-Song. Und was bekam des Soldaten Weib? Die Muschel von Margate: Petroleum Song. Wie lange noch? Youkali: Tango Habanera. Der Abschiedsbrief. Es regnet. Buddy on the Nightshift. Schickelgruber. Je ne t'aime pas. Das Lied von den braunen Inseln.

WEILL: Sonata for Cello and Piano.
DOHNÁNYI: Sonata for Cello and Piano, in B flat, Op. 8.

Jerry Grossman, cello; Diane Walsh, piano. [Judith Sherman, prod.] NONESUCH D 79016, \$11.98 (digital recording). Tape: D1 79016, \$11.98 (cassette).

The songs of Kurt Weill's Berlin years are intricate webs of ironic tensions: between apparently banal musical materials and ultrasophisticated treatment, between traditional harmonic entities and their juxtaposition in novel ways, between hard-bitten lyrics and superficially sentimental or cheerful tunes, between the songs' ostensible straightforwardness and their function, in the context of the drama, as trenchant social commentary.

As Weill was forced into exile, first in France and then in the United States, the effectiveness of this ironic style became gradually more problematic, as Nonesuch's fascinating song collection vividly illustrates. "The Unknown Kurt Weill," proclaims the cover, and the adjective is deserved, even though six of these songs were actually published at one time or another and several have been previously recorded. The composer's late widow, Lotte Lenya, made the music available to Teresa Stratas in admiration of the soprano's performance of Jenny in the Metropolitan Opera production of *Mahagonny*—an admiration in which many will concur, on the basis of this record.

Two of the best songs were written for leftist plays in Berlin, and they remain startlingly timely, for they attack the pollution engendered by oil: "*Das Lied von den braunen Inseln*" and "*Die Muschel von Margate*." The latter had some recent exposure as an interpolation in the New York City Opera production of *Silverlake*; furnished with a new and jaunty lyric extolling the virtues of friendship, it lost all the original tension between bitter lyric and cheery tune. The importance of Weill's balancing act could not be better illustrated.

Sometimes that balancing act didn't work to begin with. "Youkali," pub-

lished in France in 1935, is a bland tango that saves its ironic twist for the end—but by then it is too late to salvage our interest. In America, irony was not much in fashion. "Schickelgruber" might have been a genuine satirical subject in the hands of a Brecht, but Howard Dietz supplied mere crudities, and Weill just clattered along in the same vein. Alongside that triviality, Oscar Hammerstein II's "Buddy on the Nightshift" seems a masterpiece of understatement—but there is nothing here of the cross-rasping of lyric and music that vitalized Weill's earlier style. In the framework of this program, these American songs, wartime *pièces d'occasion*, don't stand up very well. (In his theater work, of course, Weill hammered out a distinctive "American" style, quite different from what he had done in Berlin.)

In the event, the high points of this program seem to be the songs with German texts, to which Weill occasionally

Weill's Berlin songs are intricate webs of ironic tensions.

returned—even as late as 1944, the year of a brief and final collaboration with Brecht on a propaganda song for the Office of War Information, "*Und was bekam des Soldaten Weib?*" (Its piano ritornello quotes Schumann's "*Die beiden Grenadiere*," another song about soldiers who went to Russia.) One song is heard in two versions: "*Je ne t'aime pas*" (1934) turns up ten years later as another propaganda piece. "*Wie lange noch?*"—a kind of allegorical torch song.

Precisely which of these songs will enter the repertory of Weill classics, only time will tell; I would bet principally on the German ones, though "*Es regnet*" is fairly dull and the "*Klops-Lied*" more a joke than a song. They are all certainly presented with enormous commitment by Stratas and Richard Woitach. One reservation: The Stratas intensity, so valuable in the theater (where, of course, it is varied and paced by the interventions of others), is pretty unremitting upon continuous exposure, and I've found the program more effective if taken a few songs at a time.

No doubt the reason Lenya could so greatly admire Stratas' singing lies in its complete contrast to her own. Lenya's extraordinary musicality precludes the use of the term "disease" in reference to her performances—but there is some truth there, for the words tangibly take first place with her; the only intensity in her basically light, detached delivery is in the clarity of the diction. Stratas, on

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the other hand, puts intensity in the vocal tone, making her effortful and unconventional production serve expressive ends; her words, though perfectly distinct, do not have the special crispness of Lenya's. Only rarely does the vocal effort get in the way—e.g., in riding the higher lines of "Youkali." More interesting is another contrast: Whereas Lenya's detachment usually reinforces Weill's irony, Stratas' intensity can undercut it: In "Die Muschel von Margate," the progressively more raucous screaming of the final refrain ("Shell! Shell! Shell!") ends by abolishing the satirical distance.

Three of these songs were recorded by Lenya. "Complainte de la Seine," a rather grisly bit of *Schadenfreude*, she sang in a rare set of 78s on the Bost label: according to her recollection, the anonymous pianist in these six songs was Weill himself. (Unfortunately, that particular side of the set in Lincoln Center's Rodgers and Hammerstein Archives proved unplayable, but certain details in the piano accompaniments of the other sides struck me as the kind of liberties only a composer would allow himself.) A tape of the OWI recordings of the two propaganda songs can be heard at the same archive: there are two versions of "Was bekam des Soldaten Weib"; in one of them, the final stanza is brought to an unexpected and heart-stopping cadence in midstream. Both the Bost set and the OWI recordings should be made available on LP; they are apparently the only recordings Weill and Lenya made together.

On another disc, Nonesuch brings us one of Weill's earliest surviving works, a 1920 cello sonata that predates his studies with Busoni. Perhaps because the coupling is Ernő Dohnányi's very Brahmsian (and very brilliant) cello sonata—written some twenty-one years earlier, when its composer was also in his early twenties—one's attention is called to the Brahmsian aspects of Weill's piece, notably in its treatment of rhythm and meter. But the Weill has much genuine originality as well: The kinds of harmonic relationships that Brahms explored between third-related keys are now presented as interlocked simultaneities, their ambiguity given constantly shifting emphases. The slow movement seems fragmentary, at least by comparison with the sweeping first movement, a big sonata form that continues to accumulate tension until well into the recapitulation. The lively finale has cyclic aspects—as does the last movement of the Dohnányi, an ingenious variation movement that surpasses the finale of Brahms's Third String Quartet in incorporating earlier material. Both pieces are commandingly played by Jerry Grossman, a cellist of full and

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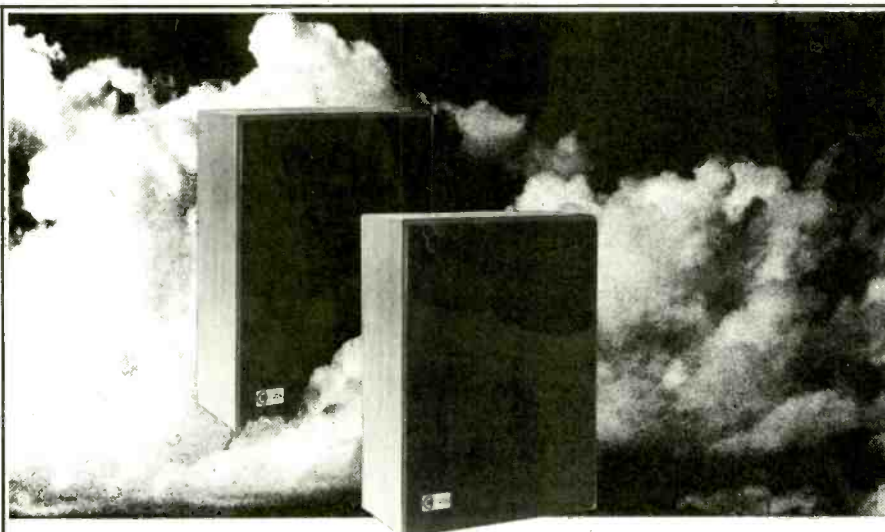
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CLASSICAL Reviews

wonderfully secure tone, and Diane Walsh, who matches him in rhythmic vitality.

