

DECEMBER 1987 \$2.25

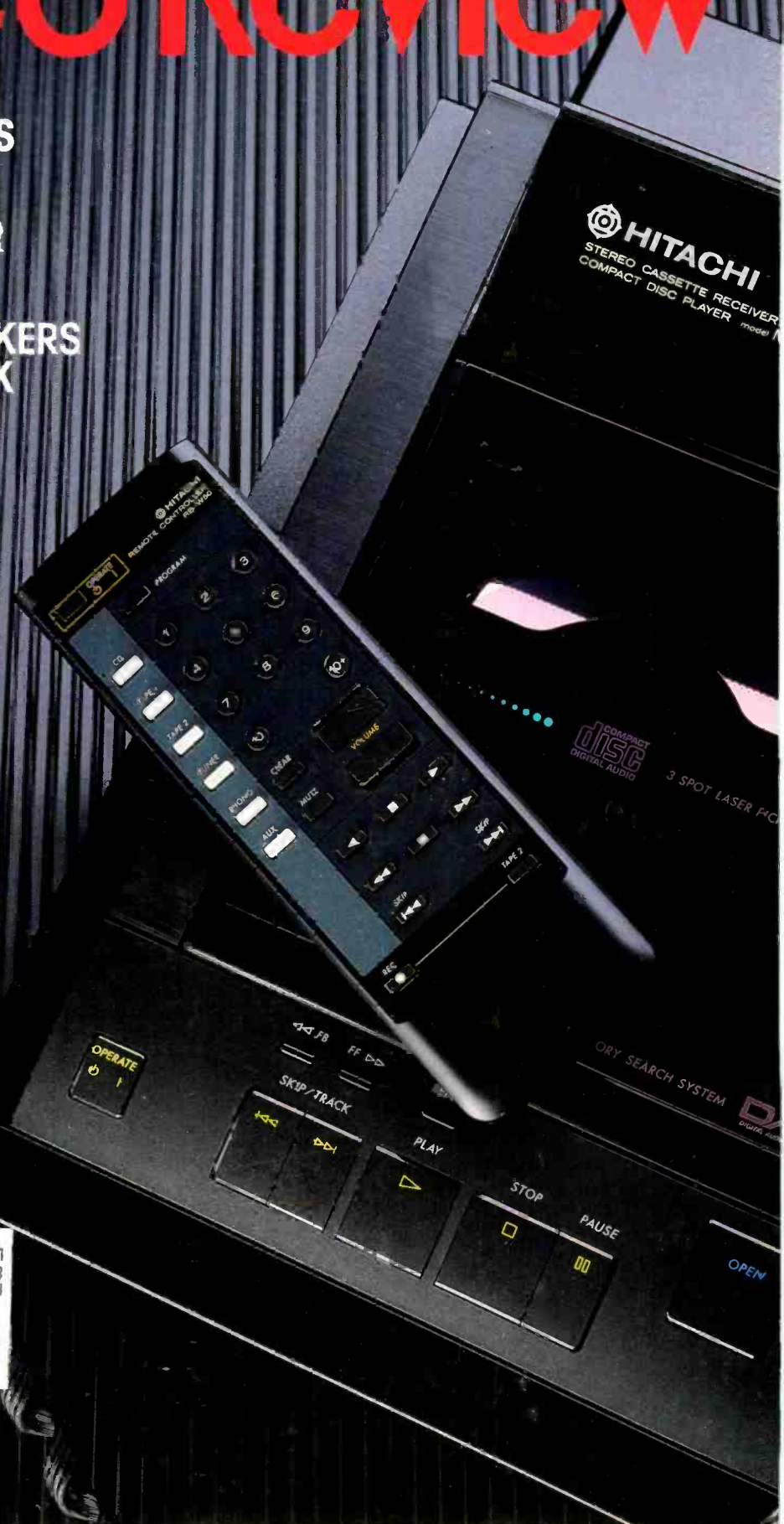
# Stereo Review

**HOW TO BUY HEADPHONES**

**SPECIAL TEST REPORT:  
THE A/D/S/ R4 RECEIVER**

**ALSO TESTED:  
DESIGN ACOUSTICS SPEAKERS  
TECHNICS CASSETTE DECK  
HITACHI SLIMLINE SYSTEM  
... AND MORE**

**THE NEW EQUIPMENT:  
REPORTS FROM TOKYO  
AND BERLIN**



MR DAVID S BUCHANAN  
8900 YELLOW WOOD PL  
12#LP  
LOUISVILLE KY 40222  
#2598\*\*\*\*\*5-DIGIT 40222  
#BCH8900Y091\*  
430492 BCH 8900Y091 741J JAN90



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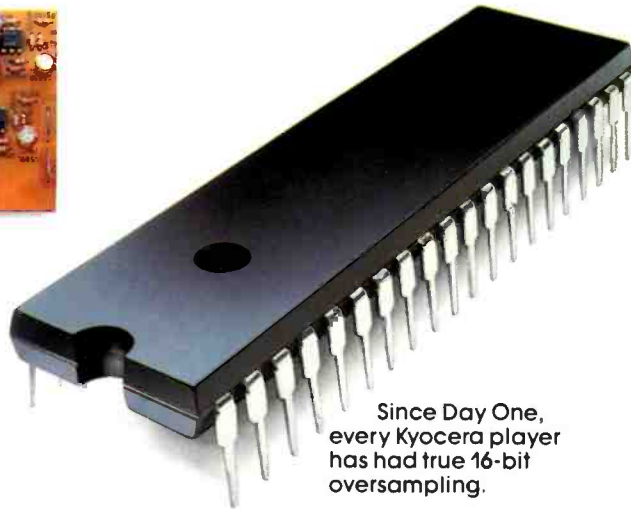
These anti-resonant chassis spacers are made with Kyocera's proprietary Fine Ceramics.

Fine Ceramics laser guide shafts hold their tolerances five times longer than other materials.

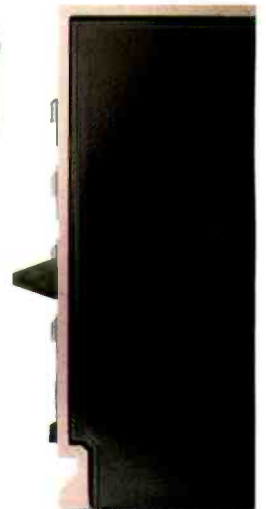
# These are the CD features they'll be copying next.



3rd-order analog filters cause less phase shift than the 7th- and 9th-order designs that others use.



Since Day One, every Kyocera player has had true 16-bit oversampling.



The front fascia of all our players is brushed aluminum, not plastic.



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Our real wood side panels help damp resonance. They also look good.

In May of 1983, Kyocera introduced a CD player with true 16-bit digital filters. Today, the competition's calling this circuit "the latest thing." Years ago we had four-times oversampling. This year every high-end player worth mentioning has a similar design. In September, 1984 Kyocera raised some eyebrows with the world's first Fine Ceramics anti-resonant CD chassis. Now the stores are full of flimsy imitations.

How did all these innovations happen to come from Kyocera, and not some household name? Perhaps because Kyocera's knowledge of digital circuitry comes from years of building computers for some of the best-known names in electronics. Perhaps because Kyocera is a world leader in Fine Ceramics, the technology used to house circuitry in aerospace and other advanced applications. Or perhaps because some top-rated CD players from other brands were actually made by Kyocera.

Now Kyocera has four world-beating Compact Disc Players, ranging in suggested retail price from \$350 to the \$800 model DA-710CX shown here. Each boasts technology so advanced, it's a preview of what the competition will be selling in 1989. After all, history does repeat itself.



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Cover: The Hitachi MXW-50 Slimline system and Beyer's DT 990 headphones.  
Design by Sue Llewellyn, photo by Aaron Rezny.

STEREO REVIEW BUYER POLL, SEE PAGE 133  
Please fill in if you bought equipment in the past thirty days.  
READER SERVICE INFORMATION CARD, FACING PAGE 133  
Circle the items you want to know about.



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# BULLETIN

by Christie Barter and  
William Burton

## HIGH CD NUMBERS

More bits, higher sampling rates, and more digital-to-analog converters are being featured in new compact disc players. Sony and Yamaha showed 18-bit players at the Tokyo Audio Fair that were said to have eight-times oversampling and four D/A converters. Pioneer's new PD-91 (\$1,200) is a linear 18-bit quadruple-oversampling player with super-fast access. Denon and Onkyo will use linear 18-bit quantization, and Technics's 18-bit players will have four D/A converters.

## DANCE SINGLES

Mixed Masters is the name Columbia Records has given to its new series of dance-music reissues. Titles are limited to recordings that have figured among the top five on *Billboard's* pop, black, or dance charts. The first release includes double-sided 12-inch singles by the Clash, the SOS Band, Michael Jackson, Herbie Hancock, and Heatwave. Future releases in the series are expected to include special mixes that were never commercially available.

## DAT DELAYS

Last summer Marantz announced it would sell DAT decks in the U.S. in October, but the company now says that a parts-supply problem is delaying sales until early next year. Marantz also plans to join Sony and Technics in making portable DAT decks. Anti-DAT laws are still pending in Congress, but a spokesman says CBS has no plans to Copycode recordings unless legislation requiring the complementary detector circuit in DAT decks becomes law.

## MUSIC NOTES

Starship's Top 10 single *It's Not Over ("Til It's Over)* is this year's baseball pennant-race anthem. . . . Royalties from the sale of the World Champion Lakers' anti-drug single *Just Say No* will benefit Forum Community Services, a nonprofit charity sponsored by the wives of players on the Lakers

team. . . . Sid Caesar is making his debut at the Metropolitan Opera this month in performances of *Die Fledermaus*. He plays the non-speaking role of the Jailor in the revival of Johann Strauss's popular opera. . . . Perry Como and Nathan Milstein are among the five recipients of the Kennedy Center Honors of 1987. The honorees are being saluted at a gala performance in the Kennedy Center's Opera House on December 6.

## FIRST CD SINGLES

The first recordings actually released for sale in the 3-inch CD single format developed by Sony are not pop hits but classical pieces on the Delos label. The Delos Pocket Classics series lists for \$3.99. Each of the little discs holds up to 20 minutes of music and will work in any CD player, though some players require an adaptor.

## 3-D CAMCORDER

Toshiba's new 3D-Cam color camcorder records three-dimensional moving pictures on standard VHS-C tape. The tapes play on ordinary VCR's, but they require a special TV set and special liquid-crystal glasses and synchronizing adaptor. The 3 $\frac{3}{4}$ -pound camcorder should be on sale next year at a price of \$2,000.

## BIRTHDAY SALUTE

On May 11, 1988, when Irving Berlin celebrates his 100th birthday, he will be honored at New York's Carnegie Hall with a concert co-sponsored by Carnegie Hall and the American Society of Composers, Authors and Publishers. Berlin is the only surviving charter member of ASCAP, which was formed in 1914 to protect performing rights.

## NEW YEAR FOR CDV

Sale of CDV discs in the U.S. is now set for the first quarter of 1988, with every major record company releasing five to ten titles. Some titles have already been released in Japan, and strong CDV sales are said to be increasing sales of LaserVision videodiscs.

Magnavox is joining Pioneer and Yamaha in manufacturing CDV/CD/LaserVision players with the CDV-474, which has a suggested list price of \$750.

## TECH NOTES

The first single-ended noise-reduction system from dbx, called SENR, is expected to appear in consumer products as well as professional equipment. . . . "My First Sony" is Sony's new line of portable audio products for children. It includes a Walkman, a boombox, a cassette recorder, blank tape, and a headset walkie-talkie. . . . Fifty million VCR's have been shipped to U.S. retailers, according to the Electronic Industries Association, which means half of American homes now have at least one VCR. . . . Musical instruments and sound systems for David Bowie's Glass Spider tour are wired entirely with Monster Cable. . . . Dual electronic components will be distributed in the U.S. by Ortofon, which also distributes Dual turntables, Tandberg components, and Ortofon products. . . . Discwasher has been purchased from International Jensen by a team of Discwasher executives.

## TOP MONEY MAKERS

Nearly half of the forty biggest earners in show business listed recently by *Forbes* magazine were recording artists. Among the top ten were Bruce Springsteen, with earnings for 1986-1987 estimated at \$56 million; Madonna, \$47 million; Whitney Houston, \$44 million; and Michael Jackson, \$43 million.



TERRY ALLEN



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For over thirty years Teac has been famous for building precision tape recording equipment. But, we're not willing to rest on our reels. So now Teac offers its most comprehensive line ever. From audio and hi-fi video recording equipment, to compact disc players, to graphic equalizers, speakers, and a complete line of audio and video accessories. One thing, however, will never change at Teac—our obsession with creating the most advanced, featured-filled, superbly executed audio and video equipment we can make. So, no matter what Teac you decide to buy, you can be assured of acquiring a piece that has been built to unheard of standards.

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# "Matthew Polk Has a Passion for Perfection!"

## Experience the Awesome Sonic Superiority of His New Signature Edition SDA 1C and SDA 2B.

The genius of Matthew Polk has now brought the designer styling, advanced technology and superb sonic performance of his award winning SDA Signature Reference Systems into the new Signature Edition SDA 1C and SDA 2B.

**"They truly represent a breakthrough."**

*Rolling Stone Magazine*

Polk's critically acclaimed, 5 time AudioVideo Grand Prix Award winning SDA technology is the most important fundamental advance in loudspeaker technology since stereo itself. Listeners are amazed when they hear the huge, lifelike, three-dimensional sonic image produced by Polk's SDA speakers. The nation's top audio experts agree that Polk SDA loudspeakers always sound better than conventional loudspeakers. Stereo Review said, "Spectacular... the result is always better than would be achieved by conventional speakers." High Fidelity said, "Astounding... We have yet to hear any stereo program that doesn't benefit." The new SDA 1C and SDA 2B utilize new circuitry which allows the drivers to more effectively utilize amplifier power at very low frequencies. This results in deeper, more powerful bass response, greater dynamic range and higher efficiency. In addition, the new circuitry makes these new speakers an extremely easy load for amplifiers and receivers to drive. Lastly, the imaging, soundstage and depth are more precise and dramatically realistic than ever.

### **Why SDAs Always Sound Better**

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

Without exaggeration, the design principals embodied in the SDAs make them the world's first true stereo speakers. The basic concept of speaker design was never modified to take into account the fundamental difference between a mono and stereo signal. The fundamental and

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

**"A stunning achievement"**

*Australian HIFI*

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

### **"Literally a New Dimension in the Sound"**

*Stereo Review Magazine*

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

**"Mindboggling, astounding, flabbergasting"**

*High Fidelity Magazine*

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

**"You owe it to yourself to audition them."**

*High Fidelity Magazine*

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

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## SPEAKING MY PIECE

by Louise Boundas



*Joyful Noise*

**T**HE holiday season is pretty rough on the editors of STEREO REVIEW. The magazine's production schedules just won't wait for us to do our Christmas shopping, and, like a lot of other people, we often wind up settling for what is left in the stores the week before Christmas. Worse, since we close the December issue early in October, shopping has been on our "to do" schedules—and our consciences—for almost three months by the time the holiday actually comes around. And when we are working on spring issues of the magazine, as we are at Christmastime, it becomes even more difficult to think about gifts for a holiday that is, on our office calendars, already some months gone.

This year, though, I decided to be more efficient by co-ordinating my office calendar and my Christmas shopping. That is, I resolved to wrap up all my gifts before we wrapped up the December issue. I have to report that I haven't exactly kept to that resolution. Here it is October already, and I haven't *bought* a single present. Still, I have made my list, so I am at least that much ahead of where I was this time last year and all those other Christmases past.

At the top of the list are the three suggestions I came up with for "Hi-

Fi Holiday Gifts" (page 79). The Zapit infrared booster is earmarked for a couple with two small children who watch television at the other end of a large family room, the headphones are for a friend who loads one Walkman-type portable for her briefcase and another for her bedroom, and the CD is for several people who keep asking to borrow my precious old Epic LP. When I saw the suggestions the other editors were making, I took a few cues from them, too. The teak CD racks Richard Freed recommends, for instance, sound perfect for the neighbor who already owns most of the sets Robert Ackart mentions in "Opera on CD" (page 106). Another neighbor will get a replacement stylus, which, once installed, might convince me to lend its new owner that Mozart record. My husband is down for a new tape deck, my mother a set of Frank Sinatra tapes for her car, and my father-in-law a new VCR.

But the happiest discovery I made while I was looking for ideas was My First Sony, the new line of audio products for children mentioned in this month's "Bulletin." Everybody on my list between the ages of two and six is going to get a My First Sony cassette recorder or Walkman.

I always have trouble choosing Christmas presents for my nieces and nephews. They grow so rapidly that I never know sizes, and their other aunts and uncles are bound to choose the same games or toys for them that I would choose. The My First Sony products are not toys, according to Sony, but real audio equipment designed to be used by very young children. They are brightly colored, with large buttons that are easy to operate. And they are safe: the plastic shells have rubber guards and rounded edges, and the Walkman has a volume-limitation feature to prevent damage to young ears. I especially like the big, fat microphone that is attached to the cassette recorder and the big, fat, comfortable headphones that come with the Walkman.

Now, as soon as I can get out of the office long enough to buy the presents on my list, I will be all set. And, for once, I can hardly wait for Christmas. □

### Stereo Review

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# CAN YOUR SPEAKERS HANDLE THE EXTREMES?

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A case in point is the new EPI model T/E 280 Series II. It exemplifies the EPI tradition of achieving high levels of performance by using imag-

inative engineering and precision manufacturing, not complex designs and exotic, expensive materials. Its efficiency, power capacity, wide range response and just plain beautiful sound will make even the most die-hard technophile forget the graphs and specs and sit back to revel in the sound. And, with a suggested retail price of \$199.95, forget about what it cost to get it.

There is an EPI Time/Energy speaker for everyone regardless of their listening habits, their electronics or their budget. Each one gives dedicated music lovers the kind of performance, quality and reliability that will keep them listening for years to come. With the Time/Energy speakers you can literally hear today what you'll listen to in the future.

*The EPI T/E 280 Series II. One of eight Time/Energy Series II speakers and Time/Energy Monitors offering EPI performance and value with suggested retail prices of from \$99.95 to \$299.95. Epicure Products, Inc., Newburyport, MA 01950, 800-225-7932, in Mass. 800-892-0565.*

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## LETTERS

### Hi-Fi Values

The September editorial on the diminished relative expense of records and hi-fi equipment was a good one. The "basic" system I used to sell, on the lower edge of the top-quality plateau, would set buyers back 10 to 20 percent of a respectable middle-class annual income—and without stereo or tape. Records were around \$5 then, too.

Another appealing thing about hi-fi equipment is its longevity. It doesn't usually come apart the way expensive cars do. Many high-fidelity systems that I sold and installed in the early Sixties are still in daily operation, usually only with newer cartridges, renewed rubber in the turntables, and the addition of cassette recorders and CD players.

JOHN WITHEY  
Hartford, CT

### Marshall Crenshaw

Contrary to Steve Simels's assertion in October that the songs on Marshall's Crenshaw's new album are "utterly generic," I must argue that "Mary Jean

and Nine Others" is the most difficult record Crenshaw has yet recorded. Don Dixon's fine production is tricky, and it hides many of the album's greatest harmonies from casual listeners. Mr. Simels also neglected to mention Crenshaw's remarkable advances in playing technique. His solos and rhythm lines are truly impressive.

T. H. KERN  
Galesburg, IL

### Loudspeakers

Congratulations on the September issue featuring that most fascinating subject, the loudspeaker. As a speaker manufacturer for some thirty years, I laud the rational tone of the articles and their theme of steady refinement of the principles of sound propagation that apply to all types of loudspeakers. Regarding what your writers term "conventional" loudspeakers—that is, dynamic drivers with crossovers in enclosures—I submit that such loudspeakers can do everything other types profess to do and with much less cost, smaller size, and fewer room complications. I have seen exotic

loudspeakers come and go while the steadily improving "conventional" loudspeakers stay.

IRVING M. FRIED  
Fried Products Co.  
Philadelphia, PA

### Saving Dirty Records

Just a note to thank Ian Masters for October's "Audio Q&A" item on washing records. He said to use *distilled* water and a lint-free cloth to remove heavy record-cleaner residue and other contaminants. I did what he said, and the few "hopelessly contaminated" albums I had are saved. I am listening to one as I write this.

NICHOLAS G. KUMIS  
Evergreen Park, IL

### Copy Prevention

In the controversy over copy-prevention encoding of CD's, what is not being said often enough is that we object to encoding *whether or not* it compromises the program (and this applies to videotapes as well). The most useful and



## LETTERS

enjoyable aspect of taping is the variety of selections one can compile on a tape for one's own "creative" expression. The programmability of CD players makes the task of compilation infinitely less arduous than in the past with LP's. But if they're going to remove that potential, what's the use?

PETER TOCCI  
Leominster, MA

Why would anyone spend \$1,500 or more on a digital audio tape recorder and \$15 for a blank DAT cassette to record a \$10 to \$15 CD? With more and more "mid-price" CD's on the market, a lot of source material would be cheaper than DAT copies!

RUSSELL S. LOW  
San Francisco, CA

Do CBS and other record companies considering "copy prevention" encoding systems plan to label the affected CD's? I'd like to know which discs to avoid. The very notion of intentionally adulterated CD's is vile and infuriating!

MARK JOHNSON  
Austin, TX

I sent a letter to the Recording Industry Association of America, among others, urging them "to drop any notion of using Copycode notching, or the greedy gestapos of the record industry will feel the unrelenting wrath of the consumer. ... There are millions of music purists in this country, and we're the ones who buy the records, tapes, and CD's. I don't think it would take much of an effort to organize and boycott record stores and put a real dent in the record industry's pockets."

They replied by sending me a whole kit, button included, thanking me for my support of anti-taping legislation. Can they be so self-righteous that they see things only as they want them to be, or did I die and get reincarnated in the *Twilight Zone*?

ANDREW J. GERARD  
Somerville, NJ

### Cable Upgrade

Six months after buying a CD player, I was ready to surrender to the "flat, lifeless, sterile" school of CD-player sound analysis. After a recent impulsive pur-

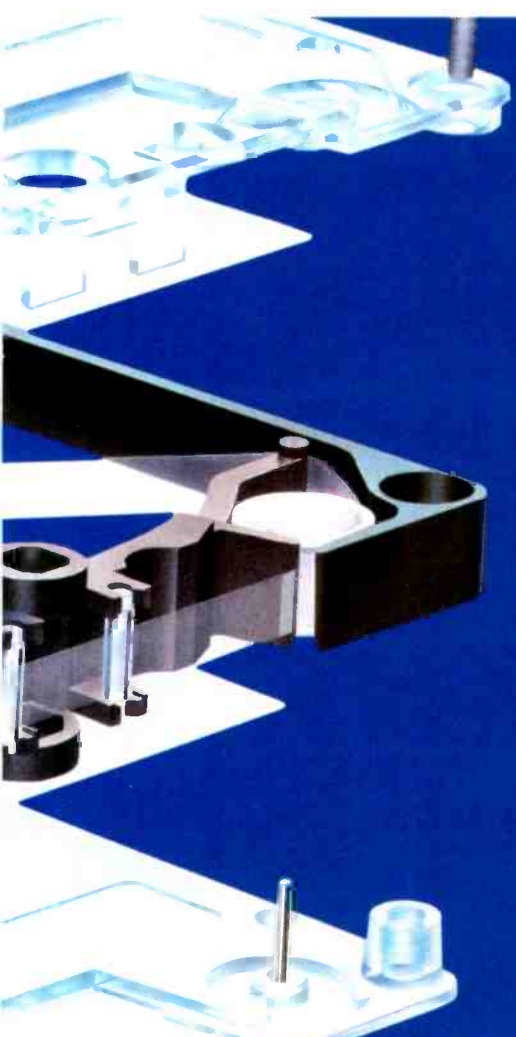
chase of a pair of high-quality interconnect cables, I'm compelled, as is my CD player, to sing a totally different tune. The sound is dramatically improved over the entire range, but especially in the bass and mid-bass.

TOM PERICAK  
Indianapolis, IN

### Correction

In the October test report on the Sound Concepts SSD550 Surround Sound and Ambience Restoration System, Julian Hirsch incorrectly stated that the unit "incorporates a true Dolby Surround matrix, with the required Dolby B noise reduction." The SSD550 does decode the surround channel from Dolby Surround films, but it uses a new matrix circuit of our own design that does not include a Dolby B chip. We think the SSD550 is an optimum system for the home, where listening conditions differ from those in theaters, but it is not a Dolby-licensed product.

JOEL M. COHEN  
President, Sound Concepts Inc.  
Brookline, MA



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New SA-XG is TDK's exclusive SA-X formulation—the world's quietest tape—technomooniously joined together with TDK's most sophisticated mechanism ever—the RS-II.

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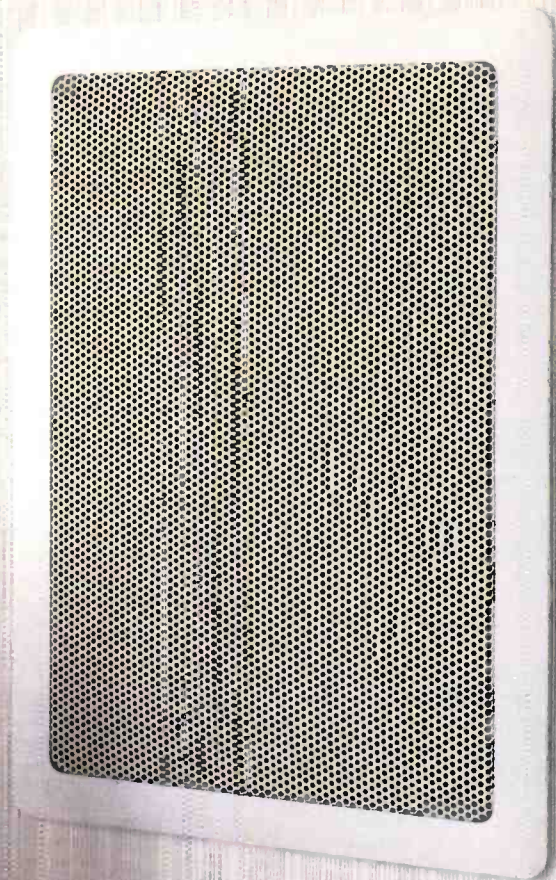
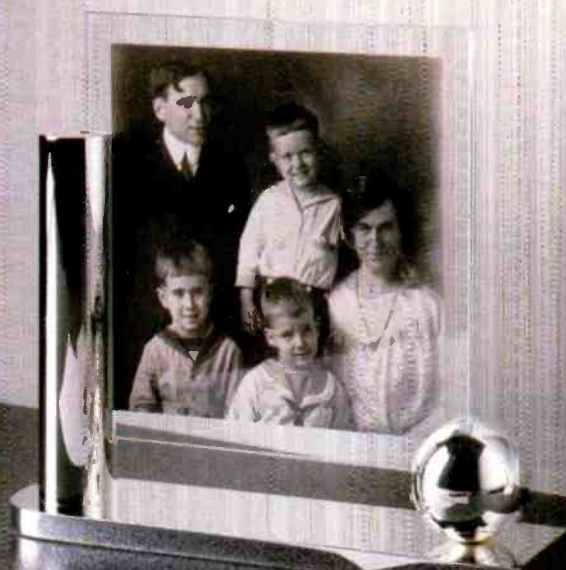
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There are two Designer Series models. Shown above is the model 360, with a 6 1/2-inch woofer. The smaller model 350 has a 5 1/4-inch woofer. Both have our CFT-4 one-inch dome tweeter. The contoured grille and trim,

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For a Designer Series brochure, please write to us at 247 Lynnfield St., Peabody, MA 01960. Or call 617-532-2111.

**Boston** Acoustics

## NEW PRODUCTS

### *Boston Acoustics*

The Boston Acoustics A150 Series III, a three-way floor-standing speaker system, has a 10-inch woofer with a copolymer cone that is said to offer better transient response than the earlier A150 Series II. The 3½-inch midrange driver also uses a copolymer cone and has a separate internal subenclosure. The 1-inch ferrofluid-cooled dome tweeter is said to result in improved detail and wider dispersion. The tweeter and midrange are mounted asymmetrically to the woofer, which is said to reduce cabinet diffraction and thereby enhance

upper-range detail. The speaker's broad baffle design is said to insure accurate tonal balance in a variety of room environments and placements.

The A150 Series III is compatible with power amplifiers delivering from 15 to 125 watts per channel. Frequency response is given as 39 to 20,000 Hz  $\pm$  3 dB, nominal impedance as 8 ohms. The speaker measures 16 inches wide, 32½ inches high (including the built-in base), and 8¾ inches deep. Price: \$650 a pair in genuine oak or walnut veneer; \$560 a pair in wood-grain vinyl. Boston Acoustics, Dept. SR, 247 Lynnfield St., Peabody, MA 01960.



### *Luxman*

The Luxman K-112 is a two-motor, three-head cassette deck featuring Dolby B and Dolby C noise reduction, Dolby HX Pro headroom extension, and a computer-controlled full-logic transport system. The transport is constructed with a double-plate metal chassis for greater rigidity, and the separate capstan motor is said to provide superior speed accuracy with negligible wow-and-flutter. The tape heads have superhard multilayer Hexalamin permalloy cores, and oxygen-free-copper wire in the windings of the record and play elements for extended frequency response and greater wear resistance. Price: \$500. Luxman, Dept. SR, 19145 Gramercy Pl., Torrance, CA 90501.

*Circle 120 on reader service card*

### *NEC*

The NEC AV-350 surround-sound audio/video amplifier has connections for up to four videocassette recorders or videodisc players, an audio tape deck, and a CD player or other audio source. Flexible switching facilities allow dubbing from tape to tape or disc to tape. The four power-amplifier sections are rated for 30 watts each into 8 ohms, and they can be bridged to drive a single pair of speakers with 60 watts per channel. Dolby Surround decoding is included, and two other surround effects are possible. The digital delay circuits can be adjusted for different delay times. Additional features include synthesized stereo from mono sources and a video image enhancer. A remote control is included. Price: \$579. NEC Home Electronics, Dept. SR, 1255 Michael Dr., Wood Dale, IL 60191.

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## NEW PRODUCTS



### Denon

The HD8-100 from Denon, designed for recording compact discs, is the first 100-minute audiocassette sold in the U.S. The thickness specifications of the tape are the same as for Denon's 90-minute HD8 cassettes, and the hybrid metal/ferric formulation is said to approach the performance of pure-metal tape. The high-bias cassettes have a "bridge" hub to maintain flatness around the perimeter for smoother tape running. Price: \$4.99. Denon, Dept. SR, 222 New Road, Parsippany, NJ 07054. **Circle 122 on reader service card**

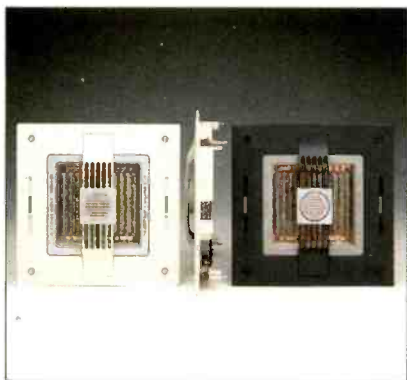
### Thiel

The Thiel Coherent Source CS3.5 floor-standing loudspeaker system can be used with amplifiers rated up to 250 watts for clean sound at high volume levels. Its frequency response is specified as 23 to 20,000 Hz  $\pm 2$  dB, its phase response as within  $\pm 10$  degrees, and its time response as  $\pm 50$  microseconds. Time coherence is said to be achieved by positioning the drivers along a sloping baffle, phase coherence by use of a special crossover network that synthesizes gradual, first-order acoustic roll-offs for each driver. Deep-bass response, rated flat down to 23 Hz, is achieved through an external active bass equalizer. Available finishes include teak, walnut, oak, rosewood, and black. The CS3.5 measures 42 inches high and 13 inches square at its base. Weight is 77 pounds. Price: \$2,450 a pair. Thiel, Dept. SR, 1042 Nandino Blvd., Lexington, KY 40511.



### OWI

The Thindy 2300-FX from OWI Inc. is a weatherized, wall-mounting, two-way speaker system that's only 9 inches square and 1 3/4 inches thick. The flat, square Dynapleat woofer, which uses strontium bar magnets and a unitized, heat-resistant voice-coil/polymer diaphragm, is said to avoid the "cavity effect" of conventional cone drivers. A round, flat ribbon tweeter is mounted in



front of the woofer. Frequency response of the system is given as 50 to 20,000 Hz (no tolerance stated), the sensitivity as 85 dB sound-pressure level at 1 meter with 1 watt input, and impedance as 4 ohms. The speaker weighs 2 1/2 pounds and comes in black or ivory finishes. Price: \$320 a pair. OWI Inc., Dept. SR, 1160 Mahato Place, Compton, CA 90220.

**Circle 123 on reader service card**



### Kyocera

Kyocera's top-of-the-line CD player, the DA-710CX, uses 16-bit digital filtering with quadruple oversampling and has an antiresonant construction in the form of ceramic laser-guide shafts and chassis spacers. Also featured are separate power supplies for the digital and

analog sections, dual-mono audio circuits, 100 percent discrete components in the analog output stage, LC-OFC wiring, and ninety-nine-track direct access. Price: \$800; \$320 more for a full-system remote control. Kyocera, Dept. SR, 100 Randolph Rd.-CN6700, Somerset, NJ 08873-1284.

**Circle 124 on reader service card**

### Monster Cable

The Alpha Genesis 1000 moving-coil phono cartridge from Monster Cable uses "horizontal coil winding" instead of the standard process of winding coil wires along a vertical axis. According to the manufacturer, the cartridge incorporates seven advances in its mechanical parts, including a long-life Micro-Ridge stylus and a laser-hollowed boron cantilever tube coated with "diamond carbon." Output voltage is rated as 0.2 mV, frequency response as 10 to 75,000 Hz, and the recommended load is 80 ohms. Price: \$800. Monster Cable, Dept. SR, 101 Townsend St., San Francisco, CA 94107.

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## NEW PRODUCTS



### Magnat

The three-way MSP 60 is next to the top of Magnat's line of bookshelf speaker systems. It has a 1-inch soft-metal dome tweeter, a 2 $\frac{3}{4}$ -inch Supranyl mid-range driver, and an 8-inch polypropylene woofer. All the drivers use Magnat's patented Ribbon-Wire voice-coil winding technology, which is said to put up to 40 percent more copper in the voice-coil gaps than conventional methods, resulting in lower distortion, greater accuracy, and longer life. The

soft-metal alloy in the tweeter provides substantial internal damping, which is said to give the tweeter extended response and a broad, uniform dispersion pattern.

System frequency response is rated as 41 to 29,000 Hz  $\pm$  3 dB, and maximum power-handling capability is 90 watts. Dimensions are 11 $\frac{1}{2}$  x 20 x 10 $\frac{1}{2}$  inches, weight 28 $\frac{1}{2}$  pounds. Finish is wood-grain vinyl. Price: \$325 each. Magnat, Dept. SR, 70 Atlantic Ave., Marblehead, MA 01945-3038.

**Circle 126 on reader service card**

### Soundcraftsmen

The Soundcraftsmen Pro-Reference Two MOSFET power amplifier is rated to deliver 100 watts per channel continuous output into 8-ohm loads, or 190 watts per channel into 4 ohms. Peak dynamic reserves are said to exceed 700 watts, and the output stages have ultra-high current capability to handle low-impedance loads. Frequency response is rated as 20 to 20,000 Hz  $\pm$  0.1 dB, hum and noise as -105 dB. There is a twenty-segment LED level indicator for each



channel as well as separate clipping indicators. Dimensions are 19 x 5 $\frac{1}{4}$  x 10 $\frac{1}{2}$  inches. Price: \$699. Soundcrafts-

men, Dept. SR, 2200 S. Ritchey, Santa Ana, CA 92705.

**Circle 127 on reader service card**



### Sharp

Sharp's WQ-CD30 portable system includes both a programmable compact disc player and a stacked dubbing cassette recorder. The amplifier section is rated for 3.5 watts minimum rms per channel into the 6-ohm speakers from 100 to 20,000 Hz with no more than 10 percent total harmonic distortion. There is a three-band graphic equalizer.

The CD player has a three-beam laser pickup, a 16-bit digital filter, programming for up to twenty tracks, and auto-scan. The cassette section features high-speed dubbing, continuous playback, and automatic program search on Tape 2. Dimensions are 23 $\frac{1}{4}$  x 5 $\frac{3}{8}$  x 7 $\frac{5}{8}$  inches, weight 12 $\frac{1}{4}$  pounds without batteries. Price: \$400. Sharp, Dept. SR, Sharp Plaza, Mahwah, NJ 07430-2135.

**Circle 128 on reader service card**

### Dual

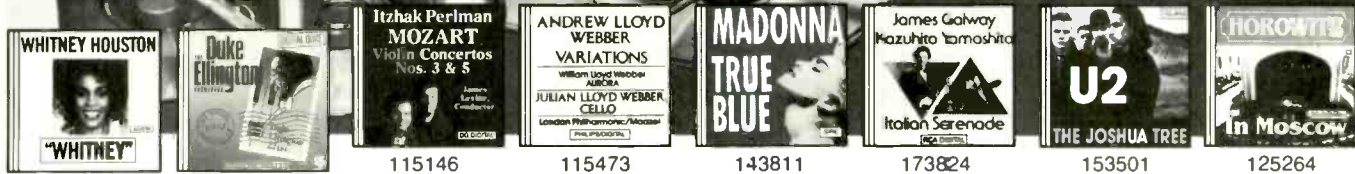
Dual's CS 503-1 "Audiophile Concept" two-speed turntable has a DC motor and a belt-drive system that isolates the resonance-damped aluminum platter from vibration and speed variations. Its straight aluminum tonearm is mounted on a gyroscopic gimbal and fitted with a carbon-fiber headshell. Vertical tracking force (VTA) is applied by a precision-adjustable torsion spring instead of gravity, which is said to eliminate the need to install the turntable perfectly level and to let the tonearm respond faster to warps. It weighs 10 $\frac{1}{2}$  pounds and measures 17 $\frac{1}{3}$  x 4 $\frac{1}{2}$  x 14 $\frac{1}{3}$  inches. Price: \$250. Dual, Dept. SR, 122 Dupont St., Plainview, NY 11803.

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| <p><b>Bon Jovi: Slippery When Wet</b> • You Give Love A Bad Name, etc. Mercury 143465</p>               | <p><b>Pops In Space</b> John Williams &amp; The Boston Pops, Music from Close Encounters, Superman, Star Wars, others. Philips DIGITAL 105392</p> | <p><b>Eagles: Gt. Hits, Vol. 1</b> • Take It To The Limit, One Of These Nights, Take It Easy, others. Asylum 123481</p> | <p><b>Brahms, Symphony No. 1</b> • Vienna Philharmonic Orchestra/Bernstein. DG DIGITAL 125224</p>                              | <p><b>Mozart, Requiem</b> • Schreier leads the Leipzig Radio Choir &amp; Dresden State Orchestra. Philips DIGITAL 115039</p>             | <p><b>Bryan Adams: Into The Fire</b> • Heat Of The Night, title song, more. A&amp;M 153919</p>    | <p><b>The Legendary Enrico Caruso</b> • Vesti la giubba, Celeste Aida, Cielo e mar, La donna è mobile, 17 more. RCA 134274</p> | <p><b>Kenny Rogers: Greatest Hits</b> • Lady, The Gambler, Lucille, more. Liberty 150019</p>  |
| <p><b>Genesis: Invisible Touch</b> • Land Of Confusion, title song, etc. Atlantic 153740</p>            | <p><b>The Glenn Miller Orchestra: In The Digital Mood</b> • In The Mood, Chattanooga Choo-choo, more. GRP DIGITAL 143293</p>                      | <p><b>Huey Lewis &amp; The News: Fore! Hip To Be Square, Stuck With You, Jacob's Ladder, more. Chrysalis 154570</b></p> | <p><b>Mozart, Symphonies Nos. 40 &amp; 41 (Jupiter)</b> Chicago Symphony Orchestra led by James Levine. RCA DIGITAL 104810</p> | <p><b>Elvis Presley: The Memphis CD</b> • Suspicious Minds, Kentucky Rain, In The Ghetto, more. RCA 254097</p>                           | <p><b>HEART</b><br/>Bad Animals<br/>144276</p>  | <p><b>STARSHIP</b><br/>NO PROTECTION<br/>163287</p>  | <p><b>Toscanini: Beethoven, Symphonies Nos. 2 &amp; 7</b> • NBC Symphony Orchestra. RCA 154202</p>                                    |
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| <p><b>Previn: Gershwin</b> • Rhapsody In Blue, Concerto in F, more. Philips DIGITAL 115437</p>          | <p><b>Bach, Brandenburg Concertos Nos. 1-3</b> The English Concert/Pinnock. Archiv DIGITAL 115541</p>   | <p><b>Bach, Brandenburg Concertos Nos. 1-3</b> The English Concert/Pinnock. Archiv DIGITAL 115541</p>                   | <p><b>Randy Travis: Always And Forever</b> • Forever And Ever Amen, Too Gone Too Long, more. Warner Bros. 163917</p>           | <p><b>Previn: Gershwin</b> • Rhapsody In Blue, Concerto in F, more. Philips DIGITAL 115437</p>   | <p><b>Previn: Gershwin</b> • Rhapsody In Blue, Concerto in F, more. Philips DIGITAL 115437</p>    | <p><b>Previn: Gershwin</b> • Rhapsody In Blue, Concerto in F, more. Philips DIGITAL 115437</p>                                 | <p><b>Previn: Gershwin</b> • Rhapsody In Blue, Concerto in F, more. Philips DIGITAL 115437</p>  |

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## *A Special Test Report*

# CARVER'S AMAZING LOUDSPEAKER

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by *Julian Hirsch*

**A** PRODUCT with a name like "The Amazing Loudspeaker" would be difficult to take seriously if it came from anyone with a less distinguished track record than Bob Carver. It *does* come from him, however, and it *is* something to be taken seriously! Carver has long considered the unique sound quality of a planar loudspeaker to be unequaled, and rarely approached, by any form of enclosed speaker. The acoustic radiation from a large area produces a sonic image that seems to float in the air and usually cannot be localized to a specific point of origin. Planar speakers, with drivers on or in the form of a freestanding panel, are typically dipole radiators, emitting sound equally from their front and rear surfaces. The rear radiation bounces off the wall before reaching the listener, and the resulting directional scattering and time delay of a few milliseconds add additional airiness and a sense of space to the sound.

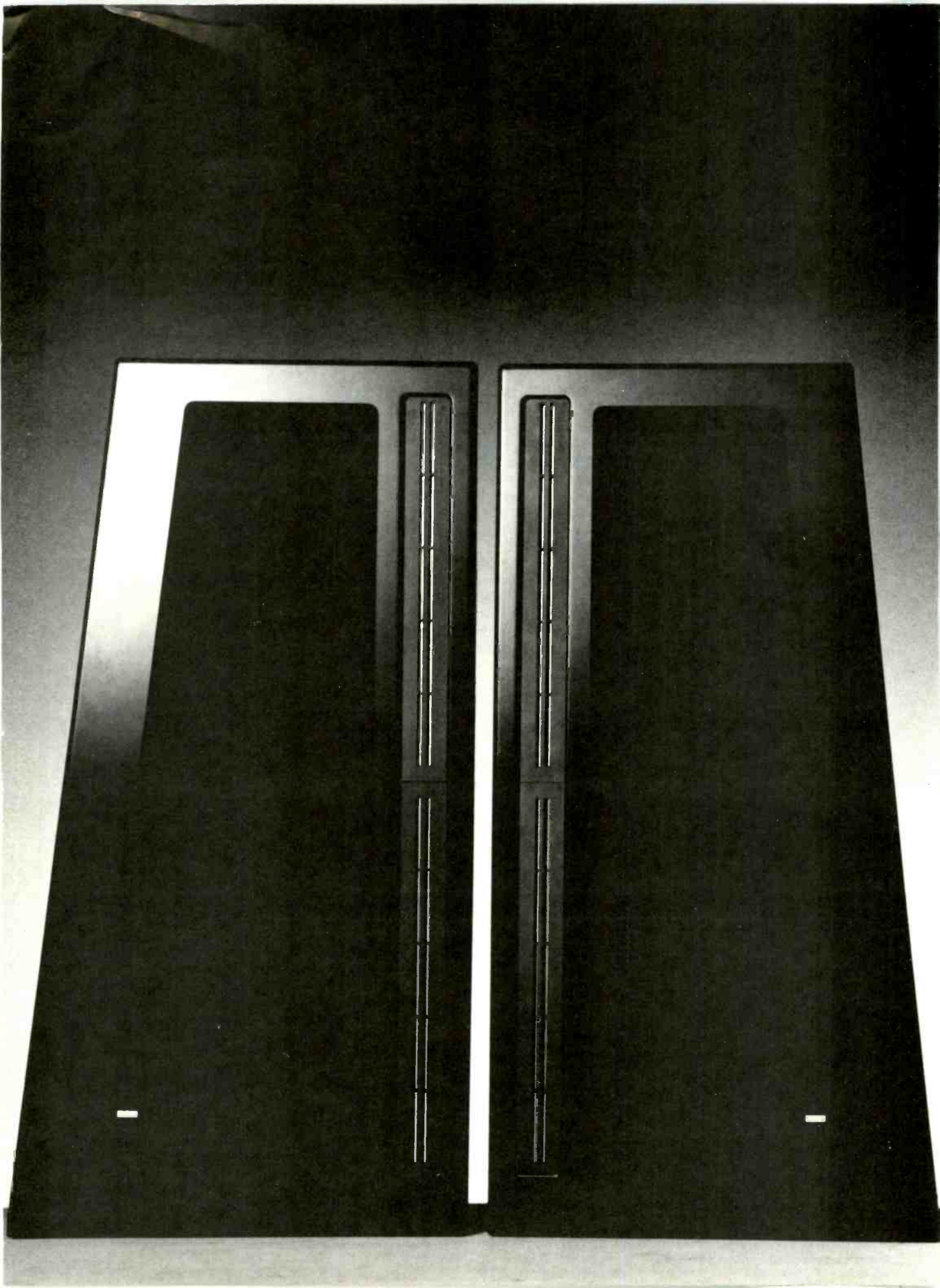
Planar radiators can be either electrostatic or electromagnetic in their operation. Carver based the Amazing Loudspeaker on a driver that he calls a "direct-drive large-area full-range ribbon." It is a type of magnetic driver whose "voice coil" consists of a long foil conductor suspended vertically in a magnetic field. "Direct drive" refers to the absence of any matching transformer to couple the very low impedance of the ribbon to the driving amplifier. Instead, a resistor connected in series with the ribbon is used to present an acceptable load to the amplifier (although it wastes some of the available power).

Adequate sensitivity is obtained by using a large number of magnets along the full 60-inch length of the dual ribbon, which is about 1/2 inch wide. The ribbon's considerable length and 30-square-inch area, as well as its placement in free air, enable it to dissipate the heat from large power inputs, unlike the fragile voice coil of a dynamic tweeter. Being vertical, it also has excellent horizontal dispersion. And the large area of the ribbon—effectively even larger than 30 square inches at low frequencies

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*It must be emphasized that the samples of the Amazing Loudspeaker that we tested were handmade prototypes and thus not necessarily fully representative of future production models.*

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*Despite being a one-piece planar speaker system, the Amazing Loudspeaker had to be able to generate the lowest bass frequencies. Using magnets only a third as powerful as in conventional woofers, Carver's "uniform drive planar subwoofer" extends bass response to 25 Hz.*

---

because of its Kapton plastic-film support—gives it the ability to radiate very low frequencies with near-ideal phase characteristics. Space-age plastics such as Kapton have the physical qualities needed to support the ribbon conductors of the Amazing Loudspeaker, and they remain dimensionally stable at extremely high temperatures.

Although Carver's ribbon is a superb radiator for the middle and high frequencies, aided by the absence of a crossover network in this major part of the audible frequency range, it lacks the area and linear excursion range needed to generate high acoustic levels in the low-bass region. Carver's goal was to create a two-way speaker that could deliver large amounts of undistorted power to all audible frequencies without requiring unrealistic drive levels from the amplifier. Despite being a one-piece planar speaker system, the Amazing Loudspeaker had to be able to generate the lowest bass frequencies without the aid of an external subwoofer. Carver's solution is called the "uniform drive planar subwoofer system," which, by using magnets only one-third as powerful as those of conventional woofers, extends the bass response down to 25 Hz with only a minimum loss of efficiency.

**D**ESPITE the novelties of the bass drivers, the ribbon radiator is the heart of the Amazing Loudspeaker. Operating from 100 Hz to far above audibility, it supplies most of the audible sound from the system. It consists of a pair of series-connected aluminum-foil ribbons bonded to a sheet of Kapton plastic film. Four rows of bar magnets mounted on the speaker's wooden frame extend along its entire length—on either side of the ribbon, in front of it, and behind it. The magnetic field of these magnets is parallel to the front of the speaker. Signal currents flowing in the ribbon cause it to move and to generate acoustic waves that radiate to the front and rear of the speaker.

The ribbon is surprisingly rugged, thanks to the strength of its Kapton base, and its resonance frequency of about 25 Hz allows it to radiate over almost the entire audio frequency range. To keep the ribbon's maximum excursion at safe levels, the system's crossover is set for a low-frequency limit of 100 Hz. With the crossover removed, we were surprised (and impressed) to find that the ribbon alone could generate a

solid deep bass, though only at background-music levels.

A CONCERT SLOPE switch on the back of the speaker inserts a small response dip in the vicinity of 3,000 Hz. This adjustment shifts the normal perspective of the sound stage so that the music appears to come from a point behind the speakers. With the switch off, the sound is slightly more forward and nearer to the plane of the speakers.