The digital sound of both discs is remarkably convincing. Both are furnished with authoritative notes by Weill scholar Kim Kowalke; the song program is offered in a double-fold sleeve with insert, to accommodate interesting photographs as well as texts and translations—the latter, alas, not set in parallel columns, so that it is an effort to match sound and meaning. (A couple of lines have been dropped, one each in “Complainte de la Seine” and “Buddy on the Nightshift.”)

D.H.

Recitals and Miscellany

KIRI TE KANAWA: Song Recital.

Kiri Te Kanawa, soprano; Richard Amner, piano. [Paul Myers, prod.] CBS MASTERWORKS M 36667. Tape: MT 36667 (cassette). [Price at dealer's option.]

SCHUBERT: Rastlose Liebe; Nacht und Träume; Gretchen am Spinnrade. **SCHUMANN:** Du bist wie eine Blume, Op. 25, No. 24; Stille Tränen, Op. 35, No. 10; Die Soldatenbraut, Op. 64, No. 1. **WOLF:** Goethe-Lieder: No. 24. Blumengruss. **DUPARC:** L'Invitation au voyage; Le Manoir de Rosamonde; Au pays où se fait la guerre. **FAURÉ:** Après un rêve, Op. 7, No. 1; Nell, Op. 18, No. 1. **WALTON:** Three Songs by Edith Sitwell.

From a soaring “*Rastlose Liebe*” to Walton's swaggering “*Old Sir Faulk*,” stopping en route for some passionate—yes, passionate!—Duparc, this is a delightful program, brought to life by Te Kanawa's emotional immediacy and vocal bloom.

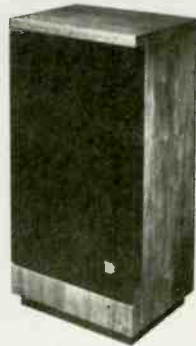
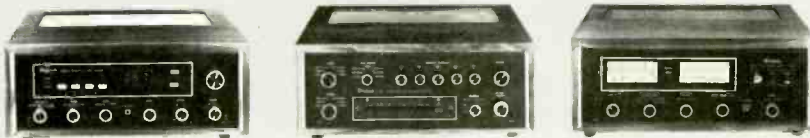
It's not “*profundity*” that she's after, but communication. Which she achieves, because she has a wide-ranging, fairly free and colorful voice and the sensitivity to make each of these songs drive that voice into action. The open upper range is a special pleasure, and so is the variety of the material, which sounds as if it was chosen not to show off the singer's “*versatility*” (three languages!), but because she has something to say about all of it.

The only material likely to be unfamiliar is the 1932 Walton set, which consists of a newly composed song, “*Daphne*,” joined to two recycled original *Façade* numbers, “*Through Gilded Trellises*” and “*Old Sir Faulk*.” Te Kanawa has a lot of fun with this, and I did too.

K.F.

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The Tape Deck

Critiques of new cassette releases by R. D. Darrell

Tuppence Colored

Mushrooming digital recordings, superchrome tapings, real-time duplications, etc., are widening the schism between premium-priced audiophile specialties and "ordinary" standard- or budget-priced releases. Not since the "society" editions of the 78-rpm disc era have there been such frank appeals to elitist, affluent buyers. This trend, though perhaps deplorable in a democracy, proves valuable in raising standards and widening choices—for the well-heeled, anyway. And in actual practice, at least some of the techniques developed for these hi-tech, high-cost (tuppence colored?) specials are coming to be adopted in the best ordinary (penny plain?) analog recordings and ferric tapings.

One of the most novel, decidedly elitist tape producers is Bob Sellman's Direct-to-Tape Recording Co., which has just informed me that it pioneered (from July 1979) in both cassette real-time duplication and DBX encoding—firsts for which I credited In Sync Labs (September 1980) and DBX Inc. (August 1981). And Sellman is surely first with DBX encoding of open reels. His practically hand-crafted tape line actually offers its infant catalog in both formats: cassettes in Dolby B, Dolby C, or DBX II (on Agfa Superchrome tape) and quarter- or half-track reels in Dolby B, in DBX II, or unencoded. Also available at extra cost are 7" and 10" (metal) reels on mastering tape. All duplicating is done in real time (i.e., at a 1:1 speed ratio); both cassettes and reels are recorded on one side only and accompanied by notes (but no texts) in type that ranges from small (reels) to microscopic (cassettes). Tapes, catalog, and a quarterly newsletter are available from the Direct-to-Tape Recording Co., 14 Station Ave., Haddon Heights, N. J. 08035 (add \$2 per order for shipping).

The three current releases I've heard, in both cassette and reel editions, are topped by perhaps the first recording of Kodály's late and very moving *Laudes organi*, together with his engaging *Mátra Pictures* (folksong settings) and Bartók's more familiar four *Slovak Folksongs*. Superbly recorded before a very quiet audience in St. Peter's Church in New York, Philadelphia Music Group

Chorus sings with infectious relish under Sean Deibler, with Norman MacKenzie at the organ (DTR 8102, \$13).

The other two programs, though just as un gimmicked and clean sonically, are far less distinguished musically: Elizabeth Boggs's "Art of the Harpsichord," a rather stiffly played collection of mostly familiar pieces by Couperin, Rameau, Handel, et al. (DTR 8101, \$11); and a recital of baroque "Heroic Music," by trumpeter Elin Frazier and organist Leander Chapin Clafin, that sadly lacks both tonal appeal and stylistic expertise (DTR 8103, \$12).

Penny Plain: Recyclings, continued. Deutsche Grammophon's new "Resonance" reissue series (\$6.98 each: made in Canada; no notes) is led by a Ralph Kirkpatrick Bach recital, including the Harpsichord Partita No. 1 and the *Italian Concerto*, dating from 1959-61 and purist for the time (3335 213), and Tamás Vásáry's virtuosic if lightweight Chopin scherzos, from 1964 (3335 285). But I also welcome Rafael Kubelik's 1968 Mahler (Fourth Symphony, 3335 119) and 1963 Wagner (*Siegfried Idyll* and preludes, 335 212).

Budget-priced reissues include the pioneering recording of the Schumann violin concerto (Mercury, c. 1965), coupled with the Mendelssohn, by Henryk Szeryng and Antal Dorati (Quintessence P4C 7194, \$5.98); and in the three-cassette Vox Box series, Vols. 1 and 2 of Maurice Abravanel's admirably straightforward 1974 Tchaikovsky orchestral works with the Utah Symphony (CBX 5129/30, \$13.98 each).

Arabesque (\$7.98 each) continues its invaluable historical series with Wilhelm Furtwängler's 1944 mono recording of Strauss's *Sinfonia domestica*, plus four songs starring Peter Anders (9082); only specialists are likely to tolerate the aged broadcast sonics, however. On the other hand, everyone is sure to be charmed by Rudolf Kempe's 1960-63 EMI superpops concert with the Vienna Philharmonic—favorite overtures by Berlioz, Mendelssohn, Nicolai, Offenbach, Smetana, and Weber (9100). And even Eurodisc's full import price of \$9.98 may not seem excessive to devotees of the late, extraordinarily gifted tenor, Fritz Wunderlich, heard in an undated anthology of familiar opera and operetta arias and songs, all sung in German with various orchestras (55907). **HF**

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BACKBEAT[®]

Christian Music: The Record Industry's Saving Grace?

With 60 million Born Again Christians in this country, anything is possible.

by Davin Seay

WHITE-ROBED BAPTIST CHOIRS banging tambourines and shouting hallelujahs. Harmonizing quartets in toupees and polyester suits. Sonorous Wurlitzers pumping out the Protestant Top 10. Blissed-out hippies strumming guitars and passing out tracts in front of X-rated theaters. Such were the prevailing stereotypes of the Christian use of music, stereotypes that have, in the past decade, been exploded by the emergence of a rapidly expanding specialty industry. Various dubbing Gospel, Contemporary Gospel, Contemporary Christian, or simply Jesus Music, the Christian record industry has become one of the fastest growing segments in the entire spectrum of modern music. At this point, the only factors preventing it from achieving a more distinct presence in the marketplace are the inherent hidebound views of those both within and outside the faith, and the problem of specialty marketing. But even those obstacles are disappearing.

Consider: Recent Gallup polls delineated a hefty slice of the American populace as Born Again Christians (George Gallup himself among them); estimates ranged from 60 to 90 million, or twenty-five percent of the population. Of that figure, a significant proportion is in the prime record-buying age group—eighteen to thirty-four-year-old baby boomers. By any estimation, the market has staggering potential, and it has only begun to be tapped within the past decade. A 1980 survey by Warner Communications put Sacred/Gospel music in a

Davin Seay is a free-lance music journalist based in Los Angeles; he is a practicing Christian.

category of its own; two years earlier it had been a subdivision of All Other, lumped in with Ethnic and Spoken Word. What Warner discovered was that Christian music was the fifth highest-selling LP category, placing it above both classical and jazz. Those figures were for conventional retail outlets only; they did not take into account the industry's traditional distribution network, the Christian bookstore, where an estimated seventy-five percent of all Christian records are sold. The Gospel Music Association, Christian music's trade association, reports \$120 million in record and tape sales in 1980. By whatever means you gauge it, contemporary Christian/gospel/Jesus music is much more than Baptist choirs or folk-singing evangelists. It is big business.

But what does it sound like? Equal parts country, soft rock and m.o.r., r&b, and, of course, traditional gospel, the broad range of Christian music sounds a little bit like everything—with the notable exceptions of the heaviest of heavy metal, punk, and the further limits of the avant-garde. It comprises a variety of subgenres. Inspirational, or "praise music," can best be described as m.o.r. updates of hymns; it's a kind of spiritual Muzak. Southern quartet music, sung by harmony-heavy white foursomes primarily from the deep South, is country-flavored gospel (*Amazing Grace, What a Friend We Have in Jesus*, etc.); it was hugely popular in the Sixties. Contemporary gospel is performed by black artists who use old-line r&b styling to deliver their message, bringing rhythm & blues full circle back to its gospel roots. The sound most commonly associated

with the word gospel—black choirs, soulful Mahalia Jackson-esque soloists—is categorized as traditional gospel. Finally, contemporary Christian/Jesus music is primarily white pop/rock that runs the gamut from easy listening to almost-hard rock.

The best-selling Christian artists (defined by LP sales of around 100,000) are spread fairly evenly across these categories. Vocalists such as Amy Grant, Reba Rambo, and Evy Tournquist are the Olivia Newton-Johns and Anne Murrays of Christian music; the Bill Gaither Trio and the Imperials upgraded and improved on the old Southern quartet format; the Walter Hawkins Family and Mighty Clouds of Joy work from a firm traditional gospel base. To extend the secular/sacred metaphors, the highly successful contemporary gospel singer Andrae Crouch could be called the Stevie Wonder of the field, appealing to both white and black audiences, while contemporary Christian artists like B. J. Thomas, Barry McGuire, Keith Green, and a trio named 2nd Chapter of Acts run parallel in popularity to such artists as Springsteen, Styx, and REO Speedwagon.

But the similarities end there. The music of the above, as well as that of numerous lesser lights—Sweet Comfort Band, DeGarmo & Key, Daniel Amos, Leon Patillo, Denny Correll, Larry Norman, and Darrell Mansfield, to name only a few—is explicitly and unswervingly Christian. Brightly optimistic or deeply devotional, the lyrics reflect an often fervent faith; the music is almost universally melodic, as opposed to riff-oriented.



Andrae Crouch



2nd Chapter of Acts: second only to Led Zeppelin



Imperials: improved the old Southern quartet style



Amy Grant



Mighty Clouds of Joy: traditional gospel base

JOE GRIFFIN

A number of Christians working within the secular mainstream have attempted to record songs that both espouse their belief and stay within the conventional rock/pop milieu. The most famous example is, of course, Bob Dylan, and the wildly uneven quality of his LPs since his profession of faith graphically demonstrates the difficulty of bridging the gap between commercial song forms and religious content. Dylan is not the only performer to wrestle with this quandary. Donna Summer, Van Morrison, Arlo Guthrie, T-Bone Burnett, Roger McGuinn, Richie Furay, Maria Muldaur, Robin Lane and the Chartbusters, Jennifer Warnes, Britain's U-2, and others have also attempted, with varying degrees of success, to combine rock and religion. Disregarding the old saw that rock is the devil's music, the problem of relating the message via the marketplace's favored medium is one that has kept Christian rock & roll from becoming popular with mass audiences.

None of which seems to affect the extraordinary success of modern Christian music within its own community. There is little doubt that this white, rock-oriented subgenre has been primarily responsible for the industry's runaway growth in the past decade. The roots of

the music can be traced back to the Jesus Movement of the mid- to late-Sixties, to such places as Calvary Chapel and San Francisco's Grace Cathedral. Groups like Lovesong played amplified instruments to gatherings of young believers at beaches, store fronts, and in church basements. The introduction of rock music in religion transcended the cultural trappings of gospel; regardless of the screams of fundamentalist preachers (many of whom were rapidly losing their congregations), the new approach spread in direct proportion to the burgeoning ranks of baby-boom believers who had grown up with rock & roll. As a result, throughout the Seventies, record labels and contemporary Christian radio stations sprouted like weeds.