The Carver Amazing Loudspeaker, finished in a glossy black lacquer, measures 66 inches high and 34 inches wide at the base, tapering to 27 inches wide at the top. The ribbon driver is visible as a golden stripe near the inner edge of the speaker (the system is designed in mirror-image pairs). A dark gray cloth grille (not normally removable) covers the four woofers, which are aligned vertically and occupy most of the height of the panel. The rear of the woofer array is protected by a cloth-covered box. The speaker panel is supported on a low metal base that angles it backward a few degrees. Each speaker weighs about 150 pounds. Suggested retail price is \$1,536 a pair.

### *The Measurements*

For our measurements, we positioned the two Carver Amazing Loudspeakers with their ribbon elements about 6 feet apart and their backs about 4½ feet in front of a room wall. Any speaker whose directional properties differ markedly from one using front-radiating cone drivers is difficult to measure because no single response curve is adequate to describe its performance in a meaningful way. Therefore, we were prepared to find the measured response of the Amazing Loudspeaker to be quite irregular, especially in quasi-anechoic FFT measurements, which respond to the sound arriving at the microphone along a specific line from the speaker.

Measured at a distance of 1 or 2 meters from the speaker, the FFT response revealed a strong bass, a dip at about 3,000 Hz, a broad maximum from 5,000 to 12,000 Hz, and a falling output from 12,000 Hz to beyond 20,000 Hz. There was evidence of comb-filtering, which showed up as a periodic fluctuation of output over the middle and upper frequency range. Further investigation, including close-miked measurements of the ribbon response, confirmed that this fluctuation was caused by interference be-

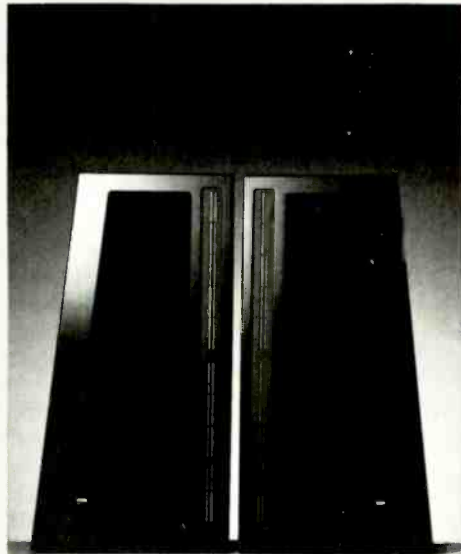
tween signal components arriving at slightly different times from different parts of the ribbon, an inevitable result with any line or planar radiator.

**T**HE fluctuations averaged out in the room-response measurements, and when the room response was spliced to the close-miked woofer response, the composite curve was flat within  $\pm 4$  dB from 65 Hz to beyond 20,000 Hz. The low-frequency output increased smoothly below about 300 Hz and leveled off between 20 and 40 Hz at about 10 dB above the average midrange level. This composite response curve corresponded closely to the frequency balance that we heard from the speakers.

We measured the woofer response with the microphone close to one driver. The FFT response rose at 6 dB per octave from above 100 Hz down to its maximum at about 26 Hz, and it decreased at 12 dB per octave below that frequency. The initial rise exactly compensates for the normal low-frequency loss of a planar speaker, making the system's actual bass response flat down to the maximum point, 26 Hz, of the woofer-response curve, dropping off at 18 dB per octave below that point. Since our test speakers (including the drivers) were handmade prototypes, we measured the actual lower limit for each of the speaker's four woofers. The limit frequencies varied between 24.3 and 26.7 Hz, with the average being 26.4 Hz. The average response below 26.4 Hz dropped off to  $-3$  dB at 21 Hz and  $-6$  dB at 18 Hz.

The measured impedance of the Amazing Loudspeaker was relatively constant over the entire audio range. From a minimum of 4 ohms at 35 to 40 Hz, it rose to 12 ohms at 220 Hz, remained between 7 and 12 ohms from there to 5,000 Hz, and decreased to 4 ohms at 20,000 Hz. The average impedance was close to 8 ohms. The system's sensitivity was 82 dB sound-pressure level (SPL) at 1 meter with an input of 2.83 volts. Our bass distortion measurements are made at a drive level corresponding to a 90-dB SPL output, which in this case was 7.1 volts. We measured the distortion of each woofer individually, averaging the results at each frequency to account for possible variations among the drivers—which turned out to be remarkably alike in their distortion characteristics. The distortion was less than 1 percent from 100 Hz

## AMAZING BASS



*Bob Carver's solution to the problem of generating the lowest bass frequencies from a planar speaker system without the benefit of an external subwoofer is what he terms a "uniform drive planar subwoofer system." The inherent relationship of the low-frequency cutoff, the enclosure volume, and the efficiency of a sealed-box speaker system normally requires a trade-off between volume, efficiency, and cutoff frequency. Since efficiency varies with the cube of the cutoff frequency, the penalty in lost efficiency for even a modest extension of bass response is huge. To reduce a sealed speaker's lower limit from 40 to 25 Hz, for example, would require a fourfold reduction in efficiency (equivalent to a 6-dB loss of sensitivity) and therefore four times as much driving power to achieve the same acoustic output level.*

*It had always been thought that planar speakers suffer from a similar limitation—that in order to have a useful low-bass output, the radiating panel must be large (comparable to the wavelength of the lowest frequency to be radiated). Carver, however, realized that while the efficiency equations for a planar speaker resemble those for a box speaker, there is a vital difference. The box's volume is replaced by the ratio of the woofer's cone area to its suspension stiffness (which is a function of the driver design and not related to the size of the speaker panel), and the relationship between the low-frequency cutoff and the efficiency becomes linear instead of cubic. Therefore, the response of a planar speaker could be extended from 40 to 25 Hz with a loss of efficiency, and consequent power penalty, of only 60 percent (a 2-dB reduction in sensitivity) instead of the 400 percent efficiency loss in a box speaker.*

*This bonus in the equations was not the complete answer to the problem,*

*however. Carver intended the Amazing Loudspeaker to generate frequencies not only equal to but well below the usual limits of box speakers, to say nothing of other planar types. Although its panels are rather large for many listening rooms, if the system used conventional bass drivers having a  $Q$  of 0.7 (the measure of the damping of the drivers' resonance), the system's response would be down 3 dB at 100 Hz and fall at 6 dB per octave below that frequency. Carver's design solution to this problem was characteristically both ingenious and simple.*

*By making the woofers'  $Q$  much higher, 2.5 instead of 0.7, and by placing their resonance at the desired lower frequency limit of the system, bass response (including the contribution of the crossover inductor) could be made to rise at 6 dB per octave with decreasing frequency. When the woofers' response is combined with the falling panel response, the result is a flat system response down to the woofers' resonance frequency, with a sharp cutoff at 18 dB per octave below that point (which happens to provide a superlative rumble filter).*

*It is noteworthy that the necessary high woofer  $Q$  was obtained by using magnets only about one-third as powerful as those of conventional woofers! The economy of this approach is considerable, since each speaker panel uses four 12-inch woofers and the magnet is a major part of the cost of any dynamic driver. The flat, rigid, low-mass radiating surfaces of the woofers are driven by conventional cones and voice coils. Since the woofers' moving mass must be very low to obtain the desired efficiency, a low resonance frequency (about 25 Hz) was achieved by using a very compliant cone suspension, which also allows a large linear excursion (about 1½ inches).*

*The overall sonic effect of the Amazing Loudspeaker was remarkably three-dimensional, with a very wide sound stage. Moreover, these were probably the most unstrained speakers we have ever used, with a seemingly limitless capacity to absorb electrical power and deliver clean audio output.*

---

down to 50 Hz, rising to 1.73 percent at 40 Hz, 4.6 percent at 30 Hz, and 9 percent at 25 Hz.

The power-handling ability of the Amazing Loudspeaker was as impressive as its frequency response. At 100 Hz the woofers' output waveform remained an excellent sine wave until the input was raised to 555 watts, where it showed a slight sign of "rounding" from second-harmonic distortion. The output began changing to a straight-sided triangular waveform, representing third-harmonic distortion, at higher inputs, although the drivers never reached the endpoints of their linear excursions. The amplifier finally clipped at 960 watts. At higher frequencies, the amplifier clipped before the ribbon output showed any signs of distortion. The maximum inputs were 875 watts at 1,000 Hz (into 7.9 ohms) and 1,350 watts at 10,000 Hz (4.7 ohms).

### Listening

In our listening tests, the Carver Amazing Loudspeaker had the essential spatial properties of a true planar speaker. The sound intensity hardly changed at all throughout the listening room, even when we stood quite close to the speakers themselves. The wall behind the two speakers became part of the sound stage, with the apparent sources distributed across and behind it as well as in front. The overall effect was remarkably three-dimensional. Moreover, these were probably the most unstrained speakers we have ever used, with a seemingly limitless capacity to absorb electrical power and deliver clean audio output. It would be safe to say that no home amplifier will tax the capabilities of the Amazing Loudspeaker.

THE sonic balance of the speakers was somewhat warm, with a noticeable bass emphasis. In the ribbon's middle- to high-frequency range, the sound was audibly smooth, well dispersed, extended, and effortless. Since the bass emphasis was largely below 100 Hz, it added little boominess to voices, although some of this effect could be heard. When the program contained really deep bass (under 50 Hz), the speakers began to show their unique qualities. Even at the lowest listening volume, we could *feel* their bass output, and at the highest levels it became positively tactile. The Amazing Loudspeaker is one of the very few speakers whose frequency response can hon-

estly be said to extend from below 20 Hz to above 20,000 Hz.

THE perspective adjustment afforded by the CONCERT SLOPE switch was quite subtle. We often had difficulty hearing its effect with music, although the frequency-response change was plainly audible with random-noise inputs. Whichever way the switch was set, there was a striking stability of the sound stage and of the imaging within it.

An unusually large sound stage is a clear advantage of a dipole radiator, and the Carver speakers possess a very wide one. For example, we heard the cannon shots on the Telarc CD of the *1812 Overture* coming from three distinct directions (left, center, and right), whereas with other speakers they all appeared to originate fairly close to the middle of the stage. As might be expected from their bass response, the speakers deliver an enormous impact from recorded cannon and bass-drum sounds, especially if the amplifier can deliver a few hundred watts per channel (at least 100 watts per channel is recommended).

It must be emphasized that the samples of the Amazing Loudspeaker that we tested were handmade prototypes and thus not necessarily fully representative of future production models. Judging from our tests and past experience, however, we would expect production models to be substantially improved, both cosmetically and in their listening performance. For one thing, Carver plans to reduce the original bass emphasis (which was established when the speakers were in a much larger room and could be placed further from the side walls) by changing the balance between the ribbon driver and the woofers. This should also increase the system's sensitivity by about 2 dB.

As with other Carver products, the nomenclature of these speakers is unconventional, but they do deliver the special performance that is claimed for them—and they offer unusual value for the money. We must admit that "amazing" does not seem entirely out of place applied to the Carver loudspeaker. Its overall sound is spectacular, its bass performance surpasses that of almost any other speaker one might name, its stereo imaging is outstanding, it appears to be indestructible by excessive power input, and its price is ridiculously low for what it does and considering what comparable products cost. □



by Ian G. Masters



## Antiskating

**Q** What are the basic principles of antiskating devices?

PAT FOSTER  
San Leandro, CA

**A** Records are mastered using a cutting stylus that moves in a straight line from the edge of the record to the center. Ideally, the stylus that plays the record should have the same orientation (perpendicular to the groove), but until fairly recently that has been difficult to achieve. Instead, a pivoted arm has usually been employed.

The problem with a pivoted arm is that it can only be perfectly oriented at one or two points on the record; elsewhere there will be at least some discrepancy between the angles of the cutting and playing styli, called "horizontal tracking-angle error." This error is smaller the longer the tonearm, but there are practical limits to arm length, both because a record-playing system must fit into a reasonably compact space and because very long arms would also have a great deal of mass.

Fortunately, it was discovered that the angular effect of a very long arm could be simulated by mounting the phono cartridge—and hence the stylus—at an angle, either by bending the arm or by mounting the headshell with an "offset." This technique does reduce tracking-angle error to a low order, but

it has one negative side effect. The inevitable friction between the stylus and the record's surface does not pull along the length of the arm, as it would if it were straight, but off to one side, in the direction of the offset. Unchecked, this pull would cause the stylus to "skate" across the record surface toward the center, and even in its mildest form it causes the stylus to favor the inside wall of the groove (the right channel).

To correct for the tendency of the stylus to skate inward, tonearm manufacturers build in a compensating outward force called "antiskating." This force can only be approximate, because the propensity of the stylus to skate depends on a number of factors that can't always be predicted: stylus force, contact area, and so forth. True straight-line arms, of course, need no antiskating correction.

## Disappearing Signal

**Q** At low volumes my right channel disappears, although everything seems to be fine at normal listening levels. I have concluded that the problem must lie in my preamplifier or power amplifier and have cleaned the contacts on the volume control but found no improvement. Is this normal? If not, what can I do about it?

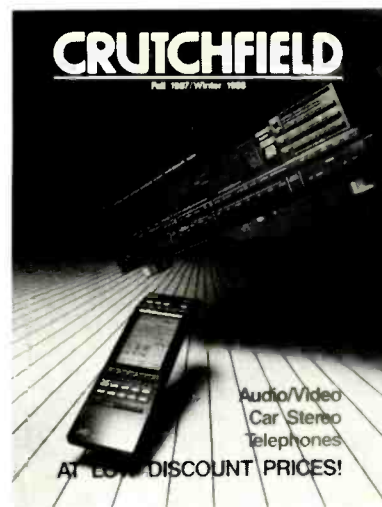
MICHAEL CHEN  
Calgary, Alberta

**A** It's certainly not normal, but your preamplifier may have to go back to the shop to have the volume control replaced. Such controls consist of a circular (or, more accurately, omega-shaped) resistor with an armature resting on the surface. Occasionally contact between the armature and the resistive surface is lost and the signal is interrupted, frequently by dirt building up inside the control. The interruption is usually momentary, showing up when the knob is rotated as a loud crackling or, if the armature stops on a particularly large bit of dirt, silence. This can often be cured by a shot of contact cleaner, as long as the insides of the control are accessible.

If the pressure the armature exerts on the resistive surface is too great, however, it can score or wear the surface (age can bring this on as well). The audible evidence is the same as with dirt, but no amount of contact cleaner will help—the control must be replaced.

In your case, the armature is probably moving away from the resistive surface at certain positions, either because it's bent or because it has been mounted eccentrically. Contact cleaner will obviously do nothing; again, the control will have to be replaced.

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## AUDIO Q&A

your preamp for several weeks, you might call or write the manufacturer and buy a new control directly from him. If you're handy with a soldering gun, you could replace it yourself, although for most of us it makes more sense to take it to a qualified technician for installation. Either way, it should only take a few minutes.

### Multiple Amplifiers

**Q** I have two integrated amplifiers, each driving a pair of speakers. I would like my turntable, cassette deck, and compact disc player to drive both systems simultaneously. Is there a better way to accomplish this than by using Y-connectors to connect each source to the amplifiers? If not, do I lose anything by splitting the signals this way?

MIKE MINISTRELLI  
Corona, CA

**A** The Y-connectors are unlikely to degrade the sound quality of your setup seriously, although the loading on the phono cartridge will probably be somewhat out of whack, and the effect of this may or may not be audible. The main disadvantage of your arrangement is functional: Every time you want to switch signal sources, or even change level, you have to fiddle with controls on both amplifiers.

If possible, you should use one of your integrated amplifiers as a master control and the other simply as a power amplifier. If one of them provides preamplifier outputs, these can be used to drive the second amplifier. Once you have set the level and tone controls on the "slave" amplifier to match the main amplifier, you can leave it alone, using the master unit for input selection, volume adjustment, and so forth. Some amplifiers offer auxiliary preamp outputs that are independent of the internal connection to the power-amplification section. In such cases these outputs need only be connected to one of the second amplifier's high-level inputs for the system to work acceptably. Other amplifiers have only a single set of preamp outputs, usually connected to the power-amplifier inputs by means of U-shaped pieces of metal. These connectors will have to be removed and replaced by a pair of Y-cords to feed the preamplifier's signal both to the power-amplifier section and to the external amplifier.

If neither of your amplifiers provides a preamplifier output, one tape output could be used for this purpose. That would allow you to control input selection on the main unit but would still require you to alter levels and tone-control settings separately on the two amplifiers, as you are doing now. □

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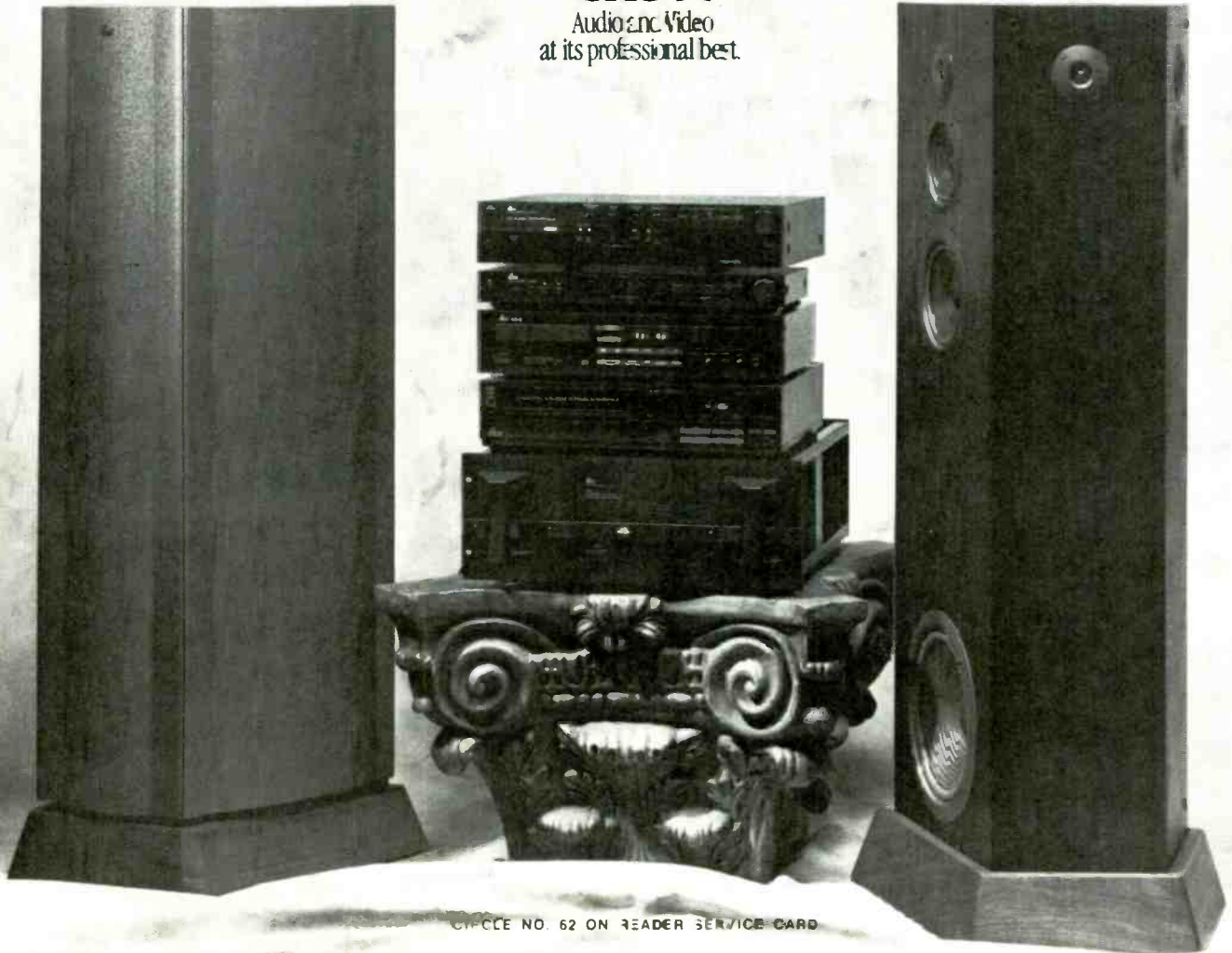
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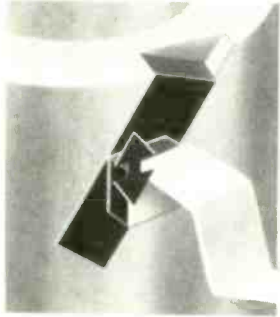
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# Canton announces significant engineering advances in the science of music reproduction.



Enlarged detail from center of photo: the rigid aluminum ring with obliquely positioned permanent magnets. In front of it, the semiconductor sensor which is linked via a supporting plate with the diaphragm and moves to and from with it.



## Motion Feedback:

All loudspeaker systems have an inherent problem. A driver's diaphragm is burdened by mass and reacts to sound impulses with a certain amount of inertia. A time delay exists between the instantaneous sonic impulse and the acceleration and deceleration of the diaphragm. This delay translates into coloration of the source material.

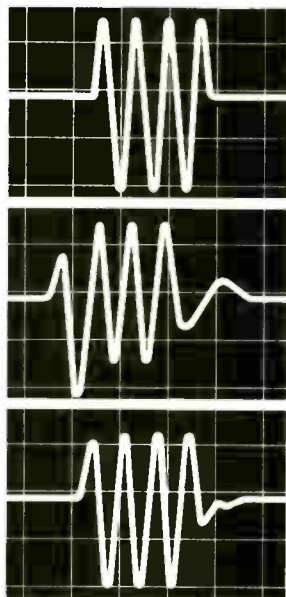
Canton's new CA series, in addition to their advanced power amplifiers, are equipped with a built-in electronic signal correction system which monitors each speaker diaphragm, checking whether its motion corresponds exactly with the impulses of the musical signal at all times. Instantly—within a fraction of a

A "sound burst" (upper curve) as seen on the oscilloscope: fast attack and equally rapid decay of sonic impulses. Here's

what an uncorrected speaker makes of the signal (center curve): there are distinct discrepancies on both incursion and excursion. And here's how the Canton system corrects diaphragm motion (lower curve): to the exact image of the original sound burst, in all but infinitesimal "afterflash."

millisecond—any discrepancies are registered, fed back and corrected via counteraction of the built-in power amplifiers.

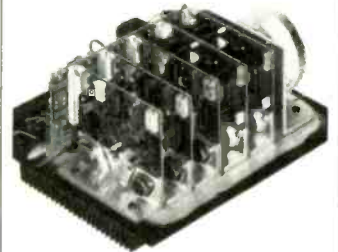
Canton employs a number of new patented processes for driver correction. In the woofer illustrated here, the "Hall Effect" is used. A semiconductor element serving as sensor cuts across the field of a fixed magnet. This creates an electrical voltage related to depth of insertion. Inversely, this "Hall Voltage" is an indicator for the position of the sensor, e.g. the diaphragm. By comparing this actual value with the target value of the musical signal, the control circuitry acquires the impulse needed for any amplifier counteraction. The diaphragm is accelerated or braked accordingly.



The top-of-the-line CA 30 active speaker is a 4-way system powered by 7 internal amplifiers (one for each driver). The woofers are powered by 4x120 Watt amplifiers, the midranges by 2x100 Watt amplifiers and the titanium tweeter by 1x100 Watt amplifier. A total of 780 Watts per CA 30 speaker.

In addition, problems normally associated with passive crossover networks are non-existent due to Canton's advanced MOS-FET electronic crossovers.

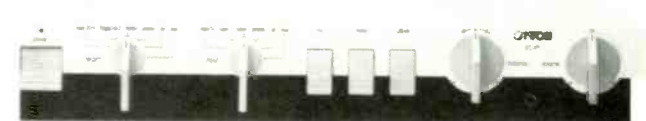
## Each amplifier is meticulously fine tuned to achieve optimal performance with its associated, companion driver.



With these high standards, all components—not just the signal correction circuitry—incorporate the most sophisticated technical advances. The entire system reflects the design approach customary in industrial electronics like using thick film modules with SMD's (Surface Mounted Devices), bus interface connections, and plug-in card technology for high reliability and performance capability.



Connecting and control elements on rear panel of a CA series active speaker. Each frequency range can be independently boosted or attenuated to compensate for listening room idiosyncrasies.



Since active speakers incorporate their own built-in power amplifiers, all that's needed to drive them is a pre-amp like the new EC-P1 from Canton (pictured above).

Find out more about the entire Canton product line by visiting an Authorized Canton Dealer and picking up Canton's 1986/1987 40-page Loudspeaker Journal.

## Advanced Technology from

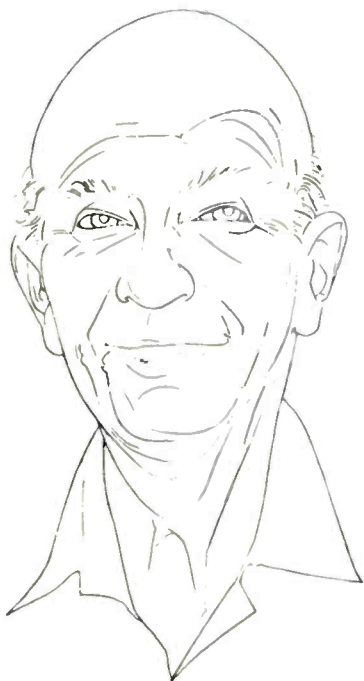
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CIRCLE NO. 33 ON READER SERVICE CARD

by Julian Hirsch



## What the Specs Won't Tell You

**A**LTHOUGH performance specifications can define many of a hi-fi product's attributes, they convey surprisingly little information about what it will do in actual use. I am not referring merely to the usual "subjective vs. objective" arguments about sound quality, but rather to some of the other characteristics that are frequently overlooked in evaluating audio components.

I have often commented on the relative (or total) inaudibility of many of the characteristics that we measure and use as a basis for evaluating products. Judging from reader mail, many of you are wondering about the same thing.

A common question is, "How much louder will the sound be if I replace my 30-watt amplifier with a 100-watt amplifier?" The answer is, "No louder at all." Unless you are trying to reproduce music at its original volume level (which is not necessarily a good thing in a home environment), you probably will not require more than a watt or so even on peaks, and at moderate lev-

els the average power is likely to be a small fraction of a watt. If you play the music really loud—loud enough that conversation is impossible in the room and neighbors may complain—the average power may reach a couple of watts, with peaks of perhaps 20 or 30 watts. Of course, these are "ball park" figures. Your actual power requirements will vary with the program material, listening-room size and acoustic treatment, speaker efficiency, and what you consider to be a proper listening level.

So why have an amplifier that puts out 100 watts, 200 watts, or more? Not to play louder, but to accommodate short-duration peaks that might be clipped if the amplifier could not deliver enough power. Peak-clipping is a common occurrence, and it is more likely to occur with the wide dynamic range of CD's. Fortunately, clipping may not be particularly obvious unless you are listening critically. It can become a problem, however, if you turn up the volume a little beyond your normal listening levels. A 10-dB increase in volume, which might represent a slight movement of the control knob and a subjective volume increase of roughly double, will require a *tenfold* increase in amplifier power. Your 30-watt amplifier would then be severely overdriven, whereas a more powerful amplifier might take the increase in stride.

High power in an amplifier serves the same purpose as high horsepower in an automobile—it is a reserve capability for special situations. You don't drive your car with the accelerator on the floor all the time,

nor do you listen to your music system with its volume at maximum. The extra power is there to be used only when needed.

Specifications for FM tuners are even more difficult to relate to the real world of listening. Although the hundreds of FM tuners I have tested differ widely in their measured characteristics, they tend to sound very much alike. One reason is that the broadcast material is usually derived from LP records or, increasingly, from CD's. The quality of these sources, which are exactly like the ones in your own collection, is then degraded to some degree in transmission, and it is further degraded in your tuner or receiver.

What you hear from a tuner can *never* sound any better than the same record played on your home system, which is also likely to have a better cartridge than most broadcasters use. Under the most ideal conditions, the tuner will add a little more distortion and increase the noise level. The detail and special qualities that help us distinguish one sound from another are masked by the added noise and distortion.

Things are not as bad as they might seem, however. Unless you are inclined to quibble about minute frequency-response changes or the various slight sound colorations that intrigue the high-end segment of the audiophile community, the result can still be quite enjoyable.

In my listening tests, done under less than ideal conditions, the major differences in the sound from various FM tuners and receivers are in their background noise levels. I deliberately use indoor folded-dipole antennas a few feet above ground level. These antennas favor the creation of multipath interference and the resultant distortion as well as providing low signal strengths, which insure an audible hiss on many stations. A few feet away, a personal computer generates a prodigious number of interfering signals that lay a floor of "hash" underneath most FM programs. Such test conditions are a convenient way to separate the sheep from the goats in the flock of tuners and receivers. You won't find any published specification that quantifies this evaluation of *true* signal-to-

### Tested This Month

*Hitachi MXW-50 Slimline  
CD/Cassette/Receiver  
Design Acoustics PS-103  
Speaker System  
Technics RS-B905  
Cassette Deck  
NEC T-710 AM/FM  
Tuner  
DCM Time Frame  
TF-1000 Speaker System*

## TECHNICAL TALK

noise ratio (S/N), and our results don't seem to have any obvious correlation with AM rejection, capture ratio, or rated tuner S/N performance, but I don't have any trouble deciding in my own mind whether a tuner is above or below par.

Occasionally, a lay reader works his way through to a conclusion that closely fits my own reality of product evaluation. For example, there are a number of listeners who, through necessity or preference, must listen to distant FM stations. The usual advice I give them is to erect the largest, highest directional antenna system they can. *Nothing* else is as important as a good antenna for satisfactory radio reception (or transmission, for that matter). Tuner "sensitivity" is next to meaningless as an indicator of capability in this regard.

One correspondent tells of his experience with various tuners and antennas, which led him to the conclusion that variations in radio propagation conditions (usually resulting from sunspot activity) are the ultimate determinants of long-range FM reception. He has found that tuners with very ordinary quieting sensitivities and otherwise unremarkable characteristics are as likely to receive distant signals as the most advanced and sophisticated tuners. He is undoubtedly cor-

rect, and his closing line says it all: "Not even a high-gain antenna system can provide a signal which just ain't there."

The point of this observation is that *all* specifications—whether of tuners, amplifiers, or anything else—are based on measurements using signals of known, well-defined characteristics. Unfortunately, all *listening* is done using signals with totally uncontrolled and usually unknown characteristics. The numbers that define the specifications may (and usually do) have little in common with the unknown "real world" numbers that determine what you ultimately hear.

There are two other areas of product evaluation that are extremely important to me and, I should think, to most users. One is ease of operation. I often comment on this in reports, although I recognize that everyone reacts differently to the array of operating controls that fill the panels of many of our hi-fi components. Personally, I find a panel full of buttons whose markings are often difficult to see, and which are not differentiated in function by grouping, color, size, or shape, to be confusing and disquieting. Some of the test instruments I use are also quite complex, but usually they are ergonomically designed so that the hand goes readily to the appropriate

area of the panel. A row of buttons with unrelated functions that are identical in size, shape, and color is a prime example of poor human engineering, yet this sort of panel layout is more common than not in today's receivers. I, for one, do not like it. All I can do is mention it when I encounter it and, better yet, point out better control layouts when I encounter them.

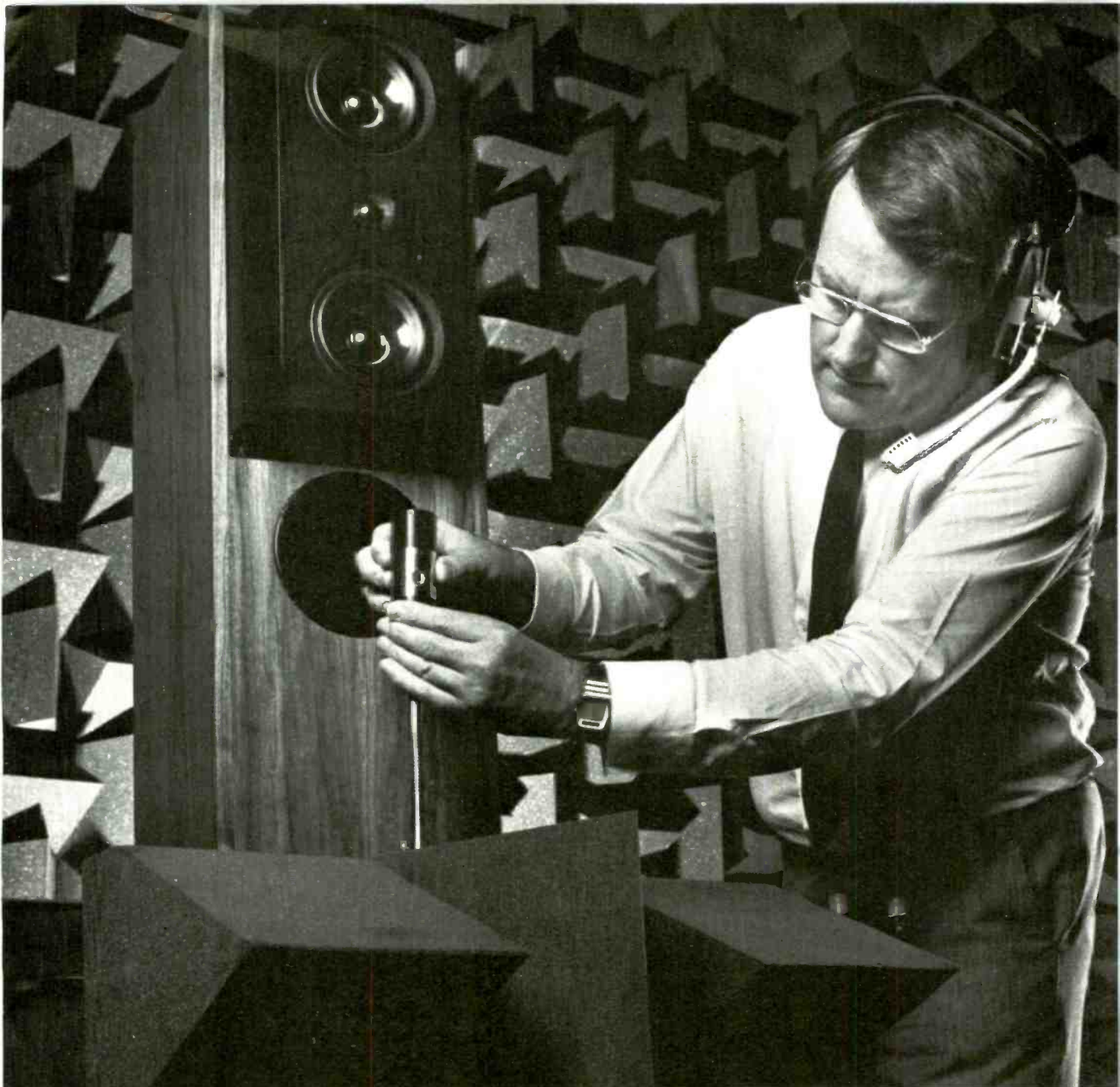
The other area of concern is reliability. Assessing reliability has long been a source of frustration to me, and to anyone else who tries to evaluate audio components. I don't know how this vital factor—to me, more important than all the measurements and specifications—can be assessed except by extended use of a large number of samples. In other words, only the manufacturer, or a large-scale service agency, *really* knows which products are reliable and which are not. Only when a product fails during my tests, or is "dead on arrival," do I have a clue to this factor, but it is usually a useless one. A single failure proves nothing, and I am not inclined to downgrade a product for such an event unless it is clearly the result of a design fault *and* the failed unit is a regular production sample. If a second sample fails, the test is usually canceled. This happens rarely, however, and then only to very early production or pilot-run samples that are really not fully ready for the market.

A difficulty with assessment of reliability by either the manufacturer or a service agency is the time factor. Failure patterns generally show up only after a certain period of time, so even if this information were analyzed statistically and made available to the public, it would be too late to help anyone: The product would long since have been replaced by the manufacturer with a new model.

Fortunately, in my experience the quality control of most large audio manufacturers is uniformly superior, and many of the smaller companies also go out of their way to insure customer satisfaction. If all consumer products were designed and manufactured with the same care as hi-fi components, we would all be better off. □



"... Pssst, lady. You're his wife; I think you should know. That old vacuum-tube FM tuner there that your husband brought in for service—it's too far gone. There's nothing I can do...."



**'Before we could make our speakers better,  
we had to invent a better speaker test!'**

—Laurie Fincham, DIRECTOR OF KEF RESEARCH AND DEVELOPMENT

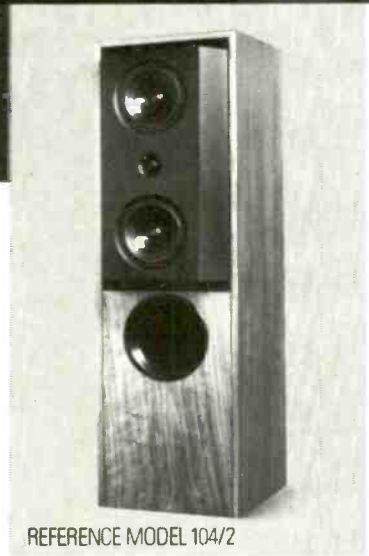
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'FFT testing has already spurred us to major advances in phase integrity and production consistency. It's certainly easier to make progress when you can see where you're going.'



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**AR**  
ACOUSTIC  
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We speak from experience.







JOCK LEUNG

## HITACHI MXW-50 SLIMLINE SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE Hitachi MXW-50 is a completely integrated audio system. Its central component is an AM/FM stereo receiver that is rated to deliver 50 watts per channel into 8-ohm loads. The single chassis also contains a dual-transport "dubbing" cassette deck and a full-featured CD player. Only speakers need to be added to form a complete music system almost totally free of visible wires and requiring a minimum of space for its installation.

The MXW-50 comes with a wireless remote control for the full system, including some features not available from the front panel. In spite of its completeness, the MXW-50 is a very compact, "low-profile" unit measuring only 25¼ inches wide and 14½ inches deep. Its height tapers from 1¾ inches at the front to 5¼ inches near the rear. It weighs 20½ pounds.

The MXW-50 is housed in an all-black, molded-plastic case with hinged plastic doors covering the CD and tape sections. The tape and CD operating controls are large, well-marked pushbuttons. There is no recording-level control (or indica-

tor) since the deck has a nondefeatable automatic level-control circuit. Similarly, there are no switches for tape equalization or recording bias.

As in other dubbing decks, the MXW-50's two tape transports have separate controls. The right transport (TAPE 1) has only a playback head, but the left (TAPE 2) has a conventional record/playback head and an erase head. The deck can copy in a double-speed mode as well as at the standard 1⅞-ips speed.

Both transports are autoreverse, and the system can be set to play for extended periods in a fully automatic mode initiated by a single button. A CD is played first, followed by TAPE 1 in both directions, then by TAPE 2 in both directions. A small pushbutton switches the Dolby B noise reduction on or off, and two other buttons control the autoreverse operation of the transports, including uninterrupted bidirectional recording on TAPE 2. Instead of conventional tone controls, the MXW-50 has a five-band graphic equalizer. The index counter operates only with the TAPE 2 transport.

The operating status of the top-loading CD player is displayed on a

fluorescent indicator at the top (rear) of the panel. An adjacent window contains a matrix of twenty compartments, called the "Music Table," in which track numbers appear as they are being played. The player can be programmed with up to thirty-two selections on a disc in any desired sequence by means of a keypad on the remote control.

The digital-synthesis tuner is operated by a number of small buttons. The tuning increments are 50 kHz for FM and 10 kHz for AM (switchable to 9 kHz for countries using that spacing). In the auto mode (FM only), the tuner scans the band until it encounters the next sufficiently strong signal. Up to twenty presets are available, each assignable to an AM or an FM frequency. The only knob is a large volume control flush with the panel and slightly indented for the user's fingertip. It has a clearly visible red LED index marker and can be motor-operated from two buttons on the remote control.

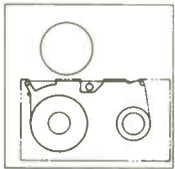
The rear of the cabinet has insulated spring clips for the speaker wires, a 75-ohm FM antenna, and the supplied wire-loop AM antenna, which is detachable so that it can be oriented for best reception. There are phono-jack inputs for a magnetic cartridge and an external high-level (AUX) source, and there is a set of fixed-level line outputs for driving an external amplifier or accesso-

# Why it took a to build a better

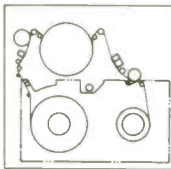


## AKAI'S QUICK START: THE MOST SIGNIFICANT ADVANCEMENT IN TAPE HANDLING SINCE THE VHS CASSETTE.

Today's VHS cassettes may give you eight hours of programs. But today's VHS decks make locating those programs a real bore. That's because conventional decks must slowly thread the tape around the head drum every time you go from Fast Forward or Rewind into Play. And slowly pull the tape back into the cassette whenever you return to Fast Forward or Rewind.



Unloading for conventional VCR



Full-loading for Quick Start

Of course, most VCRs have visible scan. But can you imagine scanning through a two-hour movie? Pass the aspirin. Akai's exclusive Quick Start system gives you fast, fast, fast relief. For the first time, the VHS tape remains fully threaded—even during Fast Forward and Rewind. So switching between

functions is more than *five times faster* than conventional VHS decks.

There's more. To make locating programs even easier, Akai searches and scans recorded segments automatically. Best of all, this revolution in tape handling is found not just on our top model—but on every new Akai VCR.

Sound great? Seem simple? Wonder why no one ever did it before?

## WHY IT TOOK AKAI TO PERFECT VHS TAPE HANDLING.

Simply stated, Akai has been building tape recorders for over 35 years. And what is a VCR if not a tape recorder? People may forget that it



Akai has over  
35 years of experience building  
tape recorders of all kinds.

# hi-fi company er VCR.



VS-M930U-B

was Akai that built the first home video tape recorder in 1965 and the first lightweight helical-scan portable video tape recorder in 1969. Compared to Akai, even the biggest names in video recording seem like "Johnnies-come-lately"

To invent Quick Start, Akai invented a completely new tape transport with better tape tension control, more precise guide poles and specially conductive fine ceramic tape guides. The entire transport is under the intelligent control of a micro-processor that only years of tape deck experience could develop. The Akai Quick Start Transport. Sure it's simple... when you know how.

AT AKAI, SOPHISTICATION MEANS SIMPLICITY.

Akai, a leader in on-screen programming, now takes ease-of-operation one step further. On our new decks, most programming functions require no more than one touch. Nothing *could* be simpler.

Or more sophisticated. Take Akai's new top-of-the-line VS-M930U-B. It offers digital special effects with memory; VHS Hi-Fi stereo; four heads; HQ circuitry with CCD noise reduction; editing; universal wireless remote control with LCD readout; on-screen programming and naturally, Akai's Quick Start system with Index and Address Search, as well as Intro Scan. Not just bells and whistles, but features any serious recordist would deem essential.

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Universal Wireless Remote is programmable independently of the VCR. You can "download" programmed information.

# AKAI

Where audio and video are one.

## TEST REPORTS

ry. Price: \$799. Hitachi, Dept. SR, 401 W. Artesia Blvd., Compton, CA 90220.

### Lab Tests

The published specifications for the Hitachi MXW-50 do not conform to EIA standards and cannot be compared with those of most audio components offered for home use in this country. Similarly, the power rating of its amplifier section does not follow the format required by the Federal Trade Commission. Therefore, our test data should not be compared too critically with the manufacturer's specifications. It is obvious that this system was designed for use throughout the world. The manual is written in English, French, Dutch, German, and Spanish, adaptors are supplied for several types of power sockets used in other countries, and the system has a user-adjustable power-line voltage selector.

Although the FM tuner has only a 75-ohm antenna input, it lacks the coaxial F-type jack customarily used for connecting a 75-ohm antenna system to a receiver, and a common 300- to 75-ohm transformer cannot be used for the same reason. Strangely, a conventional 300-ohm dipole antenna was furnished with the MXW-50, and we used

it with perfectly satisfactory results.

The MXW-50's FM sensitivity, though slightly lower than that of most tuners or receivers we have tested recently, was quite adequate for most installations. The noise level was low, as was the mono distortion, but the stereo distortion was on the high side. The stereo channel separation was a nearly constant 25 to 27 dB, sufficient for a good stereo effect but quite a bit short of the performance of most tuners. The AM sound quality was far more listenable than that of most other AM tuners.

With a normal 120- $\mu$ s tape, the playback deck (TAPE 1) had a virtually flat response in both directions, though the  $\pm 1$ -dB variations fell in different parts of the frequency range. The 70- $\mu$ s response was roughly the same, with closer correspondence between forward and reverse directions. The low frequencies rolled off at about 6 dB per octave below 120 Hz, and the highs dropped rapidly above 16,000 Hz. The playback response of the record/playback deck (TAPE 2) was roughly similar.

The record-playback response of TAPE 2, using a maximum-level (0-dB) signal from a test CD in the MXW-50's own CD player, was within  $\pm 1$ ,  $-3$  dB from 45 to 7,500

Hz. The output fell steeply at higher frequencies to  $-10$  dB at 11,000 Hz. The tape-dubbing response was much better, perhaps because we used a standard TDK test tape (recorded at a  $-20$ -dB level) for the source and recorded on Maxell XL-II's. The resulting TAPE 2 playback was flat within  $\pm 0.5$  dB from 120 to 12,500 Hz (the upper limit of the test tape) in the forward direction and within about  $\pm 2$  dB over that range in reverse. In high-speed dubbing the forward response was  $\pm 1.5$  dB from 100 to 10,000 Hz.

The CD player's frequency response was flat within  $\pm 0.3$  dB from 35 to 20,000 Hz, falling to  $-0.9$  dB at 20 Hz. The square-wave response indicated the use of analog low-pass filtering following digital-to-analog conversion, and the phase shift of 90 degrees at 20,000 Hz showed that a single converter was being multiplexed between the channels.

After preconditioning, the amplifier of the MXW-50 clipped at 52.5 watts with both channels driving 8-ohm loads at 1,000 Hz. Into 4 ohms, the clipping output was 60 watts. The distortion was about 0.3 percent at 0.1 watt, falling smoothly to around 0.1 percent or less at several watts output and remaining at that level nearly to the clipping point. Into 4 ohms the distortion was slightly higher. At the rated 50 watts output, the distortion was about 0.15 to 0.2 percent from 30 to 3,000 Hz, increasing to almost 0.5 percent at 20,000 Hz and 0.7 percent at 20 Hz. At half-power and one-tenth power, the distortion was between 0.08 and 0.1 percent from 20 to 2,000 Hz, reaching 0.35 percent at 20,000 Hz.

Although the manual makes no mention of it, the MXW-50 has nondefeatable loudness compensation, which boosted both low and high frequencies slightly at volume settings below  $-30$  dB but had an inverse effect near maximum volume, where it rolled off both lows and highs.