At first glance, the sheer number of Christian record labels would seem to indicate a crowded and highly competitive field. The truth is that, while the competition is stiff, the players are few. The huge Word, Inc. conglomerate (wholly owned by the American Broadcasting Company) is a perfect example. Aside from operating such subsidiary labels as Myrrh, Canaan, and Dayspring, this Waco, Texas-based giant distributes a number of smaller companies including Solid Rock, Maranatha, Good News,

Seed, and others. As Christian Music's top record label, Word is in an escalating signing and marketing war with the number two label, Benson. An old-line Southern gospel company with a Contemporary Christian facelift, Benson owns Impact, Greentree, and other labels and distributes Lamb & Lion, New Pax, Paragon, Starsong, Milk & Honey, Home Sweet Home, and more. The number three company, Sparrow, is a seemingly autonomous and feisty corporate dog that allegedly gets silent corporate backing from a major music publisher. Thus, a few voracious and well-heeled concerns are calling the shots—a situation with precise parallels in the music business-at-large.

The corporate giants on the secular side are, in fact, beginning to give Christian music a run for its potentially substantial money. CBS records has recently formed its own in-house Christian label. Priority records, which promises to release product by Dylan and others. MCA—a pioneer in the field—has not let the recent failure of its own Songbird label deter it from entering a two-way distribution pact with Sparrow. Warner Bros., which recently signed gospel giant Andrae Crouch with the intention of expanding his audience to mainstream r&b, has announced a distribution agreement with Crouch's Christian label, Light records.

While the parallels between Christian record companies and conventional labels are strong, such is not the case with radio. Christian radio is wide open. Its programming (within the genre) tends to be a good deal less restricted than conventional radio and it is currently experiencing tremendous growth. Stations that feature at least four hours of religious fare a day number 1,400, nationwide. Music-formatted outlets account for something less than fifty percent of that total, spread evenly (about one per market) across the country. That number is increasing, and for very natural reasons. In the days before the Jesus Movement, the two elements most vital to traditional religious radio were a talkative preacher and a large donor pool, most of which was in the fifty-five and older age bracket. There are no less preachers today, but the contributors are dying off, leaving a lot of stations in a financial crunch. Young listeners are not, as a rule, given to sending money to support on-the-air ministries. Ergo, the rapid proliferation of commercial-based, music-formatted Christian radio stations, with an impressionable and loyal twenty-five to forty-nine year-old listenership.

The Christian music industry is fairly self-contained, if not downright incestuous; it's a network of artists, labels, and radio stations that can exist quite

(Continued on page 81)

Input Output

Field tests of new instruments and accessories by Fred Miller



If you make a mistake, it asks you, "Huh?"

The McLeyvier Speaks English, Writes Music, Remembers Everything

YOU'RE A FILM-SCORE COMPOSER, and you've just completed the music for *Rocky 10*. You've played it through several times on the piano, and you think, you hope, that everything is going to sound great when the time comes to record. Your piece now goes to the orchestrator, who, after designating which instruments play which parts, gives it to a copyist. The copyist writes out each musician's chart—say thirty in this case. All the charts, and the conductor's score, go back to the orchestrator for checking and proofreading, and finally back to you. Then, off to the recording studio to hear your precious work for the first time. If all the writing, arranging, orchestrating, and copying went as planned, you can sit back and relax. After all, you've just spent the last two months (under normal circumstances) preparing for this, not to mention paying \$10,000 for copying and orchestrating services.

Of course, if you had been using the McLeyvier the entire process would have taken about two days for an approximate cost of \$200—for paper. Switch to the present, and imagine an eighty-eight note keyboard on a console that also incorporates a standard typewriter keyboard and a CRT (picture tube or screen). You want to write a trumpet melody. Type WRI(TE) CH(annel) 1, USE TPT, and play the keyboard. Since the keyboard is "velocity-sensing" (touch sensitive), your trumpet line will have real dynamics. You want to hear the four bars you've just written, so you hit RET(urn), type GO, and the

McLeyvier plays the line back, complete with dynamics. You like it, so after naming it *Axis*, you type SAVE AXIS, and the piece is safe in the memory of the computer. (According to the manufacturer, its memory is "longer than all of Beethoven's symphonies combined.") You want to hear what you've just written with two trumpets, so you hit RET, type RESET, WRI CH 2, COPY CH 1. To add French horn and hear the trumpet parts at minimal volume while doing so, hit RET, type MUTE CHS 1 and 2, then RESET, WRI CH 3, USE FR HN and play your new line on the keyboard.

Twenty instruments later, you decide to have a listen to the whole works (hit RET and GO). Something sounds strange in that cello line on Channel 12. Hit RET, type OFF CHS 1-11, OFF CHS 13-20, GO. It *sounds* okay, so, to have a look at it on the CRT you type SCO(re) AXIS CH 12. Aha! The E flat in the third bar is clashing with the oboe line's E natural. You make a correction and now take a look at the full score on the screen by typing SCO AXIS. It looks as good as it sounds.

It's time for a break, but before you go, you type SCO-P AXIS. By the time you return, the McLeyvier will have printed out on paper (by means of a pen plotter) the complete conductor's score to *Axis*. It will also print all the instrumental parts, each bearing the title of the piece, your name, the copyright notice, and all the tempo, dynamic, phrasing, and metronome markings you need. You can even transmit the entire score

via telephone to your publisher's McLeyvier so it's waiting in his office when he gets in the next morning, ready for duplication and distribution.

The McLeyvier comprises a computer, software, a keyboard, CRT, plotter, and several synthesizers. It can perform in any of 128 preset voices, each of which has its own channel. It responds to approximately 150 commands, and needs only the first three or four letters of each to do so (WRI for write, RETR for retrograde, CRES for crescendo). It will transpose from any key to any key, play slower or faster. It will even generate its own SMPTE (Society of Motion Picture and Television Engineers) time code for synchronization with tape and film. Developed by Canadian composer/inventor David McLey, it is designed specifically for musicians who speak the English language, not computer experts who speak COBOL or FORTRAN. (It can also be programmed in French, Spanish, or any other language for that matter.) If you make a mistake, it responds with, "huh?" or "guess again."

To get started, you simply type HELP on the keyboard. The CRT displays several introductory paragraphs explaining how to use the McLeyvier. It tells you that it responds to commands and then lists some of them. If you don't understand a particular command, type "?" and then the word. If it's a musical term, it will first give you a textbook definition. In any case it will describe the specific application of the command on the computer. Once you've mastered this information, it guides you through its operating procedures, one step at a time, until you fully understand how to compose, embellish, edit, score, and print.

If you want more details, it will display on its screen a block diagram of the synthesizer components—oscillators, filters, VCAs, envelope generators, noise generators, and so forth. You can inter-

(Continued on page 82)

BACKBEAT

Reviews



EBET ROBERTS

Rod Stewart whoops it up on "Tonight I'm Yours" (see page 80).

David Byrne: The Catherine Wheel
David Byrne, producer
Sire SRK 3645

Conceived as the score for Twyla Tharp's recent Broadway dance production, "The Catherine Wheel" arrives on the heels of other individual projects by David Byrne's partners in Talking Heads. Byrne's vitality as a purveyor of rhythm makes these excerpted songs and instrumental pieces easily as effective on their own as they must have been with Tharp's choreography. His basic approach here falls midway between the song form used on the Heads' most recent studio work and the sonic collages that dominated "My Life in the Bush of Ghosts," his collaboration with Heads producer Brian Eno. As the subtitle ("Songs from the Broadway Production of The Catherine Wheel") indicates, the disc's prime lure is the new songs, each continuing Byrne's now-familiar juxtaposition of convoluted streams of consciousness against percolating band arrangements that are studded with cross-rhythms and repeating melodic figures.

Compared to his partners' more straightforward bids for separate recording identities, this seemingly esoteric and ambitious assignment only underscores

Byrne's focal role in Talking Heads. "The Catherine Wheel" proves more substantive than either the somewhat labored surrealism of Jerry Harrison's "The Red and the Black" or the more whimsical dance rock of the Tom Tom Club (which coheres around Heads drummer and bassist Chris Frantz and Tina Weymouth). Like his songs for the group, Byrne's solo compositions are hiccuping recitations on modern life, meshing edgily with the intricate syncopations that are common to all three Heads projects.

Credited here with instrumental support on three tracks, Eno exerts a wider influence than those listings might suggest, especially on the brief but generally atmospheric instrumental pieces. On *Eggs in a Briar Patch*, Byrne uses the same formula of "found" recitation over instrumental bed that dominated "My Life in the Bush of Ghosts."

Most of his Heads fans will gravitate more readily to the songs. On *His Wife Refused*, *My Big Hands (Fall Through the Cracks)*, *What a Day That Was*, and *Big Blue Plymouth (Eyes Wide Open)*, Byrne offers his familiar declamatory vocals against Head-strong slipstream riffing. If the songs are sometimes numbingly repetitive, they are no more so than those on last year's "Remain in

Light," which sometimes overstated its new wave/funk intentions.

For the audience coming to this music by way of Tharp's production, the longer cassette version (Sire M55 3645) may be preferable, since it contains all seventy-three minutes of the score. This LP is limited to songs and selected brief instrumentals. —SAM SUTHERLAND

The J. Geils Band: Freeze-Frame
Seth Justman, producer
EMI America SOO 17062

The J. Geils Band is one of the very few groups from the '60s that has not only survived but prospered with its original lineup still intact. The reasons are amply documented on this tough, bracing, and often brilliant album. "Freeze-Frame" sounds so fresh, it's as if this Boston-based sextet had carefully mixed some of its earliest influences with some very current ones, as if the strength of its distant past had inspired a renewed spirit of exploration and growth.

This effect jumps right out on the opening title track. Drummer Stephen Bladd's tightly-wound shuffle-stomp recalls such mid-'60s, first-wave punk groups as the Barbarians and the Knickerbockers, as Peter Wolf spins out an intricate double entendre that compares an amorous encounter with a photo session: "Thursday morning was a hot flash-factor/Her face still focused in my mind/Test-strip proof-sheet love is hard to find..." Slap-back echo on the snare drum and the sound of cameras clicking and whirring reinforce the ultramodern image, while a crack horn section and Seth Justman's rich Hammond organ chords supply traditional reference points. The overall effect is clever and meaningful, leaving one with the impression that these guys have obviously been around awhile, but they're also "hip" to what's going on.

As a songwriting team, Justman and Wolf have matured significantly over their last two albums, capable now of dealing with a variety of subjects without resorting to clichés. *Rage in the Cage* delves into pent-up teenage emotions as effectively as any Springsteen tune ever has, without ever once using any of the Boss's Jersey Shore mannerisms. *Do You Remember When* addresses lost love quite bluntly, the believability of Wolf's crooning, heartfelt sadness no doubt a result of his on-the-rocks marriage to actress Faye Dunaway.

The band plays with real fire and authority throughout, going for new sounds and instrumental approaches.

Magic Dick provides especially hair-raising solos on *Flamethrower* and *Rage in the Cage* without relying on hackneyed rock/blues phrasing. Geils sounds wonderfully fluid and jazzier than ever on his guitar solos. As producer/arranger, Justman provides a fascinating array of synthesizer tone colors, and, on *River Blindness* delves into African/electronic rhythmic textures that are so idiosyncratic as to easily avoid sounding trendy. "Freeze-Frame" should significantly expand the J. Geils Band's already-large and loyal following. This is one group of musical survivors who will undoubtedly be around for a long time to come.

—CRISPIN CIOE

Daryl Hall & John Oates:
Private Eyes

Hall & Oates, producers
RCA AFL 1-4028

For years Daryl Hall and John Oates flirted with major success, turning out occasional glorious singles (*Sara Smile* and *Wait for Me* immediately spring to mind) and a series of unevenly-produced albums. On "Voices," their last LP, these brainy former Philadelphians finally took over their own production, using their own band to record rather than studio musicians. Not coincidentally, that album yielded three artful hit singles in a row, making it their most successful LP to date. "Private Eyes" is a followup in the best sense of the word, a further refinement of the shiny surfaces and smoothly polished stylistic influences that began to emerge with consistency on "Voices." Without a producer to stand between them and their finished product, Hall and Oates's artistic goals are much clearer now, and one of them is to resurrect the AM radio single as an exciting medium. Judging from "Private Eyes," they're well on their way to achieving that goal.

Of course, most contemporary AM radio is notoriously bland and formulaic, so rock groups often look down on the format, the common wisdom being that FM sells albums. But Hall and Oates literally revel in the classic conventions of the single, and their songs are steeped in riffs, textures, and harmonies that allude to its '60s and early '70s heyday, when arresting lyrics, undeniable rhythm, and a transcendent melody were necessary for a song to be a hit. The title track, for instance, pivots on the tension between drummer Jerry Marrotta's relentlessly simple backbeat and Hall's nonstop, nervously pounding piano chords. As he sings, "What my head overlooks/the senses will show to my heart . . . you can't escape my Private Eyes," he sounds every bit as edgy and uncertain as he expects his girl to be. On *Your Imagination*,



EBET ROBERTS

Hall & Oates: masters at creating AM radio singles with integrity

a slithery synthesizer line frames Hall's opening statement: "I remember when I used to be the jealous kind/I got over it, now you're taking over my old line," summing up a relationship's mistrust and insecurity in a few moody bars.

Hall and Oates get to the musical heart of the matter just as quickly, another sure-fire sign of great singles artists at work. On *Looking for a Good Sign* (which is "dedicated to David, Eddie, Melvin, Otis, and Paul," i.e., the original Temptations), Hall's David Ruffin-inspired falsetto and his and Oates's ringing Motown harmonies are placed squarely over a pulsing modern rock beat, creating a believable homage to soul music. Sure, Hall and Oates specialize in short pop tunes meant to be enjoyed by the masses. But most of the songs here also have musical integrity and depth—and that's a rare combination these days.