### Comments

The Hitachi MXW-50 is unlike any other audio product we have tested because it is so complete and so totally integrated. It enables

### FEATURES

#### Digital-Synthesis AM/FM Tuner

- Twenty preset channels
- Auto-scan or manual tuning (50-kHz steps for FM, 9- or 10-kHz for AM)
- Inputs for 75-ohm FM antenna and supplied AM loop antenna

#### Dual Autoreverse Cassette Deck

- Solenoid-operated tape transports
- Automatic recording-level setting
- Automatic tape bias/EQ selection
- Automatic dubbing at normal or double speed
- Dolby B noise reduction
- Automatic long-play mode

#### Compact Disc Player

- Fast search with audible sound
- Repeat function for disc, track, or user-defined segment (phrase repeat)
- Programmed playback for up to thirty-two tracks with remote control

- Direct track access with remote control
- Fluorescent display of track number and elapsed time
- "Music Table" display of programmed tracks in playing sequence

#### Amplifier and Preamplifier

- Inputs for external high-level (AUX) and phono sources
- Pushbutton source selectors automatically switch power on
- Balance control
- Volume-control knob (motor-driven)
- Five-band graphic equalizer
- Power amplifier rated for 50 watts per channel into 8 ohms
- Outputs for 8- or 16-ohm speakers
- Wireless remote control for virtually all front-panel functions and programming of CD player

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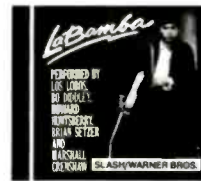
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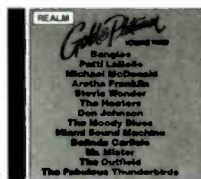
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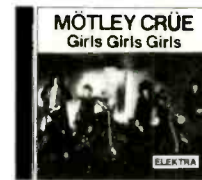
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359901. Mick Jagger—*Primitive Cool.* (Columbia)  
352534. Holst: *The Planets*—A. Davis, Toronto Symph. (Digital—Angel)  
347955. Huey Lewis & The News—*Fore!* (Chrysalis)  
348979. Tino Turner—*Break Every Rule.* (Capitol)  
346478. Madonna—*True Blue.* (Sire)

356287. Suzanne Vega—*Solitude Standing.* (A&M)  
355958-395954. Beethoven: *Symphonies Nos. 8 & 9* (Choral)—Michael Tilson Thomas, English Chamber Orch. (Digital—CBS Masterworks)  
357871. Tchaikovsky: *Waltzes—5.* Commission and Houston Symphony (Digital—Pro Arte)

357889. Copland: *Billy The Kid; Appalachian Spring;* etc.—Bernstein, NY Phil. (Digitally Remastered—CBS Masterworks)  
287003. Eagles *Greatest Hits 1971-1975.* (Asylum)  
346957. Steve Winwood—*Back In The High Life.* (Island)  
345777. Peter Gabriel—*So.* (Geffen)

308049. Creedence Clearwater Revival *Featuring John Fogerty/Chronicle.* 20 greatest hits. (Fantasy)  
326629. Bruce Springsteen—*Born In The U.S.A.* (Columbia)  
348649. Pachelbel Canon & Other Digital Delights.—Toronto Chamber Orch. (Digital—Fantare)

219477. Simon & Garfunkel's *Greatest Hits.* (Columbia)  
348318. The Police—*Every Breath You Take—The Singles.* (A&M)  
336222. Dire Straits—*Brothers In Arms.* (Warner Bros.)  
35156. Vladimir Horowitz *Plays Favorite Chopin.* (Digitally Remastered—CBS Masterworks)

341073. Steely Dan—*A Decade of Steely Dan.* (MCA)  
346544. Kenny G—*Duotones.* (Arista)  
345751. Paul Simon—*Graceland.* (Warner Bros.)  
356279. Gloria Estefan *And Miami Sound Machine—Let It Loose.* (Epic)  
336396-396390. Billy Joel's *Greatest Hits, Vol. 1 & 2.* (Columbia)

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HMM/C3

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# TEST REPORTS

## LABORATORY MEASUREMENTS

- **Tuner Section** (all measurements for FM only except frequency response)

**Usable sensitivity (mono):** 19 dbf (2.5  $\mu$ V into 75 ohms)

**50-dB quieting sensitivity:** mono, 22 dbf (3.5  $\mu$ V into 75 ohms); stereo, 45.5 dbf (52  $\mu$ V into 75 ohms)

**Signal-to-noise ratio at 65 dbf:** mono, 78.7 db; stereo, 71.5 db

**Harmonic distortion (THD + noise) at 65 dbf:** mono, 0.11%; stereo, 0.8%

**Capture ratio at 65 dbf:** 2.4 db

**AM rejection at 65 dbf:** 67 db

**Selectivity:** alternate-channel, 64 db; adjacent-channel, 9 db

**Image rejection:** 43 db

**Stereo threshold** 24 dbf (4.3  $\mu$ V into 75 ohms)

**19-kHz pilot-carrier leakage:** -32 db

**Hum:** -66.5 db

**Stereo channel separation at 100, 1,000, and 10,000 Hz:** 26.5, 27.5, and 26.5 db

**Frequency response:** FM, 30 to 15,000 Hz +3, -0.2 db; AM, -6 db at 140 and 2,500 Hz

**Line-output level (100% modulation):** 0.42 volt

- **Tape Deck (Dual Transport)**

**Fast-forward time (C-60):** 112 seconds

**Rewind time (C-60):** 112 seconds

**Speed error:** TAPE 1, -0.03%; TAPE 2, -0.3%

**Flutter:** 0.065% JIS-weighted rms;  $\pm$ 0.12% CCIR-weighted peak

**Line output at 250 nwb/m:** 0.3 volt

**1,000-Hz distortion at 250 nwb/m:** 1.8%

**Signal-to-noise ratio (A-weighted):** no noise reduction, 55.5 db; Dolby B, 64.5 db

**Crosstalk (1,000 Hz):** -56 db

**Playback frequency response (120  $\mu$ s EQ):** TAPE 1, 70 to 16,500 Hz +0.5, -6 db forward, 70 to 16,500 Hz +0, -6 db reverse; TAPE 2, 70 to 17,000 Hz +1.5, -6 db forward, 70 to 15,000 Hz +0, -6 db reverse

**Playback frequency response (70  $\mu$ s EQ):** TAPE 1, 70 to 17,000 Hz +2, -6 db forward, 70 to 16,500 Hz +1, -6 db reverse; TAPE 2, 50 to 17,000 Hz +1.5, -6 db forward, 50 to 16,000 Hz +0, -6 db reverse

**Record-playback frequency response (TAPE 2, Maxell XL-IIS tape):** 32 to 10,000 Hz +1.5, -6 db

### Dubbing frequency response

(Maxell XL-S tape): normal speed, 120 to 12,500 Hz  $\pm$ 0.5 db, 78 to 12,500 Hz +0.5, -6 db; double speed, 40 to 12,500 Hz +1.5, -6 db

- **CD Player**

**Line-output level (0-db):** 0.57 volt

**Total harmonic distortion at 1,000 Hz:** 0.0056% referred to 0 db, 0.0085% referred to -10 db, 0.055% referred to -20 db

**Signal-to-noise ratio (A-weighted):** 91.8 db

**Dynamic range:** 86.5 db

**Channel separation:** 72 db at 1,000 Hz, 53 db at 20,000 Hz

**Frequency response:** 20 to 20,000 Hz +0.3, -0.9 db

**Maximum phase shift:** 90 degrees at 20,000 Hz

**Cueing time:** 2 seconds

**Cueing accuracy:** A

**Impact resistance:** B+ (C over CD compartment)

**Defect tracking:** tracked maximum defect levels on Philips TS5A test disc

- **Amplifier Section**

**1,000-Hz output power at clipping:** 52.5 watts into 8 ohms, 60 watts into 4 ohms

**Clipping headroom (relative to rated output):** 0.2 db (8 ohms)

**Dynamic power output:** 81 watts into 8 ohms, 101 watts into 4 ohms

**Dynamic headroom:** 2.1 db (8 ohms)

**Harmonic distortion (THD + noise) at 1,000 Hz into 8 ohms:** 1 watt, 0.155%; 10 watts, 0.083%; 50 watts, 0.165%

**Maximum distortion from 20 to 20,000 Hz into 8 ohms:** 0.7% at 50 watts (20 Hz)

**Slew factor:** greater than 25

**Sensitivity (1-watt output into 8 ohms):** AUX, 15 mV; phono, 0.42 mV

**Phono-input overload:** 49 to 74 mV

**A-weighted noise (referred to a 1-watt output):** AUX -78.5 db; phono, -73 db

**Phono-input impedance:** 47,000 ohms in parallel with 150 picofarads

**RIAA equalization error:** 20 to 20,000 Hz +1.5, -2.5 db

**Equalizer center frequencies:** 80, 300, 1,000, 3,500, and 12,000 Hz

**Equalizer control range:**  $\pm$ 10 db

**Loudness boost (maximum):** 4.5 db at 100 Hz, 2 db at 10,000 Hz

those who do not care to get involved with selecting and connecting separate components to obtain a truly *complete* system with a minimum of fuss or complexity. And it is a surprisingly good system. Whether it is "true hi-fi" depends on your definition of that term.

The tape recordings and dubs that this unit makes will probably not satisfy critical listeners or hard-core audiophiles, but they were always listenable in our tests, and any frequency-response deficiencies are likely to be correctable with the built-in graphic equalizer. The CD player is definitely comparable to the lower-priced models from most manufacturers, and no apologies need be made for its sound or operating flexibility.

The tuner worked well and sounded fine, though its FM performance was more reminiscent of a *good* car stereo tuner than a typical home unit. It is unfortunate that there is no display of the selected preset number, since the user will need an excellent memory to recall which frequency corresponds to each of the twenty preset channels!

Anyone buying the MXW-50 should make sure that the unit purchased is set up for 110- to 120-volt operation—ours lit up after a fashion but was mute until we discovered from the manual that it was *factory set* for 230-240 volts! Also, be aware that the output levels of the tuner, CD player, and tape decks are not matched. In our tests, switching from one of the other sources to the tuner produced an unwelcome change in sound level. And I have reservations about the value of a "power level indicator" that does not respond to volume-control changes in a system where the power level is never under the user's control.

Nevertheless, the Hitachi MXW-50 is a worthwhile and ingeniously designed product that, combined with a couple of speakers, can provide a good and unusually complete music system at a list price under \$1,000 (slightly more if you add a record player). I doubt that a system of equal versatility and quality could be put together from separate components for less.

*Circle 140 on reader service card*

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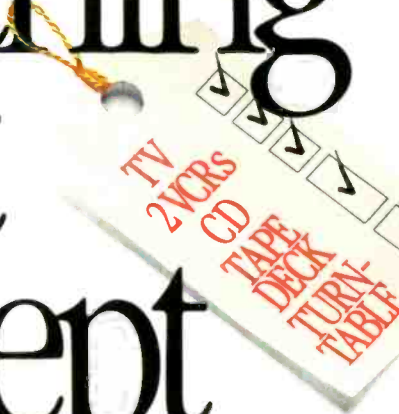
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### DESIGN ACOUSTICS PS-103 SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE newest and largest model in the Design Acoustics Point Source series of loudspeakers is the floor-standing PS-103. Most of the speaker's sound is radiated by two drivers in an isolated pyramidal subenclosure at the top. The drivers are hidden from view at the front and sides by an opaque, nonremovable cloth

grille but their enclosure is partially visible through a large cutout in the rear of the speaker cabinet.

A 6-inch cone radiates the frequencies from 100 to 3,000 Hz, where there is a 12-dB-per-octave crossover to a ¾-inch dome tweeter. The lower bass frequencies are generated by a 10-inch acoustic-suspension subwoofer located at the bot-

tom of the cabinet and facing downward. Its output radiates through the slot formed between the floor and the bottom of the speaker cabinet, which is held about 2 inches off the floor by four casters.

The PS-103 has a rated sensitivity of 88 dB sound-pressure level (SPL) with a 1-watt input to its nominal 8-ohm impedance. It is recommended for use with amplifiers rated between 30 and 250 watts per channel. A panel recessed into the rear of the cabinet contains three pairs of five-way binding-post terminals (each pair is normally connected by wire jumpers) and a three-position toggle switch that selects a FLAT, -3-dB, or -6-dB tweeter-level setting to suit personal preference or local listening conditions. The speakers can be operated with bi-amplification, using separate power amplifiers and an electronic crossover, by removing the jumpers and connecting the amplifier outputs to the indicated terminals. The low-frequency amplifier drives only the subwoofer; the other powers the two higher-frequency drivers from 100 Hz on up.

The PS-103 stands 38¼ inches high and measures 13¾ inches wide and 13⅞ inches deep. The top and bottom of the cabinet and its side trim panels are made of solid oak. The casters that support it also simplify positioning the speakers for best results, although placement is not particularly critical and each unit weighs a moderate 55 pounds. The 2-inch spacing from the floor is important, however, for correct bass performance. Price: \$950 a pair. Design Acoustics, Dept. SR, 1225 Commerce Dr., Stow, OH 44224.

#### *Lab Tests*

In addition to our usual room-response measurements of the two speakers, smoothed and averaged to minimize the effects of room resonances and standing waves, we made close-miked measurements of the 6-inch bass/midrange driver and of the subwoofer (the latter being measured in the gap between the cabinet bottom and the floor). Combining both of these curves with the room response produced our composite frequency-response curve.

## TEST REPORTS

From 50 to 1,000 Hz, the response variation was only  $\pm 3$  dB, falling off at 12 dB per octave below 50 Hz. The effective crossover between the subwoofer and the bass/midrange appeared to be about 85 Hz—the subwoofer's response peaked at 65 Hz and dropped off at 12 dB per octave above and below that frequency. The room response above 1,000 Hz was quite flat, but the average level was about 5 dB below the midrange plateau. There was a small tweeter-resonance peak at about 15,000 Hz, but the variation between 1,000 and 20,000 Hz was only  $\pm 3$  dB. The tweeter-level switch affected the output above 3,000 Hz by approximately the indicated amounts. We always preferred the sound with the switch set to FLAT.

Quasi-anechoic FFT response measurements with our IQS signal analyzer confirmed the response shape we had derived from swept sine-wave measurements. At certain distances and angles relative to the speaker, the FFT response showed irregularities or holes not present at other positions. These were probably caused by signal reflections from

the edges of the cabinet (the pyramidal subenclosure is located slightly behind the plane of the front of the cabinet). In general, these irregularities were not present in the room measurements, which combine sounds arriving from many directions.

The speaker's horizontal dispersion was excellent. Except for the effects mentioned, there was no significant difference between the response curves measured on-axis and 45 degrees off-axis until the frequency exceeded about 12,000 Hz. The group-delay variation, which was less than  $\pm 0.2$  millisecond from 1,500 to 23,000 Hz, confirmed that the system had excellent phase linearity.

The impedance, which averaged about 6 to 8 ohms over most of the audio range, reached its minimum of 4.5 ohms at 65 and 350 Hz and its maximum of 19 ohms at 2,200 Hz. The speaker's sensitivity, measured at 1 meter, was 86 dB SPL with an input of 2.83 volts of pink noise. Its bass distortion was measured from the subwoofer using a 4.5-volt input (corresponding to a 90-dB SPL at 1 meter). It was under 1 percent from

100 to about 70 Hz, rising slowly to 4.7 percent at 40 Hz and 6.3 percent at 35 Hz, which appeared to be the speaker's effective lower limit.

The PS-103 handled our high-level pulse-power tests well, emitting a faint rattle when the 100-Hz input

*The Design Acoustics PS-103 had a wide, smooth, and well-balanced response. The stereo image was excellent over a wide range of spacings between the speakers.*

reached 135 watts into its 7.5-ohm impedance. At 1,000 Hz, in the range of the 6-inch driver, the amplifier clipped, at an input of 850 watts into 8.5 ohms, before the speaker distorted. The tweeter, driven at 10,000 Hz, had no problems with the amplifier's 1,100-watt output into its 6-ohm impedance.

### Comments

From our first hearing, we realized that the PS-103 had a wide, smooth, and well-balanced response. Frankly, there was no indication of a level disparity between the high frequencies and the midrange or bass. This perceived smoothness may have been a result of the speaker's overall excellent dispersion and the ultimate effect of that dispersion on the sound reaching our ears. Measurements cannot, of course, duplicate the full effect of a human brain's interpretation of a complex sound field.

Even after the tests, when listening to the speakers we were more aware of their well-balanced sound than of any departures from an ideal, straight-line response (which has never been achieved by any speaker, and probably never will be). The PS-103's delivered an excellent stereo image over a wide range of spacings. The sound never seemed to come from the pair of handsome enclosures at the front of the room—it was just *there*. That would seem to be a reasonable description of a really good speaker, and it is a fair description of the Design Acoustics PS-103.

**Circle 141 on reader service card**



*"If you ask me, they've gone bananas with this 'high-end' stuff."*


A man with a mustache, wearing a brown cowboy hat and a brown jacket, is shown in profile, smoking a cigarette. The background is a warm, golden-brown color. In the foreground, two packs of Marlboro cigarettes are visible: a red pack of Marlboro Longhorn 100's and a yellow pack of Marlboro 100's.

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## TECHNICS RS-B905 CASSETTE DECK

*Craig Stark, Hirsch-Houck Laboratories*

**D**OLBY HX Pro headroom expansion, dbx and Dolby noise-reduction systems, separate record and playback heads, and a closed-loop, dual-capstan drive system are among the many attractions of the new Technics RS-B905 cassette deck. As the flagship deck of the Technics line, the RS-B905 also incorporates phase-compensation circuitry to improve stereo imaging, a user-

adjustable bias control, and separate tape-sensitivity controls for each channel.

The take-up and supply-side capstans of the RS-B905 are belt-coupled and are driven by a DC servomotor. A small difference in the capstans' diameters gives them slightly different rotational speeds, which produces the tape tension that holds the tape against the heads (The cassette's pressure pad exerts

additional tension, of course, but from an engineering viewpoint the pad is superfluous in a closed-loop transport.) A second DC motor drives the two reel hubs.

Although they share a common casing, the record and playback heads of the RS-B905 are electrically separate units, which allows the user to make instant quality comparisons between the source signal and its just-recorded counterpart. Such a design also allows the use of a relatively wide head gap for the record element, yielding a better signal-to-noise ratio, while using a narrow head gap for playback, yielding improved high-frequency response.

The Dolby HX Pro headroom-

# TEST REPORTS

expansion system also extends high-frequency response at high signal levels. The HX Pro circuitry continuously monitors the signal being fed to the record head, and when it

detects treble levels that would result in tape saturation (a serious problem at the 1 7/8-ips cassette tape speed), it instantly lowers the record bias slightly. The lowered bias ena-

bles the tape to hold more treble energy at just those moments when it is needed. The bias is restored to its normal level when the treble demand declines so that overall signal distortion will not increase.

The RS-B905 has a conventional cassette well with a nicely damped door mechanism, but the lack of rear illumination and a narrow viewing window render label and tape-remaining visibility poor. In contrast, the fluorescent peak-level indicators, with eighteen segments per channel calibrated from -40 to +18 dB, are highly readable. The three-digit fluorescent tape counter registers reel-hub revolutions only, with no indication of elapsed or remaining time.

The main adjustments for bias and equalization for different tape types (ferric, high-bias, and metal) are made automatically, but a user-adjustable bias control is provided to compensate for the bias requirements of different brands of ferric or chrome-type tapes. Since no tone-generating circuits are included, the user must make such refinements by ear while switching back and forth between tape and source positions. (A good test signal is FM interstation hiss, if it is recorded at a level well below 0 dB.) With most decks, slight differences in tape sensitivity, manifested as differences in loudness between tape and source switch settings, make such noninstrumented bias adjustments extraordinarily difficult. The RS-B905's tape-sensitivity controls for each channel both ease this problem and increase the accuracy of the Dolby noise-reduction system.

The front-panel headphone jack has its own volume control, but there is no playback level control for the main output jacks on the rear. A conventional switch for external-timer record and playback activation is provided, as is rewind/repeat-play operation. The FM-multiplex filter is defeatable so that high-frequency response of CD and LP dubs is not limited.

The Technics RS-B905 measures 17 inches wide, 4 3/8 inches high, and 11 1/4 inches deep, and it weighs approximately 11 pounds. Price: \$600. Technics, Matsushita Electric

## FEATURES

- Separate record and playback heads
- Dual-capstan, closed-loop transport
- Dolby B, Dolby C, and dbx noise reduction
- Dolby HX Pro headroom expansion
- Phase-compensation circuitry
- User-controlled bias and tape-sensitivity adjustments
- Eighteen-segment-per-channel fluorescent level indicators
- Defeatable FM-multiplex filter
- External timer activation
- Selection-repeat facility

## LABORATORY MEASUREMENTS

**Fast-forward time (C-60):** 81 seconds

**Rewind time (C-60):** 79 seconds

**Speed error:** +0.7%

**Dolby tracking error:** Dolby B, +0.5 dB; Dolby C, +2.0, -0 dB

**Wow-and-flutter:** 0.036% wrms, 0.08% DIN-weighted peak

**Line input for indicated 0 dB:** 60 mV

**Line output at indicated 0 dB:** 0.35 volt

**Meter indication at IEC-standard 0 dB:** +6 dB

**Tape:** TDK AD (Type I, ferric)

**IEC 0-dB distortion:** 0.3% (0.03% with dbx NR at equivalent output level)

**Meter indication at 3% third-harmonic distortion:** +12 dB (0.2% at +20 dB with dbx NR)

**Signal-to-noise ratios (in decibels):**

	Unwtd.	A-wtd.	CCIR
NR off	54.6	60.5	57.6
Dolby B	57.8	69.0	68.0
Dolby C	58.8	76.2	76.2
dbx	83.5	93.0	91.0

**Tape:** TDK SA (Type II, chrome-equivalent)

**IEC 0-dB distortion:** 0.7% (0.12% with dbx NR at equivalent output level)

**Meter indication at 3% third-harmonic distortion:** +12 dB (0.8% at +20 dB with dbx NR)

**Signal-to-noise ratios (in decibels):**

	Unwtd.	A-wtd.	CCIR
NR off	53.6	60.5	58.0
Dolby B	56.4	68.5	68.2
Dolby C	57.5	73.4	76.1
dbx	85.5	93.5	91.8

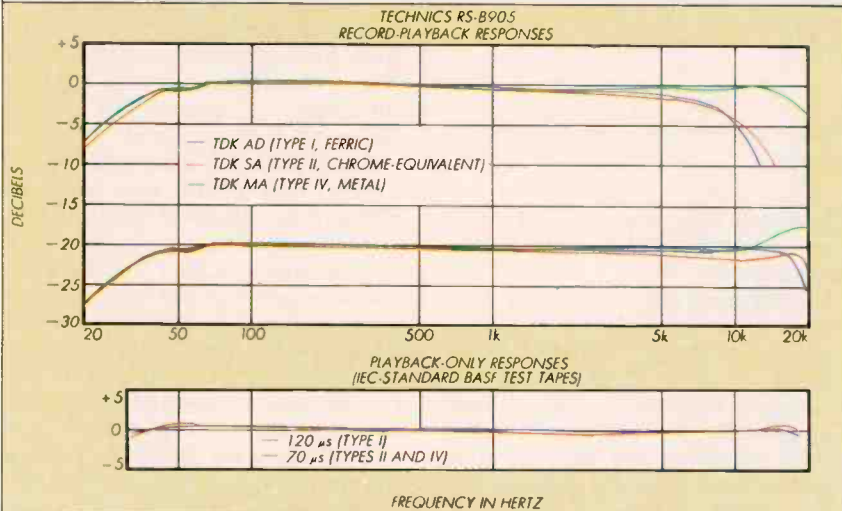
**Tape:** TDK MA (Type IV, metal)

**IEC 0-dB distortion:** 0.9% (0.18% with dbx NR at equivalent output level)

**Meter indication at 3% third-harmonic distortion:** +12 dB (1.1% at +20 dB with dbx NR)

**Signal-to-noise ratios (in decibels):**

	Unwtd.	A-wtd.	CCIR
NR off	52.3	59.0	56.7
Dolby B	55.6	67.4	66.7
Dolby C	56.5	72.4	75.1
dbx	83.5	90.6	93.3





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Dr. Sidney Harman, Founder and Chairman of Harman Kardon.

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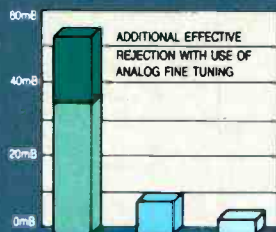
The new Citation twenty-three makes tuner design history as the world's first Active Tracking tuner and the world's first synthesized tuner with Analog Fine Tuning. This patented system delivers two aspects of tuner performance that were previously mutually exclusive: high selectivity and high fidelity. Its

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\*20Hz-20kHz < 0.00% THD into 8 Ohms and into 4 Ohms



■ CITATION TWENTY-THREE ■ TYPICAL SINGLE IF TUNER  
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## TEST REPORTS

Co. of America, Dept. SR, One Pan-asonic Way, Secaucus, NJ 07094.

### Lab Tests

Measured with our IEC-standard calibrated BASF test tapes, the playback frequency response of the RS-B905 was extraordinarily flat for both ferric and chrome or metal cassettes. On an overall record-playback basis, the low end rolled off very smoothly to  $-3$  dB at 30 Hz, and there was no sign of the usual low-frequency undulations ("head bumps"). At the normal  $-20$ -dB measurement level, the response of our "center-line" ferric tape (TDK-AD) dropped to  $-3$  dB at 18,000 Hz, as specified, and our chrome-equivalent tape (TDK-SA) made it all the way to our 20,000-Hz upper measurement limit with a deviation of only  $+0.5$ ,  $-2.5$  dB.

With our centerline metal tape (TDK-MA), the response between 10,000 and 20,000 Hz rose to  $+3$  dB, indicating a slight underbias in the factory setting, which also exaggerated the metal-tape response at a 0-dB level. The user bias adjustment does not affect the deck's setting for metal tape, so we could not try to flatten this response, but it was (just) within specification in any case.

The signal-to-noise ratios of the

RS-B905, as shown in the accompanying box, were extremely good, though the raw numbers perhaps need some additional explanation. The 0-dB indication on the unit's display was factory set at what is, for today's tapes, an unrealistically low level. Specifically, inputs at the IEC standard reference level, which is often used to set the 0-dB point for today's high-quality decks, read  $+6$  dB on the left channel and  $+4$  dB on the right. Also, we measured 3 percent third-harmonic distortion, both with no noise reduction and with the two Dolby noise-reduction systems, at a staggering indication of  $+12$  dB. In my opinion, encouraging recordists to record at such an indicated level for signal peaks is absurd, yet if they do not do so residual background hiss will become an almost inescapable audible problem.

Measuring the signal-to-noise ratio (S/N) with the dbx noise-reduction system posed an additional challenge, though of a pleasanter sort. The conventional 3-percent point for third-harmonic distortion could not be reached by *any* input level, for the input stages of the RS-B905 began to clip at a  $+22$ -dB input, 4 dB above the maximum of the deck's own indicators! We measured the dbx S/N, therefore, at

a  $+20$ -dB input, though I do *not* advise readers to run their indicators offscale when recording with dbx. With this noise-reduction system it is more important to use some of the "excess" signal-to-noise capacity to reduce—drastically—the so-called "normal" distortion on the tape.

Our wow-and-flutter measurements showed good but not exceptional performance, and overall speed accuracy was 0.7 percent high. Dolby tracking was extremely good, as was that of the dbx system. Both input sensitivity and output level were entirely normal, and fast winding was slightly better than average.

### Comments

We made most of our listening tests in advance of measuring the RS-B905, and some of the residual background hiss we detected (especially with Dolby C, with which we expected to hear next to none) dropped into insignificance when we later learned how severely miscalibrated the deck's 0-dB indicators were. The sonic imagery and ability to pinpoint sources across the sound stage were absolutely superb, among the best I have heard. How much of this is attributable to the deck's special "phase correction" circuitry is not certain since the feature can't be defeated temporarily for comparison, but the clarity of the record-playback reproduction was outstanding.

The smoothness of the frequency response was also audibly evident, and while our measurements later showed that perhaps we *should* have been able to detect some slight wow-and-flutter, the fact is that we did not. The dbx system itself showed very little audible "pumping," though when we were listening for it specifically some very slight noise shifts could be heard on solo piano notes in a recording of the Schubert Trout Quintet. On prerecorded materials the playback was as clean as any we have heard. That so much top sound quality can be provided in a deck at the relatively modest price of the RS-B905 is a tribute to the engineering acumen of the Technics designers.

Circle 142 on reader service card

...INDUSTRIALS WERE OFF AND UTILITIES WERE UNCHANGED. THE LONDON GOLD MARKET CLOSED AT \$435 AN OUNCE, UP \$1.40. PURE SILVER INTERCONNECTS AND SPEAKER CABLE CLOSED AT \$271, UP \$3.85 PER METER FROM YESTERDAY...



# CAMEL FILTERS

Share a new adventure.



16 mg. "tar", 1.0 mg. nicotine av. per cigarette by FTC method.

**SURGEON GENERAL'S WARNING: Quitting Smoking  
Now Greatly Reduces Serious Risks to Your Health.**

# What happens when studio recording engineers also design home tape recorders.

What qualifies a company to build audiophile cassette decks? Try seven decades of intimate knowledge in every aspect of the recording process. Creating award-winning blank tape. Recording award-winning classical and jazz releases. Building transcription-quality open-reel recorders, multi-track



THE SAME EARS THAT GUIDE DENON RECORDING SESSIONS ALSO EVALUATE THE SOUND OF DENON HOME COMPONENTS.

decks for studio work, and finally the world's first digital recorder good enough for commercial record production.

Only one company has all these qualifications. That company is Denon.

Consider Denon's DR-M30HX Cassette Deck. This machine's professional heritage is evident in the three-motor drive system for flawless tape movement, the high-overload heads with oxygen-free copper



A CASSETTE DECK IS ONLY ONE HALF OF THE RECORDING SYSTEM. HERE'S THE OTHER.

coils for the barest minimum noise, and the wideband DC playback amplifier for ruler-flat

response. Even the power supply has separate windings for the audio circuits — for absolute minimum distortion.

Although not highly publicized, the control of supply reel back tension can be a cassette deck's Achilles' Heel. Over time, the typical friction clutch can wear down, disturbing tape-to-head contact and degrading high frequency response. That's why Denon borrowed the

## "Top Class"

Germany's Stereo Magazine on the DR-M30HX

Under test, its metal tape overload (MOL) margin is incredibly high, at +6db being as good as the best use of Dolby HX Pro or excessive bias either. Overload margins on chrome and ferric tape were high too, so the benefit is a general one, if not being quite so marked with ferric tape. (IEC Primary Reference head gives the DR-M20 +2dB headroom advantage over other decent decks, with metal and chrome tape so recordings can be taken up to a higher level (+8 on the indicators), so making this less noticeable.

cult types of music on the Denon DR-M30HX. You'll hear steady, unwavering pitch on sustained piano chords. And you hear cymbals and harpsichords with all their distinctive overtones.

You might expect audio components of this caliber to come with high-caliber price tags. Yet Denon cassette decks



THE DENON DR-M30HX. THREE MOTORS, THREE HEADS, DOLBY B, C, AND HX PRO DON'T BEGIN TO TELL THE STORY.

open-reel concept of Non-Slip Reel Drive — servo-controlled back-tension that will not degrade over time.

Denon incorporates such studio technology for one purpose only: its direct effect on sound quality. The proof is in the listening. Record the most diffi-

## "Best Buy"

Britain's Hi-Fi Choice on the DR-M20

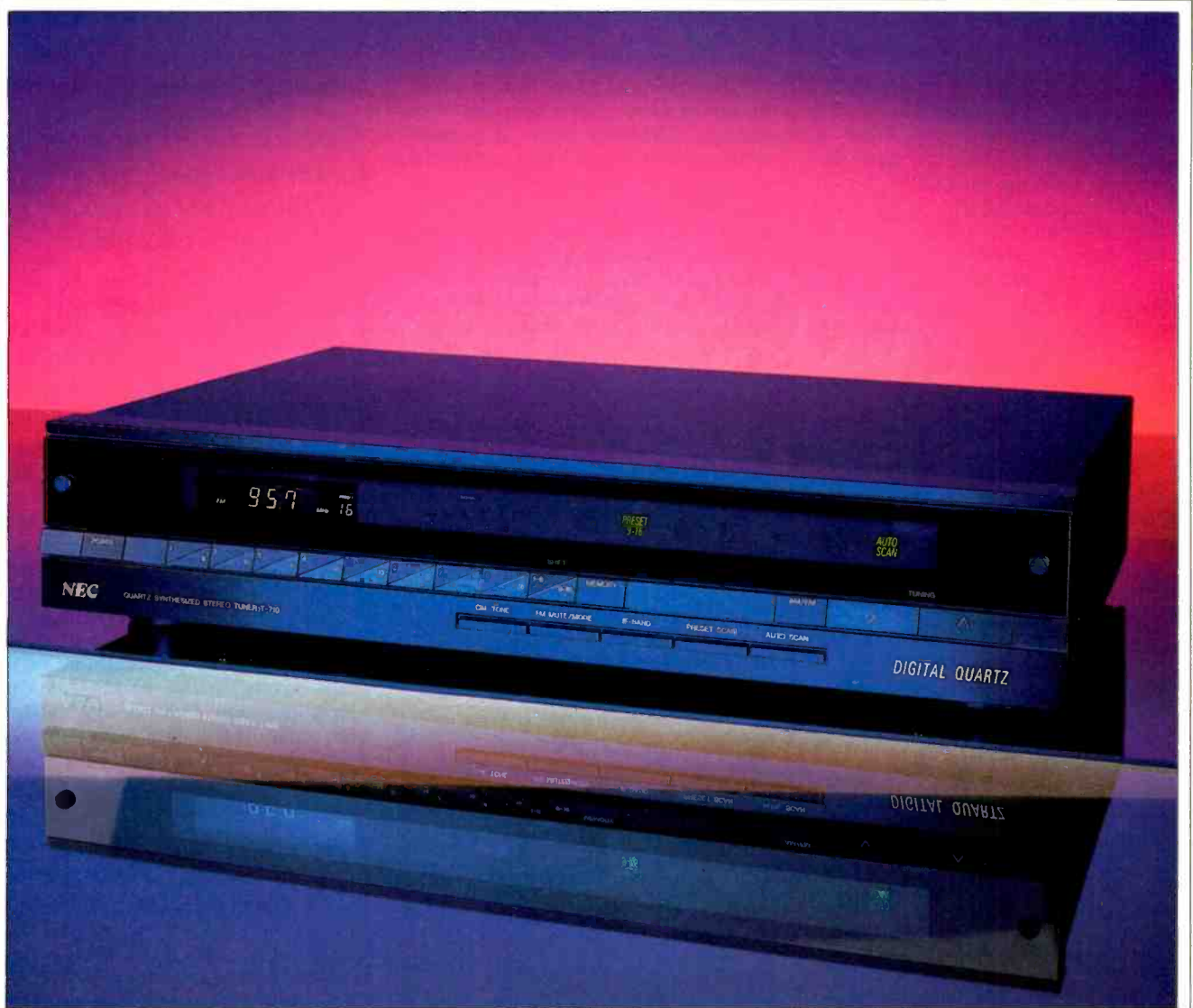
start at less than \$250.\* So for the price of far lesser audio components, you can do what studio engineers all over the world do. Record on a Denon.

# DENON

DESIGN INTEGRITY

\*Suggested retail price. Clipping reprinted with permission from Hi-Fi Review, November/December, 1986 issue.

Denon America, Inc., 222 New Road, Parsippany, NJ 07054 (201) 575-7810  
Denon Canada, Inc., 17 Denison Street, Markham, Ont. L3R 1B5 Canada



## NEC T-710 AM/FM TUNER

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE NEC T-710 is a moderately priced quartz-PLL digital-synthesis tuner with some features and performance specifications not often found in its price class. For example, it has a switchable IF bandwidth that allows the user to select either a wide (normal) or narrow mode. Under most conditions the wide-band mode gives the best results, but the narrow-band option can improve reception of weak signals that might be interfered with by signals from

stronger stations broadcasting on nearby channels.

Each of the tuner's eight preset buttons can be assigned to two different frequencies, either AM or FM. The display window shows the selected preset number as well as the station frequency and band. Other display information includes automatic tuning mode, AUTO SCAN or PRESET SCAN, WIDE IF bandwidth when selected, and whether a stereo FM broadcast is being received. The window, which covers most of the

width of the front panel, also contains a five-segment signal-strength indicator.

All of the operating controls of the NEC T-710 are soft-touch pushbuttons. A row of rectangular buttons below the display window control such frequently used operating functions as preset channel selection, band selection, and tuning. Narrow bars below them control the less often used functions. In the auto-scan mode, pressing one of the tuning buttons causes the tuner to scan rapidly in the selected direction, stopping on the first signal that exceeds the muting threshold. Preset scan automatically steps through the preset channels, pausing on each for several seconds before proceed-

## TEST REPORTS

ing. The T-710 also has a built-in calibration-tone generator, activated by a CAL TONE button, whose output replaces the received signal.

The rear apron of the NEC T-710 contains the audio output jacks, a connector for a 75-ohm coaxial FM antenna, and spring-loaded terminals for connecting the supplied AM loop antenna. A 300- to 75-ohm matching transformer is supplied for use with 300-ohm FM antenna systems. The T-710 measures 17 inches wide, 11 inches deep, and 3 $\frac{3}{8}$  inches high. It weighs about 9 pounds. Price: \$299. NEC Home Electronics, Dept. SR, 1255 Michael Dr., Wood Dale, IL 60191.

### Lab Tests

We made most measurements on the NEC T-710 using both its narrow-band and wide-band IF modes. There were only minor differences between the two in respect to sensitivity and capture ratio, and virtually none in the AM-rejection, distortion, and noise measurements. As is usually the case with switchable-

bandwidth tuners, the differences in selectivity and channel separation were considerable.

When the signal generator was set for minimum distortion, its frequency difference from the tuner setting was about 40 kHz, sufficient to increase the distortion at the correct frequency from 0.047 to 0.083 percent with a 65-dBf input signal. Though this seems to be an appreciable difference, even the 0.083-percent figure is entirely negligible and inaudible. The muting and stereo thresholds were identical, about 24 dBf (8.7  $\mu$ V, or microvolts), but a built-in hysteresis action caused the signal to remain audible until the level had dropped again to 18 dBf (4.4  $\mu$ V). This is a highly desirable characteristic for a muting circuit, because it prevents minor signal fading from producing intermittent reception.

Aside from improved selectivity, the most obvious effect of using the narrow-band mode was a reduction of channel separation to a nearly constant 30 to 35 dB across the

entire audio band. In the wide-band mode the separation was as great as 55 dB in the 2,000- to 10,000-Hz range, but it decreased to 37 dB at 30

*The NEC T-710 has some performance specifications and features not often found in tuners in its price class.*

*For instance, it has a switchable IF bandwidth to improve reception of weak signals in some conditions.*

Hz and 47 dB at 15,000 Hz. In practical terms, all these separation readings are adequate to produce a full stereo effect. The AM tuner was down 6 dB at 28 and 3,000 Hz.

Pressing the CAL TONE button replaced the program by a 400-Hz triangle wave with a 1.12-volt peak-to-peak amplitude. This signal bears little obvious relationship to program levels, being about 6.4 dB below the peak level of a 100-percent modulated sine-wave signal. Even as a possible aid to setting tape-recorder input levels, the feature seems to be of little value.

### Comments

The performance of the NEC T-710 tuner was excellent in all important respects. Its sensitivity was average, but its noise levels and distortion readings were very low. Even in its wide-band position, the selectivity was quite adequate here in the metropolitan New York area. The narrow-band IF made only a modest improvement in the tuner's adjacent-channel selectivity but a very considerable increase in its alternate-channel readings.

At its price, the T-710 appears to be a very good value. It is not a tuner that will extract the last bit of reception in very weak signal areas or where adjacent-channel signals of widely different strength must be separated, but it should outperform many comparably priced tuners (or even higher-priced ones) under more normal operating conditions. It is attractive, easy to operate, and in general intelligently designed.

**Circle 143 on reader service card**

### FEATURES

- Digital-synthesis quartz-PLL AM/FM tuner
- Selectable wide (normal) or narrow IF bandwidth
- Eight preset buttons for up to sixteen AM or FM frequencies
- Preset scan, auto scan, or manual tuning
- Display of station frequency, band, preset number, status of all operating controls
- CAL TONE replaces broadcast signal in line outputs
- Coaxial input for 75-ohm FM antenna
- Transformer for 300-ohm FM antenna
- Hinged, removable AM loop antenna

### LABORATORY MEASUREMENTS

(All figures for FM only except frequency response)

#### Usable sensitivity (mono):

wide-band, dBf (2.5  $\mu$ V);  
narrow-band 15.2 dBf (3.2  $\mu$ V)

#### 50-dB quieting sensitivity: mono,

14 dBf (2.8  $\mu$ V) wide, 13.5 dBf  
(2.6  $\mu$ V) narrow; stereo (wide  
and narrow), 35 dBf (30  $\mu$ V)

#### Signal-to-noise ratio at 65 dBf:

mono, 88 dB wide, 86.3 dB  
narrow; stereo, 78.4 dB wide,  
79.6 dB narrow

#### Harmonic distortion (THD +

noise) at 65 dBf: mono, 0.083%  
wide, 0.115% narrow; stereo,  
0.048% wide, 0.056% narrow

**Capture ratio at 65 dBf:** wide, 1.15  
dB; narrow, 2.5 dB

**AM rejection at 65 dBf:** wide, 73,  
dB; narrow, 74 dB

#### Image rejection: 76 dB

**Selectivity:** alternate-channel, 38  
dB wide, 82 dB narrow;  
adjacent-channel, 4 dB wide, 7.5  
dB narrow

**Stereo threshold:** 18 to 24 dBf (4.4  
to 8.7  $\mu$ V)

**Muting threshold:** same as stereo  
threshold

**Stereo channel separation at 100,**  
1,000, and 10,000 Hz: wide, 46,  
53.5, and 55 dB; narrow, 31, 33,  
and 34.5 dB

**Frequency response:** FM, 30 to  
15,000 Hz +0.5, -0.4 dB; AM,  
-6 dB at 28 and 3,000 Hz





# Pure Joy

(And we'll deliver...tomorrow morning)\*

Imagine a superbly crafted electronic instrument, powerful enough to protect against traffic radar, miniaturized enough to slip into a shirt pocket, beautiful enough to win an international design award—and advanced enough, thanks to its sophisticated Rashid-rejection circuitry, to obsolete the detectors of every other maker.

Then imagine finding one with your name on it.

**Money**  
MAY 1987

**Best Anywhere**

Money magazine, May 1987, listed 99 Things That Americans Make Best. "All of these widely available U.S.-made goods... are clearly superior to their overseas competitors, overwhelmingly dominate their markets or are so outstanding or novel that they have no well-known international counterpart."

This select list included PASSPORT.

PASSPORT has exactly what the discerning driver seeks; superheterodyne performance with complete Rashid rejection. On duty, it maintains a commendably low profile, only 0.75 inch tall. It's about the size of a cassette tape.

An instrument providing so much protection always elicits the same response...Pure Joy.

Others may put it differently. In April, *Car and Driver* tested nine of the latest radar detectors. Once again PASSPORT was rated highest. These magazine experts said, "At \$295 direct from the factory, it's the most expensive piece of electronic protection in the group, but it's worth every nickel in roadgoing peace of mind."

This good reputation keeps getting better. In June, the *Roundel* ranked PASSPORT first in a comparison of 14 detectors, saying, "It remains the State of the Art, a true quality product, American ingenuity at its best."

Installing PASSPORT is easy. Just clip to visor or windshield, plug into the lighter, and PASSPORT is on guard.

Pure Joy is also our commitment to you, the giver. If PASSPORT doesn't live up to your highest hopes—for any reason—within 30 days, just send it back. We'll refund all of your money and your return shipping costs. There are no hidden charges.



PASSPORT comes with its own leather case.

Here's one more PASSPORT advantage: we deliver. PASSPORT is designed and made by us, and we sell it directly to you. So you can avoid crowded stores and waiting in lines. Just call us toll-free. We'll pay for shipment by UPS, and a gift box is available at no extra charge. Orders in by 3:00 pm eastern time Monday through Friday go out the same day.

\* Overnight delivery is guaranteed by Federal Express for only \$10 extra. So you can have your PASSPORT tomorrow morning if you choose.

With shopping this easy, PASSPORT takes the hassle out of giving. But the best part is still that special moment when the wrapping is torn away...Pure Joy.

**Toll Free 800-543-1608**  
(Mon-Fri 8am-11pm, Sat-Sun 9:30-6 EST)

**PASSPORT**  
RADAR RECEIVER

**\$295** (Of 1 res. add \$16.23 tax)  
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Cincinnati, Ohio 45249-9502

# Attack Of The Refrigerators

Hostile forces within your own home may be attacking your computer and stereo systems. It's an insidious attack, but before you even think about buying the Protectors below, check it out.

By Drew Kaplan

Don't order the Protectors below. Sit back tonight and spend a relaxing evening watching TV, working on your computer or listening to your stereo.

No, I don't think any of your components are going to blowup tonight. But tonight, there's just one thing I'd really like you to do.

## EASY TEST

As you're enjoying your evening, keep an eye on the lighting around you (incandescent bulbs). Oh, don't bother to measure the intensity, lumens or anything complicated at all.

But, if your lighting is anything like mine, every so often, your lights will instantaneously blink or dim. If they don't,

reading any farther may not be of life or death importance to your components.

If you're still reading, you'll probably be as amazed as I was, to know that there can be an average of 200 to 300 line voltage fluctuations per day.

Many of them can't be detected without instruments. But, the main ones, caused within your own home, and not by the constant stream of spikes coming from the power company, are easy to spot.

## CONSTANT ATTACKS

The biggest culprit is your refrigerator or your air conditioner. Each time one comes on, a compressor cycles on and sucks up an enormous surge of power.

It's that instantaneous reduction in power that causes your lights to dim or

blink. What you don't see, is that as the power level snaps back, a high voltage surge hits your equipment.

It's just like starting and stopping the nozzle on a hose. The flow fights to keep going and going.

By the way, if you ever have an actual power failure or brownout, turn off all your equipment immediately.

When the power comes back on, you are likely to get some mammoth spikes that can cause immediate irreparable damage to your equipment.

These spikes are large versions of what your equipment is inundated with, day in and day out.

Don't panic. Most equipment is made

...Next Page Please



Protect your computer and 5 peripherals from spikes, turn everything on and off from the front & swivel your monitor.

By Drew Kaplan

It's great. Now you don't have to reach around the back of your computer to turn it on. And not only can you turn on each peripheral separately, you can turn them all on or all off with one switch.

But there's more. This all new Power Controller is much more than just a fancy 'octopus' that supplies you with 6 outlets to get rid of cumbersome tangled cords.

It aids in the prevention of damage caused by voltage surges and spikes. It then goes on to filter your AC to help protect your equipment and data from line noises caused by power disturbing air conditioners, refrigerators and the like.

And look at this. It protects your equipment from itself. There are 4 separate filtered sections. So, your computer will be protected from your printer, modem or other peripherals.



## BUT IT'S CONVENIENT

There are 6 protected 3-wire outlets

on the back. 5 are switched from the front. One is unswitched but spike protected so you can leave a peripheral on.

Each of the 5 switched outlets has a non-glare status light so you know what's on. Push a button for on/off control.

You can swivel the monitor from side to side. So, if you have a separate keyboard, you can really type in comfort.

Above, you can see The Power Controller between the Visual IBM® Compatible Computer and its monitor. It is 1¾" high, 13¾" wide and 12¾" deep.

You can use it with virtually any computer. (It can hang off the back up to 3½ inches with no problem.) It's a perfect combination of convenience and protection for your computer system. It's backed by a limited warranty.

## PROTECTION & CONVENIENCE RISK FREE

I've only had my data wiped out once by a power surge. But, I had over 2 hours of irreplaceable 1st draft copy in my computer when it happened.

Now, I'm using my new Power Con-

trollers with 4 different computers. With this added protection, maybe I won't lose data again. And, I've learned to save my data much more often since my loss.

If you're not 100% satisfied, simply return it to DAK within 30 days in its original box for a courteous refund.

To order your 6 outlet Power Controller with Spike Protection, Line Filtering, Circuit Breaker and a 10' 3-wire grounded power cable risk free with your credit card, call toll free or send your check for DAK's blockbuster price of just \$79 (\$6 P&H). Order No. 4623. CA res add tax.

I like the convenience. It's something that helps me every day. But, I'm thrilled with the added protection. If it even helps once, it's worth many times the cost.



**DAK INDUSTRIES  
INC.**

Call Toll Free For Credit Card Orders Only

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8200 Remmet Ave., Canoga Park, CA 91304

## Refrigerator Continued

to withstand this continual attack. With computers, you usually only crash or lockup if the spike hits at the critical micro-second of data storage.

It's then that you can lose your data or have your computer lockup. But frankly, it's not all that common.

What is common, is that the constant repetition of surges, spikes and high and low voltage that can average 2-300 times a day, ultimately cause your equipment to fail.

### IMMORTALITY

Theoretically, a light bulb is made to last a set number of hours, because the filament is actually burning.

When we used tubes for our stereos, TVs and even computers, they too had a

predetermined life. In fact, I used to re-tube my amps once a year because I could really hear the difference.

Transistors and integrated circuits don't wear out or have a set life. Unless they are damaged electrically or physically, there's no reason for them to fail.

So, you can be pretty sure that if the tuner in your stereo or the CPU in your computer fails, it's been damaged.

The Protectors below blunt this series of electrical shocks to your equipment.

And, while a catastrophic computer crash is rare, these Protectors are also really built to protect the long-term life of your equipment. And, they really do a good job.

Plus, they're very convenient. You'll have 6 plugs for your components, so

you won't have wires running everywhere, and you won't forget to turn things off. (I always forgot to turn off my printer.)

When you use the Stereo Power Controller you can also add remote power ON/OFF and fully timed ON/OFF control of your stereo system.

Plus, if you're like me, there are never enough plugs in the back of your receiver to plug in all your components.

Wow, here's insurance for your stereo system that also makes your life easier.

So, if you're into computers or stereo, read my ads below. And, pay attention to any dimming or blinking of your lights.

And, if you open your refrigerator door for a midnight snack, remember, you may be attacking your electronic equipment as you add to your waistline.



**Protect your stereo system's components from spikes and line interference. Plus, you'll control them automatically.**

By Drew Kaplan

It's amazing. For years I've lived with occasional interference when I'm recording. When a transistor has blown, I've never known why. Plus, I've had to individually turn on and off each component.

Now I can protect my music from noise. Now I can protect my system's circuits from transient power surges. And now, I can not only control each component separately, I can turn them all on or off with a single button, or automatically.

**But there's more.** This all new Power Controller is much more than just a fancy 'octopus' that supplies you with 6 outlets to get rid of cumbersome tangled cords.

It aids in the prevention of damage caused by voltage surges and spikes.

It also filters your AC to help protect your music and recordings from noises caused by power disturbing air conditioners, fluorescent lights and the like.

**And look at this.** It protects your components from themselves. There are 4 separate, electronically filtered sections. So, your tape deck won't pick up a blip if you switch on another component.



### BUT IT'S CONVENIENT

There are 6 protected 3-wire outlets on the back. 5 are switched from the front. One is unswitched but still spike protected,

so you can leave on a component.

Each of the 5 switched outlets has a non-glare status light. Plus, there's 'Master Power' for selected components.

### COMPUTER INSPIRED

Last year I picked up static from a bad fluorescent fixture on an FM broadcast I was recording, so, I put a computer power controller into my stereo system.

It has really cleaned up my sound. And, of course, added protection for my components. Also, with its 6 plugs, it's cleaned up my wiring. So, I've had the manufacturer create the same protection for my audio that I have for my computers. **And, look what we've added.**

### AUTOMATIC CONTROL

The built-in clock timer will allow you to have your system come on and turn off whenever you desire. So, you can record broadcasts you'd miss, or have your stereo wake you up or put you to sleep.

With more and more cassette decks being timer-ready, DAK's new power controller is a great asset.

Plus, if you'd like to turn your system off or on from up to 25 feet away, there's an optional infrared remote.



I didn't include volume or mute because this controller is made to suppress noise going to your system, not add wires and noise within the 'sound loop'.

It's a perfect combination of convenience and protection for your stereo system. And, it fits right in. It's 17" wide, 1 3/4" tall and 12 3/4" deep. It's backed by DAK's standard limited warranty.

### PROTECTION & CONVENIENCE RISK FREE

It's so easy to turn on my components. I love not worrying about noise. The timer lets me have total control. And, 6 extra 'protected' plugs are great.

If you're not 100% satisfied, simply return it to DAK within 30 days in its original box for a courteous refund.