—CRISPIN CIOE

Del Shannon: Drop Down and Get Me

Tom Petty, producer
Elektra 5E 568

Women have been a source of trouble for Del Shannon throughout his career. Their capacity for betrayal and deception has been his primary subject from his first, magnificently moody hit *Runaway*, through later songs like *Little Town Flirt* and the vindictive *Hats Off to Larry*, right up to this two-years-in-the-making project with Tom Petty, "Drop Down and Get Me." As it happens, Shannon's insistent voice and musical style are perfectly suited for conveying bruised anguish, and his new album is a solid achievement. It contemporizes him without compromising the individuality that made him one of the strongest rockers of the early '60s. But when, on song

after song, he depicts females as users and liars, the ultimate message gets somewhat soured.

In much the same way that Bruce Springsteen and Steve Van Zandt revived the career of Gary U.S. Bonds, Petty and the Heartbreakers rescue Shannon by giving him their creative sponsorship. Shannon fully deserves re-discovery. His use of the organlike Musitron precedes all electronic/synthesizer effects in rock. (ELO's Jeff Lynne acknowledged Shannon's influence by producing some sides with him on Island Records.) His lovers-on-the-run singles *Keep Searchin'* and *Stranger in Town* are definite Springsteen prototypes. He recorded an LP of Hank Williams songs a decade-and-a-half before *Urban Cowboy*. All through "Drop Down and Get Me," he and the Heartbreakers get the spirit right. Tracks like *Sucker for Your Love* and the title song have the old Shannon momentum (Benmont Tench stands out on keyboards), and the more reflective cuts—Don Everly's *Maybe Tomorrow*, Shannon's *Never Stop Tryin'*, and the oldie *Sea of Love*—are enhanced by the complementary vocals of Kym Westover.

It's a fine album, but it would rate more cheers if its prevailing point of view weren't so spiteful. Nearly all of Shannon's compositions, including *Liar*, *To Love Someone*, and *Life Without You*, find him embittered by a faithless lover, and his choice of a Rolling Stones cover—*Out of Time*, from Jagger and Richard's most female-baiting period—is telling. (Shannon had a minor success some years ago with *Under My Thumb*, so the attitude is not a new one.) As commendable as Petty's attempt to focus new attention on Del Shannon is, "Drop Down and Get Me" is a mixed event: very sound musically, very suspect emotionally.

—MITCHELL COHEN

Frank Sinatra: She Shot Me Down
Don Costa, producer
Reprise FS 2305

Frank Sinatra has spent much of the last two decades (his entire tenure with Reprise) denying his artistry. What is one to make of a talent as rich as his being frittered away on concepts like "Some Nice Things I've Missed," on songs by Rod McKuen, Marilyn and Alan Bergman, Sammy Cahn, and Paul Anka, on painful renditions of *Downtown*, *Mrs. Robinson*, and *Winchester Cathedral*? The high points—his collaborations with Count Basie and Antonio Carlos Jobim, parts of "Ol' Blue Eyes Is Back," album one of "Trilogy"—seem like aberrations in a career of total carelessness. "She Shot Me Down," then, comes on like a glow of sudden realization. There are still moments of banality, but they are alongside moments so movingly rendered as to make one mourn even more achingly the years of wasted vinyl.

The only bad news is that some of the material is, as usual, not of the quality he deserves. Sonny Bono, author of *Bang Bang (My Baby Shot Me Down)*, should never enter Sinatra's repertoire; Gordon Jenkins (*I Loved Her*, a simplistic "list" song) is a mundane composer; *Thanks for the Memory* should have been left as originally written. The good news, however, is that Sinatra is singing better—tonally, interpretively—than he has in a very long time, possibly since the Jobim album (1967). His phrasing and enunciation are flawless; there is never a need for printed lyrics. And the thematic thread of the album is one that has served him well for forty years: love locked out, romantic dreams gone bust. This is his home court.

That Sinatra is in such good voice is remarkable. That he has chosen some stylish, literate, and melodically challenging songs is more so. "She Shot Me Down" begins with Stephen Sondheim's *Good Thing Going*, a rueful number from *Merrily We Roll Along*, and concludes with a medley of *The Gal That Got Away* and *It Never Entered My Mind*, arranged by Nelson Riddle. If there were nothing but Bulgarian commercial jingles between those cuts, the very jump from Sondheim to Arlen & Gershwin-Rodgers & Hart would still raise this album above most latter-day Sinatra.

What does fill the grooves are two recent songs by the late Alec Wilder with Loonis McGlohon (*A Long Night* is the better of the pair), a fine contribution by Jule Styne, a surprisingly workable conceit by producer Don Costa (*Monday Morning Quarterback*), and the melody of *Thanks for the Memory* (the new lyric features lines like "Tonight the way (Continued on page 80)

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(Continued from page 77)

things look/I need a book by Sigmund Freud/How brainy he was"). The structure of some of the songs, especially Sondheim's and Wilder's, is a challenge to maneuver through, but Sinatra never loses his footing. He brings to "She Shot Me Down" what he has always, at his best, brought to his music—a matchless union of compassion and craft.

—MITCHELL COHEN

Rod Stewart: Tonight I'm Yours

Rod Stewart & Jim Cregan, producers. Warner Bros. BSK 3602

Following in the wake of 1980's ultraslick, trashy "Foolish Behaviour," "Tonight I'm Yours" marks a welcome return to real-life rock & roll for Rod Stewart. The scraggly-voiced veteran's eleventh solo LP is probably his best since '72's "Never a Dull Moment." It's a clever, vigorous collection of originals (most of them written with guitarist Jim Cregan and keyboard player Kevin Savigar), and well-chosen outside material: Bob Dylan's *Just like a Woman*, the Burnette brothers' Fifties rocker *Tear It Up* (which boasts a playful classical piano intro), and Ace's mid-Seventies hit *How Long*. It also features some of the best group playing of any Stewart effort. Guitarists Cregan and Robin LeMesurier, keyboardist Savigar, drummer Tony Brock, and bassist Jay Davis provide a fervent, roiling setting for the singer's eccentric, masterful vocals.

"Tonight I'm Yours" also contains one of the year's best singles in *Young Turks*, a Dylan-meets-Dire Straits rave-up that bristles with the clacking, mechanical drums of old Stewart crony Carmine Appice. Cregan steals a page from Mark Knopfler's book of willowy guitar runs, and the whole tightly wrapped package is topped off with the radiant keyboards of Savigar and Duane Hitchings. The album's only truly inauspicious moment is *Never Give Up on a Dream*. This overblown tribute to Terrence Stanley Fox, the Canadian cancer victim who jogged across the continent last summer and then died, was co-written by pop music's premiere sentimentalist hack, Bernie Taupin. As Stewart waxes emotional, a portentous Pentecostal choir warbles woefully. It's a delicate subject that has been handled with heavy, clumsy hands.

As for the rest, Stewart sings like a man with a new lease on life. He pokes fun at his sexy image on *Tonight I'm Yours (Don't Hurt Me)*, he whoops it up on *Tora, Tora, Tora*, and he even saves a son-of-Passion number called *Jealous* from falling in the disco abyss. Along with venerable Anglo acts like the Rolling Stones and the Kinks, Stewart seems

to have been caught in the currents of a second wind.