To order your 6 outlet Stereo Power Controller with Spike Protection, 4 separate Line Filters, a Circuit Breaker and a 9' 3-wire grounded power cable risk free with your credit card, call toll free or send your check for DAK's noise silencing price of just \$79<sup>90</sup> (\$6 P&H). Order No. 4832. For May delivery. CA res add tax.

If you'd like the identical controller/protector with an infrared On/Off remote, it's just \$89<sup>90</sup> (\$6 P&H). Order No. 4833.

I love the convenience every day. I can now record with confidence. But, I'm most thrilled with the added protection for my cherished components.

# Wireless TV Marriage Saver

Now you can watch late night TV without bothering your spouse. Now you can listen to any audio source **WIRE FREE!**

By Drew Kaplan

It's a problem. I like to watch the late late movies and my wife wants to sleep. I also like to flip channels and it drives her crazy.

Well, now I can listen as loudly as I like, as late as I like, and there are no complaints.

And speaking of loud, if you know someone who is 'hard of hearing', now everyone in the room doesn't have to be bombarded by a loud TV.

## HERE'S HOW IT WORKS

The system operates on waves of infrared light, just like your remote controls. So, there's virtually no noise and no interference, with a 30-18,000hz frequency response.

Simply plug the AC powered transmitter into an earphone jack or audio out from your TV, VCR, or other audio source.

You wear a great sounding pair of featherweight stereophones which plug into an amplified receiver.

You'll have your choice of Mono or S.S.A (Spatial Sound Around) simulated



stereo. Of course, you'll control the volume. (9V battery not included.)

And look at this. If there's no headphone jack, there's an optional micro-

phone that you simply place in front of the TV's speaker. It's so sensitive that you barely have to have the sound on to listen, so you still won't bother anyone.

It's also great if your kids want to watch TV while you read. It's backed by a standard limited warranty.

## WIRELESS TV FREEDOM RISK FREE

Luckily, my marriage is happy, but the late night TV has been a problem. Wait till you hear the sound quality carried on a wave of light. It's amazing.

If you're not 100% satisfied, simply return it to DAK in its original box within 30 days for a courteous refund.

To order your complete Transmitter, AC power Supply, Receiver, and Stereophones risk free with your credit card, call toll free, or send your check for DAK's breakthrough price of just \$49<sup>90</sup> (\$4 P&H). Order No. 4860. CA add tax.

You can add as many extra receiver/stereophones as you wish for just \$29<sup>90</sup> (\$2 P&H). Order No. 4861. If you don't have a headphone jack, the installation free, sensitive microphone is just \$19<sup>90</sup> (\$2 P&H). Order No. 4862.

You'll have wireless sound freedom.

# Concerto For Gophers

Gophers must have great musical taste. They sure 'walk out' on this concert.

It's not Bach or Beethoven. It's a combination of a 300hz sound and vibration that makes gophers, moles and ground squirrels pack their little bags and leave.

Forget poisons, traps and gas. Gophers have a keen sense of hearing and an ability to detect vibrations to signal them of danger. The new Go'Pher It! expels rodents with no damage or danger.

Just push the 11" electronic vibrating stake into the ground, put in 4 D batteries and you'll have about 6 months worth of annoying music for gophers.

You can protect a circular area up to 100' in diameter with a single Go'Pher It! So, don't let burrowing rodents destroy your lawn. Of course, it's 100% safe for children and pets. It doesn't kill the gophers, it just makes them leave.

Every 15 seconds it sends out its an-

noying concerto through the ground. In the yard, you won't hear it. And it doesn't even bother worms. But, it sure annoys rodents. It's weather resistant and backed by a standard limited warranty.

## PROTECT YOUR YARD MUSICALLY RISK FREE

If you work hard on your lawn, now is the time to protect your investment. If you're not 100% satisfied, simply return it to DAK in its original box within 30 days for a courteous refund.

To order your Go'Pher It! Electronic Concerto for Gophers risk free with your credit card, call toll free or send your check for just \$49<sup>90</sup> (\$4 P&H). Order No. 4746. CA res add tax.

Gophers make lousy house guests. They simply eat too much. Let them face the music and get the "... out!



# Wireless WalkLite

Now you can have romantic and safe lights in your yard without any wires.

It's true. It's sunshine at night. The new WalkLite is solar powered by day to provide a soft romantic light by night.

In your garden, on your patio or anywhere in your yard, you can have light without running wires or putting in batteries. Each WalkLite comes with its own 2' pole, or it can be wall mounted.

Just after dusk, these incredible lights will come on and will provide an average of 4 to 5 hours of gentle warm light each night.

By day they are charged, by night they give back the light to brighten and romanticize your home, night after night.

They'll add glamor to your yard, deck areas or even by the back door. And since there's no wiring and no maintenance, you'll really appreciate these lights over the years.

They aren't flood lights, they provide a soft glow for a safer, more romantic yard. They're made by Chronar and they are backed by their limited warranty.

## WIRELESS WALKLITES RISK FREE

As you walk in your yard, you'll really appreciate these beautiful lights. They really are lovely.

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

To order Chronar's Wireless WalkLite Rechargeable Yard Light risk free with your credit card, call toll free or send your check for just \$49<sup>90</sup> (\$5 P&H). Order No. 4864. CA res add tax.

Look out of your window tonight and imagine the warmth of automatic Walk-Lites lighting your garden.



**Bonus Drum Sticks Included**



# Orchestral ChordMaker Plus

*Here's an entire instrumental group to fulfill your every musical need. Whether you're a pianist, an organist or a singer, even if you've never played before, you'll be creating beautiful music. And, wait till you pick up the bonus drum sticks.*

By Drew Kaplan

It's chopsticks time in musicland. Now you can play any of 12 totally different instruments, and have 12 different rhythm sections backing you up automatically.

And what if you don't play? Well, if you sing, this incredible new chordmaker will combine auto-rhythm with your choice of chords to accompany you.

It's amazing. It's like having a skilled band backing you up. If you want to sing in the key of G, just touch G, and let the concert begin.

And for chords, this keyboard is 8-note polyphonic which means you can press more than one key at a time.

**Special note:** Like a studio mixer, you'll have individual level control of the accompaniment volume, rhythm volume and main volume. So, you're in complete control of this superb musical system.

## AUTO-ACCOMPANIMENT

This isn't the first keyboard I've seen, although it's certainly the best I've used. But I think what really sets it apart is the auto-accompaniment.

board. Play through the 3 full octaves. Choose your favorite voices. Then add in the incredible auto-accompaniment and auto-rhythm.

When you sit down at this keyboard, you'll be playing full rich vibrant instruments. It's great for soloists or for accompaniment. It's so easy to use because it's so incredibly sophisticated.

If you're not 100% satisfied, simply return it in its original box to DAK within 30 days for a courteous refund.

To order Casio's 3 Octave Full Size Electronic Keyboard with 12 Incredibly Accurate Instruments, 12 Separate Rhythms with 2916 Variations, Recording Capabilities and the incredible Chording Auto-Accompaniment Function, call toll free, or send your check for DAK's market breaking price (suggested retail is \$199) of just \$129<sup>90</sup> (\$7 P&H). Order No. 4895. CA res add tax.

**Super FREE Bonus:** Pick up the incredible electronic Casio Drum Sticks.

You can add any of 8 drum sounds.

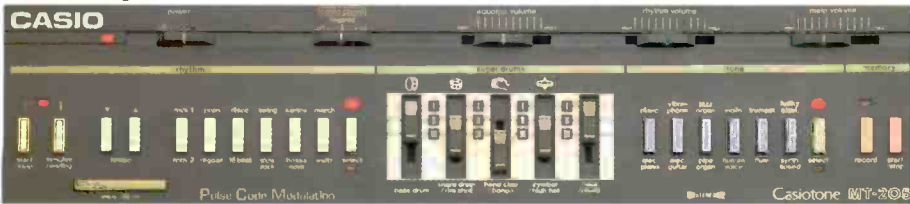
The sound is electronic. You can shake them in the air or hit any object. You'll be amazed. So, you can now have a complete drum section in your hands.

The sticks are normally a \$50 suggested retail option. DAK will include them ab-

solutely free when you purchase the keyboard at our breakthrough price.

**NOTE:** None of the rhythm capabilities described with the keyboard include what you'll be able to do with these incredible electronic drum sticks.

You'll be the hit of any party, even your own, with this phenomenal group of musical instruments from Casio.



## GREAT SOUNDS

You'll hear your music through powerful twin built-in speakers. Or, connect this keyboard to your stereo system. Wait till you hear the power of a pipe organ in your living room. It's awesome.

Just touch a button and this keyboard accurately reproduces the sounds of the following 12 instruments and rhythms: Piano, vibraphone, jazz organ, violin, trumpet, funky clavichord, electric piano, electric guitar, pipe organ, human voice, flute and synthesizer sound. The rhythms are rock 1, pops, disco, swing, samba, march, rock 2, reggae, 16 beat, slow rock, bossa nova and waltz.

The sound is so real that when you touch violin, you can actually hear the bow move across the string.

So, even if you can only play with one finger, you can record about 500 notes in this keyboard's real time memory, or hook it up to your stereo and send your creations off to Carnegie Hall.

There are 12 basic rhythm beats, but you'll also have 5 automatic 'Super Drums', each with 3 variable effects for a total of 2,916 possible variations.

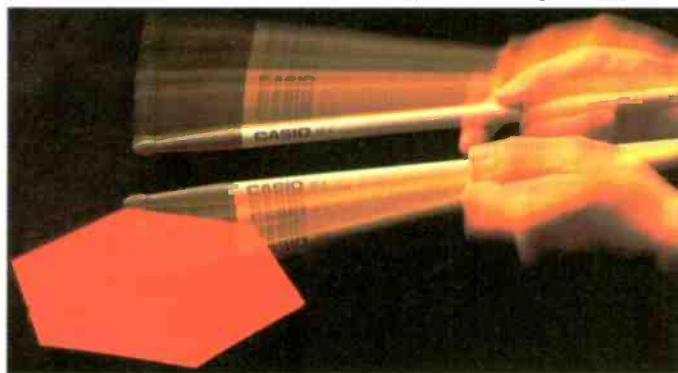
Plus, the rhythm is controlled by infinitely variable electronic tempo controls.

There's even an Intro./Fill-In Button and an Automatic End Button.

This may all sound complicated, but just switch on the keyboard and start playing. It's all really easy to use.

In fact, it's mostly automated for you. Or, you can take control anytime you like. You'll have a full 3 octave 49 key range.

It combines rhythm and the cords you



choose to accompany you when you or a group sings.

It's like strumming chords on a guitar without ever having to learn how to play, and adding in a rhythm section too. Wow!

But if you're a professional musician, you'll love the freedom to play any instrument anywhere you are. It operates on 6 AA batteries (included).

And, it even shuts itself off if you haven't used it for 6 minutes. It's a full 26" wide, 7 1/4" deep and 2 1/2" tall. It weighs just 6 pounds, including batteries. It's made by Casio and backed by their standard limited warranty.

**A COMPLETE ORCHESTRA RISK FREE**

Put your fingers on the full sized key-

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 Any Other Inquiries... 1-800-423-2866  
 8200 Remmet Ave., Canoga Park, CA 91304



# Emerson's Gone Audiophile?

So, Emerson's not known as the biggest (best) name in audiophile components? Well, the next time you see Emerson's digital equipment in a discount store, before you turn up your nose, read on. And, wait till you see the price!

By Drew Kaplan

It's not music. It's not stereo. And, it's not like any HiFi that's ever been created. CDs have blasted the audiophile world with such power, that they've pulverized sales of all other types of recordings.

As I write to you, their sales have even surpassed LPs. Virtually everyone is switching to CDs. With a 5hz to 20,000hz frequency response and a 95db signal to noise ratio, music has surpassed an audiophile's most optimistic dreams.

## BUT IT'S NOT MUSIC

### AND THERE'S A BIG PROBLEM

OK, So 1) Why aren't CDs really Music? And, 2) What's the big problem?

And, 3) Why is Emerson now an audiophile company? Well, let me tell you.

Records and tapes contain electronic images of the music they reproduce.

So if a microphone picks up a 1,000hz tone, it transmits a 1,000hz wave down the wire to your cassette deck.

Those 1,000hz tones (Note: hz means cycles per second or vibrations per second.) are faithfully recorded on the tape.

Well, actually those 1,000 cycles, and tape hiss and the tape's ability to handle the volume level without saturating, are actually recorded onto the tape.

Plus, very few cassette decks can reproduce frequencies to the response limits of human hearing. So, while records and tapes contain recorded music, they also contain a lot of garbage.

Well, CDs don't. CD's aren't music. They are actually computer disks. When that 1,000 cycle tone comes down the line at the recording studio, it is broken into 44,100 segments each second and only the computer codes are recorded.

There's no tape hiss because a CD player is not reproducing the music, just the same computer bits as any computer.

And, a computer bit is either an on or an off signal. There's no cleaner or more sensitive bit. It's there, or it's not!

There's no saturation because volume is also recorded in bit form, not as a bigger wave as it is in conventional audio.

And, there's no frequency limitation because again, bits are used rather than mirror image recording. So, a CD can only reproduce exactly what's recorded.

And, therefore it's 1) Not music, it's really computer bits. 2) There's a big problem because a bit is a bit and I've yet to hear the CD player that sounds any different from any other player.

And 3) Since Emerson's CD is just as good sounding (and working) as the most expensive names in audiophileland, Emerson is an instant Audiophile Company.

**In Short.** A CD player is a CD player is a CD player, as long as it's a good, reliable deck (Emerson's is) and has all the features like remote control and random programing (Emerson's does).

So, don't spend an extra nickel, because after 22 years of running DAK, 1) I've never heard sound equal to CDs, and 2) I can't hear the difference between a \$1,000 CD deck and a \$150 CD deck.

## SOUND LIKE A LIGHTNING BOLT

There's no warning. There's no record noise, no tape hiss. Vibrant but finely detailed music just explodes from your stereo system. The sound is like a shock-wave reverberating through your home.

This is the experience you can expect with your introduction to digital audio.

Imagine listening to music with a frequency response from 5-20,000hz. Imagine sound so pure that harmonic distortion is just 0.03. And, if you're into zeros, flutter and wow is "unmeasurable".

## NO SOUND AT ALL

You've got to experience the silence during very quiet passages to comprehend the sonic adventure of the music.

Conventional records and tapes have a dynamic range of perhaps 50db. Dynamic range is simply the difference in sound level (volume) between the softest and loudest recorded sounds.

CD gives you a 90db dynamic range, which is roughly equivalent to the difference between absolute silence and standing next to a jet engine.

## MORE MUSIC NOW

Much of the music of the 50s, 60s and 70s is now being re-released. The music was recorded on 2" wide tapes moving at 15" per second in recording studios.

The masters really sound great. It was the limitations in LPs and cassettes that really hurt the sound. So, if you will buy just one CD of an LP you already own,

you'll be awed by the digital version.

## SIMPLY LOADED

Emerson's remote control 16 bit CD player uses the latest 3-beam, laser system with heavy sampling.

You can select up to 15 tracks to play in any order you like. Plus, there's repeat which lets you listen to a single track, the 15 programmed selections, or the entire disc, over and over again, forever.

So, you can have an hour or an evening of uninterrupted music just the way you want it. Isn't this what musical enjoyment is all about?

Touch a button and the motorized front-loading door opens to accept a CD. Touch the button again and it closes.



The oversized fluorescent display shows total playing time, index position, track number or time played per track.

## POWERFUL REMOTE

You can do it all from your favorite easy chair. You can randomly select any track on the disc. Choose Play, Pause, Skip to the Next or to the Last Track and even change the displayed information.

It plugs into any 'Aux' input, and it's backed by Emerson's limited warranty.

## TRY EXPLOSIVE SOUND RISK FREE

Plug it in. Experience music with a thrilling frequency response and sonic range. You'll be thrilled by the hiss and background noise you won't hear.

If you're not 100% awed, simply return it in its original box to DAK within 30 days for a courteous refund.

To order Emerson's Audiophile Remote Control CD player with its myriad of automated features risk free with your credit card, call toll free, or send your check for just \$159<sup>90</sup> (\$8 P&H). Wow! Order No. 4907. CA res add tax.

The sound is thrilling. You'll hear music as you've never heard it before. Emerson has used computers to become a major audiophile company. Why not let your ears confirm my claims!



# The \$1,000 Sound Secret

Make your stereo system's sound explode with life for just \$88<sup>90</sup>. Then, try to get a salesman at a HiFi store to compare any equalizer to a \$1000 worth of improved amplifiers and tuners. Read on!

By Drew Kaplan

It's like night and day. Crashing cymbals, the depth of a string bass, more trumpets or more voice will come bursting forth from your stereo system. The sound is awesome!

You'll make your music so vibrant that you won't recognize your own stereo system's exciting new sound.

Now you can save spending up to \$1,000 on new equipment. It wouldn't equal the massive sound improvement that will literally blow you away when you connect this equalizer.

## BAD NEWS FOR DEALERS

Here's a good test for dealers. Ask them to demo an equalizer for you with a less expensive system than the one you are looking at.

If they won't demo it and let you set the controls, beware, you may end up spending more money for less sound.

## HOW MUCH BETTER SOUND?

It can sound incredibly better. Think of an equalizer as 20 (10 per channel) partitioned bass and treble controls.

When you buy equipment, you judge it and pay for it often based on its ability to accurately reproduce the audio frequency response from 20hz to 20,000hz.

Well, with an equalizer, you can add or subtract up to 12db at any of 10 specific frequency areas to really enhance the equipment you already have.

Of course, the better your equipment, the more an equalizer has to work with.

And, it even becomes more important with CDs. An equalizer's capabilities are simply awesome.

Just a 5db roll-off at the high end, up around 14,000hz, can decimate the harmonics that give you the open feeling you'd experience at a live concert.

A roll-off at 60hz causes the bass notes to just fade away into the 'murk'. Anyway, bass and treble controls really aren't very good and should be left flat (neutral). Here's why.

Bass controls turn up the entire low end as well as the low mid-range, making the sound muddy and heavy. With an equalizer, you simply pick the exact frequencies you want to enhance.

You can boost the low bass at 30hz, 60hz and/or 120hz. Boost the mid-bass at 250hz and 500hz to animate specific areas of the musical spectrum.

And when you boost the part of the bass you like, you won't disturb the mid-range frequencies and make your favorite singer sound like he has a sore throat.

The high frequencies really determine your music's clarity and brilliance.

You can boost the highs at 8,000hz and 16,000hz. So, you can bring crashing cymbals to life at 16,000hz while at the same time you cut tape hiss or annoying record scratches at 8,000hz.

You can also boost or cut specific mid-range frequency areas to add or subtract vocal, trumpets, guitars or whatever instruments you prefer.

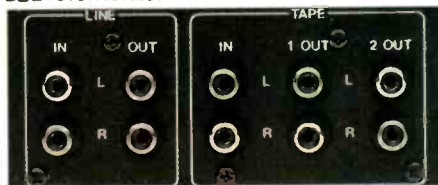
**IMPORTANT NOTE:** There's nothing complicated. Just adjust the illuminated sliders shown in the picture above until you like the sound. It's totally up to you.

There is no right or wrong, only explosive sound. And, there's a Bypass Switch so you can instantly compare unequalized with equalized sound. You'll be the judge.

## MOVING INSTRUMENTS

You'll see your music, not as a single level on a VU meter, but as a kaleidoscopic parade of 10 individual 9 element VU meters. It's called a real time spectrum analyzer.

Each column is tuned to a specific octave of the sound spectrum. The effect is awesome. You can visually isolate a string bass or cymbal and actually see each individual instrument almost as a wave moving across the 90 individual LED elements.



## EASY HOOK UP

Use your tape monitor circuit, but don't lose it. Now your one tape monitor circuit lets you connect two tape decks.

You can play from either and dub from B to A. Just plug the equalizer into the tape 'in' and 'out' jacks on your receiver. Even the cables are included.

As you listen to your records, FM or 'aux', any time you push the tape monitor switch on your receiver you'll hear your music jump to life.

The output from your receiver is always fed directly to deck A for recording. With the touch of a button, you can choose to send equalized or non-equalized signal to your deck.

Send equalized signal to your deck and you can add thundering bass to your cassettes. So, when you play them on

bass starved personal stereos, they'll really thunder to life.

You can also enhance the highs for cassettes played in your car. Wait till you hear the dramatic impact of thrilling enhanced sound in your car.

An equalizer can improve all your music wherever you are.

Your tape deck will work exactly as it did before. Except, now you can choose to listen with or without equalization, and you can dub.

You won't be listening to any distortion or hum. This equalizer has a 90db signal to noise ratio, total harmonic distortion of less than 0.05%, and a frequency response from 5hz to 30,000hz.

Once you've set your equalizer controls, switch it in and out of the system.

You'll hear such an explosive improvement in sound, you'll think you've added thousands of dollars of new equipment.

## THE FINAL FACTS

There are 20 slide controls, each with a bright Green (right channel) or Red (left channel) LED to clearly show its position. Each control will add or subtract up to 12db. (That's a 24db range!)

Enhance each channel by  $\pm 12$ db at 30hz, 60hz, 120hz, 250hz, 500hz, 1,000hz, 2,000hz, 4,000hz, 8,000hz and 16,000hz.

It's 17 $\frac{1}{2}$ " wide, 8 $\frac{1}{2}$ " deep and 3" tall. It's backed by a limited warranty.

## INFUSE YOUR MUSIC

### RISK FREE

Prepare for a shock the first time you switch in this equalizer. Instruments you never heard in your music will appear. Your music will sound deeper and richer.

If your stereo system doesn't leap out at you, return it in its original box within 30 days for a courteous refund.

To order your BSR 10 Band Graphic Equalizer with Real Time Spectrum Analyzer and Tape Dubbing risk free with your credit card, call toll free or send your check for just \$88<sup>90</sup> (\$7 P&H). Order No. 4744. CA res add tax.

Wake up the sound in your stereo. Your sound will explode with life as it never has before. You won't experience a subtle improvement. It's awesome!



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8200 Remmet Ave., Canoga Park, CA 91304

# \$6<sup>90</sup> Module Blowout

Now you can literally steal X10 Modules because GE dropped its multi-hundred dollar TV House Minder<sup>®</sup> remote system. And, X10 wants to introduce its new hand held wireless system. It lets you turn on lights as you approach your home in your car, or adjust the brightness of your dining room chandelier. It's compatible with all X10 modules.

By Drew Kaplan

It's great luck. X10 made modules for an ill-fated system that GE designed.

Oh, the system worked great, but not enough people wanted to hook up a multi-hundred dollar control box to their TV to control the lights in their homes.

We didn't buy GE's Home Minders<sup>®</sup>, but we've been able to secure about 50,000 lamp and appliance modules.

Because X10 labeled them for GE, we got them at a price that lets us put a module on virtually every lamp and appliance in 'our' homes.

Yes, I use the system in my home. In fact, I had an X10 system long before I ever thought of selling remote control.

It's just about the only way to gain remote control and dimming of your lights without building your own home.

I suppose you could open walls and run wires, but with X10 modules, just plug them in and you have instant remote control anywhere in your home.

The modules are made by X10. The warranty comes from X10. And they do the same things as any other X10 modules. The only difference, that isn't cosmetic, is the price. Wow!

## IT'S A BRAINSTORM

As a great way to introduce X10's incredible new hand held wireless system, we're blowing out these modules.

Now you can get as many lamp or appliance modules as you like (See Important Note), by just buying a new RF wireless remote control system.

Each system consists of a wireless hand held transmitter and a receiver. And, they are on sale for just \$39<sup>90</sup> (we introduced them this summer for \$49<sup>90</sup>).

So, with the purchase of at least one wireless system, you may order GE lamp and appliance modules for the incredible blowout price of just \$6<sup>90</sup> each.

**Important Note:** We cannot sell the modules without the wireless system. And we cannot sell to dealers. Therefore, we cannot accept orders larger than 25 modules per wireless system. DAK reserves the right to stop this promotion when the GE modules are sold out.

## WIRELESS FREEDOM

Forget wall-bound switches. Imagine walking freely around your home, turning lights and appliances on and off.

Look out of a window and turn on your backyard lights. Dim the lamp at the other end of the room. Or, turn on the living room lights as you come downstairs.

This instant remote control system consists of inexpensive space age control modules and command centers, and it simply plugs in in seconds.

It actually uses your existing house or office wiring. And if you can plug in a lamp, you can plug in this system.

It's exciting. Just imagine effortlessly retrofitting your home or office for remote control without ever running a single wire.

## NOW IT'S REALLY REMOTE

As sophisticated as the X10 system has been with Control Consoles, Timers and even Telephone Controllers, it has



now gone Hand Held Wireless.

As you can see in my hand, a new hand held RF radio controlled ultimate console now exists to set you free.

You'll actually be holding remote control for your entire home in the palm of your hand. Touch a rocker switch to turn on or off any lamp or appliance you wish. There's even 0% to 100% dimming.



There are 8 buttons, plus a switch that lets you select another 8 (more later).

Just imagine the freedom of sitting on your patio as it gets dark. Just touch a button and your patio or yard lights will jump to life. If you'd like to view the stars, just switch off the lights.

It's very romantic under the stars. In fact, it's very romantic in the living room, at the dining room table, or in the bedroom as you remotely dim the lights.

It's also a great safety/security device. If you hear a noise, a button in your hand

turns on the lights.

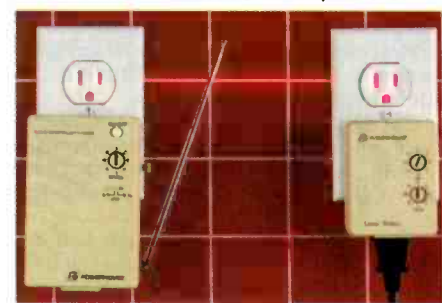
As you drive up to your home at night, just touch a button to turn on your front, side or back yard lights. You or your spouse will never be in the dark again.

And, if you connect a siren to a module, this wireless remote becomes a portable panic button that goes where you go.

## WIRELESS REMOTE EXPLAINED

The handset generates radio waves that won't bother your TV or FM, but will activate its matched plug-in receiver.

The receiver (which is also a plug-in appliance module), then translates the button you've pushed into control codes for ALL the X10 modules in your home.



So, using this remote is basically the same as using any of the wired consoles that I'm about to describe. One receiver will operate up to 8 different modules.

If you have two receivers, a front panel switch lets you select a second 8 modules. So, from the handset you can operate up to 16 different modules.

If you buy two of these wireless systems (consisting of a handset and remote receiver) for just \$39<sup>90</sup> each, you'll have 16 module control and Two handsets. Wow, what a way to go.

## HERE'S HOW X10 WORKS

As you push each button on the command consoles, a powerful but silent encoded signal is sent down its AC cord

...Next Page Please



...Remote Continued into your home or office wiring.

This safe, silent encoded signal, travels throughout your electrical system. And, it won't disturb your TV or your FM.

It can even reach your unattached garages, barns, sheds and even your pool light, porch lights and yard lights.

Wherever you want to control a light or appliance, all you have to do is plug in one of the systems controller modules.



Each module has a rotary dial numbered from 1 to 16. Just dial in a number to match one of the 16 numbered buttons on any of the control consoles.

Then just plug the module into the wall and the lamp or appliance into the module for instant remote control.

**Important note:** You will still have local control of all your lights and appliances by just using their normal switches, even though they are plugged into modules.

Each module actually senses when you turn the controlled unit's switch and automatically relinquishes control.

There are separate modules for lamps that have full range dimming capability from 0% to 100%, and handle up to 300 watts. There are appliance modules that have no dimming but can handle up to 500 watts, or 1/3hp motors.

And, there are even light switch modules that have both full dimming and 500 watt capability which you can put in instead of your present wall switches.



### SOME NEAT IDEAS

You can set several modules to the same number so that the front and rear lights can come on together.

Or, you can set all the lamps in a room to come on and even dim together.

I can turn the lights on in the garage as I walk toward it. And, I can turn on our bedroom lights as I walk upstairs.

You're sure to want a module in your dining room. Eating by subdued light is a real pleasure. And remember, not only do you get full remote control, you get 0% to 100% brightness control.

It's like getting free dimmers thrown in with your remote control. Use it for

bedside lamps, swag lamps, ceiling lights, track lights and garage lights.

And, you'll automate your fans, coffee maker, humidifiers and crock-pots.

### QUITE A SYSTEM

As you get into bed tonight, think about what you'd do if you heard a noise outside or downstairs. Just push a button.



Think about how nice dimmed lights would be in your bedroom or living room.

### THE COMMAND CONSOLE

Imagine that you're watching TV. You can dim the lights from your easy chair. If you hear a noise, touch a button and your outside flood lights jump to life.

It's all easy when you have this top of the line Command Console, shown above, sitting next to you. It can let you control up to 16 different lights and appliances.

You can turn each on or off. You can dim or brighten lights. And look at this, you can turn all your controlled lights on or off for instant security with the 'All On' and 'All Off' buttons on the console.

You can even move it from room to room because its total installation consists of simply plugging it in.

### THE TIMER

This sophisticated electronic brain can perform 32 tasks. Just plug it in.

Select the module number you want to control, then decide if you want the controlled device to come on or off.

If you only want something to happen once, just push the 'Once' button.

There is a 'Daily' button that lets anything you've programmed occur every day.

There's a 'Security' button. You can program lights and radios to give your house a lived-in look when you're away.

With The Timer, you can set your window air conditioning to come on an hour before you return from work.

Or, you can have your porch lights come on so you'll never enter a dark house. And, you can set your hall light to come on at 11 PM and off at 6 AM.

**Special Note:** Just put in a 9V battery and your program memory will be protected from power failures.

### TELEPHONE CONTROL TOO

You can even phone home and control anything. Just plug it into both your AC line and any modular phone jack.

Then just call your regular phone number, hold up its 'beeper controller', give your 3 digit code, and start controlling.

And, if you own a second home, now you can activate pipe heaters or 'switch on' the house so it's warm or cool and lit.

### ULTIMATE REMOTE CONTROL RISK FREE

It's simply thrilling to use. It's security.

It's convenience. And, it's fun. It's backed by X10's standard limited warranty.

If you aren't 100% satisfied, simply return any component to DAK in its original box within 30 days for a refund. Note: Special Sale modules must be returned if Wireless Remote is returned.

To order Any Combination of Com-

mand Consoles, and Modules call toll free, or send your check as shown below.

**All Command Consoles and Modules are 100% compatible.**

1) **The Hand Held Wireless Remote plus Receiver**-Lets you control 8 different modules with one receiver, or buy two sets of transmitters/receivers. You'll have two handsets and each will be able to control up to 16 different modules, On/Off and Dim. NOW ON SALE FOR JUST \$39<sup>00</sup> (\$3 P&H) per receiver/transmitter set. Order No. 4712.

**SUPER SALE ON GE MODULES.** You may order up to 25 modules with each wireless system you buy. The specifications are identical to X10's below. They are just \$6<sup>00</sup> (\$1 P&H) each. Use Order No. 4899 for the Lamp Module. And/Or, use Order No. 4900 for the Appliance Module. Note: If you don't order the Wireless System or want more than 25 modules, order X10's below.

2) **The Control Console**-Lets you control up to 16 different modules. On/Off/Dim/All On/All Off. Just \$19<sup>00</sup> (\$2 P&H). Order No. 4622.

3) **32 Event Clock Timer**-Lets you control 8 modules. Also acts as a command base plus sleep and security extras. Just \$26<sup>00</sup> (\$2 P&H). Or. No. 9777.

4) **Telephone Responder**-Phone home and control 8 devices. It's also a base. It's just \$39<sup>00</sup> (\$3 P&H). Order No. 9778.

5) **Lamp Module**-Controls/Dims lamps up to 300 watts plugged into walls. Just \$9<sup>00</sup> (\$1 P&H). Order No. 9779.

6) **Wall Switch Module**-Controls/Dims lights now controlled by wall switches. 500 watt capacity. Just replace your wall switch with this automated module. Just \$12<sup>00</sup> (\$1 P&H). Order No. 9780.

7) **Appliance Module**-Control stereos, TVs, or anything with motors. 15 amps, 500 watts, 1/3hp rating. Just \$10<sup>00</sup> (\$1 P&H). Order No. 9781.



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# The Great \$99<sup>90</sup> Copier Blow-Out

DAK has obliterated the \$349 suggested retail price. Now for just \$99<sup>90</sup>, you can copy price lists at trade shows, articles in libraries, receipts in your car, stock quotes on airplanes, recipes at home or blueprints on a construction site.

By Drew Kaplan

You're in a restaurant. An important meeting is in progress.

The person you're meeting with shows you a confidential price list. You whip out your new Silver Reed Industrial Pocket Copier and make yourself a copy.

**Great Idea, but..** While thousands of rich executives are currently increasing their productivity by using this sophisticated copier at meetings, in hotels, and of course at home, it's simply been too expensive for the rest of us to use.

**Well, no more.** Silver Reed couldn't find as many rich executives as it needed, so DAK bought all their copiers for cash! Now, for just \$99<sup>90</sup>, which I've been told is \$40 below the Japanese manufacturing cost, we can all make full size, crisp, flawless copies wherever we are, instantly.

Now we can all enjoy the productivity and luxury of the rich. We can forget the \$349 suggested retail price.

We can forget the 1987 Confidential \$230 Dealer Price List Cost. Cordless, hand held copying is now a reality while our limited supply lasts, for just \$99<sup>90</sup>.



## HOW IT WORKS

Dozens of magazines have reviewed this product because of its revolutionary miniaturized technology and utility.

Just glide this less than 2 pound copier over any printed surface including words, pictures and graphs. And, your permanent copy will instantly emerge.

This copier uses the newest sophisticated CCD image sensors to scan the material to be copied.

It then digitally converts the image. Finally, much like a laser printer, it prints an image so sharp and crisp and with such incredibly fine dots, that it can even have more contrast than the original.

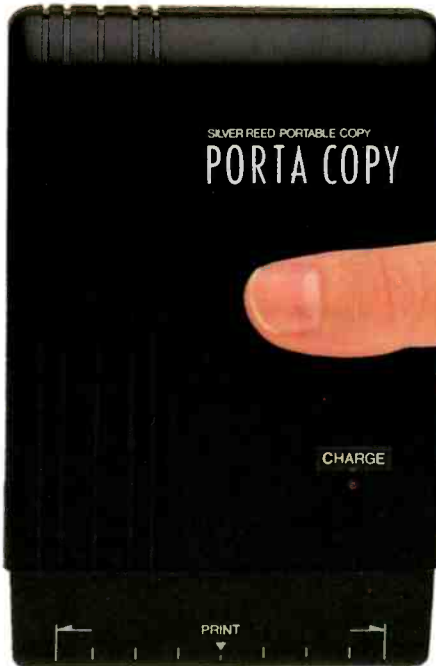
Since it uses the newest thermal technology, there are never any chemicals or powders to bother with. And best of all, absolutely no maintenance is required.

It's a phenomenal amount of technology for just \$99<sup>90</sup>. Plus, look at everything you get!

It comes with built-in rechargeable ni-cad batteries. So, you won't have to buy batteries. And, even the charger is included. There's a leatherette carrying case and it all fits easily into your briefcase, purse or overcoat pocket.

## HERE AND THERE

So, if you want to copy a column out of an encyclopedia, or a document that can't be removed from a file room or library, or stock quotes from the paper, Silver Reed has the solution.



## FINAL CLOSE-OUT

List Price was \$349  
DAK sold it for \$299

**NOW JUST  
\$99<sup>90</sup>**

At home you can copy checks, recipes or airline ticket schedules.

On the road, you can copy your expense receipts as they occur. If you're like me, you often lose half of them, so this copier is saving me a lot of money.



**And look at this.** It's ideal for copying numbers & addresses from phone books in phone booths. Now you don't have to scribble notes; just pass the copier down the pages and you'll have a perfect copy, even from the yellow pages.



## BUT IT'S ONLY 3" WIDE

It copies a 3" wide path, as long as you like, flawlessly. So, it's really great for sections of blueprints, computer printouts and hard to copy items like box labels in the warehouse or on the dock.

You can copy a typical 6" letter (that's the average text amount) in two quick passes. So, for letters, checks, research or newspaper articles, you can now copy where no copier has gone before.

## ALL THE CORDLESS USES

From copying EKG results for doctors to bibliographies for students and professors, you'll be more productive.

Forget taking tedious notes. Just copy paragraphs or sections you need. You'll have error free permanent records.

You can copy charts or music. Copy an income statement or a balance sheet.

And, if you've ever stood in line at a federal, state or city archive as I have, you can now copy anything instantly.

And, speaking of aggravation, being stuck in a hotel room or on a commuter train can just devastate my productivity.

I can't copy my notes. I can't copy sections of articles I'm reading to show my fellow DAK executives, and I hate writing notes on original spec sheets.



If you make house calls to sell insurance,  
...Next Page Please

... Copier Blow-Out Continued  
or real estate, or if you simply work on school projects at other peoples' homes as my wife does, this copier is a must.

You can copy title reports, old medical forms, or even original blueprints. For working on school projects, you can instantly copy class phone/address lists and save lots of tedious note taking.

You can copy the front and back of a check. Or, you can copy a map so you won't get lost. It's all really easy.

Copy driver's licenses if you own a store and cash checks, or if you have an accident. Hospitals can copy health cards or IDs for permanent, error free records.

And if you're into government espionage (our side only please), this copier should replace your old spy camera.

Of course, the most common use is at your desk. You'll be amazed at how many things you'll copy when a copier is at your side. As I mentioned, if I read an article, I like to copy the important parts for others at DAK, to maximize my efforts.



#### BUT IS IT REALLY GOOD?

OK, if you're standing next to your desktop copier, which copier should you use? Well, the answer is simple. Assuming you don't have to wait for the desktop copier to warm up, (the Porta Copy is instant on) the answer is the desktop.

But, you'll love the quality of this copier. You'll love all the places you can take it. And, now that it doesn't cost \$349, you'll love how much cheaper it is.

The quality of the copy is nothing short of superb. So, you won't be sacrificing quality for portability.

It's just 6½" tall, 4" wide and 1¼" deep. It weighs less than two pounds (Wow). It has a copy density control that lets you adjust for imperfect originals.

It comes complete with a carrying case, a roll of paper and the recharger for its internal ni-cad batteries. It's backed by Silver Reed's limited warranty.

#### Desktop Blow-Out Too

If you don't need cordless portability, DAK also bought all of Silver Reed's top of the line desktop copiers too. Forget the \$449 suggested retail price. Forget the 1987 Confidential \$280 Dealer Cost.

For an incredible \$229 you can copy full 8½" X 11" papers and even books, flawlessly. It is maintenance free and doesn't require toner or powders.

Take a moment and journey back with me to about 1978. My very first real luxury was renting a Xerox® machine for my office at home.

Every time I made a copy of a letter or a magazine article, I felt successful.

My wife copied recipes and a never ending series of school projects for our kids. I could copy checks, tax returns or receipts. But, it cost me \$100 per month

for the rental, plus a charge per copy.

Well, now at home or in my own office at DAK, I can make perfect copies of letters and reports. I can make 8½" wide copies from 3" to 11" long.

This copier is absolutely silent. There are no fans to disturb you. The only sound you'll hear is a gentle whirr during the actual copy process. It's absolutely perfect for your desk at work.



At DAK, we have several large expensive copiers. But, we have a 64,000 square foot building. So, they are never nearby. I can buy 12 of these copiers for the cost of just one standard machine.

And since the copy quality is so good, several departments at DAK have their own. They're thrilled and I'm happy because they save time.



Just switch it on and in 3 seconds you're ready to make great looking copies. There's even a contrast control to compensate for imperfect originals.

It uses the same breakthrough CCD image sensing circuitry as the portable. The revolutionary computerized thermal technology that makes these copiers possible, provides you with crisp, dramatically sharp copies with contrast that can even surpass the original.

My wife often says she married me because I had a copier at home. (She was a teacher at the time.) And, we all use it a lot. From homework assignments to road maps to report cards, our copier is always running.



We had to send a copy of our cancelled check for a house payment to our bank. And, I copied a poem from a book for my son to learn. We even made copies of my son's 3rd grade speech.

This desktop copier is just 16" wide, 14½" deep and 4¼" tall. It's backed by Silver Reed's standard limited warranty.

#### THE UGLY SERVICE PROBLEM

Everyone knows that copiers need ser-

vice. But Silver Reed's sophisticated maintenance free thermal copiers eliminate the problem. Forget powders, toners and drum cleaning. Just turn these copiers on and enjoy the luxury of making copies whenever and wherever you want.

#### MAMMOTH COPIER BLOW-OUTS RISK FREE

I love having a copier. I never have to get in the car when I need a copy of a document when I'm at home. And now, I can even make flawless copies in an airplane, a hotel room or on a loading dock.

If you're not 100% thrilled with either copier, return it to DAK in its original box within 30 days for a courteous refund.

To order Silver Reed's Hand Held Porta Copy Cordless Copier complete with built-in ni-cad batteries, charger, carrying case and a 30' roll of paper risk free with your credit card, call toll free, or send your check for DAK's limited blow-out price of just \$99<sup>90</sup> (\$6 P&H). Order No. 6203. CA res add tax.

Extra 30 foot rolls of Thermal paper are just \$1<sup>49</sup> each. A box of 5 is just \$7<sup>45</sup> (\$1 P&H). Order No. 4679.

To order Silver Reed's DeskTop AC Powered Copier with CCD Imaging, 3"-11" long Copying, for home or office use risk free with your credit card, call toll free or send your check for DAK's limited blow-out price of just \$229 (\$12 P&H). Order No. 6204.

100' Rolls of Pure White Thermal Paper are just \$4<sup>90</sup> (\$1 P&H). Order No. 4836.

Having a copier at home or in your briefcase is one of life's true luxuries. And, once you have it, you'll realize that it's a money saving necessity as well.



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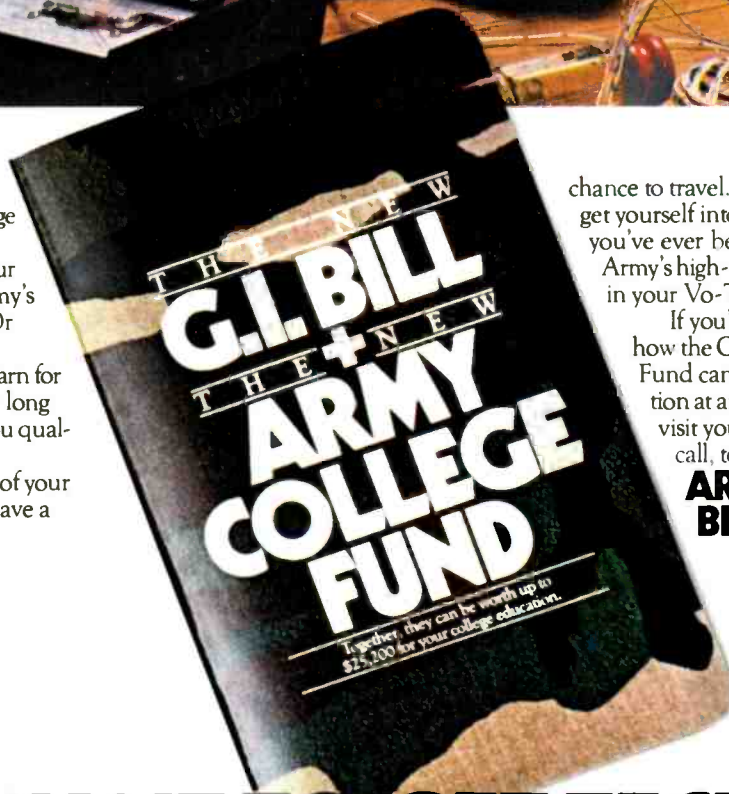
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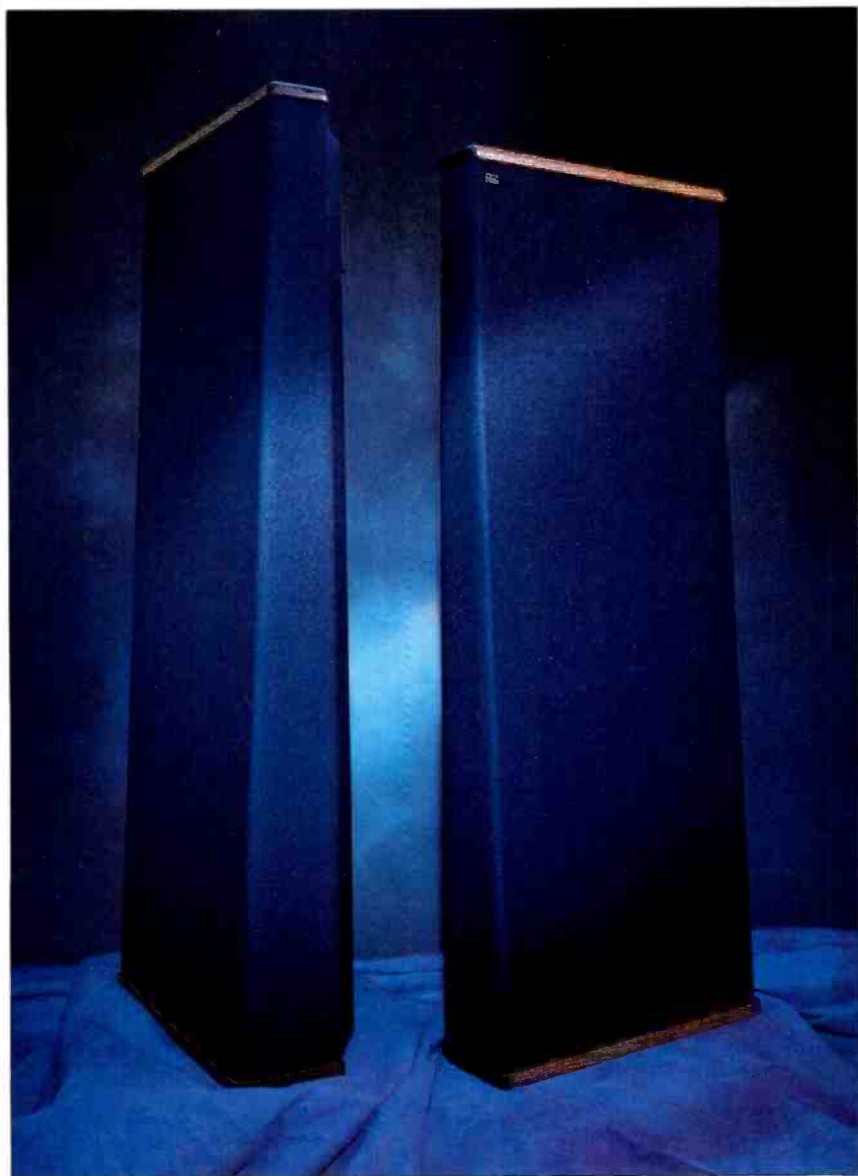
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### DCM TIME FRAME TF-1000 SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**F**ROM the outside, the DCM Time Frame TF-1000 speaker looks similar to a number of planar or dipole panel speakers, but it is actually a more or less conventional three-way forward-radiating system. The enclosure is a folded, tapered transmission line that loads the rear of an 8-inch woofer and is terminated by a

2½-inch-diameter port on the front panel. All three active drivers are located on the upper half of the panel. The woofer is nearest to the bottom, a 4-inch midrange driver is near the top of the panel, and a ¾-inch soft-plastic dome tweeter is between them. The transmission line's port is slightly below the woofer but on the speaker's rear

panel. The Time Frame TF-1000 is designed to be used in mirror-image pairs, with the drivers closer to the inside edges of the cabinets.

According to DCM, the system is delay-equalized for correct on-axis time coherence and improved off-axis response smoothness. An acoustic lens in front of the tweeter is claimed to improve its on-axis high-frequency smoothness and its off-axis high-frequency response. Its voice coil is cooled by a low-viscosity ferrofluid in the magnetic gap. The woofer is constructed with an aluminum voice-coil former to improve its power-handling ability and efficiency.

The TF-1000's specifications include a frequency range of 26 to 20,000 Hz, a sensitivity of 91 dB sound-pressure level (SPL) at 1 meter with a 1-watt input, and a nominal impedance of 8 ohms. The system is rated to handle 50 watts of continuous pink noise, or 300 watts of peak program material, and is recommended for use with amplifiers delivering between 10 and 200 watts per channel. There are no level or balance adjustments.

The DCM TF-1000 stands 49 inches high and measures 19½ inches wide and 8 inches deep. Extra support can be provided by a pair of short feet that swing out from the base. Weight is 49 pounds. Except for its oak top and bottom, the enclosure is fully wrapped in a nonremovable black grille cloth. The spring-loaded clips in the rear accept twin banana plugs as well as wires. There are no external fuses or other signs of overload protection. Price: \$1,099 a pair. DCM Corp., Dept. SR, 670 Airport Blvd., Ann Arbor, MI 48108.

#### *Lab Tests*

The composite frequency-response curve of the DCM TF-1000 (derived from the room response and a close-miked woofer measurement) was notably smooth and uniform, varying only  $\pm 3.5$  dB from 26 to 20,000 Hz. Between 1,000 and 11,000 Hz, the averaged output level varied only  $\pm 0.5$  dB. There was a plateau between 200 and 1,000 Hz, about 3.5 dB above the high-frequency level, and a slight peak of about 3 dB at 150 and 15,000 Hz.

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easy for you to select the right components for your needs and your budget. And our exclusive Road Tests feature users' evaluations of various installations under real driving conditions.

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## TEST REPORTS

The bass output sloped off gently below 100 Hz. The effective crossover between the woofer and its port radiation was at 60 Hz.

The speaker's measured sensitivity, 1 meter from its grille at the approximate height of the tweeter, was 85 dB SPL with an input of 2.83 volts. Though this fell short of the rated 91 dB, it is not very different from what we have measured from a number of good speaker systems. The woofer's distortion, at an input of 5 volts (equivalent to our standard 90-dB reference SPL), was between 1 and 2 percent from 100 to 50 Hz, rising smoothly to 5 percent at 30 Hz and 7.3 percent at 25 Hz.