—STEVEN X. REA

Jazz

Pee Wee Erwin: Classic Jazz

Pee Wee in New York

Pee Wee in Hollywood

Pee Wee Playing at Home

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A year and a half before Pee Wee Erwin's death at the age of sixty-eight, he and his friend Bill Muchnic started work on a project that would show the trumpeter in a variety of recorded situations. When he died last June, three albums had been completed. Though they may not have covered the full spectrum that he and Muchnic had in mind, they are a fitting memorial to Pee Wee's talents and a welcome corrective to the widely held impression that he was just a Dixieland musician.

"Pee Wee in New York" puts him in a mini-big-band context playing Bob Wilber's octet arrangements of ballads, blues, standards, and show tunes, from Gershwin's *He Loves, She Loves* (rarely played by jazz musicians) to Ellington's *Creole Love Call*. Particularly on this last, Pee Wee's warm, glowing tone, his sly coloration, and his mastery of effects from growls to lyricism shine brilliantly in the company of Ed Hubble, Johnny Mince, and Wilber.

"Pee Wee in Hollywood" finds him in a septet playing pieces closer to the Dixieland repertory. Though he and tenor saxophonist Eddie Miller provide strong solos on such tunes as *There'll Be Some Changes Made* and *Hindustan*, the most revealing cuts are three piano-and-trumpet duets—two with Dick Hyman, one with Dick Carey. These put Pee Wee in some "naked" situations, much like Louis Armstrong's performances with Earl Hines, and he sustains the exposure admirably.

On "Pee Wee Playing at Home," the most fascinating of the three discs, his trumpet is joined by the guitars of Bucky Pizzarelli and Bucky's son John. The pieces are gentle and relaxed, the kind that Pee Wee almost never had an opportunity to play in public. Included are a trumpet and guitar arrangement of Bix Beiderbecke's piano composition *In the Dark*; *September Song*, played with a gruff sweetness that reflects both Walter Huston's singing and Pee Wee's own personality; and *The Hour of Parting*,



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Pee Wee: much more than Dixieland

whose reflective, tender reading is a refreshing change of pace from the bravura treatment the tune usually gets. The complementary balance between the players makes this record as much Bucky's as it is Pee Wee's.

Together, these three unusually well-recorded discs show the true breadth of Erwin's capabilities, strengthening the picture of a modest man who was a much greater trumpet player than his usual circumstances ever suggested.

—JOHN S. WILSON

John McLaughlin: Belo Horizonte

John McLaughlin, producer
Warner Bros. BSK 3619

As the best-known pioneer in fusing jazz guitar technique with post-rock firepower, John McLaughlin has remained an archetype for that movement's excesses, despite a stylistically varied career. As recently as his live guitar summit conference with Paco deLucia and Al DiMeola, McLaughlin has succumbed to grandstanding amid frenetic crossfires of arpeggiated picking.

Yet unlike such glaring technocrats as DiMeola who eclipse melodic grace and harmonic color with count-the-notes displays of pure speed, McLaughlin has long excelled at gentler, atmospheric excursions on both acoustic and electric instruments. His late '60s solo work and subsequent leadership of the Mahavishnu Orchestra opened up quiet new realms as well as fiery jazz/rock vistas. But in recent years his focus on the more eclectic marriages of Indian and Western acoustic instrumentation have met with diminishing popularity.

All of which makes his first album for Warner Bros. a twin triumph. On it, McLaughlin balances a restrained personal style shaped by those recent forays against an implicit attempt to remain accessible. His new nine-piece band, aug-

mented on one track by deLucia, surrounds him with percussion, synthesizers, keyboards, reeds, and violin, using a textured palette shaped by the electronic orchestral timbres associated with Weather Report.

McLaughlin sticks with acoustic guitar throughout and the modern chamber orchestra feel he achieves is generally satisfying. While he still flashes daunting technique, songs like the title composition, *Very Early (Homage to Bill Evans)*, and *Waltz for Katia* reflect a heartening emphasis on melodic shape and song structure.

His playing—together with Jean Paul Celea's acoustic double bass, Augustin Dumay's violin, Katia LeBeque's acoustic piano, and deLucia's guitar—injects a vital warmth and human intimacy to the washes of synthesizer and Fender Rhodes, creating a mature, elegant fusion. If "Belo Horizonte" is far from a grand statement, it's a charming one nonetheless. —SAM SUTHERLAND

Emily Remler: Firefly
Carl E. Jefferson, producer
Concord Jazz CJ 162

Up until the time of his death in 1968, guitarist Wes Montgomery's style was as widely imitated as Charlie Christian's and blues-based B. B. King's are now. Emily Remler, a twenty-four-year-old Montgomery enthusiast, may well bring his thumb-strumming and parallel octaves back into prominence. On "Firefly," her first album under her own name, the warm sonority of her tone and the direct logic of her ideas provide a very refreshing change from most current jazz guitar playing.

Her debt is expressed directly in her light, fluent performance of Montgomery's *Movin' Along*, and indirectly in her own *The Firefly*, a bright swinging piece that captures the lilt of her model's style. Horace Silver's *Strollin'* also falls easily into the Montgomery mode.

But there is more to Remler than admiration for Montgomery. Even within the context of his approach and compositions, it's quite clear from her naturally flowing lines that she has already found her own, distinctive approach. She handles with equal finesse the post-bop of McCoy Tyner's *Inception*, the lush romanticism of Ellington's *In a Sentimental Mood*, and the quasi-folk (in this reading) of the unaccompanied *A Taste of Honey*. Backing her are bassist Bob Maize, drummer Jake Hanna, and pianist Hank Jones. Jones plays a very supportive but unobtrusive role, giving Remler virtually all the solo space. She easily justifies the opportunity. —JOHNS. WILSON

(Continued on page 82)

CZECH CHAMBERS

(Continued from page 56)

Many of today's listeners, unfamiliar with the older school of string playing, with its anticipated shifts and flagrant portamento, will be initially—and perhaps permanently—put off by the Bohemians' highly idiosyncratic period playing. But if one can hear beyond the scoops, the dated extremes of tempo, the passages (particularly in the Smetana scherzo) in which disparate methods of shifting make unisons a disparate everyman-for-himself scramble, one will discover the very soul of this music.

The Smetana is, of course, a far better and better-known composition than the Suk, and how beautifully these "authentic" interpreters calibrate the transition to the first movement's second theme. And how poignant this same theme sounds when it returns, forlorn and spent, in the coda of the finale. (The high E, which depicts the onslaught of Smetana's deafness, is absolutely terrifying here.) "Original instrument" protagonists will warm to the subtle colors obtained by the use of gut strings; here is eloquent proof that something expressive *did* vanish with the appearance of the steel E string.

If the Bohemian Quartet cannot be said to have directly influenced modern Czech groups (such as the Smetana

Quartet, which has recorded both these works), one can find its influences galore in the mid-1930s recording of the Smetana by the Ondříček Quartet. By then, some of the portamento was already becoming mitigated, but otherwise the Ondříček's reading is uncannily patterned after this "definitive" paradigm. Today's performers tend to treat Smetana more as a classicist, but the surrealistically pinched, crabbed inflection and angular rubatos (especially in the third and fourth movements) reveal an aspect of Czech style much in keeping with, for example, Janáček's music.