The system's impedance varied widely throughout the audio range. Although it averaged roughly 6 to 8 ohms, its minimum levels were 3 ohms at 200 Hz and about 5 ohms from 5,000 to 20,000 Hz. The maximum was 20 ohms at 1,500 Hz, with

a 16-ohm peak at the bass resonance frequency of 47 Hz. In pulse-power tests at frequencies of 100, 1,000, and 10,000 Hz using a single-cycle burst followed by 128 off cycles, the amplifier clipped before the speaker's output became audibly nonlinear at power inputs from 500 to almost 1,300 watts.

Our quasi-anechoic FFT measurements confirmed the previously observed response variations as well as the essential smoothness of the TF-1000's frequency response. The horizontal dispersion was very good; the response on-axis and 45 degrees off-axis diverged only moderately at frequencies over 10,000 Hz. This test did reveal some mid-range cancellation effects in the off-axis measurements, probably caused by the asymmetrical driver arrangement on the panel.

The phase coherence of the system was outstanding. Its group de-

lay varied less than 0.05 millisecond overall from 4,500 to 20,000 Hz (presumably the tweeter's operating range, although the crossover frequencies were not specified by the manufacturer). From 1,000 to 20,000 Hz, the delay variation was 0.2 millisecond. Even at lower frequencies, where much larger phase shifts (and group delays) are usual, we measured an overall delay variation of less than 5 milliseconds between 100 and 1,800 Hz.

### Comments

For our listening tests and measurements, we placed the DCM speakers about 2 feet in front of a wall, where most speakers seem to sound their best in our listening room. The sound was so pleasing that we were not encouraged to experiment much with their location. Although these speakers are not as large as they look, they are highly visible nevertheless. In a sense, since they occupy little floor space, they could be ideal "large" speakers for an ordinary-size room.

In many cases a speaker's sound does not correspond with what one might expect from its measured performance, but the DCM TF-1000 was an exception. Even a brief audition left no doubt that it is a very wide-range speaker, with no particular emphasis on any part of the audio spectrum. In particular, there was little sign of the upper-bass emphasis that mars the reproduction of male voices by so many speakers. The general effect was of clarity and transparency. Compared with our reference speakers, the sound of the TF-1000's seemed more open and sharply defined, a trifle brighter, and with somewhat less deep-bass extension. These characteristics are completely consistent with the measured frequency responses of both speakers.

Overall, the DCM TF-1000's were very easy to listen to for extended periods. Their sound lived up to the promise of their unusual design and stood up exceptionally well in comparison with a number of other speakers in their size and price range—and with some more expensive speakers as well.

**Circle 144 on reader service card**



"... Comrade Leontov, these things take time. I cannot simply telephone Kiev and say, 'Commissar Ratoff, this is Comrade Director Miakov at the Kremenchug Speaker Factory. Is it permissible to change the crossover frequency of our Gorki speaker from 550 Hz to 1,000 Hz?'"



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Smith • Leisure Electronics—Little Rock **CALIFORNIA** Honkers Sound Company—Berkeley • Kustom Hi Fi Music House—Burlingame • Sound Goods—Campbell • The Federated Group—Canoga Park • Rogersound Lab—Canoga Park • Shelley's Stereo Video CT—Canoga Park • Dow Stereo/Video—Carlsbad • Sounds by Dave—Chico • Dow Stereo/Video—Chula Vista • Sound Distinction—Concord • Pacific Coast Audio—Corona del Mar • Audio Video Specialists—Downey • Dow Stereo/Video—El Cajon • The Federated Group—El Cajon • Genesis Audio—El Toro • Rogersound Lab—El Toro • The Federated Group—Hollywood • Tubes N Tunes—Livermore • Act Electronics TV & HiFi—Long Beach • Sound Goods—Mountain View • Pro Audio Electronics—Oakland • Western Audio—Palo Alto • Rogersound Lab—Pasadena • The Federated Group—Riverside • Stereo Showcase, Inc.—Sacramento • Dow Stereo/Video—San Diego (two locations) • Harmony Audio Video—San Francisco • Maybrun's Hi-Fi Video Ctr—San Francisco • The Stereo Store—San Francisco • Tubes N Tunes—San Ramon • The Federated Group—Santa Ana • Burdick's—Santa Cruz • Rogersound Lab—Santa Monica • Shelley's Stereo Video CT—Santa Monica • Golden Ear Hi-Fi Video Ct—Santa Rosa • The Federated Group—Torrance • Rogersound Lab—Torrance • Stereo Showcase, Inc.—Vallejo • Rogersound Lab—Van Nuys • Thrifty Electronics—Van Nuys • Visalia Sight & Sound, Inc.—Visalia • Rogersound Lab—Westminster **COLORADO** SoundTrack—Arvada • SoundTrack—Aurora • Listen Up—Boulder • SoundTrack—Boulder • Sunshine Audio—Colorado Springs • Listen Up—Denver • SoundTrack—Denver • SoundTrack—Highlands Ranch • SoundTrack—Littleton • Sunshine Audio—Pueblo • SoundTrack—Thornton **CONNECTICUT** Tweeter, Etc.—All Locations **DISTRICT OF COLUMBIA** AudioKrafters—Washington **DELAWARE** Sound Studio Inc.—Dover • Sound Studio Inc.—Newark • Bryn Mawr Stereo—Wilmington • Sound Studio Inc.—Wilmington **FLORIDA** Audio Spectrum, Inc.—Altamonte Springs • Sound Advice—Boca Raton • Sound Advice—Clearwater • Sound Advice—Coral Gables • Stereotypes—Daytona Beach • Sound Advice—Ft. 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Audio—Lancaster • Listening Post—Monroeville • Bryn Mawr Stereo—Montgomeryville • Stereo Land—Natrona Heights • Bryn Mawr Stereo—Philadelphia • David Mann Audio—Philadelphia • Listening Post—Pittsburg (two locations) • Bryn Mawr Stereo—Quakertown • The Stereo Connection, Inc.—Scranton • D.S. Audio—West Reading • Bryn Mawr Stereo—Whitehall • Robert M. Sides Audio—Williamsport • Audio Clinic—York • Bryn Mawr Stereo—Langhorne **RHODE ISLAND** Sounds Unlimited—Cumberland • Soundings—Newport • Tweeter, Etc.—All Locations **SOUTH CAROLINA** Music Machine—Anderson • Audio Warehouse, Inc.—Charleston • Music Machine—Columbia • Tart's TV Furn. & Applian.—Florence • Music Machine—Greenville **SOUTH DAKOTA** Audio King—Sioux Falls **TENNESSEE** Audition Hi Fi Inc.—Kingsport • Modern Music Audio—Memphis • Audio Systems—Nashville (two locations) **TEXAS** Sound Effects—Abilene • High Fidelity, Inc.—Austin (two locations) • Brock Audio—Beaumont • Audio Video—College Station • Tape Town Audio Video—Corpus Christi • Custom Video—Dallas • The Federated Group—Dallas, Preston Royal • Hillcrest High Fidelity—Dallas (two locations) • Home Entertain, Dallas Gal—Dallas • Howell Electronics—El Paso • Marvin Electronics Co.—Fort Worth • Home Entertainment, Inc.—Houston (four locations) • B & M Electronics, Inc.—Houston • Jet Sales—Lardo • Audio Techniques—Longview • Harold's Electronics—Midland • Branch Patton Superstore—Nacogdoches • Harold's Electronics—Odessa • Sound Box—San Angelo • Audio Concepts—San Antonio • Bjorns Audio Video—San Antonio • Audio Tech—Temple • Sound Towne—Texarkana • Stereo & Record Center—Tyler • Audio Tech—Waco • Tom Padgett, Inc.—Waco • Audio Tech—Wichita Falls **UTAH** Lynn's Audio & Video—Logan • Broadway Music—Salt Lake City • Arrow Audio—St. George **VIRGINIA** Audio Associates—Arlington • Holdrens—Charlottesville • The Sound Machine—Charlottesville • Sounds Unlimited—Danville • Audio Associates—Fairfax • AudioKrafters—Fairfax • Audio Showroom—Franklin • Sound Approach—Newport News • Audiometrics—Richmond (two locations) • Gary's Stereo & Video—Richmond (two locations) • Audiometrics—Roanoke • Holdrens—Roanoke (two locations) • Audio Associates—Springfield • Audio Connection, Inc.—Virginia Beach **WASHINGTON** Magnolia Hi Fi & Video—Bellevue • Q.C. Stereo—Bellevue • Magnolia Hi Fi & Video—Lynnwood • Magnolia Hi Fi & Video—Tacoma **WISCONSIN** American TV—Appleton • Eme Audio—Eau Claire • Team Electronics #88—Janesville • Sound World—LaCrosse • Flanner & Hafsoos Music—Mequon • Flanner & Hafsoos Music—Milwaukee • American TV—Oak Creek • American TV—Waukesha **WEST VIRGINIA** The Sound Post—Princeton **WYOMING** Murphy Sight and Sound—Gillete • The New Music Box—Laramie

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*David Ravada, Technical Editor  
High Fidelity Magazine*



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# HEADPHONES



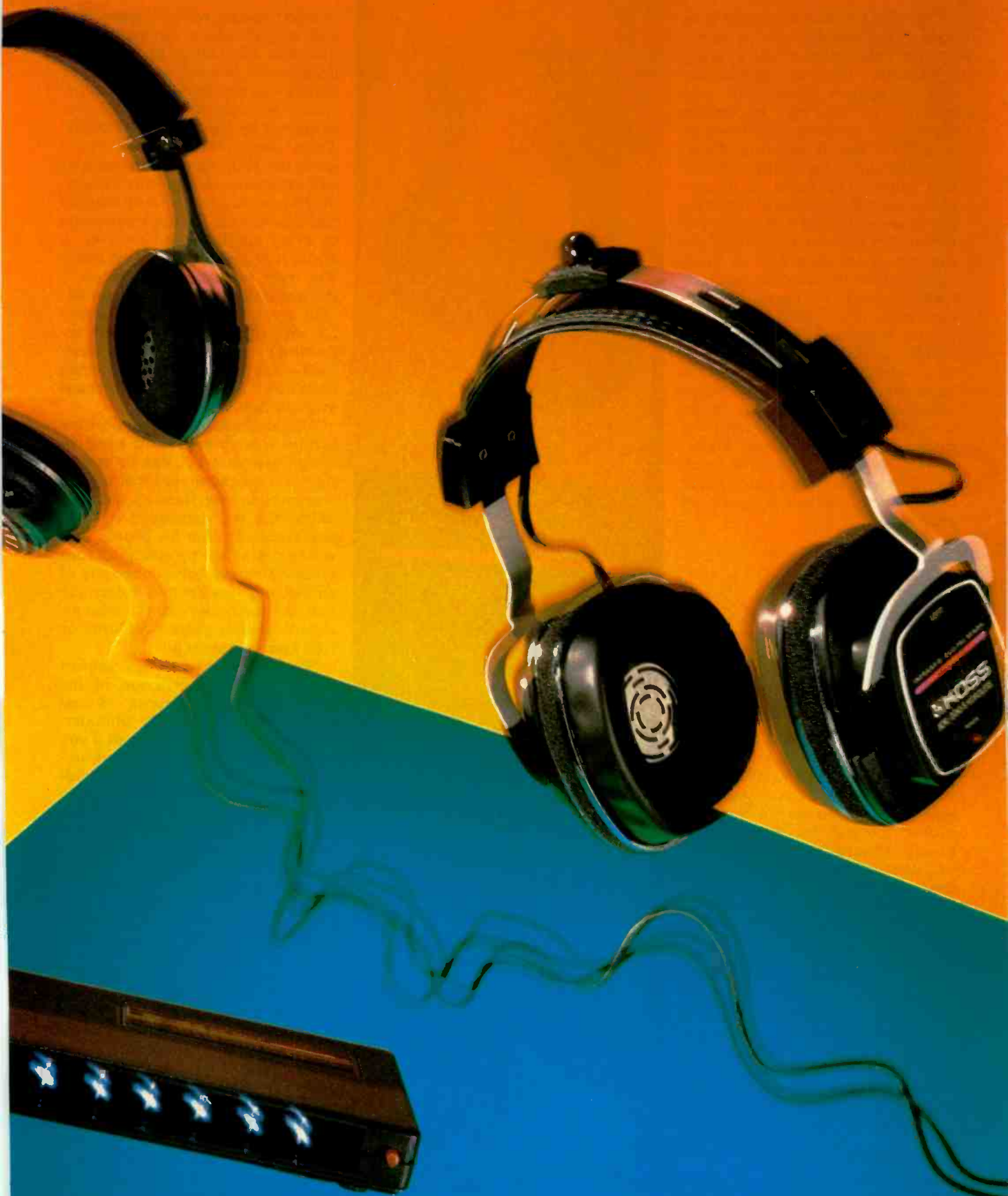
Selecting good headphones is a little like shopping for a suit: the fit comes first.

**I**N the years when many of us were amateur live recordists, headphones were a matter of daily and glum dispute. Yes, they were needed, because the recordist, often having to set up just a few feet in front of the stage, had to be able to hear, without disturbing the performers or his own perceptions, what was coming through the microphone feeds and off the tape. But they were also hated, because your instinct was to pull the phones off and listen to the real music instead. It always sounded much better.

And then headphones began sounding somewhat better, and then even better still. Recordists were allowed choices and began forming preferences. My own preference became the Koss ESP-9, a fabulous set of phones for its time. It was priced outrageously at almost \$200, and since it was an electrostatic design, it required not a mere headphone jack to function but a whole additional stereo amplifier such as might be used to power loudspeakers. The pain didn't stop until you began to listen, and then it all became worthwhile.

HING/NORTON

BY RALPH HODGES



The ESP-9 is worth describing in some detail because it was its manufacturer's statement on the ultimate headphone listening experience, and all phones since have said either "Yes" or "No" to various aspects of its design philosophy. The ESP-9 was an isolating phone, intended to cut you off from all outside sound. The backs of its earpieces were fully enclosed, their interiors were intricately damped, and the contact surfaces surrounded the ear with a generous oval of fluid-filled cushion that conformed excellently to a variety of head and outer-ear shapes. They felt mushy when you put them on, but they stabilized rapidly thanks to the clamping force of a substantial spring-steel headband that you never forgot about until the orchestra started to do something interesting—or until you rushed to catch a falling microphone, forgetting about the cord, which proceeded to rip the 3-pound headphones and half the hair off your head.

**P**ROVIDING a splendid, almost airtight seal, the ESP-9 was sweaty to wear. In a way the sweat was welcome, because it only improved the seal. In time, however (usually toward the end of the adagio), unequalized pressures between the inside and outside worlds would cause a squeaky air leak that had you wondering what fool oboist was testing his reed at such a critical moment.

Such were the joys of the ESP-9—or *are* the joys, because many of them are still in use for critical premix monitoring of master tapes. Canny headphone manufacturers, however, knew there was a blossoming consumer market out there, and the rigors of the ESP-9 were not the way to approach it.

### *The Leisure Headphone*

Five factors recommended—and still recommend—headphones to manufacturers and consumers alike. First was their spatial presentation



*AKG's K340 headphones have earned an excellent reputation for musical accuracy throughout the recording industry. Price: \$215.*



*The independently suspended circumaural ear cushions of the Stanton SRS-265 provide superior isolation. Price: \$125.*

of stereo sound, which is flawed but still very seductive for many. Second was the ability to hear very deeply into musical and recording details—an ability that, in my experience, is rarely equaled and never surpassed by loudspeaker listening. Third was portability; you could leave the Klipschorns at home and still experience decent music reproduction on vacation. Fourth was the headphone jack on the front panel of every amplifier and receiver, a black void just begging to be filled. The very important fifth factor—the possibility of getting as animalistic as you wished about sound levels without disturbing (or even informing) the rest of the household—was rarely stressed, being somehow negative and perhaps even antisocial.

Weighing against these positive factors was an enormous negative factor: discomfort. It can be said of the earliest headphones that no one was going to keep them on willingly unless the job demanded it. This was especially true for people who wore glasses (just try clamping your outer-ear flanges between the grip of an isolating headset and the temple bars of sturdy horn-rims), who affected carefully shaped coiffures, or who had no hair at all.

Now, as then, I would say comfort is the overriding criterion in the selection of headphones. Sound quality is comparatively immaterial; you'll never listen to them if you can't stand to wear them. And, unfortunately, being fitted for headphones is not much different from being fitted for a suit. I know families of four who all have different headphones, just as they have different clothing. You have to try these things on and experience them for a time.

Comfort is far from being a mere matter of having the phones seem as if they're not there at all. You need a feeling of security, a sense of cranial embrace, a confidence that they won't be shifted or blown off by a gust of wind (very important for skateboarders). Do not, under any circumstances, buy headphones because they feel weightless or because they are comfortable to wear over triple earrings. Shake your head around vigorously, get them loose, and find out which way they're going to flop. And do your best to determine how much they're going to make you sweat.

With many types of headphones,

there is something of a trade-off between comfort and sound quality, particularly in the bass but also at higher frequencies. The tight seal that true isolating phones provide makes bass response much easier to achieve, but it is physically and acoustically oppressive for many users. On the other hand, lightweight phones can lose their bass response and also their overall spectral balance when they shift on your head; the sound tends to change dramatically when headphones are even slightly askew.

**I**SOLATING phones are always of the *circumaural* (surrounding-the-ear) type, but the term is not precisely correct because many such phones clamp securely onto the rear flange of the pinna, the fleshy and cartilaginous body of the outer ear, which structures the sound reaching the eardrum in many complex ways. Firmly fitting headphones compress the pinna, giving their output a straight shot down your ear canal, but they also do who knows what to your natural sense of well-being and well-hearing. *Supra-aural* phones, which rest lightly on the ear's surfaces with slabs of foam, compress the pinna less. The consequences? Less bass, certainly, but the rest is a personal matter.

### To the Phone Store

At any given moment, the market has many hundreds of headphones available to the prospective purchaser, but not always just the type of headphone that's wanted. For example, the number of true isolating phones has shrunk relative to other headphone categories, and those that remain tend to cluster at the upper end of the price scale—a reflection of how difficult it is to design an earcup that thoroughly contains the ear and yet doesn't make it feel suffocated or awash in cavity resonances. The Koss Pro/4 series has been an isolating standby for years, and Beyer Dynamic has won a following with an earcup con-



*Nakanishi's SP-7 lightweight stereo headphones have a 45-ohm impedance and a frequency response of 20 to 20,000 Hz. Price: \$80.*



*Nady's IR-103 personal infrared stereo receiver system is wireless and can be used with any headphones. Price: \$99.95.*

figuration that attempts to diffuse internal sound reflections. Sennheiser has an isolating pair, the HD 222, at under \$100, as do a number of Japanese manufacturers, whose headphones generally switch to nonisolating designs below that price point.

A number of the European manufacturers, particularly Sennheiser, Beyer, and AKG, offer nominally isolating designs with features reminiscent of loudspeakers ("passive radiator," "bass reflex"). My best guess is that these may also function as diaphragmatic acoustical-absorption mechanisms to suppress cavity resonances. Audio-Technica's ATH-20 has a variable-damping scheme (adjustable vents) that reflects thinking along the same lines.

The vast majority of today's conventional phones are of the "open" or "semi-open" variety, which is to say that they make no attempt at isolation. They can be circumaural, supra-aural, or somewhere in between, but what they largely attempt to be is an acoustically transparent support for sound sources close to the ears. To appreciate the difficulties involved in this approach, extend your hand out flat and bring it up close to your ear, as if it were a compress you were about to apply. Note that you can hear its presence. Now, without moving the hand, spread your fingers. Note that the ambient sound the ear perceives changes in character but never becomes fully uncolored. According to one theory, ideal open-air phones should not color your perceptions of the outside world at all. But that, is just an ideal, and probably an unachievable one. Open-air phones are, notwithstanding, the favorites of the general populace by a wide margin, and hundreds of models are available from almost as many manufacturers.

**E**VEN lighter and smaller than open-air phones are the devices that, to one extent or another,



## HEADPHONE SPECIFICATIONS

**A**BOUT the only thing that can be said about headphone frequency-response specifications is that the phones that measure flat, in any of the numerous test configurations now in use, will not sound flat to most ears. The ear and its intimate relationship with a headphone sound source are evidently the culprits here, but there seems little to be done about the problem except to ignore the numbers (unless they're grotesquely bad) and just listen.

The impedances of most available headphones lie in the range of 30 to 40 ohms (here again, measurement techniques are far from standardized), and such numbers imply that the phones are usable with a wide variety of signal sources. Yet "usable" does not mean the phones will be driven to their greatest possible output unless their maximum power rating (usually a hundred milliwatts or so) matches what the program source can deliver. Phones with higher impedance (400 ohms or more) were probably designed with professional applications in mind and may not interface well with all home tape decks, much less with portables. Phones with impedances below 10 ohms are intended to be driven by the speaker outputs of an amplifier or receiver.

A mini phone plug at the end of its cord is a promising sign that a headset will work with just about anything. If you happen to need a standard 1/4-inch plug, adaptors are readily available. Some of them are designed to screw into the miniplug, but I have found the friction-fit variety more reliable.

actually fit *into* your ear; the smallest, called ear "buds" or "buttons," lodge within the ear canal itself. These models represent something of a return toward isolation, because some of them do have a tendency to block outside sound, like earplugs. Their principal advantage, from everybody's point of view, is that, being so close to the eardrum, they require a minimum of power and diaphragm area to do an astonishingly convincing job of putting your head in orbit. There are some headphone-using professionals, such as recording engineers, who have switched over to these devices exclusively, quite probably because their orientation relative to the hearing mechanism is very secure.

Prominent purveyors of such phones include Panasonic, Sony, Onkyo, Koss, Pickering, Stanton, Memorex, Radio Shack, and surely more by the time you read this. They are almost always sold with headbands to keep them in position if you're a little reluctant to give them that final half-centimeter shove into the ear canal. Caution here is not ill advised. An eardrum puncture is unlikely, but an infection is an omnipresent risk, washable ear-cushions notwithstanding.

### Operating Principles

The way headphones work is not generally of crucial importance in determining sound quality or comfort. Most headphones sound the way they do, and feel the way they do, for reasons other than what makes them go. But if you're shopping for headphones, it is useful to know something about the vocabulary the manufacturers use.

At least 90 percent of today's headphones are like miniature electro-dynamic loudspeakers. Many of them, when exposed, look like dome tweeters, but there is also a large family of planar-diaphragm phones that have oversized radiating surfaces, either rigid, like Denon's AH D-6, or flexible, like Nakamichi's SP-7. ("Oversized" simply means that the "cone" is appreciably larger than the voice-coil diameter.)

At the high end, electrostatic and electret headphones begin to appear. Both of these terms refer to devices in which the planar diaphragm itself becomes the voice coil by virtue of being electronically polarized, either by an external voltage source (electrostatic) or by a bias

that is actually molded into the diaphragm material (electret). Normally, such phones have to be plugged into an active energizing module, which is then connected to a system's headphone jack or speaker outputs. AKG also offers two hybrid electrostatics (dynamic drivers are employed for the lower frequencies) that can plug into headphone jacks directly. Stax has the largest line of electrostatics and electrets; the top model, Class A amplification included, costs about \$1,000. Of course, none of these exotic headphones is really designed for use with personal portables, although ingenuity might make an adaptation possible in some cases.

At least four companies—Koss (JCK/200-S), Magnavox (WS200), Nady (IRH-210), and Sennheiser (HDI 2)—have developed cordless headphones that receive audio, usually FM encoded, via infrared transmission from an adaptor module. The principle is a valid one, and these devices work well under line-of-sight conditions in even the largest domestic rooms. They do, however, necessitate your wearing a small amplifier and a battery, which may jeopardize the comfort factor for some individuals. Prices range from \$90 on up.

Many headphones intended for the personal-portable market are foldable. And, of course, in the case of ear buttons used without headbands, stowage is simply a matter of wadding the wires up and stuffing the things in your pocket. Folding headphones are indeed a fine idea, and the execution is often ingenious. The comfort factor here needs special attention, however, as some of these models have a tendency to feel spidery during extended wear.

In recent years, headphones have received their biggest boost from the Walkman phenomenon, and most new ones have been designed with that use specifically in mind. Without question, even a rather modest portable headset will put the most elaborate boombox to shame for auditory satisfaction, and it will not cost you a fortune in batteries either. There are murmurs abroad, however, that the industry is once again looking closely at the home headphone market and preparing ambitious new products, including some interesting electrostatic designs that promise to advance the technology even further. □



# Hi-Fi Holiday GIFTS



Some people do their Christmas shopping early. A friend of mine actually buys her gifts at the Labor Day sales in September and can then enjoy all the holiday concerts and parties with a clear conscience. Christmas takes most of the rest of us by surprise every year, and we get a bit desperate as the shopping days dwindle down to a precious few.

If you have already bought a gift for everyone on your list, the staff of STEREO REVIEW wishes you happy holiday concerts and parties. If you are still trying to think of gifts to buy for an audiophile, however, we are prepared to help, as in past years, with the following list of

suggestions from our editors and regular contributors.

Although some of them get confused between what they'd like to give and what they'd like to receive, there are real live people to testify to the usefulness and desirability of all the items on the list. If you don't want unwelcome surprises on Christmas morning, it might be a good idea to check off a few things you'd like to receive yourself and circulate the list among your friends and relatives. As usual, we've limited our suggestions to accessories and recordings, things that cost less than an actual hi-fi component. —William Livingstone



**ROBERT ACKART**  
*Contributing Editor*

Among the most memorable of this year's opera recordings that I'd like to share are the two ebullient versions of Mozart's *Le nozze di Figaro*. The Philips recording is directed by Neville Marriner, the Angel album by Riccardo Muti. A totally delightful *Ariadne auf Naxos* is available from Deutsche Grammophon with James Levine conducting a cast of notable singers and Kathleen Battle singing a near-definitive Zerbinetta. For lovers of grand opera Italian-style, there is Verdi's *La forza del destino*, directed with high spirits by Muti and starring Mirella Freni and Placido Domingo, on Angel. For a gift of Christmas music I recommend Kathleen Battle's "A Christmas Celebration," conducted by Leonard Slatkin, which is sung and played with the best spirit of the season. It is also an Angel album.

**BARBARA AIKEN**  
*Editorial Assistant*

Radio Shack markets a Pillow Speaker that fits under your pillow so that you can listen privately to a TV set, clock radio, or portable without disturbing others. It comes with a volume control plus a 1/8-inch jack that fits most portables. Price: \$4.99.

*Sumiko's Counterfeet put components on a vibration-free footing.*



*Oak racks from Tree Dimensions can store both CD's and tape cassettes.*

**CHRIS ALBERTSON**  
*Contributing Editor*

Anyone who has started a CD collection will have noticed that the hinges on the so-called jewel-box cases break easily. Replacing them requires buying a new box. Marketed by Recoton and others and available at most well-stocked record stores, these replacement boxes make inexpensive, practical, and unusual gifts.

**CHRISTIE BARTER**  
*Music Editor*

Any opera lover on your list will welcome the new edition of *Kobbé's Opera Book* (G. P. Putnam's Sons, \$35), edited, revised, and updated by the Earl of Harewood. As the book jacket says, it is to opera "what Bartlett is to quotations or Julia Child to cuisine." In just over 1,400 pages it provides plot outlines and other information on some 300 operas. You should also consider *Maria Callas Remembered* (E. P. Dutton, \$19.95), by Nadia Stancioff, a close friend of the celebrated American diva who died in Paris ten years ago.

For the balletomane or the youngster taking in a performance of that Christmas perennial, *The Nutcracker*, there's the fabulous new Philips recording of the complete Tchaikovsky ballet score by the Berlin

Philharmonic conducted by Semyon Bychkov.

**LOUISE BOUNDAS**  
*Editor in Chief*

The headphones that come with Walkman-type portables don't always last as long as the portables themselves do, and a spare is sure to be appreciated. The Sony MDR-A60 (\$69.95), with a sleek shape by the Italian industrial designer Luigi Colani, is one of the best-looking little headphones around, and it folds up neatly to fit into a corner of the thinnest executive briefcase.

The Zapit, from Monster Cable, is a battery-operated power booster that attaches to the end of an infrared remote control to extend its operating range. It also permits bouncing signals off walls and ceilings, so that you don't even have to point it at the receptor on your CD player, VCR, or whatever. The Zapit lists for \$24.95.

And, for a stocking stuffer, one of the best performances ever recorded of perhaps the greatest piece of music ever composed: CBS's "mid-price" CD, in the Great Performances series, of Mozart's Clarinet Concerto performed by Robert Marcellus with George Szell and the Cleveland Orchestra (MYK 37810).

**MARGARET BRUEN**  
*Associate Art Director*

I'm recommending records: Tom Waits's "Franks Wild Years" (Island), U2's "The Joshua Tree" (Island), and Sarah Vaughan and Michael Tilson Thomas's "Gershwin Live!" (CBS).

**WILLIAM BURTON**  
*Technical Editor*

The audio accessory I use most often is a set of storage modules made by a/d/s/. Each module holds about one hundred LP's, or, with special

PHOTOGRAPHS BY DAVID NELLELY



drawers, seventy-two CD's or 108 cassettes. Available in black or white. Price: \$249 each.

The clever CD cleaner from Alpha Enterprises is fairly quick, easy, and safe. Only \$8.99, it's the same size and shape as a jewel box.

The best book on CD technology is Ken Pohlmann's *Principles of Digital Audio*. The math is rather advanced at times, but you'll enjoy the fascinating charts, graphs, and figures. Price: \$19.95.

A few choice CD's for the season are George Winston's soothing "December" on Windham Hill, Mannheim Steamroller's bouncy "Christmas" disc on American Gramophone, and "Christmas at the Church of St. Luke in the Fields" on Classic Masters.

### ELIZABETH COSTELLO *Assistant Editor*

High on my list of gift suggestions is a case of TDK SA-X blank cassette tapes. And for those who like to take their tapes or CD's with them in the car or to parties, I recommend any of the Lebo "Voyager" series of soft nylon carrying cases. The cases come in a variety of sizes and are

*Monster Cable's Zapit boosts the range of infrared remote controls.*



*Lonaon's "Cinema Gala" series is a library of great film music on tape.*

available in red, gray, blue, and black.

### RICHARD FREED *Contributing Editor*

Shelving designed for LP's is clearly wasted on CD's. I've found compact storage for compact discs in the form of attractive, space-saving teak cabinets imported from Thailand. Sold in record shops under the name Teakwood Compact Disc Racks, these units provide shelter for sixty to sixty-two CD's each. They measure 15½ inches wide, 11½ inches high, and 5½ inches deep and can be stacked atop one another. Price: \$33.50.

### WILLIAM GOLDMAN *Senior Editor*

The true spirit of Christmas shines through in a marvelous new video release, "Rubinstein Remembered" (Video Artists International, \$49.95, 58 minutes). A centenary tribute to the great pianist Arthur Rubinstein, it is hosted by his son John.

To keep your LP's sounding their best I recommend Audio-Technica's AT605 Audio Insulators (\$33.50). When nestled under a turntable, this set of four adjustable "feet" will dampen any external vibration and prevent acoustic feedback. A bubble level is included.

### CHRISTOPHER GREENLEAF *Contributing Editor*

As a recording engineer, I find it constantly frustrating that so much music is longer than the forty-five minutes available on one side of a C-90 cassette. A solution is often provided by the Denon HD8-100, a C-100 with fifty minutes per side and just enough extra time.

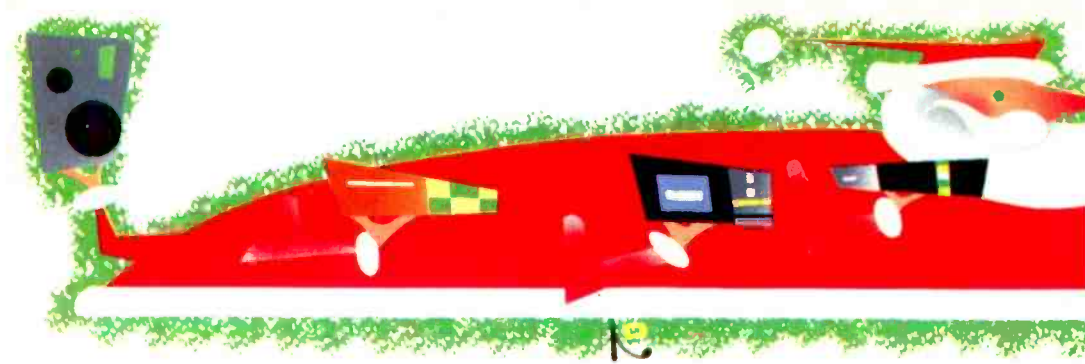
A riveting musical gift is the new cassette or CD release of Rachmaninoff's *Vespers* by the Choral Arts Society of Washington conducted by Mstislav Rostropovitch. It's on Erato, the number is 75319, and the sonics are extraordinary.



*Adcom's GFS-3 speaker selector switches among three pairs of systems.*

### DAVID HALL *Contributing Editor*

Among the most intriguing mail-order catalogs is the one from the Smithsonian Institution, which offers jewelry, toys, and replicas of historic artifacts as well as books and records. To get a copy call 1-800-247-5072. With a credit card, you can also order books and records from that number. Among the records, I recommend *The Smithsonian Collection of Classic Jazz* ably produced by Martin Williams, \$49.96 on five cassettes or seven LP's. My pick of the books is *The Music Men—The Brass Band in America*, replete with heretofore un-



published photographs. Price: \$39.95 cloth, \$19.95 paper.

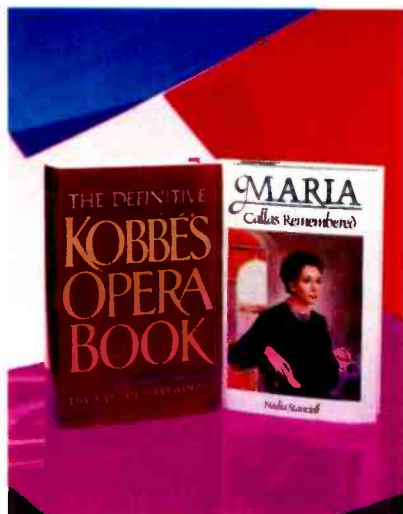
**JULIAN HIRSCH**  
*Contributing Editor*

I probably handle more cables (and their connecting plugs) than most readers of *STEREO REVIEW*, but there is no hi-fi system without at least several cables. Sometimes, when you are plagued by hums, crackles, or other noises, a cable may be suspect, but how do you identify the culprit? Recoton has a Cable Checker (Model V-449) that will check the continuity of the center conductor and shield (separately) of almost any common audio or RF cable. It has connectors for BNC, RCA (phono), mini-headphone, and F-type plugs (for 75-ohm antenna systems or VCR's). Priced at \$29.95, it is as effective as a costly meter and a lot easier to use.

**RALPH HODGES**  
*Contributing Editor*

Every audiophile should have the experience of working with a real-time analyzer, and since price is always an object, the AudioSource RTA-ONE (\$250) is probably the one. With a little practice and un-

*Recoton's CD-23 bracket gives CD players a smoother ride in the car.*



*Must reading for opera lovers on your holiday gift list.*

derstanding of its limitations, I've found that I can reach almost the same conclusions that far more elaborate instrumentation would bring about. I have used it to warn myself about problematic moments in live-recording sessions and in mobile evaluations of car stereo systems. The RTA-ONE system includes, besides an AC adaptor, a primitive little pink-noise generator that can make truly useful test tapes.

**WILLIAM LIVINGSTONE**  
*Editor at Large*

Discwasher's SpikeMaster FP-1000 will protect audio and video equipment from the electrical power surges frequently caused by thunderstorms. The unit's special filters also isolate equipment from radio-frequency interference. Price: \$69.

For CD storage, I recommend the racks made by the Napa Box Co. of California. One that holds fifty-two CD's costs \$30.

A library of great film music is London Records' "Cinema Gala" (417 855-4 LA 10), a boxed set of

ten cassettes. The individual tapes are also available separately, listing at \$7.98 each.

**SUE LLEWELLYN**  
*Art Director*

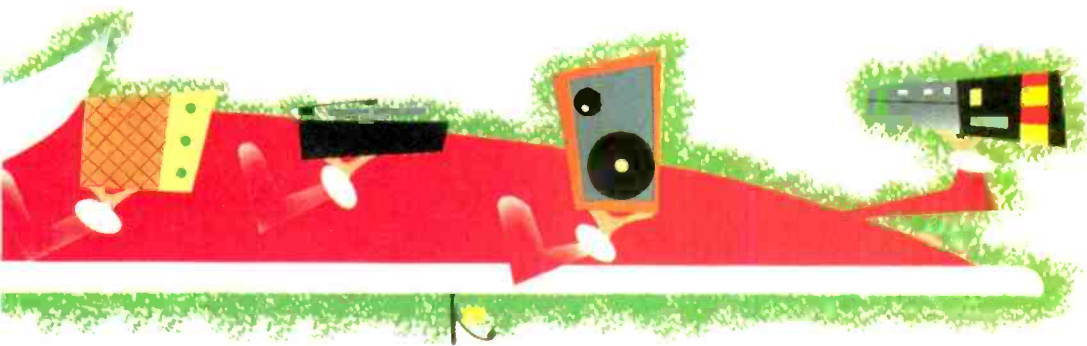
Give the gift of two Rounder Records that will put anyone on the cutting edge of African music. Nyboma's "Doublé Doublé" (Rounder 5010) represents the Zairean sound with Brazilian and Afro-Cuban flavors. Segun Adewale's "Play for Me" (Rounder 5015) presents the "Crown Prince of Juju" in a new kind of dance music called *Yopop*.

**IAN G. MASTERS**  
*Contributing Editor*

Put a cartridge in the pear tree. Sooner or later every phono cartridge begins to wear, risking permanent damage to your audiophile loved one's precious vinyl. Too often, this only becomes apparent when it's too late, when a few records have already been destroyed. A replacement stylus may not be cheap, but it is the ideal gift for someone who cares about preserving records. In this digital age, it may be the last stylus your recipient will own. Perhaps a diamond really is forever!

**LOUIS MEREDITH**  
*Contributing Editor*

As usual, I'm recommending LaserDiscs, which remain the primo video format. Three of the neatest I saw this year are the Beatles in *Help!* (Criterion), with a new digital stereo soundtrack, *Sid and Nancy* (Embassy), about two characters who will never be confused with Fred and Ginger, and *Star Trek IV* (Paramount), with a plaster-rattling digital soundtrack and a terrific, largely overlooked score by Leonard Rosemann.



**STEVE SIMELS**  
*Contributing Editor*

The pleasantest surprise I had in 1987 was "The Desert Rose Band" (MCA/Curb), in which ex-Byrd Chris Hillman redeems himself after several years of hack work. This



*Satisfying country rock, a riveting film, and a great performance.*

just may be the Great Country Rock Album. It certainly fulfills all the promise of the Flying Burrito Brothers. Gram Parsons must be smiling at it in heaven.

**MICHAEL SMOLEN**  
*Executive Editor*

I've told my wife that my stocking should contain a pair of Yamaha's YHL-003 "curl-up" portable headphones (\$50). Their frequency response is 20 to 20,000 Hz ( $\pm 3$  dB), and they fit in your pocket. Also welcome would be Adcom's GFS-3 or GFS-6 speaker selector, handling three and six pairs, respectively (\$99.95 and \$149.95), with built-in protection for low-impedance loads. For my car I've been eyeing the new Nakamichi high-end speaker wire and interconnects (\$12.50 to \$65) and Recoton's CD-23 shock-absorbing bracket (\$29.95) for portable CD players. It mounts under the dash and can hold most portables.

**CRAIG STARK**  
*Contributing Editor*

The Annis Han-d-Mag tape-head and capstan demagnetizer is a wonderful present for anyone who uses a tape deck of any kind. The standard Model 115-S, a bargain at only \$31, is available from the R. B. Annis Company, 1101 N. Delaware St., Indianapolis, IN 46202.

**DAVID STEIN**  
*Assistant Managing Editor*

A space-saving CD storage system is the line of solid-oak racks with sliding divider panels from Tree Dimensions (P.O. Box 609, Boone, NC 28607; 704-262-0220). Prices range from \$29.95 postpaid for the CD-50, which holds up to fifty-four CD's, to \$89.95 for the CD-250, which holds 260. A nice bonus is that the same racks can be used for storing both audio and videocassettes as well.

Also space saving is Onkyo's "The Unifier" (\$119.95), a programmable remote-control unit that can replace a table full of other remotes by learning how they "talk" to your audio and video compo-

*Fine portable headphones: Sony's MDR-460 and Yamaha's YHL-003.*



*Discwasher's SpikeMaster protects a system from electrical surges.*

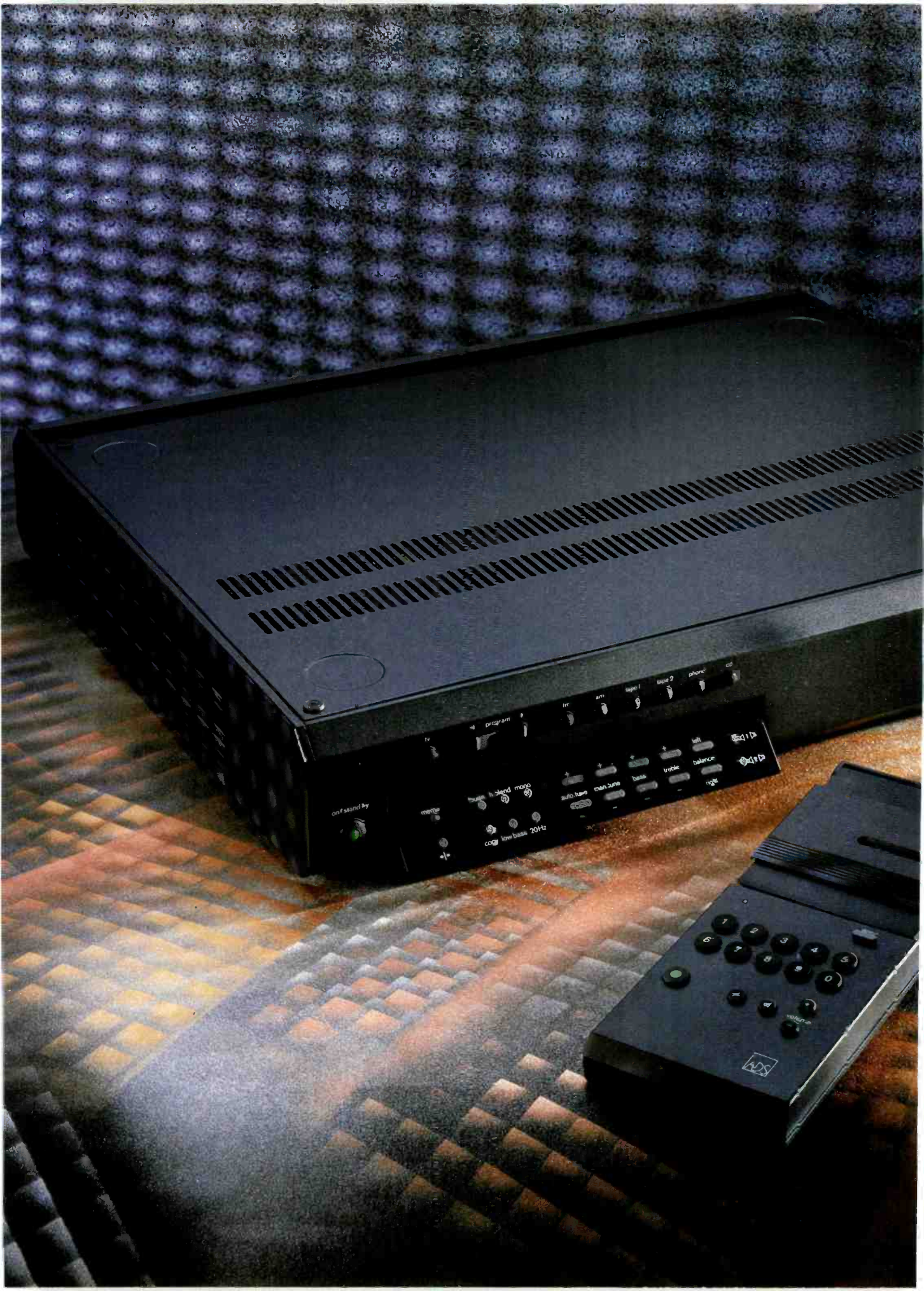
nents. The Unifier can store more than a hundred infrared control codes in its memory.

The high-tech alternative to a clock radio is a programmable digital audio timer. Kenwood's handsome, easy-to-use AT-56 (\$120) can wake you or lull you to sleep with your favorite music, and if you connect it to a good autoreverse tape deck, it will let you time-shift radio broadcasts you'd otherwise miss.

**WILLIAM WOLFE**  
*Technical Editor*

Sumiko's "Counterfeet" look like the kind of cufflinks Conan the Barbarian might wear, but they really work. Use them to isolate your stereo components from mechanical resonances. Counterfeet are available for components and speakers in short, tall, tapped, and untapped versions and as direct replacements for Oracle, Sonographe, and Sota feet. Prices range from \$9 to \$22.

For the progressive-music aficionado, I'd recommend my instant CD collection: Pink Floyd's "A Momentary Lapse of Reason" (Columbia), Marillion's "Clutching at Straws" (Capitol), IQ's "Nomzamo" (Squawk/Mercury), and Carlos Alomar's "Dream Generator" (Private Music). □



# a d s R4

## AM/FM STEREO RECEIVER

**F**OR several years we have been hearing about, and more recently seeing, preliminary models of an unusual new stereo receiver being developed by a/d/s/. Designed to be a part of the company's Atelier series, it is capable of being used by itself or of serving as the control center for a whole system of Atelier components. The R4, as the receiver is called, is now a reality, and we have had the opportunity to put one through its paces.

The R4 combines a digital-synthesis AM/FM tuner with a preamplifier having two external high-level inputs (TV and CD), a phono preamplifier designed to operate from moving-magnet (MM) or moving-coil (MC) phono cartridges, and recording and playback switching for two tape decks, including dubbing from either deck to the other while listening to a different program. Its power amplifier is conservatively rated to deliver at least 65 watts per channel from 20 to 20,000 Hz into 8- or 4-ohm loads with no more than 0.05 or 0.07 percent distortion, respectively. All of its control operations are performed by an 8-bit microprocessor with memories to store the receiver's operating conditions. Each time the R4 is turned on, it returns to the exact operating conditions that existed when it was last used, including the same volume level and all other control settings.

### *Discreet Control*

The R4 is a very compact receiver, matching the other Atelier components in size and appearance. It is knobless and, in normal use, most

of the buttons are hidden from view. The visible controls include one rocker switch for volume adjustment and another, marked PROGRAM, that steps the tuner frequency in either direction through its thirty preset memories. Small round buttons, which are visually inconspicuous but very clearly marked, mute the receiver's audio output and select the input source: TV, FM, AM, TAPE 1, TAPE 2, PHONO, and CD.

A small, well-damped panel swings down to reveal a number of less frequently used controls, including tuning buttons for both the manual and auto modes. The bass and treble buttons (+ and -) boost or cut the response at their center frequencies in 2-dB steps each time they are pressed, and the balance-control buttons operate in 1-dB steps. Other buttons behind the hinged panel control the tape-copying functions and select mono or stereo mode; one or both of two sets of speaker outputs, loudness compensation, an FM high-blend circuit, a separate low-bass boost control with a 6-dB range, and a 20-Hz low-cut filter. Another button toggles all the tone-control and filter circuits on or off, and a MEMO button stores the selected station frequencies in the preset memories.

The volume control changes the audio gain in 1-dB steps over an 80-dB range. A light touch changes the volume at a rate of 3 dB per second; pressing harder increases the rate to 6 dB per second. The display window shows the status of all operating controls. The program source—in tuner mode, the station frequen-

BY JULIAN HIRSCH

cy and the preset number, if applicable—appear in half-inch-high yellow-green fluorescent characters. Other displays show signal strength and correct FM tuning. Momentarily pressing any of the control buttons displays its current setting for a few seconds.

### Advanced Programming

The a/d/s/ R4 has a built-in clock/calendar, programmed up through the year 2019, that can control the receiver for several recurrent or selected operations. It can be programmed to turn the receiver on and off at up to five specified times and dates or at the same time daily. The timer mode also selects the desired program source, including station frequency in the tuner

the TV set's audio volume control sets the listening level.

The system-control abilities of the R4 are indicated by several DIN sockets on its rear apron. These can send control signals to a compatible a/d/s/ Atelier record player or CD player and to one or two tape decks or other components connected in a tape-monitor loop, switching them on or off when the corresponding receiver inputs are selected.

A small slide switch on the rear reduces the power-supply voltage in order to drive 4-ohm speakers safely at high levels. Its 8-ohm setting is suggested for normal operation. Four of the six AC convenience outlets are switched, allowing the receiver to power as well as control other components.

### Full-System Remote Control

The a/d/s/ R4, like all other Atelier series components, is designed to be controlled by the RC1 remote-control transmitter. The RC1 duplicates most of the operating controls of the R4 and has several other functions used for programming the system. Its exceptional versatility sets it apart from other wireless remote controls.

The RC1 is designed to control not only the receiver but also a CD player, a digital audio tape deck (when DAT becomes available), a videodisc player, a satellite TV tuner, a VCR, and a TV set. A sliding plate on the control unit selects the component, and pressing a button causes the cover to swing up, reveal-

## FEATURES



- Compact AM/FM stereo receiver controlled by 8-bit microprocessor
- Digital step controls for bass, treble, volume, and balance
- Digital-synthesis tuner with 25-kHz FM tuning steps
- Thirty preset station memories assignable to AM or FM frequencies
- Switchable high-blend circuit to reduce noise on weak stereo signals
- Manual and automatic tuning modes
- Inputs for 75- and 300-ohm FM antennas and AM wire antenna
- Fluorescent display of complete operating status
- Separate preamplifier outputs and power-amplifier inputs
- Connections and switching for two pairs of speakers
- Inputs for CD, TV, two tape decks, phono (MM or MC)
- Facilities for dubbing in either direction while listening to another program
- Six AC convenience outlets, four switched
- Audio-muting switch
- Front-panel headphone jack
- Signal switching and power controls for external program sources in a/d/s/ Atelier series
- Built-in calendar/clock (programmed through 2019 A.D.) to set receiver for timed operation (up to five programs or daily operation with a single source)
- Wireless remote control for all receiver functions as well as compatible a/d/s/ Atelier components

mode, volume, and other pertinent operating conditions.

The R4 allows the sensitivity of each input source to be adjusted individually in 1-dB steps over a 10-dB range, then stored in memory. The programmed sensitivity is automatically recalled whenever that source is selected, avoiding unwanted changes in average listening volume. In addition, if the audio output of a TV set is connected to the corresponding signal input of the R4 and the TV selector button is held in for a few seconds, the receiver switches to its TVA (TV Automatic) mode. Thereafter, an audio signal from the TV set automatically switches the R4 on. The TVA volume setting is fixed at 65 dB so that

The separate preamplifier outputs and main-amplifier inputs are joined by removable links. This feature makes it possible to replace the R4's internal amplifier by an Atelier PA4 power amplifier, increasing the system's output power to 150 watts per channel while retaining full system integration and a uniform appearance. Alternatively, another DIN socket can be used to connect the R4 with the PA4 power amplifier, switching it on and off and selecting either or both of its speaker outputs with the buttons on the R4. Then the R4's internal amplifiers need not go to waste; they are ideal for driving rear speakers if an ambience-modifying accessory is added to the system.

ing twenty-five dedicated control buttons. The overlay plate that identifies the functions of these buttons changes automatically according to the selected component.

The half of the RC1 panel not hidden from view carries controls common to several components, such as power, muting, volume, and numerical programming keys. The receiving sensor for the infrared remote control is on the front panel of the R4, but one of the DIN sockets in the rear accepts the output of as many as six remote-control receivers that can be located up to 300 feet away, making it possible to control the entire system from many locations.

The a/d/s/ R4 is an extremely



compact unit for a receiver of its capabilities. It measures 17½ inches wide, 14¼ inches deep, and only 2¾ inches high. Considering its size, it weighs a surprising 24 pounds. The rear apron is well populated by the signal input and output connectors, DIN remote-control sockets, speaker-output terminals, AC outlets, and antenna inputs, including binding posts for a 300-ohm FM antenna and an AM wire antenna as well as an F-connector for a 75-ohm FM antenna. For installations where the rear of the unit is exposed, the receiver, like the other Atelier components, is furnished with a cover plate that fits across its back and hides the cables from view. The suggested retail prices are \$1,100 for the R4 and \$100 for the RC1 remote control.

few measurements that did not match the preliminary specifications was amplifier distortion, which was rated as less than 0.05 percent at 65 watts into 8 ohms at any frequency from 20 to 20,000 Hz. While the distortion over most of the audio range was well below 0.05 percent, it reached 0.1 percent at frequencies below 40 Hz and about 0.09 percent at 20,000 Hz. More than balancing this insignificant discrepancy was the fact that the distortion was essentially the same with either 4- or 8-ohm loads and still negligible with a 2-ohm load (for which the receiver is not rated).

Another discrepancy between the preliminary specs and our test results was in the signal-to-noise ratio

preconditioned by operating at one-third of its rated power into 8 ohms for 1 hour. Not surprisingly, in view of its compactness and complexity, it ran moderately warm in normal operation, and the preconditioning left its top uncomfortably hot.

### Tuner Performance

The FM tuner section's performance was excellent in every respect. In addition to its outstanding image rejection, its 0.85-dB capture ratio was one of the best we have ever measured. Its sensitivity and distortion were exceptional. Although the tuner's signal-to-noise ratio was slightly better than specified at a 65-dBf signal level, its noise level actually *increased* at higher signal levels, unlike any other tuner we can

## LABORATORY MEASUREMENTS

□ **Tuner Section** (all measurements FM only except frequency response)

**Usable sensitivity (mono):** 11 dbf (2 μV)

**50-dB quieting sensitivity:** mono, 14 dbf (2.8 μV); stereo, 36 dbf (34.7 μV)

**Signal-to-noise ratio at 65 dbf:** mono, 74.3 db; stereo, 72 db

**Harmonic distortion (THD + noise) at 65 dbf:** mono, 0.069%; stereo, 0.045%

**Capture ratio at 65 dbf:** 0.85 db

**AM rejection at 65 dbf:** 61 db

**Selectivity:** alternate-channel, 73 db; adjacent-channel, 5 db

**Image rejection:** 122 db

**Stereo threshold:** 15 dbf (3.1 μV)

**19-kHz pilot-carrier leakage:** -72 db

**Hum:** -78 db

**Stereo channel separation at 100,**

1,000, and 10,000 Hz: 47, 51, and 47 db

**Frequency response:** FM, 30 to 15,000 Hz +0.1, -0.4 db; AM, -6 db at 35 and 2,500 Hz

□ **Amplifier Section**

**1,000-Hz output power at clipping:** 98 watts into 8 ohms, 121 watts into 4 ohms, 82 watts into 2 ohms

**Clipping headroom (relative to rated output):** 1.78 db (8 ohms)

**Dynamic power output:** 138 watts into 8 ohms, 230 watts into 4 ohms, 306 watts into 2 ohms

**Dynamic headroom:** 3.27 db (8 ohms)

**Harmonic distortion (THD + noise) at 1,000 Hz into 8 ohms:** 1 watt, 0.008%; 10 watts, 0.011%; 65 watts, 0.022%

**Maximum distortion from 20 to**

20,000 Hz into 8 ohms: 0.098% at 65 watts (20 Hz)

**Slew factor:** greater than 25

**Sensitivity (1-watt output into 8 ohms):** CD/TV, 45 mV; phono, 0.6 mV (MM), 0.065 mV (MC)

**Phono-input overload:** 136-180 mV

**A-weighted noise (referred to a 1-watt output):** CD, -86.5 db; MM phono, -70.5 db; MC phono, -60.5 db

**Phono-input impedance:** 40,000 ohms in parallel with 220 pF

**RIAA equalization error:** +0.1, -0.9 db from 20 to 20,000 Hz

**Tone-control range:** +6, -8.5 db at 100 Hz; ±9.5 db at 10,000 Hz

**Low-bass boost range:** 6 db maximum at 20 Hz

**20-Hz filter:** -4.5 db at 20 Hz

**Loudness boost (maximum):** 2.5 db at 100 Hz, 8.5 db at 20 Hz

### Specs and Measurements

Our test sample of the a/d/s/ R4 receiver was a prototype unit from the end of a final preproduction run, and it should be essentially identical to future regular production units. A finished instruction manual was not available, but we had a photocopy of the final text. We were furnished with a regular-production RC1 control unit. The technical specifications provided to us for the R4 were preliminary and may be subject to change.

That said, we must point out that the R4 was one of the first stereo receivers, if not *the* first, we have tested that met or surpassed almost all of its specifications. One of the

(S/N) through the MC phono input, which we measured as 60.5 db instead of the rated 65 db or more. We also found variations from spec in the sensitivity of the audio inputs for a reference output of 1 watt. All measured about 5 db less sensitive than rated.

Offsetting these trifling matters was the performance of the exceptionally sensitive FM tuner, which surpassed *every one* of its specs by a comfortable margin, an exceedingly rare occurrence in our experience with FM tuners. Especially notable was the image rejection: Rated as greater than 95 db, it measured a staggering 122 db.

As usual, all measurements were made after the receiver had been

recall. The change was not great enough to affect listening quality, however.

The suppression of the 19-kHz stereo pilot carrier in the tuner's audio output was a good 72 db, yet its frequency response showed no sign of the high-frequency rolloff that often accompanies good pilot-carrier suppression. This result suggests the use of either a cancellation circuit or a rather sophisticated low-pass filter. Not only was the frequency response of the tuner nearly ruler-flat, but its channel separation was excellent, better than 50 db in the midrange and still a strong 38 and 44 db, respectively, at our measurement limits of 30 and 15,000 Hz.

Although the AM tuner section's frequency response was unremarkable, 35 to 2,500 Hz at the -6-dB points, this receiver delivered the best AM sound we have heard in years. Unlike almost all other AM tuners in stereo receivers, it does not use a wire-loop or ferrite-rod antenna but has binding-post terminals for a wire antenna instead. Using a 4-foot wire enabled us to receive a large number of AM stations with low noise. The usual power-line buzz and hum, which make AM reception impractical in our location with a loop or ferrite antenna, were strikingly absent.

### *The Preamp and Power Amp*

The RIAA phono equalization of the preamplifier section was accurate within +0.1, -0.9 dB from 20 to 20,000 Hz. The MM phono input's termination was slightly nonstandard, measuring 40,000 ohms in parallel with a 220-picofarad (pF) capacitance. Almost any moving-magnet cartridge should work properly with this termination. The phono preamplifier overloaded at inputs between 136 and 180 pF from 20 to 20,000 Hz.

The tone-control curves were essentially as expected, with each step differing by 2 dB from the previous one at the frequency extremes. The only exception was the first -2-dB step, which dropped the response by somewhat more than 2 dB from the flat level. The result was to shift all the "cut" curves down about 4 dB in the bass and 1 dB in the treble.

The low-bass boost circuit, which operated below 100 to 150 Hz, was adjustable, as rated, from 0 to 6 dB. The 20-Hz low-cut filter began to roll off the output response below 40 Hz, to -3 dB at 23 Hz. Used in combination with the low-bass boost, it was able to boost the response by 5 dB at 40 Hz while rolling it off to less than 1 dB at 20 Hz, which could be useful for enhancing the low-bass response of many speakers.

The loudness compensation boosted only the frequencies below 100 to 150 Hz, beginning at volume-control settings 20 to 30 dB below maximum. The maximum boost of 9 dB at 20 Hz produced a subtle effect, quite unlike the heavyhanded action of most loudness circuits.

The power-amplifier section clipped at 98 watts into 8-ohm loads with both channels operating at 1,000 Hz. Into 4 ohms, the output at

clipping was 121 watts. Both readings were taken with the rear-apron switch set to 8 ohms. We changed it to 4 ohms when driving a 2-ohm load, into which the output clipped at 82 watts with both channels driven and at 180 watts with one channel operating. (We used the 8-ohm setting throughout our tests of the R4 except when it was driving a 2-ohm load.) The dynamic power output measured 138 watts into 8 ohms, 230 watts into 4 ohms, and 306 watts into 2 ohms.

*The a/d/s/ R4's FM reception was possibly the best we have experienced from a receiver. All our favorite stations were fully quieted. Even AM stations were as quiet and listenable as many FM signals.*

The 1,000-Hz distortion was 0.008 percent at 1 or 2 watts output into 8 ohms, typical of average listening levels. Distortion increased to about 0.02 percent at the rated 65 watts and to 0.075 percent at 95 watts. The 4-ohm distortion characteristic was almost identical to the 8-ohm characteristic, and even into 2 ohms the distortion was the same from 10 to 50 watts output, increasing to 0.06 percent at 0.1 watt and 0.038 percent at 80 watts. At the rated 65 watts (into 8 ohms), the distortion was 0.1 percent at 20 Hz, 0.0095 percent at 1,000 Hz, and 0.09 percent at 20,000 Hz. At lower outputs the distortion was always less than at full rated power.

### *Sound Quality*

As outstanding as the performance of the a/d/s/ R4 was, the receiver was equally impressive as an example of engineering excellence. If you wonder, as we did, how so much circuitry could have been packed into its compact dimensions, take the cover off and take a look for yourself. Then put the cover back and enjoy it!

Ordinarily there is little we can say about the *sound* of a stereo receiver. Most are fairly competent, but in our location their AM tuners are useless, and frequently the FM quieting is marginal with an indoor antenna. Even strong signals are often marred by the kind of low-level "hash" radiated by the computer on

which this report is being written a few feet from the equipment rack.

But the a/d/s/ R4 is no ordinary piece of equipment. Its FM reception was possibly the best we have experienced from a receiver. All our favorite stations were *fully* quieted, with no trace of computer hash. Even AM stations, except for their inherently limited frequency response, were as quiet and listenable as many FM signals. All of this in the same location and with the same antennas we use for all the other tuners and receivers we test!

### *Practice Makes Perfect*

Despite the apparent simplicity of its control panel, the R4 is not a "plug in and play" receiver. We had to spend considerable time studying the manual and getting "hands on" practice before we could make effective use of most of its unique features. Anyone who has trouble programming a VCR for unattended recording, for instance, will probably have even more trouble with the R4. On the other hand, almost any VCR can be mastered if you are willing to read the instructions—why do so many people omit this step?—and so can this receiver.

As with a full-featured VCR, the most difficult part of using the a/d/s/ R4 is programming it for timer-controlled operation. The programming logic is more straightforward than it may seem, but until you have tried a few program sequences and confirmed that they work as claimed, it is difficult to have confidence in a procedure that requires some nineteen key operations for *each* program entry. It does work, though, despite some rather cryptic control-button nomenclature. And once you have learned how to communicate with the control system of the R4, its true value becomes obvious.

Our experience with the a/d/s/ R4 convinces us that the long and costly development effort that went into creating it was justified. It may not be "everyman's" receiver, and it is neither the largest, the most expensive, nor the most powerful receiver available—although with a PA4 power amplifier added, it would come close to the front rank in power. But it is easily the most sophisticated product of its type currently on the market, and it is audibly superior, especially under less than ideal conditions, to any other receiver we have used. □

1987

# JAPAN

## AUDIO FAIR

**T**HE thirty-sixth annual Japan Audio Fair, held from September 16 through 20 this year at Tokyo's Harumi International Exposition Grounds, was sponsored by the Japan Audio Society under the theme of "Digital Revolution '87—a festival of sound and image." According to JAS officials, the fair was host to some 252,405 visitors over its five-day run.

This year's fair turned out to be my favorite one ever. The mood was subdued, sophisticated, and definitely oriented toward the high end. Gone were the rows of tawdry look-alike rack systems and banks of pastel portables of years past. In their place this year were solid, full-size components and prodigiously commanding speakers—most of which were ready to take their place in CD/DAT-based systems. It was the Right Stuff.

In the coming year, American audio enthusiasts can expect a similar trend in the U.S. marketplace. With the continuing escalation of the value of the yen, smarter Japanese manufacturers are preparing to give the market for low-cost portables and rack systems over to other Asian manufacturers. Instead, look for comparatively expensive digital-input control amplifiers, CD players with fewer bells and whistles and

ILLUSTRATION AND LETTERING BY MARK FALLS

BY BRYAN HARRELL

higher-performance basic circuitry, and eventually digital-broadcast tuners (when format standards are adopted) and DAT decks (when all the copy-prevention hysteria is sorted out).

Black is on its way out—many new components made their debuts in various shades of silver, platinum, and champagne gold. Some faceplates are polished to a mirror finish, while others are burnished to an antique glow. The beautifully turned knobs and switches are inviting to the touch, and wood side panels are back in fashion here. Apparently the Japanese are now paying more attention to the appearance of their components, recognizing that emotion is playing a larger role in purchasing decisions as enthusiasts tire of flashy features and as specifications become less relevant in the digital age.

The fair was divided into three major parts: the main exhibits of more than forty major companies at Harumi, a much smaller exhibition primarily of expensive domestic components held concurrently at the nearby Harumi Grand Hotel, and the affiliated Imported Audio Show, organized by Japanese audio importers and held across town at the Grand Palace Hotel in Kudan from September 17 to 19.

As usual, the main exposition at Harumi was housed in two large buildings appropriately labeled "L" and "R." In addition to the major displays, each building housed a special exhibit coordinated by the Japan Audio Society.

In the Left building was a digital audio tape exhibit, which not only provided a large number of working DAT machines for fairgoers to monkey with but also offered a comprehensive technical explanation of the DAT format, including background panels depicting the history of both digital and analog recording techniques along with future possibilities for digital audio. At the DAT Consultation Corner, audio experts and industry representatives were on hand to answer questions.

A large audio/video exhibit was featured in the far end of the Right pavilion, detailing the latest developments in video technology. Large-scale projectors and video monitors were displayed along with the very latest VCR's and videodisc players, all demonstrating the state of the art in what the Japanese call "Hi-Fi A/V."



### *The Next Big Thing*

By the time you read this, several Japanese manufacturers will have already released DAT decks in Europe and maybe in North America too. But the next big thing is BS—the dubious abbreviation the Japanese industry is using for the digitally encoded broadcast-satellite transmission format.

With a BS tuner hooked up to a small dish antenna, audio enthusiasts can receive digitally encoded radio programs, which can also be unraveled into analog sound by properly equipped DAT decks. The DAT format also has modes that operate at the BS sampling frequency of 32 kHz, opening impressive possibilities for compatible operations between these two types of components. Nippon Hoso Kyokai (NHK), Japan's national broadcasting organization, is gearing up for digital radio on a large scale in the next decade. Meanwhile, a small number of antenna dishes have already been sold (at fairly high prices) to Japanese home-electronics buffs who are now treasure-hunting the skies.

### *Digital Audio Tape*

The DAT show stoppers were the portable tape recorders from Sony and Technics. Sony showed its prototype PCM-2000 professional portable along with the consumer model TCD-D10 (250,000 yen, or about \$1,786 at 140 yen to the dollar), which is to be released in Japan this fall. Weighing about 4 pounds (with battery) and measuring about 9 $\frac{1}{3}$  x 6 $\frac{9}{10}$  x 2 $\frac{1}{10}$  inches, the TCD-D10 has 100 $\times$  high-speed search and a built-in clock, and it comes complete with an accessory kit that includes a stereo microphone.

Technics, however, took show honors with the world's smallest DAT recorder so far, the RQ-MD1,

weighing 3 $\frac{1}{2}$  pounds (with rechargeable batteries) and measuring a mere 8 $\frac{1}{4}$  x 4 $\frac{3}{4}$  x 1 $\frac{1}{2}$  inches—about the size of a small book. To be sold for 300,000 yen (about \$2,143) in Japan late this year, this impressive-looking unit features thirty-two-selection programming, a switchable -20-dB pad and microphone limiter, a built-in recording timer, and both line-in/out terminals and microphone jacks. The drive mechanism is very compact, using a 15-millimeter (about  $\frac{1}{2}$ -inch) head, half the size of ordinary DAT head drums, and a high-torque direct-drive flat motor with a high-precision die-cast aluminum chassis.

The RQ-MD1 is packed with loads of specially designed LSI's, including two for the magnetic converters, two for microprocessors, three for the servo, three for the audio section, and one for signal processing. Also featured is an "independent L/R MASH-type A/D Converter" developed in conjunction with NTT (Nippon Telephone & Telegraph). "MASH" stands for multi-stage noise shaping, and the circuit uses a sixty-four-times-over-sampling A/D (analog-to-digital) conversion process. The Technics deck was claimed to have the world's lowest power consumption (3.9 watts) when used with the supplied rechargeable batteries.

After the show closed, Casio announced that it would introduce in December an even smaller, lighter, and less expensive portable DAT deck than the Technics RQ-MD1. Incorporating specially designed, proprietary LSI's, the Casio DA-1 is said to be smaller but thicker than a Sony Discman CD player, measuring about 4 $\frac{3}{4}$  x 1 $\frac{3}{4}$  x 5 $\frac{3}{4}$  inches and weighing about 1 $\frac{1}{2}$  pounds without its rechargeable battery pack. The price is 148,000 yen (about \$1,057), plus 20,000 yen (\$143) for the battery pack. It is said to draw only 3.5 watts from the batteries in use.

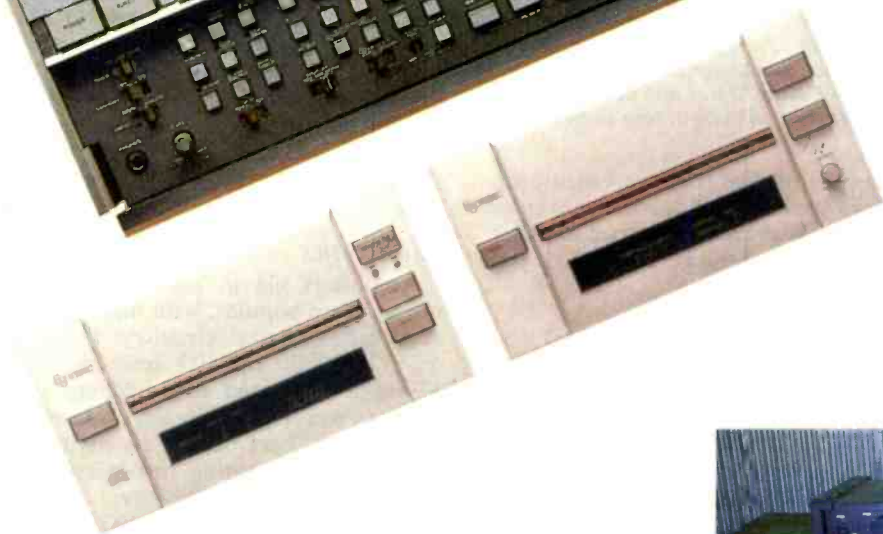
The advantages of portable DAT decks are obvious. Since they can be used at home as well as in a car or as a personal player with headphones, it's conceivable that DAT'ers will buy one portable recorder for use in every situation. With their premium-level prices, however, portable DAT units may not have the same effect as portable CD players, which were instrumental in stimulating CD sales in Japan essentially because of their low price and not their portability—most wound up being used



More than 250,000 international visitors were treated to displays of the latest audio and video technology at the Japan Audio Fair. At the Harumi Exposition Grounds exhibits were divided into two halls (above) appropriately labeled "L" and "R."



Luxman's DP-07 compact disc player (left, about \$2,860) requires the use of an out-board digital-to-analog (D/A) converter, the matching DA-07, which weighs 62 pounds and costs about \$5,710.



Teac's Esoteric series features (above) the R-1 digital audio tape deck and the two-piece PD-1/D-1 compact disc player, with the player in one unit and the D/A converter in the other.



The Sony D-600 portable CD player was shown in a white finish. Available in the United States as the Model D-160, it sells for around \$250—in black only.

Audio-Technica's new "micro-size" components (below) include the AT-SA50 and ATT-A50 amplifiers, the AT-SL70 and AT-SL50 audio/video selectors, the AT-TU50 stereo tuner, and the AT-MX50 four-channel mixer.



entirely at home anyway. Expect lower prices on next year's portable DAT units, though they'll eventually be undersold by component models, which are cheaper to produce.

In component DAT decks, one of the most elegant—and expensive, at 500,000 yen (\$3,571) by advance order—models at the show was the R-1 in Teac's new Esoteric series. Finished in a beautiful warm silver, it has the look and size of a Seventies VCR, sporting a large panel that opens to reveal the level meters and all the controls. Hitachi's DAT-9000 (189,000 yen, or \$1,350, with remote control) sports a low profile and is said to contain many of the company's proprietary LSI's.

Sansui's DT-1000i (300,000 yen, or \$2,143) is a majestic black machine with cannon-type connections, optical digital inputs and outputs, and a full-function wireless remote control. The XD-Z1100 (198,000 yen, or \$1,414, with remote) from Japan Victor Corporation (JVC) also boasts optical digital I/O, and JVC's XD-Z9000 prototype features a "K2 Interface," which is said to help preserve the sound of the original source. Other DAT decks on display included the Aiwa XD-001 (189,000 yen, or \$1,350), the Kenwood DX-2200SR (178,000 yen, or \$1,271, with remote), the Sony DTC-1000ES (198,000 yen, or \$1,414) and the Technics SV-D1000 (198,000 yen with remote).

## CD Video

Never before have I seen so much software exhibited at the fair. A large part of the Nippon Marantz booth was given over to Philips CD video displays, which highlighted the new gold-colored 4¾-inch CDV's as well as 8- and 12-inch videodiscs with digital sound. Philips also showed its CDV570 and CDV770 (the display models had "Produced in Japan" on the back panels), which play all four types of laser-read discs. The CDV770 has a shuttle-search control and a digital memory function for clear still frames. Prices and release dates are yet to be announced. A PolyGram catalog was also handed out listing several rock, jazz, and even classical CDV titles.

Pioneer's CLD-99S (158,000 yen, or \$1,129) and CLD-77 (129,000 yen, or \$921) also play LaserDiscs, CDV's, and CD's, and the CLD-99S is equipped with shuttle-search vid-



*The Philips CDV display was the most elaborately designed booth at the Japan Audio Fair, just as it was at the Summer Consumer Electronics Show in the United States and at the Internationale Funkausstellung in Berlin.*

eo control. For the true video buff, Teac showed its videodisc recording machine, available on special order for a very healthy 2,700,000 yen (\$19,286).

## Compact Disc Players

While flagship CD players continue to hover around 200,000 yen (\$1,429), prices for good midrange CD players have dropped in Japan to around 80,000 yen (\$571). It seems that predictions of a polarization in the market are coming true. Also, wireless remote controls have become a standard feature of almost all home CD players.

Shown with a distinctive dark-silver finish (black is also available), Yamaha's CDX-1000 (89,000 yen, \$636) and CDX-800 (69,800 yen,

\$499) featured full-function remote controls and the company's Hi-bit circuitry for a claimed signal-to-noise ratio of 118 dB. There are currently about fifteen different CD players in Yamaha's brochures, the lowest priced being the CDX-305 at 44,800 yen (\$320). And Yamaha still offers eight different turntables, priced from 22,000 to 320,000 yen (\$157 to \$2,286). Sansui's new CD players had model numbers more befitting European cars: the CD-α907i (150,000 yen, \$1,071), the CD-α707i (89,800 yen, \$641), and the CD-α607i (59,800 yen, \$427). JVC's XL-Z511 (59,800 yen) and XL-Z701 (89,000 yen) use optical-cable signal links. Pioneer's PD-707V (79,800 yen, \$570) also plays CD videos, and all the company's new CD players—the top PD-3000 (180,000 yen, \$1,286), the PD-8070 (89,800 yen, \$641), the PD-7070 (59,800 yen, \$427), and the PD-6070 (42,800 yen, \$306)—are single-disc machines, not changers. Kenwood's DP-1100SG (89,800 yen) and DP-990SG (69,800 yen, \$499) had optical digital outputs.

Looking very big and very expensive, Luxman's DP-07 CD player (tentatively 400,000 yen, or \$2,857) requires the use of an outboard D/A (digital-to-analog) converter; the matching DA-07, a massive 61¾-pound unit (tentatively priced at 800,000 yen, or \$5,714), is available to fill the bill. Teac's Esoteric series also has a separate CD player/converter system comprising the PD-1 CD Drive Unit (300,000 yen, or \$2,143, on special order), which looks like what could be a floppy-disk drive made by Tiffany, and the matching D-1 Multi D/A Converter (200,000 yen, or \$1,429, on special order).

## Electronics

Amplifiers big in both size and output were popular, with many incorporating digital circuitry. Hitachi's HA-9000 (89,800 yen, \$641) 130-watt integrated amp had separate D/A converters for each channel and digital filters behind its digital inputs. Incorporating proprietary "4DAC-18bit" technology, the Technics SUV100D (198,000 yen, \$1,414) and SU-V90D (89,800 yen, \$641) integrated amplifiers also have digital inputs, both wired and optical.

Yamaha's AX-2000 (230,000 yen, \$1,643) 150-watt integrated amp, equipped with Hi-bit circuitry, han-

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dles digital inputs using 48-kHz, 44.1-kHz, and 32-kHz sampling frequencies, as does the lower-priced, 100-watt AX-700D (63,000 yen, \$450) integrated amp. Also in the same series was the Yamaha DSP-3000 Sound Processor (280,000 yen, or \$2,000, with remote control), which incorporates Hi-bit circuitry and has settings for the Anaheim Stadium, Roxy Theater, Village Vanguard, and other famous concert venues. To be released next spring is Yamaha's AVX-100 integrated audio/video amplifier (no price yet) with a built-in video-detail enhancer and digital-delay surround-sound circuitry.

Denon exhibited its DAP-5500 (\$1,400) digital preamplifier, which also handles all three sampling frequencies, along with the new PRA-2000Z (\$1,600) preamplifier and matching POA-3000Z (\$2,400) power amplifier. Kenwood's DA-1100EX (138,000 yen, \$986) digital integrated amplifier has both digital and analog inputs, and so does the JVC AX-Z911 (89,800 yen, \$641, with remote) and the Pioneer A-90D (220,000 yen, \$1,571).

Sansui's new series of "alpha-1" amplifiers was headed up by the AU- $\alpha$ 901i MOS Limited integrated amplifier (260,000 yen, \$1,857). It weighs in at over 68 pounds and has twin-mono construction. Luxman's Ultimate series included the E-06 phono amplifier (260,000 yen), with four built-in MC transformers, the C-06 control preamplifier (260,000 yen), the 55-watt M-06 power amplifier (330,000 yen, \$2,357), and the M-07 power amplifier (750,000 yen, \$5,357), which puts out 100 watts per channel in pure Class A operation (all prices are tentative).

There's a good chance that Nippon Marantz will be marketing Philips brand audio components, videodisc players, and rack systems in Japan by the end of the year. It seems that most will be made in Japan by Nippon Marantz and will basically be similar to those from other Japanese companies.

## Speakers

Famous for its crystal wine goblets, Japan's Sasaki Crystal showed blown-glass speaker enclosures that looked like fishbowls with drivers pointing out the side. The sales slogan for the series is "Creative Crystal Sound." Also on display were Daiken Kogyo's Craft a-9000 speakers (700,000 yen, or \$5,000, a pair),



which use wooden diaphragms to achieve a claimed frequency response of 27 to 40,000 Hz. The Technics SH-277 speaker stands (each 30,000 yen, \$214) are designed to be filled with sand for greater weight. Bose had a strong presence at both the main exposition and the Imported Audio Show.

## Portables and Systems

Most interesting in the portable cassette category was the new Sony CFS-S30 (32,000 yen, \$229), a radio/cassette recorder permanently housed in a fashionable synthetic-cloth hinged bag with pockets on the ends to hold tapes or whatever. It's available in bright pink or black and should be a big hit with Japanese college students. Audio-Technica displayed a line of add-on components for pocket stereo sets, including cassette-box-sized speakers and power amplifiers that run on batteries.

Long popular with Japanese youth, "mid"-size (13-inch-wide) one-brand systems seem to be on a slow wane. Sony is even going in the other direction by releasing a distinctive new system that appears to be intended for the over-forty-five group. Called the CD "Denchiku" (a prewar term for record player) High Definition Compact Disc System (500,000 yen, \$3,571), it has an interesting retro look, with a finish and design that suggest Japanese folk-craft furniture.

Panasonic showed its Pana Capsule, an enclosed two-person entertainment center with an interior like a sports car. It houses a complete, high-powered audio/video system with full-size components in the "dash" and a control panel on the roof. Two long internal bass baffles are used to achieve strong response down to 10 Hz, with a rated sound-pressure level of 114 dB at 20 Hz with a 1-watt input. The Pana Cap-

sule is intended for use in cramped Japanese apartments and houses with little soundproofing.

Daiken Kogyo had a very impressive soundproofing exhibit at the fair—inside it, the loud drone of the fair could barely be heard. In Japan's urban areas, where small houses and apartments are invariably crammed together, soundproofing is an important consideration.

## The Imported Audio Fair

Held yearly at the Hotel Grand Palace, the Imported Audio Fair attracts enthusiasts of traditional audio products, particularly turntables and cartridges as well as exotic amplifiers and speakers. On the heels of the success of JBL (leading sales volume) and Bose (leading unit volume) is a whole lineup of American speaker manufacturers waiting to carve out a slice of the Japanese market, which has traditionally been receptive to imported speakers. On the expensive end is a limited edition—only 150 pairs will be available worldwide—of the 95-pound Ohm Walsh 5 speaker, which will be sold for 1,500,000 yen (\$10,714) in Japan, rather higher than the U.S. price (\$4,800), but that's not surprising given the shipping costs, import duties, etc.

JBL speakers on display at the Imported Audio Fair were the J-216 Pro MkII (66,000 yen, or \$471, a pair), the 4344 Studio Monitor (598,000 yen, or \$4,271, each), and the 4312A (128,000 yen, or \$914, each). The Bose lineup included the 901-SS-W (495,000 yen, or \$3,536, a pair), the 301MM-II (89,600 yen, \$640, a pair), and the 101MMG (40,800 yen, or \$291, a pair). Prominent among newcomers this year was Boston Acoustics, with the A-72 (41,000 yen, or \$293, each), A-62 (35,000 yen, or \$250, each), and A-42 (27,000 yen, or \$193, each) on display. □

*Bryan Harrell is an American of Humorous descent who has braved Tokyo's kamikaze-inspired taxi drivers, stratospheric prices, and apartments you need a shoehorn to get into for over a decade. This article was originally written on hand-split rice bark in Frilancian Bold Script with a split-nibbed Japanese garden trowel using a traditional ink consisting of hibachi soot and soy sauce. The entire story was then transcribed onto floppy disk in less than 350 microseconds using the latest in Japanese electronic opto-conversion technology.*



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# BERLIN

INTERNATIONAL AUDIO AND VIDEO

FAIR

THE celebrated Internationale Funkausstellung Berlin, or International Audio and Video Fair, convened in Berlin, West Germany, from August 28 to September 6 with a great deal of fanfare and style. At Messegelände, the expansive site Berlin uses only every other year for the fair, over 550 exhibitors from 26 countries packed into 25 separate *Halles* and displayed their wares to over 400,000 people. Unlike this country's Consumer Electronics Shows, the Berlin Fair is open to the public. Audio and video enthusiasts of every age wandered wide-eyed through the often ornate booths showcasing the hottest new technologies. Even this jaded trade-show goer was sobered by the enormous size of the event—sore feet and ruined Reeboks aside.

Sony garnered most of the headlines by announcing it would start selling DAT decks in Europe, and PolyGram stole the remaining spotlight with its massive CDV display. Otherwise, the best reason to attend this extravaganza was the special high-end *Halle*. A selective tour of that area follows.

BY  
MICHAEL  
SMOLEN



**G**rundig is better known in the United States as a supplier of car stereo equipment for Spitzenklasse autos like Mercedes and BMW, but the company also makes beautiful home audio equipment such as the DAT-9000 digital audio tape deck at left.

**A**lso in Grundig's premier Fine Arts series of components is the CD-9000 compact disc player, with 16-bit digital-to-analog (D/A) conversion and quadruple oversampling.

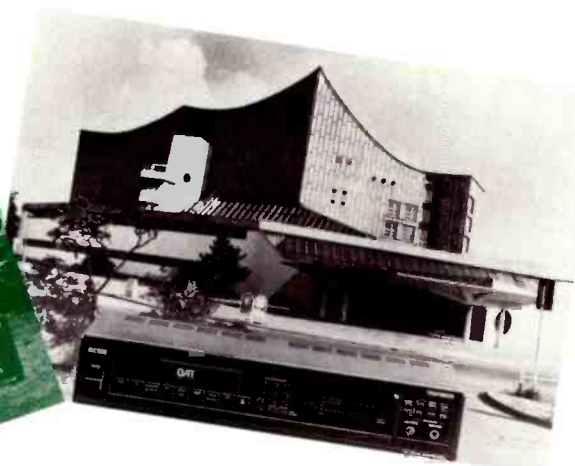
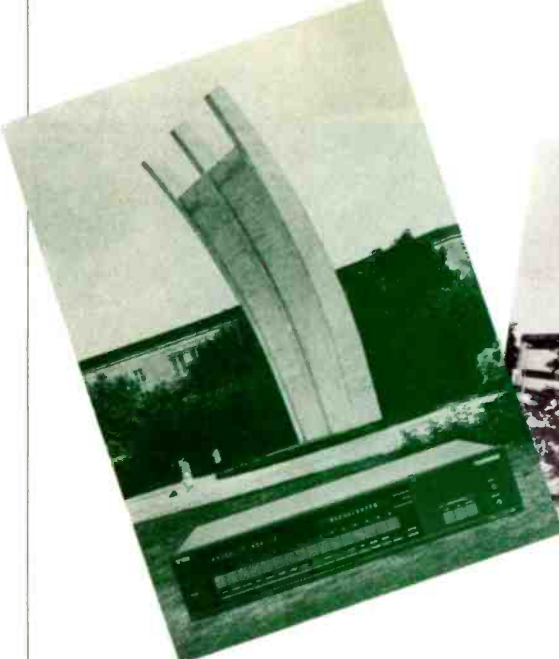
**E**lac's simple, high-contrast design for its audiophile preamplifier would make a big statement in any living room. The box has a high-gloss black top and sides, a brushed faceplate, and blood-red lettering.



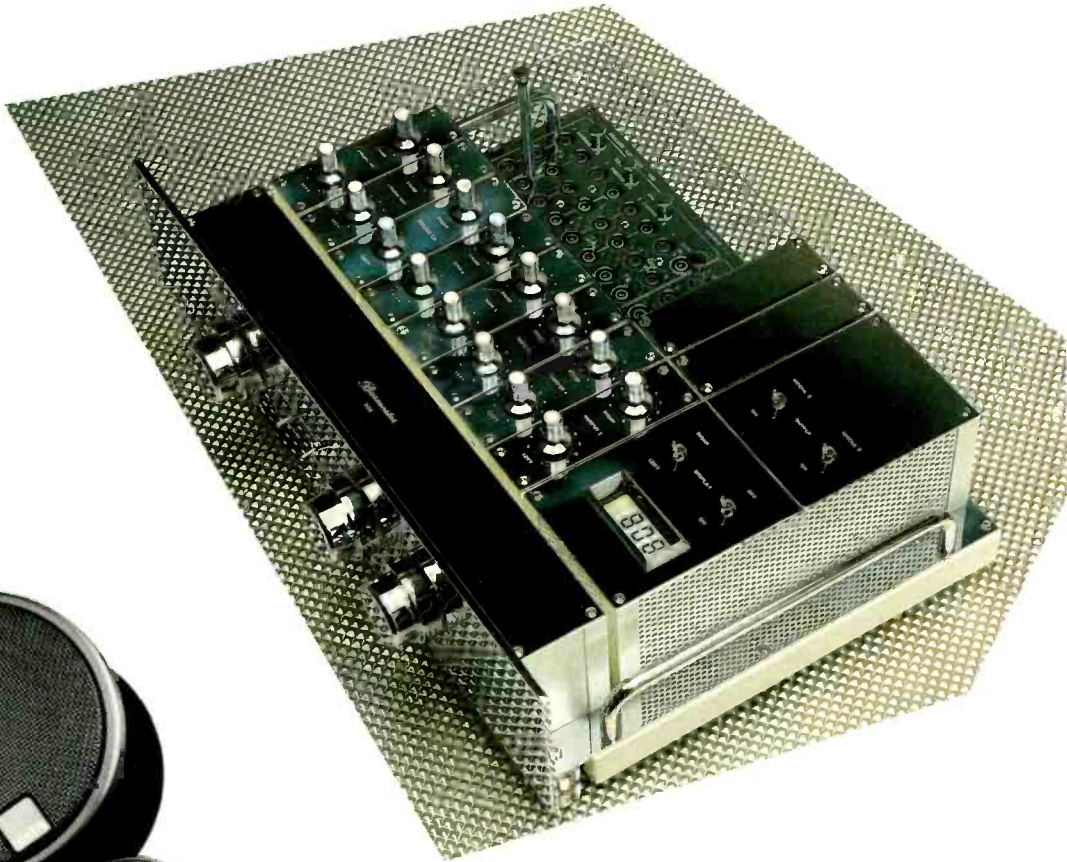
**G**SP of Berlin designs striking show booths as well as speakers. The Kristall Models 1 and 2 speakers are constructed "like organ pipes" to produce precise bass frequencies down to 35 Hz.



**T**he absolute show stopper in Berlin was this water-cooled Silbersand mono power amplifier. The water cooler is made of Plexiglas, and the blue-colored water is set into motion by an outboard pump. The cooler is connected by pipes to the amplifier, which controls the water's temperature and displays it digitally. The amp can run up to 80 watts in Class A, with a maximum power of 400 watts into 4 ohms. The cabinet is made of brass.



**T**elefunken, a name you may recognize, introduced a DAT deck (left) and the ST 900 SAT digital satellite tuner (far left). With separate circuitry for processing music and speech programs, the tuner is said to deliver FM broadcasts with CD-quality sound.



**C**ar and home speakers from MB-Quart will become available in the U.S. this month. Shown below is the Quart-Mobil 332 CS, a three-piece system featuring a titanium-dome tweeter. Rated frequency response is 30 to 32,000 Hz.



**T**he spectacular Burmester 808 MK 3 preamplifier (above) consists of a base unit with remote power transformer and a range of plug-in input and output modules that allow gradual expansion of the system's capabilities in accordance with the user's needs.





**S**chäfer and Rompf's ASR Collector preamplifier (left) is housed in a nonmagnetic case made of "acrylic-glass" with solid brass controls.



**S**peakers from T + A Elektroakustic offer everything from nine natural-wood finishes to visible tubes on the front panels of the powered models. Shown at left is a model from the company's Solitaire series.



**C**onspicuously attached to the top of the Elac 170 4c loudspeaker (right) is a 4-ohm omnidirectional ribbon tweeter.

# If your CD player's laser it could read th

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# OPERA ON CD

## A BASIC LIBRARY, PART 2

BY ROBERT ACKART




**A** MAJOR development in records and recording during the past year has been the rush on the part of the major classical labels to rerelease on compact disc the musical treasures buried in their back catalogs, particularly the great opera recordings of the past. The tenth anniversary, this year, of the death of Maria Callas spurred EMI to rerelease on CD virtually all the recordings she ever made for the company, but the advantages of the new format—improved sound and extended playing time—plus an eager audience have drawn many more prized

opera recordings back into circulation. These, combined with what seems to be more than the usual complement of new recordings this year, have made opera on CD a veritable growth industry.

In the September issue of *STEREO REVIEW* Robert Ackart covered the “basic” recorded operas, now on CD, of Beethoven, Bellini, and Bizet, proceeding by way of Mozart to Puccini and Richard Strauss. In the second part of his overview of opera on CD, Ackart discusses the popular, masterpieces of Verdi and Wagner. There are, necessarily, some omissions, including the re-

cordings inevitably being released just as we go to press.

Where two or more recordings of a particular Verdi or Wagner opera are available on compact disc, they are listed alphabetically by label (Deutsche Grammophon being abbreviated to DG). The label name is followed by the catalog number and, in parentheses, the number of CD's in the package. An  symbol indicates a mono recording.

For a review by William Livingstone of the five complete recordings on CD of Wagner's mammoth *Ring* cycle, see page 156.

*Christie Barter*

**VERDI: *Aida***

◆ ANGEL CDCC-47271 (three CD's). Caballé, Domingo, Cossotto, Ghiaurov, Cappuccilli; Chorus of the Royal Opera House, Covent Garden; New Philharmonia Orchestra, Riccardo Muti cond. This recording, made in 1974, catches the soloists at their vocal best, though the sound quality on CD is not as fine as one might expect. While all the artists sing with luster and fervency, the happiest surprise is Montserrat Caballé. Slow to warm up dramatically, she pours out glorious tone throughout and is downright thrilling in the Nile Scene. Overall, it is Muti's performance; his reading is perceptively and thoughtfully paced. The orchestra is superb, and the choral work is clean.

◆ DG 410 092-2 (three CD's). Ricciarelli, Domingo, Obraztsova, Nucci, Ghiaurov, Raimondi; Chorus and Orchestra of La Scala, Milan, Claudio Abbado cond. The remastered 1982 recording sounds splendid, and the chorus and orchestra under Abbado's skilled direction sing and play stirringly. Nicolai Ghiaurov and Ruggero Raimondi are weightily sonorous as Ramfis and the King. Leo Nucci's Amonasro is spirited, and Placido Domingo as Radamès offers some of his best singing. But the women are disappointing. Elena Obraztsova's Amneris is impassioned but not seductive, and Katia Ricciarelli's Aida is thin and too tentative to bring off Verdi's musical climaxes.

◆ LONDON 417 416-2 (three CD's). L. Price, Vickers, Gorr, Merrill; Rome Opera Chorus and Orchestra, Georg Solti cond. Recorded in 1961, this performance would be hard to surpass at any time. The remastered sound is fine, the chorus and orchestra perform superbly, Solti's conducting is exemplary, and the cast recalls what we are told of the sound and dramatic involvement of "Golden Age" singers. The recommended *Aida*.

**VERDI: *Un ballo in maschera***

◆ LONDON 410 210-2 (two CD's). Pavarotti, M. Price, Battle, Ludwig, Bruson, Lloyd, King; London Opera Chorus; National Philharmonic Orchestra, Georg Solti cond. This set is a "must." While some vocal performances are perhaps stronger than others, none is weak. In a sense, it is Solti's show; he is in absolute control, shaping, unifying, and giving energy to the performance while bringing out the finest quality of each singer. Luciano Pavarotti sings with all the musical refinement of which he is eminently capable, phrasing sensitively and with dramatic conviction. Margaret Price pours out Amelia's lines without effort and with sumptuous tone and involvement with the character. If Renato Bruson's portrayal of Verdi's Renato lacks some finesse, it is

musically solid and dramatically convincing. As Oscar, Kathleen Battle reveals what the role can be when sung with warmth and vivaciousness; she is, quite simply, the best Oscar I have ever heard. A musically and dramatically stunning performance.

**VERDI: *Don Carlos***

◆ ANGEL CDCC-47701 (three CD's). Domingo, Caballé, Verrett, Raimondi, Milnes; Ambrosian Opera Chorus; Orchestra of the Royal Opera House, Covent Garden, Carlo Maria Giulini cond. This performance of the full-length opera, including the Fontainebleau Scene but observing the excisions Verdi himself made, was recorded in 1970 by a superb cast under the direction of a brilliant conductor. Sung in the now more usual Italian translation of the original French libretto, Verdi's perhaps grandest score here becomes truly a thrilling listening experience.

◆ DG 415 316-2 (four CD's). Domingo, Ricciarelli, Valentini-Terrani, Rai-

mondi, Nucci, Ghiaurov; Chorus and Orchestra of La Scala, Milan, Claudio Abbado cond. A recording of the French version in the form the composer settled on as definitive, with the music he eliminated offered as an appendix, this set is interesting for historical considerations. The text, however, is frequently unintelligible. Placido Domingo does not match his work on the earlier Angel recording, and Katia Ricciarelli lacks the emotional grandeur required of Elisabeth. The Philippe-Grand Inquisitor scene, with Ruggero Raimondi and Nicolai Ghiaurov, is perhaps the most telling here.

**VERDI: *Falstaff***

◆ DG 410 503-2 (two CD's). Bruson, Ricciarelli, Nucci, Hendricks, Gonzalez, Valentini-Terrani, Boozier; Los Angeles Master Chorale; Los Angeles Philharmonic Orchestra, Carlo Maria Giulini cond. Handsomely recorded live in 1982, this is an unusually fine performance. Giulini brings great insight to Ver-

**F**acing page:  
Sherrill Milnes in  
the title role of  
Verdi's *Rigoletto*  
on London.



**A**t right,  
Placido Domingo in  
the title role and  
Renata Scotto as  
Desdemona in the  
RCA recording of  
Verdi's *Otello*.



PHOTOS: CLIVE BARDA/RCA RED SEAL

di's magical score and obviously prepared his artists with care. The composer's musical textures, lyricism, and warm humanity are fully realized in a fine ensemble performance. All concerned offer their best under the leadership of a very special conductor.

◆ PHILIPS 412 263-2 (two CD's). Taddei, Kabaivanska, Panerai, Perry, Arai-za, Schmidt, Ludwig; Vienna State Opera Chorus; Vienna Philharmonic Orchestra, Herbert von Karajan cond. Recorded in 1980, this is a remarkable performance. Karajan conducts with his wonted vitality and musical polish, and the glorious cast takes the trouble to convey traits of character that illuminate the progression of the comedy. Raina Kabaivanska, Christa Ludwig, and Rolando Panerai are especially winning. While the Giulini performance is perhaps a "purer" one, musically speaking, the excitement of Karajan's approach is undeniable.

### VERDI: *La forza del destino*

◆ ANGEL Ⓜ CDCC-47581 (three CD's). Callas, Tucker, Tagliabue, Rossi-Lemeni, Capecchi, Nicolai; Chorus and Orchestra of La Scala, Milan, Tulio Serafin cond. *La forza del destino* ignites when performed by artists who can willingly suspend disbelief in the convolutions of Verdi's rather catch-all plot and the often unexplained, if not inexplicable, behavior of his characters. This is such a cast, enthusiastically led by a conductor steeped in the traditions of Italian grand opera—which *La forza* surely is. Recorded in 1954, the set presents the wonderful Maria Callas at her most wonderful, a Richard Tucker relishing every melodramatic moment, a Carlo Tagliabue melodiously in pursuit of vengeance. Indeed, the entire ensemble appears dedicated to making *La forza* a very exciting experience; they succeed so well that the goings-on seem not only credible but also movingly tragic.

◆ ANGEL CDCC-47485 (three CD's). Freni, Domingo, Zancanaro, Plishka, Bruscantini; Chorus and Orchestra of La Scala, Milan, Riccardo Muti cond. This is Muti's set, primarily because of his close attention to orchestral detail, and the recorded sound is glorious. Mirella Freni sings with a vivid concept of her character, but despite the recent darkening of her voice, Leonora seems heavy for her at times. Placido Domingo's Alvaro is a taut portrayal with a high order of musicality, and Giorgio Zancanaro sings Carlo with a full-bodied "Verdi baritone," though a rather rough one in quieter moments. The remaining members of the cast and the chorus acquit themselves commendably throughout.