The Suk is played with its second finale, which the composer/performer obviously preferred to the one in the published text.

The Bohemian Quartet, founded in 1892, disbanded in 1933. These readings—and also one of Dvořák's Op. 96—thus date from near the end of its existence, a point worth considering in view of the occasionally wayward intonation.

The aged sound of these recordings is constricted, yet one notes approvingly that the viola and cello are given their due in the recorded balance, and in fact, one can readily hear all four parts at all times. Parnassus has lovingly restored the obscure source material, and both pressing and liner notes are excellent. This is indeed a fascinating document.

CHRISTIAN MUSIC

(Continued from page 73)

nicely, thank you, without any help from the outside world. Because of the highly specialized nature of the music, its somewhat conservative marketing and distribution practices have been the major factors holding it back from tapping the huge potential expressed in Gallup's figures. As far as exposure beyond the Born Again audience, conventional record stores have been loathe to spare precious floor space for what they have seen as a limited-appeal item. While the Sam Goodys, Towers, and Licorice Pizzas of the country may have gospel bins, they are usually catch-all dumping sites, inadequately stocked and tucked away in the back of the store.

Christian labels have thus had to resort to the country's 2,400 Christian bookstores, where Bibles, devotionals, and commentaries do a brisk business. But even the bookstores haven't done much to heighten the faith's music profile. Twenty years ago, when most of these stores were operated by the Baptist Church, a color code to rate Christian product was instituted: green for sanctioned, yellow for unsanctioned, and red for hellfire. Red-rated records could only be paid for by sending invoices directly to the manufacturer; the Baptist's central purchasing house would not handle the money. Those attitudes still prevail to

some extent, which explains why bookstore floorspace seems almost as tight as the record outlets'. Still, they remain the only viable outlet for Christian recordings. Combined with in-concert sales, where LPs are sold out of the back of a tour bus, Christian music has had a decidedly paltry impact on the marketplace.

The truth is, most Born Again Christians are unaware that music made for and by them exists at all. Fewer than ten percent of them ever darken the doorstep of a Christian bookstore. Christians buy most of their records where every one else does: at record stores. A recent study of children from Fundamentalist homes revealed that their favorite groups were Styx, Led Zeppelin, and 2nd Chapter of Acts, in that order.

Whether or not the Christian music industry will ever fully realize the potential inherent in Born Again statistics, whether the music is indeed relevant to anyone outside the faith, and whether that faith can be promulgated through the music are all questions that will be resolved in the not-too-distant future. With the industry-at-large in dire straits, it would seem an appropriate opportunity for Christian music to move in and take hold. At this point, its fate very much depends on how quickly and thoroughly longstanding attitudes can be changed. HF

ADVERTISING INDEX

Key No.		Page No.
	Akai America, Ltd.	41
24	AudioMatic Electronics	61
16	BASF	29
	Blaupunkt	38
	Bose Corp.	Cover III
19	BSR (USA) Ltd.	48
35	Castle Marketing	4
7	Carver Corp.	13
76	Cizek Audio Systems, Inc.	69
51	Discount Music Club	62
53	Discwasher, Inc.	Cover IV
	Fuji Tape	77
	Illinois Audio	68
45	International HiFi	62
27	J&R Music World	71
33	Jenson Car Stereo	27
	Kenwood	6
13	Loranger Mfg. Co.	15
12	Maxell Corp.	12
91	Maxell Corp.	43
56	McIntosh Laboratory	70
11	Mission Electronics	10
57	Mobile Fidelity	69
	Nakamichi USA Corp.	47
	NAD (USA), Inc.	9
21	Ortofon	61
2	Pickering & Co.	2
6	Pioneer High Fidelity	Cover II, 1
58	Polk Audio	63
93	Rhoades	46
14	Sansui Electronics Corp.	37
48	Santa Fe Express	4
	Sennheiser Electronics Corp.	67
50	Shure Brothers, Inc.	34
	Sony Corp. of America-Tape Div.	7
38	Sound Reproduction	61
59	Soundcraftsman	8
29	Stereo Corp. of America	64
10	TDK Electronics Corp.	11
60	TDK Electronics Corp.	70
8	Teac Corp. of America	16
5	Tecnnics by Panasonic	5
43	Wisconsin Discount	67
22	Yamaha Audio	33



COURTESY OF INTERNATIONAL MUSICIAN

Marian and George: four hands that sound like three

George Shearing & Marian McPartland: Alone Together

Carl E. Jefferson, producer
Concord Jazz CJ 171

Pianists George Shearing and Marian McPartland have followed similar paths of development to arrive at their basic be-bop foundations: Shearing was initially a boogie-woogie star; McPartland spent several years in husband Jimmy's Dixieland band. But despite their similar backgrounds (both also were born in England), they offer a contrast in playing styles that gives "Alone Together" variety and vitality.

Shearing's light, airy, running attack lends a floating quality to the proceedings; McPartland's slightly heavier touch provides ballast. Rather than playing in unison or, conversely, spreading out in two separate directions, they fill out each other's performances. As Shear-

ing points out in the liner notes, frequently they both play in the middle register so that it sounds more like a three-handed performance than a four-handed one.

Each plays one solo: Shearing performs McPartland's *There'll Be Other Times* and McPartland gives a gentle lilt to Shearing's *To Bill Evans*. Though both are excellent soloists, in this context their two spots are almost a letdown. Not only are the duets fresher and more inventive, but the three-handed sound has a gutsy, swinging flavor that sets them apart from any other piano duo. They are at their best in their jauntier moods, which range from a little-known pop song *They Say It's Spring* to some fuguing on *Alone Together*. They also manage to transform *Chasing Shadows*—a mistily romantic piece as played by Django Reinhardt and the Quintet of the Hot Club of France—into a joyful swagger.

—JOHN S. WILSON

INPUT OUTPUT

(Continued from page 74)

connect them in any way you choose, and it will tell you how to do so. But on the McLeyvier, you don't use patch cords or matrix boards. You just type in the connections you want the computer to make. It has up to four outputs for quad and two for stereo, with separate echo-send circuits, enabling you to do master mixes on it.

Breakdowns? No problem, according to David McLey. Phone the manufacturer—Hazelcom Industries, Ltd.—in Toronto, let your instrument speak to its mother, the Master McLeyvier, and a new program will be written around the defect, rendering it "up" again within minutes. Complete diagnosis and reprogramming should take no more than a half-hour, maximum.

The list of options is completely ri-

diculous. It's available with or without the scoring capabilities and has its own road case. Aside from the pedal and fader options, there are additional presets and computer programs—the discs hold from ten to forty megabytes of information—such as those to operate accounting and video-game systems. There's even a Braille option.

After many years in the music and recording business, I've seen a lot of innovations, from digital delay lines to parametric equalizers to digital recording. But not one has impressed me as much as the McLeyvier. If you have a chance to see it in action, don't miss it. For now, excuse me while I start rolling up my pennies: Price range is from \$15,000 to \$50,000. (The McLeyvier is available only from Hazelcom Industries, Ltd., located at 39 Hazelton Avenue, Toronto, Ontario M5R 2E3.) **HF**



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