◆ DG 419 203-2 (three CD's). Plowright, Carreras, Bruson, Burchuladze, Pons; Ambrosian Opera Chorus; Philharmonia Orchestra, Giuseppe Sinopoli cond. A spirited, snappily paced, crisply



Luciano Pavarotti: in golden voice in Verdi's *Rigoletto*

conducted performance. Sinopoli puts his own stamp on the proceedings. Rosalind Plowright is a vocally easy and affecting Leonora. José Carreras is creditable as Alvaro, but the weight of Renato Bruson's baritone puts the tenor at a disadvantage in the Alvaro-Carlo scenes. Paata Burchuladze's Guardiano is richly sung and well characterized. The others in the cast, including Agnes Baltza as Preziosilla, are fine.

◆ RCA RCD3-1864 (three CD's). L. Price, Domingo, Milnes, Gaiotti, Bacquier; John Alldis Choir; London Symphony Orchestra, James Levine cond. Recorded in 1976, this set offers each artist in prime form. It's a fabulous assemblage, and a fabulous performance. Leontyne Price sings in her familiar style, with soaring pianissimos and an unerring sense of Verdi's line. Domingo contrasts lovely lyricism with dramatic expression. Sherrill Milnes's clear baritone is heard to rousing effect. The performance is grippingly molded by Levine's sure and exuberant hand.

### VERDI: *Macbeth*

◆ ANGEL CDCC-47954 (three CD's). Milnes, Cossotto, Carreras, Raimondi;

Ambrosian Opera Chorus, New Philharmonia Orchestra, Riccardo Muti cond. The recording dates from 1976, when Sherrill Milnes was in fine voice, singing with more conviction and involvement than we have come to expect of late. Fiorenza Cossotto, too, is effective as Lady Macbeth, bringing to her big scenes a telling urgency and dramatic intensity. Ruggero Raimondi's handling of Banquo's short aria is affecting, and as Macduff, José Carreras sings with more ease and timbre than in more recent performances. The work of the chorus and orchestra is precise and rich in tone. As fine as the combined forces are, however, the laurels go to Muti, who shapes a performance of unusual excitement, one that bears his signature while respecting what is unquestionably a fascinating score.

◆ HUNGAROTON 12738/40-2 (three CD's). Cappuccilli, Sass, Kováts, Kelen; Hungarian Radio and Television Chorus; Budapest Symphony Orchestra, Lamberto Gardelli cond. This well-recorded performance has its ups and downs. Gardelli's hand is sure and draws forth a precisely paced and enthusiastic reading from the orchestra, chorus, and soloists. Piero Cappuccilli, always a first-rate technician, seems disengaged from the action, however, until after Duncan's murder; thereafter his characterization builds in intensity. Sylvia Sass nearly comes to vocal grief in her first appearance but settles in later; her *brindisi* has the requisite brittle artificiality, and her Sleepwalking Scene contains some beautiful legato singing. As Banquo, Kolos Kováts sings his short but signal aria most affectingly.

◆ PHILIPS 412 133-2 (three CD's). Bruson, Zampieri, Lloyd, Shicoff; Chorus and Orchestra of the Deutsche Oper, Berlin, Giuseppe Sinopoli cond. Intensity and exactness mark Sinopoli's work on this well-engineered recording. Both chorus and orchestra perform with passion. Outstanding among the soloists are the men in the cast, headed by Renato Bruson, whose rich, dark voice is well suited to Macbeth; Robert Lloyd is a splendid Banquo and Neil Shicoff a fine Macduff. Mara Zampieri, a somewhat steely voiced Lady Macbeth, is at her best in the Act I duet with Bruson. Not a perfect performance, but one that brings much to Verdi's gripping score.

### VERDI: *Otello*

◆ ANGEL CDCB-47450 (two CD's). Domingo, Ricciarelli, Diaz, Macurdy; Chorus and Orchestra of La Scala, Milan, Lorin Maazel cond. This recording derives from the soundtrack for Zeffirelli's film adaptation of the opera; perhaps for that reason, while there may be more musically satisfying recorded performances, to my knowledge none is more impelling or theatrically affecting. Maazel generates a large measure of the excitement, eliciting a telling intensity

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from all concerned. Placido Domingo's voice seems light for Otello, but he offers an impressive interpretation. Justino Diaz is undaunted by Iago's high tessitura, although I wish he had highlighted the role's quality of evil a bit more. Desdemona lies very well vocally for Katia Ricciarelli, and she sings with the sincerity befitting the character; the highly exposed line of her Act IV solo scene is finely spun. John Macurdy is an impressive Lodovico, and the other members of the cast are estimable. Chorus and orchestra perform with concentrated dedication and sharp attention to Maazel's contrasting dynamics, and the sound is excellent.

◆ LONDON 411 618-2 (two CD's). Del Monaco, Tebaldi, Protti; Vienna State Opera Chorus; Vienna Philharmonic Orchestra, Herbert von Karajan cond. Recorded in 1961 and remastered with singular success for CD, this performance is simply overwhelming. The role of Otello seems written for the clarion voice and personal intensity of Mario del Monaco; similarly, Desdemona perfectly suits Renata Tebaldi's warm soprano and temperament. If we have heard more beautiful voices than Aldo Protti's in the role of Iago, we have not experienced a more telling characterization. The Vienna forces perform with sweeping ardor and expressiveness under Karajan, who is at his best, totally in command as always but conducting with passion and an impelling sense of drama.

◆ RCA RCD 2-2951 (two CD's). Domingo, Scotto, Milnes; Ambrosian Opera Chorus; National Philharmonic Orchestra, James Levine cond. Recorded in 1978, this performance finds Domingo at his most effective in the title role; as his voice rings out, you can feel the reserve behind it. Sherrill Milnes, too, is at his best—which, ten years ago, was indeed *the* best. Desdemona lies well for Scotto, who projects a fragility and affecting womanliness. The recorded sound is admirable, and the chorus and orchestra under Levine contribute stirring performances.

### VERDI: *Rigoletto*

◆ ANGEL CDCB-47469 (two CD's). Gobbi, Callas, Di Stefano, Zaccaria; Chorus and Orchestra of La Scala, Milan, Tullio Serafin cond. This extraordinary 1955 performance is made even more enjoyable for being interrupted only once on CD, and the sound is good. Rigoletto was one of Tito Gobbi's finest interpretations, a role with complexities that only the kind of great singing actor he was can reveal. Callas had studied Gilda carefully and applied her considerable insight to what Verdi wrote. Hers was not a purely beautiful voice but rather a medium for communication, and such is her Gilda. By the same token, Serafin's performances are rightly legendary.



Leontyne Price: an Aida that recalls the Golden Age

◆ DG 415 288-2 (two CD's). Cappuccilli, Cotrubas, Domingo, Ghiaurov, Moll, Obraztsova; Vienna State Opera Chorus; Vienna Philharmonic Orchestra, Carlo Maria Giulini cond. While this performance does not lack drama, it is more lyrical than many present-day readings of the score. Giulini offers a thoughtful, deeply musical interpretation in a well-engineered remastering of a 1980 recording. Piero Cappuccilli has a somewhat light voice for the title role, but he sings expressively. Placido Domingo's Duke has considerably more heft than, for example, Neil Shicoff's in the Philips set (see below). Ileana Cotrubas sings an appealing Gilda; if her voice is less fluid than Gruberova's (Philips), it is warmer. Elena Obraztsova's Maddalena is a match for any Duke of Mantua, and Nicolai Ghiaurov's Sparafucile commands the burly voice to make the role convincing. Kurt Moll's Montenerone is full-voiced and rich.

◆ LONDON 414 269-2 (two CD's). Milnes, Sutherland, Pavarotti, Talvela,

Tourangeau; Ambrosian Opera Chorus; London Symphony Orchestra, Richard Bonyng cond. The recording dates from 1972 (Kiri Te Kanawa sings a minor role), but the sound is good. Bonyng conducts with his usual energy and sense of pace, and the soloists, chorus, and orchestra respond empathically. The wonder here, though, lies in the "big three" of the cast, each in prime voice. The brown velvet of Sherrill Milnes's baritone, the golden clarity of Luciano Pavarotti's tenor, and Sutherland's remarkable pyrotechnics all make for glorious listening.

◆ PHILIPS 412 592-2 (two CD's). Bruson, Gruberova, Shicoff, Lloyd, Fassbaender; Chorus and Orchestra of the Accademia Nazionale di Santa Cecilia, Giuseppe Sinopoli cond. The sound is crisp and well balanced. Sinopoli's exact direction is a distinct pleasure, revealing subtleties of the score you don't often hear. In the title role, Renato Bruson's big, warm voice pours out with seemingly endless resource. Gruberova captures Gilda's guilelessness with unusual purity of tone—her floated pianissimos are lovely—and Neil Shicoff creates a suave character of the Duke. This is a carefully prepared performance characterized by dramatic thrust, excitement, and high-level musical probity.

### VERDI: *La traviata*

◆ ANGEL CDCB-47538 (two CD's). Scotto, Kraus, Bruson; Ambrosian Opera Chorus; Philharmonia Orchestra, Riccardo Muti cond. This is a musically effective, dramatically sensitive and telling performance under Muti's direction. Renata Scotto, the bloom of her voice somewhat faded, eschews all unnecessary pyrotechnics and focuses her considerable interpretive abilities on creating an appealing portrayal of Violetta. Alfredo Kraus brings his wonted stylistic elegance and dramatic sincerity to the role of Alfredo, and Renato Bruson makes Germont unusually sympathetic. The recording is given added interest by the inclusion of passages in Act II that are usually cut.

◆ DG 415 132-2 (two CD's). Cotrubas, Domingo, Milnes; Bavarian State Opera Chorus and Orchestra, Carlos Kleiber cond. Kleiber, as always, places his particular stamp of dramatic tautness and musical clarity on the performance, qualities reflected as well in the singing and acting of the soloists. You feel you are hearing the opera for the first time—a startling statement to make of *La traviata*! Ileana Cotrubas has never sung with more conviction, Placido Domingo is in his best voice, and Sherrill Milnes adds a velvet-voiced Germont.

### VERDI: *Il trovatore*

◆ DG 413 355-2 (three CD's). Domingo, Plowright, Zancanaro, Fassbaender,



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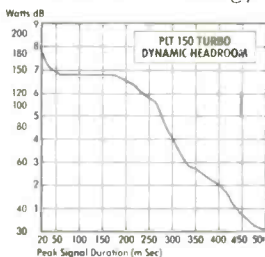


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Nesterenko; Chorus and Orchestra of the Accademia Nazionale di Santa Cecilia, Carlo Maria Giulini cond. This performance should convince anybody that *Il trovatore* is a very exciting work. Giulini conducts with dedication and attention to the demands made upon his singers; his musical sense, rarely questioned, is here paramount, and his unhurried tempos sharpen the drama of the performance. Rosalind Plowright's Leonore and Brigitte Fassbaender's Azucena are both heard to particular advantage in their first-ever recording of these roles. Placido Domingo brings his musical best (which is saying a lot) to this "restudied" performance, and Giorgio Zancanaro's Di Luna is richly articulated.



Conductor Herbert von Karajan:  
Ardent Verdi, lyrical Wagner

### WAGNER: *The Flying Dutchman*

◆ ANGEL CDCC-47053 (three CD's). Van Dam, Vejzovic, Hofmann, Moll; Vienna State Opera Chorus; Berlin Philharmonic Orchestra, Herbert von Karajan cond. This is a relaxed, lyrical reading of Wagner's *Dutchman*, typical of recent Karajan performances, and it is enhanced by José van Dam's resonant, well-focused tone and strong sense of characterization. Dunja Vejzovic sings expressively as Senta, and Kurt Moll evokes a real human being from Daland's lines. As Erik, Peter Hofmann sings better than he has, at least in public, for a long while. A strong, very musical performance.

◆ PHILIPS 416 300-2 (two CD's). Estes, Balslev, Salminen, Schunk; Bayreuth Festival Chorus and Orchestra, Wolde-mar Nelsson cond. One of the most successful live recordings I have heard, this has occasional stage noises but also commendable sonic presence and a here-and-now theatrical intensity that studio recordings do not always capture. As the Dutchman, Simon Estes turns in his finest recorded performance. Lisbeth Balslev's Senta is well sung and presents a finely drawn character, and Matti Salminen as Daland and Robert Schunk as Erik both make affecting contributions.

### WAGNER: *Die Meistersinger*

◆ DG 415 278-2 (four CD's). Fischer-Dieskau, Domingo, Ligendza, Hermann, Ludwig; Chorus and Orchestra of the Deutsche Oper, Berlin, Eugen Jochum cond. Recorded in 1975, the performance is characterized by a glorious, full sound on CD. Jochum draws from both chorus and orchestra the rich resonance one expects from forces steeped in the Wagner tradition. The pacing is deftly handled; *Meistersinger*, for all its wonders, is a long opera, and to experience its three acts without feelings of satiety is an unusual pleasure. Dietrich Fischer-Dieskau's voice is perhaps a shade light for Sachs, but his insight into the character and his musical proficiency outweigh all reserva-

tions. It is rewarding to find Christa Ludwig, that admirable artist, giving so much to Magdalene and to enjoy Roland Hermann's singing of Beckmesser's part (too often delineated in a sort of *Sprechgesang*). Placido Domingo is entirely at home with Walther, and his *Preislied*, somewhat flavored with Italian seasoning, soars impressively. For the most part, Catarina Ligendza's Eva is satisfactory, though she tends toward shrillness every so often—a minor criticism in view of the immensity and overall success of this undertaking.

### WAGNER: *Tannhäuser*

◆ ANGEL CDCC-47295 (three CD's). König, Popp, Meier, Moll, Weikl; Bavarian Radio Chorus and Orchestra, Bernard Haitink cond. This musically sensitive performance seems small-scaled; the climaxes lack force, and the drama needs more excitement. Most curious is the casting. I wonder why Lucia Popp, a delightful lyric soprano, even considered Elisabeth, let alone undertook to record the role. While she conveys the youthful purity of Wagner's heroine, her performance is vocally bland. Klaus König fares somewhat better as Tannhäuser, but his musically accurate account is not a stirring one, and Waltraud Meier's Venus is troubled by an unsettling vibrato at the top of her range. Kurt Moll and Bernd Weikl, as the Landgraf and Wolfram, respectively, deliver the most effective vocal performances.

◆ LONDON 414 581-2 (three CD's). Kollo, Dernes, Ludwig, Sotin, Braun; Vienna State Opera Chorus; Vienna Philharmonic Orchestra, Georg Solti cond. A noble performance, recorded in 1971, that has movement and majesty—a combination not always characteristic of Wagner performances. Sixteen years ago Solti did not drive scores with the same sinewy intensity we have come to expect from him today, but his conducting was no less infused with

focus and impulsion. René Kollo is very satisfying as the errant hero; his long Act III narrative, usually interminable in the theater, is dramatically telling. Elisabeth fits Helge Dernes, vocally and temperamentally, to a "T." Hans Sotin is a resonant and authoritative Landgraf, Hans Braun an appealing Wolfram, and Christa Ludwig breathes a rare life and passion into Venus. Warmly recommended.

### WAGNER: *Tristan und Isolde*

◆ ANGEL Ⓜ CDCC-47321 (four CD's). Suthaus, Flagstad, Greindl, Thebom, Fischer-Dieskau; Chorus of the Royal Opera, Covent Garden; Philharmonia Orchestra, Wilhelm Furtwängler cond. The legendary Kirsten Flagstad without, sadly, the legendary Lauritz Melchior. Although this recording was made after the great soprano had retired from the Met, her voice glows with a warmth and amplitude of tone that have not been heard since her heyday. Ludwig Suthaus's voice is not beautiful, but he sings Tristan's part accurately and with stentorian power, and Josef Greindl's Marke is a true *basso profondo*, rich and weighty. Apart from Flagstad, however, the star of the recording is Furtwängler, who, over many decades, made *Tristan* virtually his personal property. His leisurely conducting allows the music to unfold almost lyrically, yet no climax is slighted.

◆ DG 413 315-2 (four CD's). Kollo, M. Price, Moll, Fassbaender, Fischer-Dieskau; Leipzig Radio Chorus; Dresden State Orchestra, Carlos Kleiber cond. The sound is sumptuous. The interpretation is unmistakably Kleiber's: rich, rhythmically strong, and intense—qualities essential to a gripping *Tristan*. Like the cast in the Philips set, this one is perhaps not a Golden Age selection, but the artists are all capable. Margaret Price acts more with her voice than usual (Kleiber's influence?), Kollo brings to Tristan an unusual and telling lyric quality, and the remaining principals are vocally and dramatically distinguished. The orchestra and chorus, steeped in the tradition, are splendid.

◆ PHILIPS 410 447-2 (five CD's). Hofmann, Behrens, Sotin, Minton, Weikl; Bavarian Radio Chorus and Orchestra, Leonard Bernstein cond. From the lyrical prelude through the *Liebeshod*, the drama of Wagner's *Tristan* unfolds inexorably in this 1981 recording, made partially in concert and partially in the studio. It was evidently a project about which Bernstein felt strongly; rarely has he conducted with more involvement or conviction, and in Hildegard Behrens and Peter Hofmann he has singing actors who handle their roles beautifully, with diction that is exceptionally clear. The whole cast is challenged by Bernstein's ideas to deliver strong singing and thoughtful interpretation. A fine achievement. □



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# Instant You, Digitally

Forget complicated answering machines. Forget worn out announcement tapes. Now you can simply touch a button and record your voice digitally on computer RAM. It's an incredibly easy to use breakthrough, for just \$49<sup>90</sup>.

By Drew Kaplan

It's hassle free. And, its flawless digital reproduction of your voice is almost scary.

Now you can record your own voice on computer chips by simply touching a single button. Now you'll never again have to match your message to a continuous loop cassette.

If you're like me, recording a message on an answering machine is really an intimidating hassle.

Besides all the buttons you have to push, you have to rewind the tape, wait, and then play it back to see how your message sounds.

Well, with this all new digital breakthrough, simply push one button to record any outgoing announcement up to 15 seconds long.

Then, push another button to instantly play it back. It's totally hassle free.

In fact, it's so easy that you'll feel comfortable changing your flawlessly recorded announcement to suit your hourly needs. And, talk about flexibility, wow!

Now you can effortlessly change your message whenever you wish. So, if you're only out in the yard, you can tell callers you'll be available at 2:20PM. With a normal machine, they wouldn't know if you'd be back in 20 minutes or 20 days, so they might not leave a message.

So, in addition to standard answering machine features, you can instantly catch calls if you're down the street, in the shower, taking a nap, or getting the mail.

## PRIVACY AND SANITY PLUS

Now you can really protect your privacy. Never before has an answering machine been so easy to use that you'll use it when you're at home too.

When you're home, you can 'screen' calls. Your new answering machine will answer the phone and you'll hear who's leaving a message. If you want to talk to the caller, just pick up the phone.

Now you can answer only when you want without missing important calls. This is a superb necessity, not just a convenience at the Kaplan household.

It seems that as soon as we sit down to dinner, the phone starts ringing. Now, we can hear who's calling (of course we can turn down the volume if we wish) and take only urgent calls.

I used to take the phone off the hook during dinner, but aside from the danger of missing an emergency call from someone, I've been told it's really rude.

If someone tries to call and gets a busy signal, they tend to keep dialing, thinking that we're talking. Well, have I got them fooled! Anyway, now we can have the best of both worlds with this incredible new answering machine.

## GREAT SOUND PLUS

OK, it's really just like a conventional answering machine. But, it's incredibly easier to use than any machine I've seen.

When you touch the ANN. REC. (Announcement Record) button, you instantly record your voice on the machine's computer chips. So there are no moving parts to wear out, or tape to hiss or mess up the incredible fidelity.



Anyone calling you hears your message and then a beep. This answerer will then record onto a standard cassette the message the caller leaves.

The exact second they hang up, the cassette stops. So, you'll never have to listen to any blank tape.

You'll only hear messages, because your outgoing announcement isn't recorded on the tape. And, there's even a flashing message light to tell you when someone has left a message.



## EASIEST EVER

There are no complicated controls. Installation consists of simply plugging in its standard modular phone jack and its AC plug (both included).

There's even a modular jack on the back of the answerer for your phone. And, a 9V battery (not included) backs up your announcement.

But, it's virtually control free. There are no complicated controls, no sequences to remember. Just record your announcement or play back your messages.

Of course, there's a volume control for playback. And, a built-in condenser mike lets you record your messages without anything to plug in.

Push the answer button to activate the machine. You can save or erase messages or fast forward or rewind to re-hear a message. It's all incredibly simple.

To make it really easy, there's no remote pick-up, and the pretty colored handset I used in the picture isn't included. It simply answers your phone with the best fidelity you've ever heard

and with the least effort ever.

## ALL THE USES

For an hour, a day, or a month, this new answering breakthrough will faithfully record your incoming messages. And with its lifelike digital fidelity, your callers are sure to be awed.

With its full size standard cassette, it will take up to 30 minutes of your messages with no minimum length for each. Now you'll have total phone freedom and privacy at a breakthrough price.

It's made by Answerex and with its digital announcement and standard cassette drive, it's built to last. It's backed by Answerex's standard limited warranty.

## YOUR VOICE IN LIGHTS RISK FREE

It's eerie. Wait till your callers hear your voice. They'll be amazed. Wait till you see how easy it really is to use this incredible new machine.

If you're not 100% satisfied, simply return it in its original box to DAK within 30 days for a courteous refund.

To order your Answerex Digital Answering Machine that answers in your own voice digitally and takes your variable length messages on a standard audio cassette, risk free with your credit card, call toll free or send your check for DAK's breakthrough price of just \$49<sup>90</sup> (\$6 P&H). Order No. 4871. CA res add tax.

Now you can instantly change your announcement and thrill your callers with the digital fidelity of your voice.



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# Ion Tidal Wave Propelled

*Like the awesome thundering power of a tidal wave, negative ions will wipe pollution out of your environment. And like the rising and falling tides remove pollution from the beach, your environment will be kept pollution free.*

Nothing stands up to the mighty force of a tidal wave. And when the wave recedes, it takes everything with it.

And like the mighty suction of the receding ocean waters, pollutants in your air, from smoke to pollens, will succumb to the power of the Ion Tidal Wave. Here's how it works.

## IN AND OUT

First the mighty wave strikes. The force of this wave's wall of water consists of 1,400,000,000 negative ions per second.

Being negatively charged, the ions attach themselves to any positively charged particles in your air. Pollutants such as cigarette smoke, pollen, smog, car exhaust and insecticide dust, all have positive charges. So, the negative ions are drawn to them like magnets.

Then the awesome wave of negative ions stops. The negative ions, complete with the attached pollutants, start drifting to your positively charged walls, ceilings and floors.

But wait. Just as the ocean reclaims the water that it so forcefully delivered in a tidal wave, the base of the new Pulsair 3 becomes a powerful positive collector and sucks the ions, with the pollutants attached, back to itself.

So, instead of falling to the floor or sticking to your walls, most of the pollution is pulled back to the Pulsair. Just like the rising and falling tides, your environment will be cleansed by the action of the ion wave.

If you want to see an ion generator remove smoke, here's an easy test. Place a standard clear kitchen bowl over the ionizer. Puff some cigarette smoke into the bowl. Then plug in the ionizer.

Before you can say, "Pulsair Kill", the smoke will be totally gone. It's an easy test and it's sure to make you a believer.

## BIG BERTHA OF GENERATORS

Pulsair Phase 3 is the third generation of ion generators. First there were simple units that generated negative ions.

Negative ion generation is used in hospital burn wards and computer chip manufacturing to remove microscopic particles that can adversely affect patients and chips alike.

These ion generators worked fine. In fact, they worked so well that your walls became black from the particles they removed from the air.

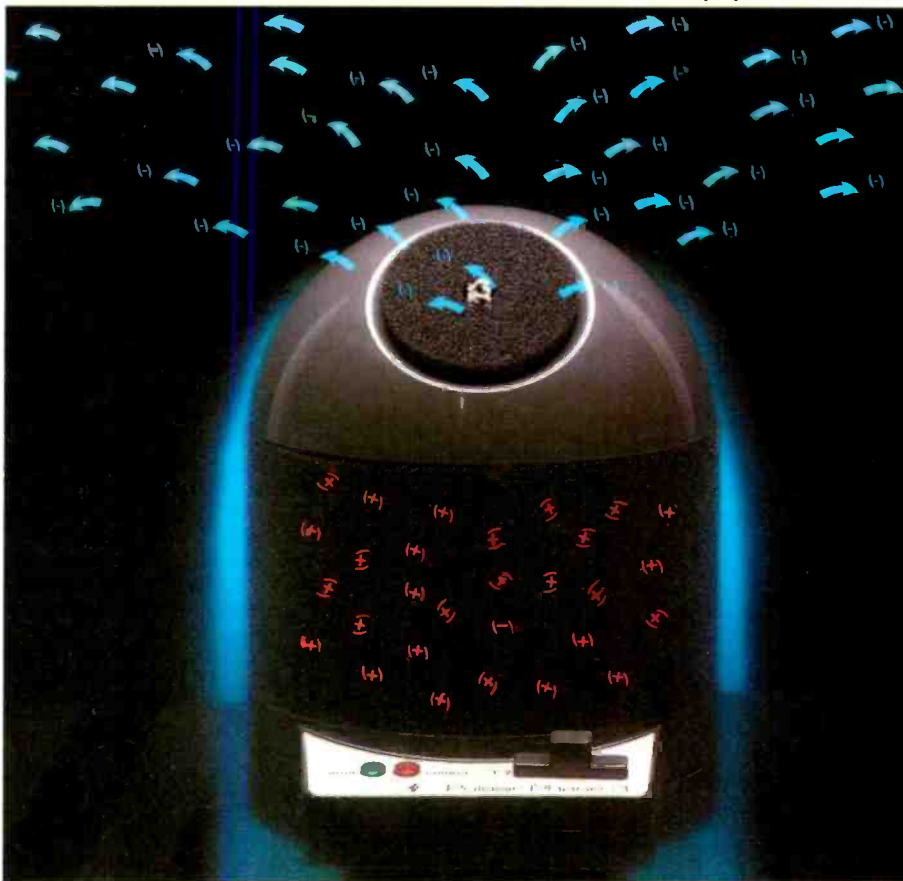
In my opinion, black walls are a lot better than black lungs. But they worked so well, that consumers complained.

Then came bipolar collectors which sent out ions and concurrently collected them in the base.

Your air could be cleaned, your walls didn't get too dirty and everyone was happy. The only negative was that the ions couldn't go as far because they were being pulled back by the collector even as they were sent out.

Enter Big Bertha. Pulsair is different. It is bipolar, but it operates just like the ocean's rising and falling cleansing tides.

By sequentially sending out a massive wall of negative ions, then shutting off, and finally turning on its collector, a massive constant circulation of ions occurs



that cleanses your room like never before.

Minute by minute, hour by hour, day by day, the sequence continues. First a massive wave of ions is sent out. Then seconds later, it's sucked back to the collector. You can't hear it. You can't feel it. But, watch the smoke disappear.

You'll have 3 protection levels. Level 1 emits ions for 5 seconds and collects pollutants for 30 seconds. Level 2 emits for 10 seconds and collects for 30 seconds. And Level 3 emits for 10 seconds and collects for 10 seconds.

So, if you're in a room with smokers, use Level 3. For home use, use level 1 or 2, because virtually all particles removed from the air end up on the filter.

## CIGARETTE BUTTS & BOULDERS

Fans with charcoal or furnace type filters may remove some large particles like cigarette butts and large ashes from the air. But, they're just about useless for anything under 5 microns.

Over 90% of air pollution particles are smaller than 5 microns. So, there just isn't any other reasonable defense for you other than a negative ion generator.

Pulsair is just about the only air cleaning system which can remove and collect tobacco smoke, dust, pollen and even bacteria from the air.

Pulsair constantly cleanses all of the air throughout its tidal area. In contrast, fan driven filter type machines can only clean the air that they actually draw through themselves.

## NOT A NEW IDEA

Actually, the negative ion manufacturers didn't think of this great way to

clean the air. God did.

If you've ever smelled the sweet country air after a thunderstorm, or near the breaking surf at the beach, you know the invigorating feeling that comes over you.

Pulsair does for a 250 square foot area, what Nature does for the entire countryside. It seems that positive ions are associated with pollution and negative ions with good fresh natural air.

There are lots of claims that a negative air ionizer will let you think more clearly, sleep better and feel happier.

There's no way to prove or disprove the claims. But, it is safe to say that if all these things come from cleaner, pollution free air, it just may be possible.

A removable, washable filter comes with Pulsair. Just wait till you see what Pulsair removes from the air before it gets into your lungs.

It is 7" tall. It's made by ISI and, backed by their standard limited warranty.

## A CLEANSING TIDAL WAVE RISK FREE

Make the smoke test. Let it wipe out the pollution (like other people's cigarette smoke) in your home or office.

If you don't think you're breathing cleaner fresher air, simply return it in its original box within 30 days for a refund.

To order your Ion Tidal Wave Negative Ion Generator with your credit card risk free, call toll free or send your check for just \$99<sup>99</sup> (\$4 P&H). Order No. 4908.

I can't guarantee that it will help you sleep, solve crime, or improve your sex life. But it's tidal surges will give you cleaner air to breathe, and that's priceless.

# Is Escort Scared or Smart?

*Cincinnati Microwave, the maker of Escort and Passport radar detectors, has ignored DAK's third, one-on-one Maxon versus Escort radar challenge. I think they're hiding behind 'independent' magazine reviews and refusing to meet us on the true field of battle. And now, I think I've finally figured out why. I believe they're in a NO WIN SITUATION! Read On.*

By Drew Kaplan

It's time to attack. No more Mr. Nice Guy for me. I've done everything I can to get them out for a conflict.

I've offered \$10,000, then \$20,000, if they could beat Maxon's lowest price \$99<sup>90</sup> detector (now on sale for just \$79<sup>90</sup>) by more than 10 feet. I've even offered to print the results in my next catalog, win, lose or draw.

In a minute, I'm going to introduce Maxon's revolutionary new Micro-Detector that is CORDLESS and built to trounce Escort and Passport, but first let's see what we can do to compare detectors.

## IS THIS FAIR? YOU DECIDE

In their recent ads, Cincinnati Microwave quotes what Car and Driver Magazine's April '87 issue says about Passport, "At \$295 direct from the factory, it's the most expensive piece of electronic protection in the group, but it's worth every nickel in roadgoing peace of mind."

Well, wouldn't you think that Passport obliterated every other detector by a country mile? And, don't you think everyone is going to go out and find the magazine and read the **WHOLE** review???

Well, look what else Car and Driver said in the same article (and not quoted in Passport ad), "As it turned out, the top five brands are so close in their "Overall Sensitivity" scores that a minor juggling of the X/K-band weighting formula would upset the apple cart." Wow, imagine that!

So, Passport didn't beat everyone by a mile. In fact, on the X Band tests, it appears that it came in 3rd in a Dead-Ahead Trap, 3rd in an Over-the-Hill Trap, and 3rd in an Around-the Corner Trap.

But in choosing Passport as best, Car and Driver says, "... an 'excellent' appraisal of support systems (cords, lights, alarms etc.) is well worth several hundred feet of warning distance..."

Which brings me back to the point I've been trying to make since I first challenged Escort. Today, a good detector can often sniff out police radar as much as 60 seconds ahead.

Traveling at 55 mph, you only cover about 80 feet a second. So, whether there's a 10' or even 100' difference in sensitivity, with today's detectors it just doesn't make much difference.

## READ THIS

So, if Passport or Escort lose to the

# A \$20,000 Challenge To Escort

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

By Drew Kaplan

We've put up our \$20,000. We challenge Escort to take on Maxon's Dual Superheterodyne RD-1 \$99<sup>90</sup> detector (right) (Now just \$79<sup>90</sup>), Maxon's new Mini RD25 \$99<sup>90</sup> detector (middle) or Maxon's Cordless Micro-Trouncer \$149<sup>90</sup> radar detector (left) on the road of their choice in a one-on-one conflict.

The real question today is: 1) How many feet of sensing difference, if any, is there between Maxon's Detectors and Escort's or Passport's? And 2) Which is

\$79<sup>90</sup> Maxon, it would be catastrophic for their advertising. And, even if they beat Maxon by a second or two, are they worth double or even triple the price?

So, that's why I think they're in a no win situation. Without the magazine's loving editorial comments, we'd be down to who won and by how many feet?

And while they may or may not be scared of losing to Maxon, so far, they sure seem to be smart enough to stay out of a footage contest.

## MAGAZINE ROUND UP

Popular Mechanics Magazine in November '86, in their Around A Corner Test said, "The low ranked... and Passport had to be rounding the bend and pointing at the radar gun before they'd detect it. Too late then!" (Not quoted by Passport.)

Although in July, after Cincinnati Microwave complained, Popular Mechanics said in an Around A Corner Test, "Consistent with the results of our previous test, Passport was easily the best of the minis." (Quoted in Passport Ads.)

Speaking of 'consistent', the magazines aren't consistent even from issue to issue.

By the way, in July's test they hated Maxon, but at least they said, "No detector in this group had to round the corner before sniffing out Smokey."

Road and Track Magazine (September '86) top rated Passport even though Maxon (a recommended buy) appears to have beaten Passport in Uninterrupted Alert, and Passport beat Maxon in initial alert.

So, when you get right down to which detector protects you, an on-the-road test without all the loving editorial 'quotable remarks' seems to be the only way to go.

We need to win or at least tie, to prove to the world that our challenge is for real, and not, as Cincinnati Microwave said, "an advertising gambit". But, speaking of advertising gambits, read this!

## PROTECTION FROM RASHID \$5?

### WHOOPEE

Last year, Cincinnati Microwave announced to the world, in virtually every magazine I picked up, that all radar detectors but theirs would be obsolete.

It seemed that a K band collision avoidance system called Rashid VRSS would knock out everyone's detectors.

Well, I said then that the \$558 system that recommends cutting a 6½" hole in your grill for installation, wasn't going to

take over the highways.

But Cincinnati Microwave kept advertising about Rashid. (My opinion of an advertising gambit). It's been a year and nobody I've talked with has run into a Rashid. I challenged Cincinnati Microwave to prove that there were even 500 on the road in the whole U.S., but they've been silent. (I wonder why???)

Anyway, just to prove that we had the technical expertise, Maxon has developed and implemented an Anti-Rashid circuit in the new Micro-Detector.

It's added about \$5 to your cost which we all think is a waste, but at least we won't get any more letters saying that the only reason we think it's worthless is because Maxon doesn't have it.

## TRUE BREAKTHROUGH NO. FIVE

Unlike the questionable value Anti-Rashid circuit from Cincinnati Microwave, Maxon has now leapt ahead. Now you can have a micro detector that operates from 6 AA rechargeable batteries (included).

Now you can forget plugging your radar detector into your cigarette lighter. A revolutionary circuit design gives you cordless freedom and improved protection.

Maxon is using a circuit used in jet fighters and other military applications which replaces the traditional Gunn diode oscillator with a DRO (Di-electrically Resonated Oscillator).

The efficient DRO circuit is much more stable when subjected to temperature extremes and vibration (hence its use in the military, especially aircraft). Its only disadvantage is that it costs more.

The new detector also has incredible "support systems". Its bright LEDs, dim themselves at night. And speaking of dimming, they can be switched off so you can't be spotted from the rear.

And, as for the separate X and K warning tones, not only is the volume adjustable, 'Mute' lets you silence the alarms without adjusting volume. They will automatically reset after the alert passes.

You can plug the Micro into your cigarette lighter, you can run it for about 8 hours on its rechargeable batteries, and it automatically recharges from your cigarette lighter overnight or while you use it plugged in during the day.

OK, now it's time to prove that Maxon is Number One. Cincinnati Microwave, eat our dust!

more accurate at interpreting real radar versus false signals?

So Escort, you pick the road (continental U.S. please). You pick the equipment to create the false signals. And finally, you pick the radar gun.

Maxon and DAK will come to your highway with engineers and equipment to verify the results.

And, we'll have the \$20,000 check (pictured) to hand over if you win!

## BOB SAYS MAXON IS BETTER

Here's how it started. Maxon is a mam-

moth electronics prime manufacturer. They actually make all types of sophisticated electronic products for some of the biggest U.S. Electronics Companies. (No, they don't make Escort's.)

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

... Next Page Please

**...Challenge Continued**

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

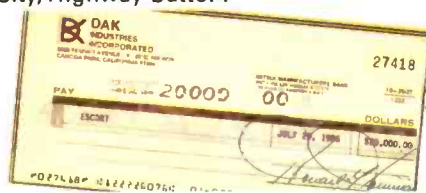
By the way, Bob is about 6'9" tall, so if we can't beat Escort, we can sure scare the you know what out of them. But, Bob and his engineers are deadly serious about this 'duel'. And you can bet that our \$20,000 is serious.

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

3) The same car be used in all tests. 4) We'd like an answer from Escort no later than December 31, 1987, and 60 days

1/4 second gives you protection from signals from other detectors, intrusion systems and garage door openers.

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



Maxon detectors are backed by Maxon's standard limited warranty.

There are many cheap imports that aren't very good. My quarrel with them is that except for themselves, I don't know who they think is any good!

**CHECK OUT RADAR YOURSELF RISK FREE**

Put a detector on your visor, dash or windshield. When it sounds, look around for the police. There's a good chance you'll be saving money in fines and higher insurance rates.

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

(RD-1 Pictured to Right.) To get your Maxon, Dual Superheterodyne, Anti-Falsing Radar Detector risk free with your credit card, call toll free or send your



notice of the time and place of the conflict to alert the public. And, 5) If Escort can prove that there are even 500 Rashid units in operation, we will present them with a check for \$5,000 at the conflict.

**HOW'S THIS FOR FAIR?**

Cincinnati Microwave will be deemed the winner and given the check if either Escort beats Maxon's RD-1 or RD-25 by 10 feet in both uninterrupted and initial alerts or equals the Micro-Trouncer, OR if Passport beats Maxon's RD-1 or RD-25 by 2 seconds at 55mph in both uninterrupted and initial alerts or equals the Micro-Trouncer. So, DAK wins only if we beat both the \$295 Passport and \$245 Escort Radar Detectors.

**SO, WHAT'S DUAL SUPERHETERODYNE?**

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

It's a technology that tests each suspected radar signal 4 separate times before it notifies you, and yet it explodes into action in just 1/4 of one second. (1/10th second for the Micro-Trouncer.)

Just imagine the sophistication of devices that can test a signal 4 times in less than a 1/4 of one second. Wow!

But, using Maxon is easy. These long range detectors have all the bells and whistles with separate audible sounds for X and K radar signals.

LED Bar Graph Meters accurately show the radar signal's strength. And, you won't have to look at a needle in a meter.

Keep your eyes on the road, you'll see these meters with your peripheral vision.

You'll have a very high level of protection. Maxon's Dual Conversion Scanning Superheterodyne circuitry combined with die-cast aluminum ridge guide wide-band horn internal antennas, really ferret out radar signals.

And the key word is 'radar', not trash. The 4 test check system that operates in

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

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

**DON'T WASTE MONEY**

As I've said, good radar detectors today are very similar. The RD-1 is great. It is much smaller than Escort at just 3 1/2" wide, 4 3/4" deep and 1 1/2" tall.



If you want an even smaller detector, the RD-25 at just 2 7/8" wide, 4 1/2" deep and 1" tall, with its included windshield mount and identical specs is for you.



If you want the very best, or if you want to forget cords and be able to slip a



4 1/2" wide, 3 1/4" deep, 3/4" tall (It mounts sideways to the rest) detector into your shirt pocket, choose the Micro-Trouncer.

I'd love to tell you that the Micro-Trouncer is light years ahead in detection, because its circuitry certainly is.

But, I'd be into advertising gambit-land if I claimed that 1 or 2 seconds of improvement over Maxon's other detectors or even over Escort and Passport really make a significant difference.

Caution: Cincinnati Microwave is right.

check for DAK's \$79<sup>90</sup> sale price (\$4 P&H). Order No. 6116.

Note: An optional suction cup windshield mount and extra coiled power cord (we can't afford to throw them in for free) is just \$5<sup>90</sup> (\$2 P&H) Or. No. 4800.

(RD-25 Pictured in Middle.) To get your Maxon, Dual Superheterodyne, Anti-Falsing Mini Radar Detector complete with 2 Power Cords, Window Suction Cup, Dash and Visor Mounts risk free with your credit card, call toll free or send your check for just \$99<sup>90</sup> (\$4 P&H) Order No. 6117. CA res add tax.

(Micro-Trouncer Pictured to Left.) To order Maxon's Top-Of-The-Line, DRO Circuit Radar Detector with Mute, 4 Second LED Meter Hold, Dark Switch, Cordless Battery Operation (6 AA Ni-Cad Batteries Included) with Windshield, Dash, and Visor mounts and 2 power/charging Cords risk free with your credit card, call toll free or send your check for this revolutionary \$249 suggested retail detector at DAK's market breaking price of just \$149<sup>90</sup> (\$6 P&H) Order No. 6119.

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

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

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**Any Other Inquiries. . . . . 1-800-423-2866**  
 8200 Remmet Ave., Canoga Park, CA 91304

# You Too Can Part The Sea

Let your car call out to you. At shopping centers, airports or parking garages, you won't ever have to look for your car again. Plus now you'll have great personal security as well. And, best of all, it simply installs in minutes.

By Drew Kaplan

You're at a mall. There are exit doors in all directions. Your arms are full of packages. And, you're with a friend.

As you look around, you realize that you've lost your car in a virtual sea of cars. How embarrassing!

At the ball game, at the track or at a convention center, it's really easy to lose your car. And, if it's late at night, walking around a parking structure isn't safe.

Well, now you can have your car call out to you. Now you can have its headlights blink. And now you can have it sound a panic alarm if you're scared.

While it may be embarrassing to lose your car in an amusement park's parking lot, it's down right dangerous for you or your spouse to be looking for your car at night in a dark parking structure.

And, even if you see your car, what if somebody comes near you? Well, they'll think you have friends in your car when the lights flash and the siren sounds.

## SIMPLE INSTALLATION

It's easy. There's a 4" box which controls the system. Attach it under your hood with two screws or to your battery with double sided tape (both included).

Connect one wire to the hot side of your battery and the other wire to any chassis ground screw. Drop the antenna wire and you're through.

Connect one more wire and your headlights will flash. If it takes more than 5 minutes to install, losing your car is prob-



ably the least of your life's problems.

## HOW IT WORKS

A tiny hand held key ring activates this locating and protection system. Just touch the button and your car will whistle and the headlights will blink.

Keep holding the button and a panic alarm will sound. You'll really have awesome power, controlled by a tiny key ring.

At the airport, your car will call out from the rows of cars. At night, you'll have lights and sound to help you find your car and protect you and your spouse.

It's called the CarFinder. It's made by Design Tech International. And it's backed by their standard limited warranty.

## PART THE SEA OF CARS

### RISK FREE

If you're like me, you're usually within a few rows of your car when you start looking. Now you won't have to look at all and you'll have protection too.

If you're not 100% satisfied or if instal-

lation takes more than 5 minutes, simply return it in its original box to DAK within 30 days for a courteous refund.

To order Design Tech's Car Locator and Protector with Easy Installation (no soldering) and up to 400' Range, risk free with your credit card, call toll free, or send your check for only \$99<sup>90</sup> (\$4 P&H). Order No. 4915. CA res add tax.

It's convenient. It's fun. And its whistle makes it as great a conversation piece as its siren makes it a protector. Now you can part the sea of cars to get to yours, instantly.

# Phone Dialing Traveler Plus

Imagine a watch that actually dials 50 phone numbers or remembers 50 appointments. Then start traveling because you'll be able to see the time in all 24 time zones. Plus you'll have alarm, stopwatch and countdown timer functions.

By Drew Kaplan

I'm astounded. First I can check the time in Tokyo. Then, I can raise my new watch to the mouthpiece of any tone phone and have the number dialed.

If you use a phone credit card number like I do, you know what a hassle it is to first dial a number then input a 14 digit credit card number.

Well, with Casio's amazing new dialing watch, my credit card authorization is just the push of a button away. And, I can have 50 different numbers, each with up to 14 digits stored in this watch.

Each number can have a name of up to 9 letters long. So, I just select the name from the watch's display and let the watch do all the work.

Just touch 'Dial' and the watch pauses for about 2 seconds so you can put it to your phone's mouthpiece. Then it dials.

## AWESOME POWER

Dialing is just the beginning. You can use the memory to store appointments. So, if you have an anniversary in June, just set the date a week ahead and you won't forget to buy your spouse a present.

Of course, it's a watch. It shows the time, day, month and year. Of course, it has a standard daily alarm and even an hourly chime. But it does so much more.

**Select World Time.** As you touch the front panel buttons, you can see the time in New York, Chicago, Los Angeles, Honolulu, Tokyo and on. I've seen dual time

before, but never 24 time zones. And a small inset shows your own local time.

There's a 24 hour countdown alarm. It's neat, because I use it for recording

audio cassettes. I always know how much time is left, even when I've been recording selected tracks.

Finally, there's a conventional stopwatch complete with split time and 24 hour capacity. And like every mode except for telephone/scheduler, there's an inset that continues to show normal time.

**One More Amazing Feature.** This watch is incredibly easy to use. With all its functions, you'd think that you might need a degree in physics to use it.

Well, have no fear. You'll be dialing, timing and scheduling in just a few minutes. It's made by Casio, and it's backed by their standard limited warranty.

## ALL THE WONDERS

### RISK FREE

Dial some numbers. Check the time in Paris. Time a race or use the countdown timer. And, you'll never forget your spouse's birthday again.

If you're not 100% thrilled, simply return it in its original box to DAK within 30 days for a courteous refund.

To order Casio's Dialer, Scheduler, 24 Hour World Time, Countdown Timer, Stopwatch, Alarm and more, risk free with your credit card, call toll free, or send your check for DAK's breakthrough price of just \$49<sup>90</sup> (\$3 P&H). Order No. 4916. CA res add tax.

I'm awed. This watch's phone dialing, world time, countdown timer and slim design, simply blow me away.







# Bedside Big Mouth Revisited

*Now you can reach out to the world from the comfort of your bed with this elegant new electronic AM/FM clock radio with a telephone and a hands free duplex speakerphone, at a breakthrough price.*

By Drew Kaplan

You're lying in bed. And, you are discussing the day's events with your mate. The lights are out, you're relaxed and your hands are at your sides.

So, what's so special? Well, for one thing, your mate is out of town and the two of you are talking on the latest in hands free full duplex speakerphones.

What's more, if the two of you were in bed together, you both (or your whole family for that matter) could talk to anyone on the phone simultaneously.

## AND THAT'S THE WAY IT WAS

Several years ago, I introduced the predecessor to this bedside wonder with the text above. The clock radio with a hands free speakerphone was incredibly popular, but our source dried up and I've been looking for a replacement.

Now from La Phone, a well respected manufacturer and an old supplier of DAK's, comes my bedside wonder, complete with current technology at an incredible \$39<sup>90</sup> price. I originally sold its predecessor for \$68!

This bedside wonder may look like the original Bedside Big Mouth, but its circuitry is all new. From the superb duplex speakerphone to the sensitive FM tuner, it's all class.

And, when you aren't using the duplex hands free speakerphone, just pick up the comfortable decorator designed phone handset and talk or make calls as you would with any regular telephone.

## BUT IT'S THE SPEAKERPHONE

You can lie in bed or wander around the room while you talk, totally hands free. The speakerphone is AC powered so it's extremely sensitive.

Duplex means that both you and the person you are speaking with can talk at the same time. Very few speakerphones are duplex because the circuitry is more complex and demanding.

But, having a conversation using a duplex speakerphone is a real joy, as you'll find out when you use this phone.

Your voice is picked up by an electret condenser microphone and you'll hear the person you're speaking with through the clock radio's main speaker.

So, you'll hear voices with the same fidelity you would expect from the radio.

And, look at this. If you are listening to the AM or FM radio when you want to use the phone, simply lifting the receiver or touching the hands free button silences the radio automatically.

What a great idea. A separate phone and clock radio could never compete.

There's even an 'In Use' LED that lights whenever you use this phone.

## AND WHAT A CLOCK RADIO

If you're impressed with the telephone, wait till you find out about the special conveniences and sound quality of this electronic clock radio.

First the controls. The large LED display with high/low brightness switch, is extremely easy to read. And, you won't have to worry about losing the time if there's a power failure once you install a standard 9V battery for protection.

You'll have hour and minute buttons for setting both the clock and the alarm.

And, once you've set the alarm, you can choose to be awakened by your favorite radio station or a pleasant electronic tone.

If you aren't quite ready to get up, just tap the snooze button for a few minutes of extra sleep.

And since getting up is no fun, this radio will also help put you to sleep. A touch of the 'sleep button' will give you up to an hour of your favorite radio station to relax you. The radio will then shut itself off and wait to perform its next programmed task.

## GREAT SOUND SAYS IT ALL

It doesn't take many features to beat phone company phones. But, there are lots of regular clock radios.

Once you hear the sound of these sensitive radio receivers, you'll be sold on the clock radio as well as the phone.

This FM radio really pulls in the stations. And the full range speaker has a deep, rich, pleasing sound.

Of course, with the touch of a switch you can also keep up with the latest news or your choice of music on AM.

This all new electronic clock radio telephone brings a really elegant look to your bedroom, office, den or kitchen.

It is Tone/Pulse switchable and simply plugs into any standard modular phone jack. The clock radio plugs into an AC outlet which gives you the advantage of having a powered speakerphone. (That's one reason it sounds so good.) It's backed by La Phone's standard limited warranty.

## TRY THE BEDSIDE BIG MOUTH RISK FREE

Be prepared for a shock. If you haven't used a duplex speakerphone, you're in for a pleasant surprise. And, for that matter, if you haven't bought a new clock radio for a few years, you're also going to be pleasantly surprised.

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

To order your all new La Phone Bedside Big Mouth Electronic AM/FM Digital Clock Radio Telephone, with both Handset and Duplex Speakerphone risk free with your credit card, call toll free or send your check for DAK's incredible price of just \$39<sup>90</sup> (\$6 P&H). Order No. 4887. CA res add tax.

Now you can replace simple phones and add an exciting, elegant clock radio with fabulous sound to turn your bedroom into an integrated entertainment and communications center.



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8200 Remmet Ave., Canoga Park, CA 91304

# Think Speak Locators

*On the job, on the field or on the road. you can now talk and listen totally hands free. Plus you can keep track of and talk to your secretary, your boss, your foreman or your children up to 1/2 mile away. Choose headset or hand held models.*

By Drew Kaplan

SWAT Teams use them. So do quarterbacks and firemen. Now you too can talk and listen to people near and far totally hands free, while you are jogging, sailing, skiing, hiking or riding a motorcycle.

Both at work and at home, this unique communications system, with a range of up to 1/2 mile, will let you keep in touch.

## LOTS OF OPTIONS

Maxon's new 5 channel (all included) 49Mhz industrial dual conversion superheterodyne communications system lets us all keep in touch.

There are two conventional belt clip beeper style communicators which not only let you be beeped, they give you full two-way communication.

There's also a base station (the only piece that plugs in) for your secretary's desk or the kitchen sink. Since there are 5 separate channels, up to 5 totally separate systems can be in use at once.

If you are using channel 2 and your foreman is using channel 4, switch to 4. You can really mix and match this system.

If you need hands free communication, there are two headset models (only one ear is covered for safety), which are great for forklift and truck drivers.

The headset models offer a voice activated circuit (VOX) which automatically engages the transmitter whenever you speak, so that you are broadcasting. When you stop speaking, it will automatically return to 'stand-by' to wait for a reply.

## AT HOME

This system is simply a lifesaver at home. Besides the obvious safety feature of being able to locate your children, you're never out of touch when you're working 'the back forty' or walking the dog around the block.

While you may not need 5 channels at home, the rugged industrial dependability of these units makes them ideal for setting up antennas and summoning help when you're working on a project.

Of course, my kids don't care much about security. They think Maxon's system makes great Walkie Talkies. But, when the call goes out "Earth to boys. Dinner is ready", they do show up.

You can talk to 1 or even 10 people with Think Speaks. The Think Speak is great if you're skiing with friends, using two boats or hiking in the mountains.

## AT THE OFFICE

It's true. It seems that whenever I buzz my assistant, she's not at her desk. I've threatened to tie a bell to her. But now I just touch a button, and no matter where she is in DAK's 64,000 square foot facility, I'm in contact.

In your factory, you can communicate with forklift drivers or people working in the warehouse. On construction sites, you're never out of touch with your foreman and heavy equipment operators.

## AT PLAY

If you hunt, fish or ski, you can now have clear, clean communication with your partner(s). It can even be used for neighborhood watch security. Now you can have house to house wireless communication, wherever you are.



So, for whatever reason you need to communicate, this system will be on your desk, at your side, or on your ear.



## HOW IT WORKS

This system is no toy. When you touch the Talk button on any of the units, you engage a virtually noise free quartz crystal locked dual conversion superheterodyne communications circuit that operates on the 49Mhz band.

With its FM modulation, it won't sound like a CB or an AM radio. You'll speak and hear with great power and clarity. And, you shouldn't be bothered by any other radio transmissions as you are with CBs and Walkie Talkies.

The transmission output is a full RF of 10,000uV/m @ 3 meters max. No FCC license is required.

All units are totally interchangeable, sound identical, and will both transmit to and receive from each other. They are industrial units made by Maxon, a pioneer in professional 2-way equipment. They're backed by their standard limited warranty.

**TRY THINK SPEAKS  
RISK FREE**

You'll find you have the convenience of a beeper, but with full two-way communication capability.

With the range of up to 1/2 mile, you should be able to keep track of anyone in your office, factory, construction site or neighborhood. If you're not 100% satisfied, simply return it in its original box(es) for a courteous refund.

To order a Maxon Industrial Think Speak Communications System to fit your needs, call toll free or send your check for the models listed below.

A Base, complete with 5 channels, powered by AC is just \$49<sup>90</sup> plus (\$3 P&H). Order No. 4530.

A Hand Held Communicator with 5 channels, powered by 4 AA batteries is just \$49<sup>90</sup> plus (\$3 P&H). Order No. 4531.

A Hand Held One Channel Communicator (It has the same sound quality), powered by a single 9V battery is just \$29<sup>90</sup> plus (\$2 P&H). Use Order No. 4533 for Channel 1, Order No. 4534 for Channel 2, and 4535 for Channel 3.

A Headset Communicator with 5 channels, powered by 4 AA batteries that has VOX (Voice Activation so your hands can be free) is just \$49<sup>90</sup> plus (\$3 P&H). Order No. 4532.

A One Channel Headset Communicator with VOX (It has the same sound quality), powered by a single 9V battery is just \$29<sup>90</sup> plus (\$3 P&H). Use Order No. 4912 for Channel 1, Order No. 4913 for Channel 2, or Order No. 4914 for channel 3.

Any Communicator on the same channel can communicate with any other. Base Stations are not required. At least 2 communicators of any type are required.

Now you can go where you want and still be in communication. Now you won't have to yell for your children, your secretary or your forklift driver. Forget paging and beeping. Now you can communicate from up to a 1/2 mile away.

# Numb Ear Miracle Grows Up

Now you can say good-bye to numb ears and tired shoulders. Here's a complete telephone that you simply clip on at your waist, that will set your hands free and end numb ears and stiff necks. It plugs into any modular phone jack, instantly.

By Drew Kaplan

It's awful. If you spend hours on the phone during the day as I do, you're probably all too familiar with the 'numb ear syndrome'.

Plus, cradling a phone on your shoulder so you'll have your hands free is . . . on your neck. Well, no more.

Over the past few years, I've offered a headset that plugged into your phone's receiver so you could avoid cramped shoulders and numb ears. But unfortunately, many of the new electronic phones aren't standardized, so I couldn't use it.

Now I've found an entire phone that's so small it clips to your belt or waistband. Or, it can just sit on your desk or sink. You can roam up to 15 feet, it's not a speakerphone but a headphone phone.

Just slip on the comfortable, adjustable headset with its flexible noise canceling microphone, and enjoy great sound and hands free conversations.

In the past, only people who sat at their desks all day would bother with headsets. But, with this amplified phone, you'll use it even for short calls. And, you can set the volume to any comfortable level, even if it's noisy around you.

The headset covers one or both ears. You can stay in touch with the world around you or block it out. Comfortable foam cushions rest on the outsides of your ears for fatigue free conversation.

It's ideal for working at your desk totally hands free. It's irreplaceable in the



kitchen where you can now cook (neat) or wash dishes (yuk) while you talk.

Switch it on to answer a call. You'll have Flash, Redial and Mute, plus Tone and Pulse dialing and Ringer On/Off.

Just plug it in along with your regular phone. You'll probably never pick up your conventional phone again.

It comes with an adaptor so that both phones can be plugged into the same modular jack. It's made by Wicom and it's backed by their limited warranty.

**FORGET NUMB EARS FOREVER  
RISK FREE**

So, think about holding a hard hand-

set up to your ear for hours. Think about hands free freedom. And forget numb ears and cramped shoulders forever.

If you're not 100% thrilled, simply return it in its original box within 30 days to DAK for a courteous refund.

To order Wicom's Numb Ear Headset Telephone with 15' coiled cord, variable volume and automated features, risk free with your credit card, call toll free, or send your check for just \$69<sup>90</sup> (\$3 P&H). Order No. 4909. CA res add tax.

I like having my hands free. But most of all, I like the way my ears feel, or don't feel, at the end of the day.

## Audio Telescope

Pick a voice out of a crowd or a sparrow's song out of a tree with this super-directional shotgun microphone



It's tough. If you've ever tried to record a singer while you're sitting in the audience, or a conversation from across the yard, you know that your microphone seems to pick up everything but what you want to record.

Now you can record a lecture from the back of the room or a bird's chirp from across a field.

The sound will be crystal clear with a wide full frequency response from this incredible super-directional electret condenser microphone.

Electret condenser microphones cap-

ture sounds never before possible outside the recording studio. By using battery driven circuits, these microphones can use a more sensitive sensing membrane to capture sound vibrations.

Very little mass must be moved, so these new mikes are incredibly sensitive. The Audio Telescope is powered by one AA battery (not included).

It comes with both a conventional mike stand mount and a stand. And, it's great for video recording.

The microphone itself is totally isolated from the stand by polymer O-rings.

So, it actually floats. It will not pick up motor noises or vibrations.

It is 17" long and comes with a full length foam wind screen. There is a mini phone plug for video camera use, plus a 20 foot mike cable with both mini and 1/4" plugs for conventional professional recording. It's backed by a manufacturer's standard limited warranty.

**TRY THE AUDIO TELESCOPE  
RISK FREE**

Record lectures, concerts or nature, risk free. If you don't feel you've made totally professional recordings, simply return the Audio Telescope in its original box within 30 days for a refund.

To order your Audio Telescope risk free with your credit card, call toll free or send your check for only \$69<sup>90</sup> plus \$4 for postage and handling. Order No. 9736.

You'll be able to make superb recordings that were never before possible.

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# Computer Answering Machine?

*Infuse your computer with power, even when it's off. Join the electronic mail revolution. And, give any external Hayes compatible modem a memory of its own, at a \$69<sup>90</sup> breakthrough price. Even if you don't own a modem, read on!*

By Drew Kaplan

Receive programs. Receive Electronic Mail. Make your stand alone modem really stand alone.

Now you can send files to your computer at home **when it's off**. Now, even if you're running spreadsheet or word processing programs, you can receive typed messages or files without interruptions.

Forget faxes. You can now have inter-office memos received, even at remote locations, effortlessly, with this all new modem answering machine.

**And look at this.** If you don't already own a modem, for just \$69<sup>90</sup> plus the \$119<sup>90</sup> cost of a DAK modem, you can have all the benefits of electronic mail for virtually any computer.

You're out of the office at meetings. When you get home, you find a schedule for the next day waiting for you at the touch of a button.

You'll also find several messages from associates and even a dinner invitation from a computer buddy. You can print it out or read it on your monitor. It's all easy with electronic mail.

Just look for the blinking light on your buffer and you can retrieve your messages and files at your convenience.

## WHAT IT IS

Technically, it's called an intelligent modem buffer. It's a new concept, so if you aren't familiar with it, don't worry.

It's installation free. Just connect it (cable included) between your modem and your computer. It will give your computer, mainframe-like remote input.



Just touch the On-Line button and it automatically takes over your modem.

Forget programming. Forget expensive complicated 'Host' programs.

Whenever your modem line rings, it will automatically be answered and the caller will be given a choice of options.

They can type in a message. Anything

they type on their keyboard will be stored for you to read at your convenience.

And, they can send you a file using standard XMODEM protocol. A file can be a letter, a program or a spreadsheet.

To read your messages, just touch the Read button. You'll see a directory of the messages and files you've received.

You can select messages and files in any order that you like. And, you can either read the files on your monitor's screen or save them to disk.

## 50 WAYS TO USE YOUR BUFFER

(Sung to the tune of "50 Ways to Leave Your Lover")

If you're like me, you don't use your modem's auto-answer feature very often. Well, whether you have a dedicated line or not, boy are you in for a change!

People spend lots of money with The Pay Services to leave messages for friends and business associates.

It's called Electronic Mail. And, it can cost \$0.50 to \$1.00 per message.

Now you'll have your own incoming electronic bulletin board. So, forget calling and logging onto message bulletin boards. Now you can retrieve your messages with the touch of a button.

And, if the SysOp of a bulletin board has a message for you, he can leave it on your bulletin board. It's really great.

If you're a lawyer, a writer, or a businessman, you can send your information at lightning speed for much less than the cost of faxing or air couriers.

With fax machines costing \$1-3,000, and air services in the \$20 range, this system (because you already own your computer) combined with any modem, represents incredible cost savings, and yet provides superior service.

It's superior because anything you send doesn't have to be retyped for revisions. It's ideal for letters, orders, proposals, contracts and memos.

And, is it easy! Just dial the number, respond to the buffer and leave your message. Whether you hand type in a message or transmit a file, it can instantly be anywhere there's a phone line. Wow!

If you have a portable computer, you can now send messages, orders and files back to your main computer without leaving it on for extended periods.

## IN A NUTSHELL

It can receive up to 64 messages or files. It's compatible with 2400 baud, 1200 baud and 300 baud modems. It has a 64K memory capacity and there's an upgrade to 128K if you're expecting really big files (128,000 characters).

With only two buttons to push, virtually no instructions needed, and less than two minute hookup, it will really add to your computer's capabilities.

It's AC powered. It's 7" X 5½" X 1¼". And, it's backed by a limited warranty.

## COMPUTER ANSWERING MACHINE RISK FREE

It's not just a convenience to save you time when files are coming in. There's simply no economical way to enjoy the benefits of Electronic Mail and automatic file transfer without this modem buffer.

If you're not 100% thrilled, simply return it in its original box to DAK within 30 days for a courteous refund.

To order your 64K, 64 message Capacity Computer Answering Machine, that installs instantly and automates your modem, risk free with your credit card, call toll free, or send your check for DAK's factory direct price of just \$69<sup>90</sup> (\$4 P&H). Order No. 4716. CA res add tax.

To order your Expanded 128K, 64 message version, risk free with your credit card, call toll free, or send your check for DAK's factory direct price of just \$89<sup>90</sup> (\$4 P&H). Order No. 4717.

East coast to west, and around town, you'll receive data at anytime, hassle free, and save a ton of money in the deal.



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8200 Remmet Ave., Canoga Park, CA 91304

# Cordless Job Blasters

Get your projects finished quickly and easily with these exciting new powerful cordless tools. For your home, your car, camper, boat or for the great outdoors, cordless power is yours. And, wait till you see DAK's breakthrough prices.

By Drew Kaplan

It's true. For pleasure projects or chores, the right tool makes all the difference.

Whether you're taking 12 screws out of your computer to put in a new card, or installing a towel rack, you'll love the incredibly powerful cordless screwdriver.

If you have to fix a speaker wire or antenna wire inside, or an automatic sprinkler or decorative lighting wire outside, cordless soldering is a dream come true.

And, whether you're buffing hard to reach crevices in antiques or spots on your car, you can grind, drill or polish at up to 4,000rpm with the Turbo Tool.

## FIRST THE SCREWDRIVER

It's amazing. It's really powerful. This high torque cordless electric screwdriver will drive in long wood screws, or assemble or disassemble electronic equipment, effortlessly.

I have a pair of speakers that I have been wanting to open. There were 12 screws between me and what was inside. Well, when I received this screwdriver for testing, the speakers lost.

With no fuss and no hassle, I had a speaker open in less than 3 minutes. I was amazed at the power and ease.

Next, I installed a towel rack that my wife had been trying to get me to put up for weeks, in our utility room.



Well, this reversible screwdriver really worked perfectly, totally unlike some of the really cheap adaptors I've tried before. It's so powerful that I was actually able to drive a wood screw's head over half an inch into a piece of 2X2" pine.

For years I've had a set of screwdrivers at my desk because I open and examine every piece of equipment DAK sells. Well, for the past few weeks I've been using the cordless screwdriver, and it's great.

Maybe the thrill of newness will wear off. But, it's fun. It's easy. It's incredibly powerful. And, even if it doesn't always remain a thrill, it will continue to save me a lot of time and blistered hands.

The project I'm really proud of is a set of shelves I put up using vertical braces.

You slip shelf holders into the braces and finally lay shelves on the shelf holders. Well, screwing in six, 3" long screws, into each of 4 braces, isn't fun.

Well, it still wasn't fun, but the shelves were up in record time. My hands feel great. And it was incredibly easy.

And, don't forget, since it's cordless, it goes outside, in your attic, basement or your garage. Plus, it's sensational for working on your car.

**Important Note:** Now you can effortlessly install your own car stereo or alarm. Cordless tools really make any project easy. Of course, you can change a hose, remove door paneling or change molding.

This Turbo Screw Driver weighs a



hefty 2 pounds. It operates on self-contained Ni-Cad batteries for up to 2 hours on a single charge. And, the charger/stand is included.

It has both forward and reverse high torque drive, which you control with a heavy duty rocker switch.



It comes with both a flat (regular slotted head) and phillips head driver.

It's perfect for any project in your home, car, camper or boat. And wait till you see DAK's breakthrough price.

## CORDLESS SOLDERING

In your yard, at your workbench or in your car, you can now have cordless rechargeable soldering power.

So, you don't do much soldering? Well, if you have speakers for your stereo, cable for your TV, or have ever had a wire on a 9V battery clip from one of your portables break, this is the tool for you.

Whether I'm connecting TV wires on the roof, fixing my automatic sprinklers in the yard, or just tinning the end of speaker wires, now it's all easy.

You can run wires in your attic or put speakers in your car. Of course, you can solder printed circuit boards and all your regular soldering jobs perfectly, with this cordless solderer.

**Danger.** If you connect your speakers without tinning the ends of the wires, you can short out your amplifier. So, what's tinning?

Well, speaker wire is stranded, and when you twist the end to fit into your amplifier or speaker terminals, if you're at all like me, as you shove in the wires, a few push back and are left loose.

Well, with a soldering iron, all you do is apply a little solder after you twist the ends and you'll never have a loose wire to short out your amplifier.



If you run sprinkler wires in the yard, antenna wires around your house or speaker wires from room to room, every connection should be soldered.

...Next Page Please

## Cordless Continued

I can't tell you how many times what works today won't work in a few months because the wire at the joint has oxidized.

Before cordless soldering, professionals used solder and a match to ensure long life connections.

I learned this when I had DAK's first burglar alarm installed. Of course, I later found TV and audio installers doing it too.

When I was an installer (yes, I used to do custom home stereo installations), I would bring a 50' extension cord. Well, now it's easy, fast and you'll never have bad connections to plague you again.

Of course, you can fix stereo equipment. This small, yet powerful tool can fit in places most soldering irons can never go. And, for installing car stereos or burglar alarms, it's a must.

So, the next time a broken wire interrupts the use of your electrical devices, think of this cordless solderer.

It's really a phenomenally useful tool to own. It's also great for burning wood or melting through plastic.

It will solder up to 250 connections per charge. It operates from its internal Ni-Cad batteries. And, it comes complete with a charger/stand. Plus, there's a DC adaptor so it can be charged from your car's cigarette lighter.

It has a built-in focused lamp to light the area you're soldering, and there's a protective cover for the tip.

Whether you build kits and solder all the time, or simply need to make an occasional repair, this cordless solderer is a really valuable tool. And wait till you see DAK's breakthrough price.

You can carve signs, add personalized scrollwork to wood, metal and plastic. And, create all types of models.

It's a hobbyist's delight. It's a perfectionist's dream. If you care how things look, you'll be amazed at what you can now create, smooth and grind.

It runs for an hour from a single charge of its self-contained Ni-Cad Batteries.



And, an AC charger is included.

You can easily rout out wood to recess hinges. You can also make holes bigger, shape almost anything and much more. You'll be amazed at DAK's incredible price on this super useful tool.

## INDUSTRIAL CLEAN UP TOO

You've probably seen little rechargeable vacuums just about everywhere. Well here's one that's truly powerful.

It's called the Plus 30 because it oper-

## FABULOUS CORDLESS SOLUTIONS RISK FREE

Consider a screwdriver that can drive the head of a screw into solid wood.

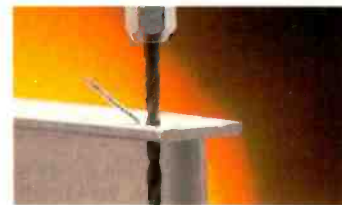
Imagine soldering up to 250 connections wherever you happen to be. And, the Turbo Tool's 4,000rpm shaping, sanding and polishing capabilities are great.

And finally, I wasn't going to offer the

vacuum. But, I've tried it myself and it's like no cordless vacuum I've used.

If you don't find these tools to be even more powerful and useful than I've described, simply return them in their original boxes to DAK within 30 days, for a courteous refund.

**NOTE:** All tools come with built-in Ni-Cad batteries and separate chargers. They're made by Amercep, where only the very best is acceptable. They are



## SO, WHAT'S A TURBO TOOL?

Hats off to Dremel®. They've established the market for these incredibly useful high speed tools.

Hobbyists have been polishing, sanding, carving, grinding, drilling and engraving with these tools for a number of years. Now, you can have totally variable high speed power from 0, up to 4,000rpm in a cordless model. Wow!

You can deburr wood, metal, plastic or china. You can drill holes at speeds and in places that no other drill can go.

You can engrave your valuable possessions. And, you can carve in wood or other materials.

The Turbo Tool comes complete (as shown left to right) with a polishing wheel, a wire brush, a grinding stone and a drill. There are also two collets (a fancy name for chucks).

Literally hundreds of interchangeable tools are available for the standard corded tools that are 100% interchangeable with the cordless Turbo Tool.

Nothing beats this tool for removing rough edges. In fact, manicurists use this type of tool to fashion expensive acrylic nails

It's really like a mini router. It's great for installing door latch plates and bolt assemblies. It will take sharp edges off your car, and it's great for crafts.

ates for over 30 minutes from a single charge of its Ni-Cad batteries (8 minutes is average). And, boy, is it strong!

It's like an industrial vacuum. It comes complete with a crevice tool, upholstery brush and extra washable filter bag.



So when you want to clean up fast, use the industrial strength Turbo Duster. Pick up sawdust, spills or plain dirt.

Use it in your home, in your car, camper or boat. Cleaning up isn't fun. So, get it over fast with the all new industrial strength Plus 30 Turbo Duster.

It comes complete with a charger/stand/mounting bracket. And, just wait till you see DAK's breakthrough price.

backed by Amercep's incredible full 2 year (yes 2 years) limited warranty.

To order the Cordless Screwdriver, complete with both slot head and phillips head drivers risk free with your credit card, call toll free or send your check for DAK's market breaking price of just \$19<sup>90</sup> (\$3 P&H). Order 4751. CA res add tax.

To order the Cordless Soldering Iron risk free with your credit card, call toll free or send your check for DAK's market breaking price of just \$24<sup>90</sup> (\$3 P&H). Order No. 4750.

To order the Cordless Turbo Tool with 0-4,000 Variable Speed Control, complete with 2 Collets, Polishing Wheel, Wire Brush, Grinding Stone and Drill, risk free with your credit card, call toll free, or send your check for DAK's market breaking price of just \$39<sup>90</sup> (\$3 P&H). Order No. 4752.

To order the Cordless Plus 30 Super Industrial Vacuum, complete with upholstery brush, Crevice Tool and Extra Filter Bag risk free with your credit card, call toll free or send your check for DAK's market breaking price of just \$39<sup>90</sup> (\$3 P&H). Order No. 4749.

You'll be thrilled by the quality and superb craftsmanship of these fine tools. You'll be amazed at how easy it is to build, fix and create things, when you have the right tools that go where you go.

# Sound Barrier Streaker

You'll streak through the heavens of disbelief the first time you put on the earphones or connect this AC/DC programmable CD player to your **stereo system**. At home or away, your music will explode with 5hz to 20,000hz life. Everything is included for just \$169<sup>90</sup>.

By Drew Kaplan

There's no warning. There's no record noise, no tape hiss. Vibrant but finely detailed music just explodes from your earphones and stereo system.

Citizen's 3-Beam Laser Servo CD is at home, plugged into our stereo system (AC and patch cord included), as it is on the move with you (battery case, shoulder strap and earphones included).

The sound is like a shock wave reverberating through your home. It's like the blazing flash and violence released by a lightning bolt as it streaks to the earth. This is the experience you can expect when you first hear digital audio sound.

Forget any experience you've ever had before with stereo. CD audio is an awesome advance that dwarfs the switch we made years ago from 78s to LPs.

Imagine listening to music with a frequency response from 5hz to 20,000hz. And, flutter and wow is "unmeasurable".

The sound quality, and yes, the sonic violence will thrill you. I've spent over 15 years on the test bench and in the studios, and the only equal I've heard to this sound is 'live sound'.

And, live sound doesn't mean the sound you hear at a concert where you are simply listening to the auditorium's PA system. Live sound means sitting right in the middle of the orchestra.

I know, I'm a cellist. And, there's just no sound experience like the sound we hear in 'the pit'.

## BUT WHY A PORTABLE?

Forget conventional audio components. CD players are computers. There's no reason a portable can't be 100% equal to a 'sit-on-the-shelf' CD. It uses the same heavy over-sampling. It uses the same type of 16 bit linear digital to analog converters. And, it could be smaller if it didn't have to accommodate the CD disc.

Since CDs are new, a portable lets you make the most out of your collection.

You can simply plug it into different stereos in different rooms, or take it with you wherever you go.

It's just 5" X 5" X 1 1/4". And it comes complete with all the accessories you will need (pictured to the right). Just program up to 16 selections and prepare for a sonic adventure.



## NO SOUND AT ALL

CD gives you a signal to noise ratio of 90db. There is, for all intents and purposes, absolutely no hiss, no scratch, and best of all, no surface noise.

You've got to experience the silence during very quiet passages to comprehend the sonic adventure of the music. It's as if your stereo wasn't even on, and then suddenly, a thunderclap explodes!

Conventional records and tapes have a dynamic range of perhaps 50 db. Dy-



dynamic range is simply the difference in sound level (volume) between the softest and loudest recorded sounds.

CD gives you a 90db dynamic range, which is roughly equivalent to the difference between absolute silence and standing next to a jet engine.

Your music will be dramatically more exciting. You won't have to carefully compare CD to conventional sound. From the very first note, you'll be in shock.

## ROARING ON

This Japanese made, 3-beam, laser servo system with heavy sampling, supplies superb sound. Plus, it's loaded.

You can select up to 16 tracks in any order you like. There's even a repeat pad. So, you can repeat selected tracks or the entire disc, forever.

Just touch a pad and you can skip to

than an awesome price. It's backed by Citizen's standard limited warranty.

## A SONIC SOUND STREAKER RISK FREE

Experience music with a thrilling frequency response and sonic range. Plus, you'll be thrilled by the hiss and background noise you won't hear.

If you're not 100% satisfied, simply return it to DAK within 30 days in its original box for a courteous refund.

To order Citizen's Top Of The Line Portable and Home AC/DC Compact Disc Player with 16 program capability, complete with Battery Case, Strap, AC adaptor, Earphones, and Stereo System Cable risk free with your credit card, call toll free, or send your check for DAK's Sound Streaking price of just \$169<sup>90</sup> (\$4 P&H). Order No. 4703. CA res add tax.



the next track during play, or repeat the track you are listening to.

An LCD display shows you the track that is playing, the elapsed time, or the total time of the disc.

To use it on the move, just drop 4 AA batteries into its included battery pack, slide in the CD, put the shoulder strap over your shoulder and the earphones into your ears, for a sonic odyssey.

Installation at home consists of simply plugging the included patch cord into any 'Aux' input in your stereo system and plugging in the AC adaptor.

Whether this programmable CD becomes a permanent part of your stereo system or moves with you, or both, you'll enjoy awesome sound at incredibly less

It may strain my credibility to describe any device, let alone a portable that I'm offering for only \$169<sup>90</sup>, as providing sound many times better than anything you've ever heard before. But, use DAK's risk free trial to experience this bigger than life sound for yourself.

And, CDs are really tough. Take them with you and enjoy dramatically alive sound virtually anywhere you go.



**DAK INDUSTRIES INC.**

Call Toll Free For Credit Card Orders Only  
24 Hours A Day 7 Days A Week

**1-800-325-0800**

For Toll Free Information, Call 6AM-5PM Monday-Friday PST  
Technical Information... 1-800-272-3200  
Any Other Inquiries... 1-800-423-2866  
8200 Remmet Ave., Canoga Park, CA 91304





# BSR's Endangered Colossus

Prepare for bone jarring bass and dramatically clear highs from these newly developed 15" 3-way 5 speaker systems that nearly missed their chance to charm an audiophile's ear. BSR moved its dbx and ADC divisions into one facility and these speakers almost became orphans. So now, they're yours at a close-out price.

By Drew Kaplan

It's a shame. But, it's also a great opportunity to get a pair of 15" audiophile loudspeakers with the newest in stereo imaging at a market-breaking price.

Imagine a precisely matched mirror image pair of top-of-the-line BSR speakers that can effortlessly recreate the cataclysmic impact of a full orchestral crescendo at full volume and yet offer flawlessly subtle sound detail to 21,500hz.

You'll thrill to thunderous bass all the way down to 26hz. Incredibly rich, full, vibrant sound at low volume will explode with life as you increase the volume.

But before we examine the front speaker complement, the twin overlapping crossovers and the top mounted sonic placement and ambiance speakers, let's see why they were almost orphaned.

You see, BSR, the half billion dollar electronics giant, is the parent company of two of the best names in up-scale audio, dbx and ADC.

Last year dbx developed a new multi-thousand dollar speaker system called the Soundfield One which lets you sit virtually anywhere in your room and have full stereo imaging and terrific sound.

BSR decided to consolidate ADC and dbx into one building (still 2 companies) and put all its speaker efforts into dbx.

## POOR JACK

Well, while dbx's engineers were off designing their multi-thousand dollar masterpieces, BSR's Senior Acoustical Engineer (he had been Fisher's Chief Engineer for 10 years during its top end component stereo days), was designing BSR's radically new speaker line.

The revolutionary top of the line 15" stereo imaging pair pictured above will let you enjoy superb stereo imaging without sitting directly in front of your speakers.

But unfortunately, in the consolidation move, BSR's speakers went by the wayside, and so did Jack.

Enter DAK. After a few fearful negotiations and considering the engineering costs BSR had already expended, they agreed to make the speakers just for DAK.

Because there's virtually no BSR overhead left on these speakers, and the R&D was all but complete, we've gotten these speakers for virtually the component costs plus a little BSR labor.

And don't worry about Jack. BSR had him finish the engineering (they really are great people) and they'll pay him a royalty on each speaker we sell. Besides, by the time you read this, Jack is sure to be snapped up as the Chief Engineer at another esoteric audio company.

## WHAT'S STEREO IMAGING?

Stereo imagery is the logical separation and interaction between channels. It's the successful creation of a panoramic wall or stage of music rather than the confined, easily located 2 speaker sound. IT'S WHAT'S INSIDE THAT COUNTS

Imagine the full thunder of a kettle drum, or the pluck of a string bass being explosively recreated in your living room. BSR's 15" sub-bass acoustic suspension driver will revolutionize your concept of

low clean bass.

Its magnetic structure weighs a thundering 48 ounces. But that's not all. The magnetic field is developed by the rare earth metal Strontium for state of the art massive but flawlessly controlled bass.

A 38mm voice coil with a 200° centigrade temperature capacity, will handle the most demanding digital or analog recordings. And, a new super rigid cabinet design virtually eliminates coloration due to uncontrolled cabinet resonance.

At low volume, the bass will fill in and envelope you. At high volume, your room, your walls and your neighbors will shake. (Not for apartment dwellers please.)



## MATCHED PAIRS

The mid-range and high end of BSR's speakers are truly unique. Front mounted 8" polypropylene mid-range drivers provide rich sound while top mounted 5" polypropylene mid-range drivers provide an open, lifelike ambiance.

Front mounted exponential horn tweeters provide awesome brilliance to 21,500 hz, while top mounted tweeters enhance separation because they are mounted to the outside edge of each speaker.

So, this system has a specific left and a specific right speaker. You'll find wide, but interactive separation that will vastly widen your ideal listening area.

The imagery will give the illusion of musicians actually playing in front of you. Your music will take on a three dimensional quality. You'll enjoy superb stereo imagery regardless of each speaker's specific placement in your room.

## MORE SPECIFICS

The exponential horn tweeters, both in front and on the top of these systems, employ 25mm rigid phenol diaphragms for stability and accurate response.

Polyamid-imid binders and ferro-fluid coolant allow for a 300% increase in heat dissipation so you can drive the voice coils up to 200° centigrade.

Now, the mid-range. Both the 8" front firing and the 5" top firing polypropylene drivers reproduce the mid-range frequencies like no ordinary speakers.

It's amazing that so many speaker manufacturers simply slap in 5" paper mid-ranges to reproduce what's really the major portion of the sound spectrum.

BSR's 8" and 5" polypropylene mid-ranges are rigid, exacting drivers that deliver incredibly pure uncolored sound.

They have matched 25mm voice coils, also protected by ferro-fluid and polyamid-imid to 200° centigrade. They are driven by powerful barium ferrite magnetic fields.

## NOT QUITE FINISHED YET

To prevent phase shift and cancellation, two totally separate crossover networks are employed in these speakers.

All frequencies below 800 hz are directed to the 15" woofer. The front system routes frequencies above 800hz to the 3" mid-range to take full advantage of its superb reproduction capabilities. Frequencies above 3400hz are routed to the horn tweeter.

The top mounted system routes only frequencies above 1200hz to the 5" polypropylene ambiance mid-range driver, and frequencies above 3400hz are routed to the top sonic placement tweeter.

There are level controls for both the top and front mounted speakers so that you can voice the speakers to match your musical taste and environment.

Note: Only the top tweeters are mounted at the the edges. The front mounted tweeters are conventionally mounted for acoustical symmetry.

Each speaker is fuse protected for up to 200 watts peak, 150 watts continuous power. You can operate these super efficient speakers with as little as 20 watts.

## AND OH WHAT A PRETTY FACE

The speaker systems are 30" tall, 19 1/4" wide and 10 1/2" deep. Their lovely oak wood-grain appearance is enhanced by the dark removable grill cloths that beautifully contrast with the rich wood-grain tones. They're a statement of audio elegance when placed in any room. They're backed by BSR's 2 year limited warranty. A COLOSSAL DREAM COMES TRUE RISK FREE

You'll hear depth of sound at low levels that was previously unobtainable. And yes, when you crank up the volume, your music will explode with realism and drama.

Try these speakers in your own system. Then compare them at any Hi-Fi Store with any pair of speakers up to \$1000. If they don't beat all the competition hands down, simply return them to DAK in their original boxes within 30 days for a courteous refund.

To order your matched pair of BSR top-of-the-line 15" 3-way 5 speaker systems with unique stereo imaging risk free with your credit card, call toll free or send your check for DAK's market-breaking price of just \$299 for the MATCHED PAIR plus \$34 for Postage and Handling. Order No. 4868. CA res add tax.

It's a dream system for an audiophile. Sonically pure, thunderously powerful, these BSR speakers will make your future listening years an on-going fabulous, if not earthshaking experience.



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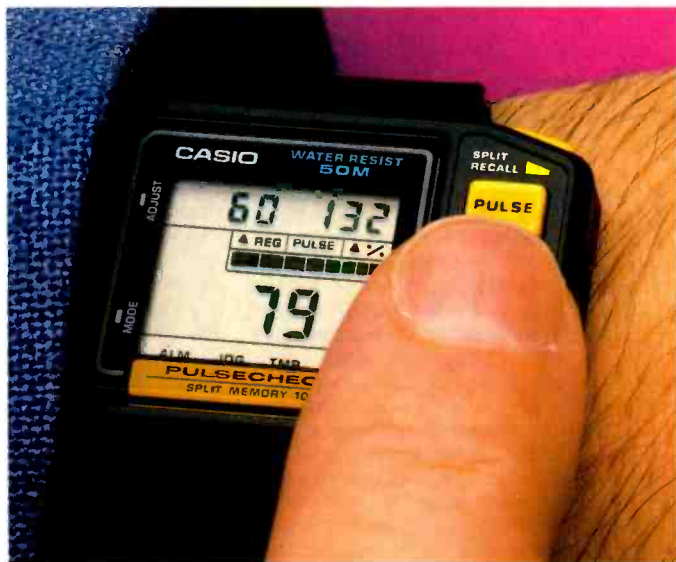
8200 Remmet Ave., Canoga Park, CA 91304



When you are at rest, so is your heart. A low resting heart rate usually means that you're in good condition. Have you checked yours?



When you exercise, you should reach your heart's target zone. But, have I reached my exercise target zone, or just had too much coffee?



# Heart Window 2

Now you can exercise, rest, swim or go out to dinner wearing the latest in computer pulse takers on your wrist. Plus, it's a talented sports watch with an audible pacer, a 9 split time stopwatch and a repeatable countdown timer.

By Drew Kaplan

It's a fact. You can tell a lot about yourself from your heart rate. You can evaluate the condition you are in, how much stress you are under, and how hard you should be exercising.

Think about it. How fast does your heart beat when you climb a flight of stairs? And how long does it take for your heart rate to return to normal?

Well, if you're at all like me, you may be a little out of shape. While I'm only 41, several friends of my own age have recently had heart attacks. And frankly, I'm getting just a bit worried.

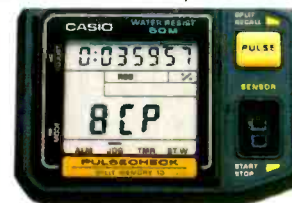
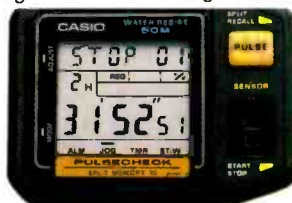
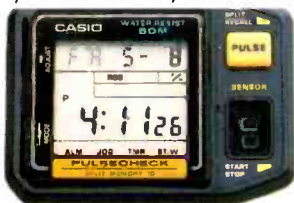
You see, I'm getting past the point where I can simply say, "I'll get back into shape next year".

So whether you're a long distance runner (this is the ultimate jogging companion), or just a few pounds overweight like I am, your heart rate will give you a picture of your heart and body's condition.

Now you can take your heart rate anytime, anywhere, with the newest in sophisticated electronic pulse takers.

And, it's contained in a talented sports watch that will dramatically contribute to your fitness program.

Plus it looks so nice and slim, you'll be as proud to wear it with a coat and tie as you are when you're running.



## YOUR HEART'S TARGET ZONE

Your heart, just like any other muscle in your body, requires exercise. Unfortunately, unlike your arms, you can't see your heart's condition just by looking.

The type of exercise called aerobic exercise is specifically designed to exercise your heart. The purpose of aerobics is to reach your heart's target zone.

So, what is your target zone? Your target exercise zone is between 60% and 80% of your maximum heart rate. And here's an easy way to figure it out.

Simply subtract your age from 220 beats per minute. So, for me at 41, my

maximum heart rate is (220-41) or 179.

So, when I exercise I should get my heart rate up to at least (179 X 60%) or 107 beats per minute, and no higher than (179 X 80%) or 143 beats per minute.

Look at this. The new Heart Window 2 shows you where you are at all times. In the pictures above I've entered my resting pulse rate of 60 and 65 beats.

When I work out, I enter my 179 maximum rate and constantly see where I am.

With the Heart Window 2 to help me, I can be sure that my workouts are valuable for my heart and neither dangerous escapades or total wastes of time. Of course, before beginning any exercise program you should consult your doctor. Note: The Heart Window 2 is designed to indicate your pulse rate and aid your exercise, not to make medical diagnoses. **BUT ISN'T EVERYONE DIFFERENT?**

Here's the really exciting part. The worse shape you're in, the faster you'll reach the target zone.

You see, as you get in shape, your heart doesn't have to beat as hard to do the same amount of exercise. Just as when you work out with weights your arms become stronger, your heart becomes stronger with aerobic exercise.

So, the Heart Window 2 is safe for the beginner or the athlete. And, you'll really

see your improvement as you exercise.

But you don't have to exercise. Just wearing the Heart Window 2 and using it at the office when you're under stress, after you've walked up some stairs or around the block, will make and keep you aware of your body's physical condition.

And look at this. Sit down at your desk and take your pulse. Then drink a couple of cups of coffee and take your pulse again. You'll see just what your morning 'pickup' actually picks up. And if, God forbid, you smoke, take your pulse before and after a cigarette. Wow!

**MICRO-ELECTRONIC WONDER**

Casio's Heart Window 2 is like a direct electronic link to your heart.

It uses a new micro-infrared technology to actually measure the capillary action in your finger. Each time your heart beats, the capillaries expand and a beat is registered.

The line just above your heart rate beats with your heart. So, you'll see the number of beats, a representation of the beat, your resting or maximum heart rate and the percentage, all displayed on the LCD screen of the Heart Window 2.

It's a beautiful LCD watch. As you can see in the display to the left below, it shows you the time, day, date and month.

It has 3 alarms. And, you can set an alarm to sound up to a week away.

It's a 20 hour stopwatch that's great for exercise and sporting events.

My son lettered in track. And, luckily he never came in 9th, but this stopwatch actually memorizes up to 9 split times.

The repeatable countdown timer is invaluable. I set it for 35 minutes when I got on my bicycle. It's great.

And, speaking of bicycles, rowers and jogging, there's a pacer (right hand picture). You can set it to provide audible beeps from 5 to 240 beats per minute.

Now you'll be able to set a consistent pace and really see your improvement.

It is water resistant to 50 meters. It comes with a two year battery. And it's backed by Casio's limited warranty.

## TRY THE HEART WINDOW 2 RISK FREE

Now you can look at your heart as easily as the time. You'll see how you react to stress, foods and exercise. Why not let your own doctor test it?

Try the Heart Window 2 risk free. Try exercising and then check your cardiac recovery rate (yes it times recovery).

If you don't like what you see, you'd better keep the watch. But, if you just don't like the watch, simply return it within 30 days in its original box for a refund.

To order Your Heart Window 2, Pulse, Sports and Dress Watch risk free with your credit card, call toll free or send your check for just \$49<sup>90</sup> (\$3 P&H). Order No. 4919. CA res add tax.

In the gym, at the track or at the office, you'll have a direct connection to the conditioning of your heart.

# Fat Watcher Plus

Now you can walk or jog around the block, walk around the office or even around a trade show, and know how far you've traveled and how many calories you've burned. Use the alarm to set calorie and distance goals.

By Drew Kaplan

No, you don't have to be fat. And no, you don't have to be a marathon runner. However, if you are, you're going to marvel at the feedback you'll get from this new electronic Body Monitor.

Before we explore how you can use this Body Monitor's capabilities to aid you in losing weight (as it is me) and to measure your training achievements, let's look at some interesting curiosities.

If you're like me, you've probably wondered just how far you go when you walk around the block. And, every year I attend the Consumer Electronics Show and I've always wanted to know how far I walk.

Since my plane always seems to be at the last gate at every airport, I've wondered just how far I go. I've also been curious about how much ground I cover in an average day at the office.

Well now, not only will I know how many steps I've taken, I'll know how many miles or hundredths of miles I've gone and how many calories I've burned.

Now we will know it all. And, with the ability to set goals, we can use this monitor to help achieve our desired fitness.

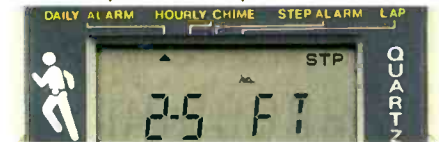
## ONE STEP AT A TIME

It all starts out with one small step. Just clip the Body Monitor on your belt or waist band and away you go.

First it counts your steps. As you can see below, I've taken 1544 steps.



It knows how far you've gone because you set it to your particular stride length. As you can see, I've got mine set at 2½ feet. But you can set yours from 0 to 7'.



Because it knows your stride length, it automatically calculates the distance you travel. Just touch a button, and as you can see, I've traveled 0.58 miles.

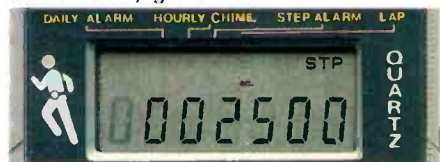


Push the button again, and you can see how many calories you've burned. The Body Monitor has a built-in table that calculates an average of how many calories you've burned, based on the number of steps you've taken.

And, you can be even more accurate by adding your exact weight to the body meter's reading. A formula is included.



What's really great is that you can set a target for yourself to achieve. Here I've set 2500 steps. When I reach 2500 steps, an alarm will sound to tell me that I've achieved my goal.



But steps aren't very interesting, so you can set the alarm to let you burn 100 calories or go 3 miles. It's all calculated through the steps, so it's really easy.

Let's say I want to eat an ice cream sundae. It has 260 calories. So, I'd have to walk 5200 steps. I'm forgetting the ice cream sundae, but I may have a piece of cheese or maybe even a cookie.

Using the Body Monitor for running or walking lets you see just what you've accomplished. And while I can't speak for you, I personally work and play best when I set goals.



The Body Monitor lets me set and achieve goals. So, it's been a terrific aid in my personal fitness program.

By the way, it's 1.03 miles around my block and I burn about 105 calories.

I'm really excited about finding out just how far I walk at the Consumer Electronics Show, but I'll have to wait till it opens in January to find out.

**SO MUCH MORE**

it may look small, but it has so much inside. It has a built-in clock with hourly chime, so you don't have to wear a watch.

It has a stopwatch, accurate to 1/100th of a second resolution. And not only does it have a lap timer, it has first and second place finishes.

But, with all its frills and all its great curiosity satisfiers, it's really a precision fitness aid.

So, if you walk, jog or exercise, the Body Monitor can aid in measuring what you've accomplished. It comes with a one year battery, and it's backed by a one year limited warranty by Innovative Time, the Pulse Watch People.

## SATISFY YOUR CURIOSITY RISK FREE

I've been dieting and exercising for years. I use my pulse watch all the time and it tells me how I'm doing. Now the new Body Monitor gives me feedback as to what I'm accomplishing.

And, I particularly like the goal setting alarms. Now, instead of watching my watch to see when I've run enough, an alarm sounds when I'm through. Plus, it's really neat to know how much ground you've covered around the office or around the block.

If you're not 100% satisfied, simply return it to DAK in its original box within 30 days for a courteous refund.

To order Innovative Time's Body Monitor with Step Counter, Mileage Counter, Calorie Counter, Stop Watch and Goal Setting Alarm, call toll free, or send your check for DAK's breakthrough price of just \$39<sup>90</sup> (\$3 P&H) Order No. 4651. CA res add tax.

It's great for fitness, but I'm wearing mine to work and even around the house. It's small in size, but it sure feeds back a lot of exciting information.



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8200 Remmet Ave., Canoga Park, CA 91304

# 2-Line Answering Solution

Now you can have both of your phone lines answered automatically. Now you can screen calls on one line without getting off the other. Plus, wait till you experience the quality of this hands free, memory dialing speakerphone.

By Drew Kaplan

You're on the phone. Your second line rings. Now you don't ever again have to break off your conversation.

Cobra's new 2-Line intelligent answering wonder will answer the line you're not on and even let you listen to the message being left, if you desire.

When you aren't using either line, you can choose: only line 1, only line 2 or both lines to be answered. So now, you can have total automated answering freedom for two phone lines.

## INCREDIBLY USEFUL

Forget beepers. When you are out, you can call home on either line without using beepers to retrieve your messages. And, you can save or erase your messages from any Tone phone.

**But there's much more.** If you forget to turn it on when you leave home, no problem. Just call home and remotely turn it on. Plus, you'll have Toll Saver.

Why waste the cost of a phone call if you have no messages? Whenever you turn on this answering wonder, it answers your phone on the 4th ring and takes your first message. From then on, it answers your phone on the 2nd ring.

So when you call in, if you get to the 3rd ring, hang up and save yourself the cost of a phone call. You'll also have security. You can use a secret code to retrieve your messages.

## EASY TO USE

Forget cumbersome 'fixed time' outgoing announcements. Most machines make you fill a continuous loop cassette.

If you've ever tried to do this, you know just what a pain it is to make your message just the right length. With this answerer, simply talk into the built-in mike from 2 seconds up to 1 minute.



## SUPER CALL SCREENING

Perhaps the nicest part of having an answering machine is call screening. When you're at home, it allows you to hear who's calling before you answer.

So, if you're talking on the other phone line and someone calls, you can decide which call is most important to you.

And, of course, if you're not on the phone at all, you'll have this wonderful privacy protector working for you. You can turn the volume down and not hear incoming calls at all if you desire.

## I'LL BET YOU HAVE A QUESTION

OK, now that you can answer two lines, what happens if you get calls on both lines at the same time?

The first line that rings will be answered.



The second line will continue to ring until the first line is released.

So, the second call will be answered when the person on the first hangs up. Why not calculate the odds of both lines ringing at the same time yourself.

In my home, it's not too often. But, the odds of my second line ringing while I'm talking on the first are enormous. So, I love my newfound phone freedom.

## TOTAL AUTOMATION

It's a sophisticated microprocessor controlled message taker. All messages are taken on a microcassette. And, incoming messages are variable.

If someone speaks for 20 seconds that's how long your message will be. If they hang up there will be no message.

And, this answerer will cut off any verbose caller who exceeds 3 minutes. So, when you listen to your messages, you

important numbers in tone or pulse.

There are 10 buttons and a selector that lets each button do double duty. And to protect the 20 memories, simply insert the included batteries.

You'll have just about every useful phone feature. You'll have Redial, Mute, and Flash. You'll also enjoy true electronic hold. It's great with 2 lines.

And, if you take a call on this phone, you can put it on hold and pick it up on any other extension in your home.

It has a ringer Hi/Low/Off switch. And, LEDs show: In Use, On Hold, and which line is ringing.

It uses the latest and most comfortable phone company style K handset. And, it's both wall and desk mountable.

## EASY INSTALLATION

It simply plugs into one standard modular 2-line jack or two modular 1-line jacks. (2-line service is required.)

You also plug in its AC power cord. Nothing could be easier. It's backed by Cobra's standard limited warranty.

## TWO LINE ANSWERING FREEDOM RISK FREE

I'm as thrilled with the two line call screening as I am with the automation of my two lines. And, just wait till you hear the sound quality of this answerer.

If you're not 100% thrilled, simply return it to DAK in its original box within 30 days for a courteous refund.

To order Cobra's 2-Line Beeper Free Answering Solution with 20 Number Memory, Hands Free Speakerphone, risk free with your credit card, call toll free or send your check for just \$199 (\$7 P&H). Order No. 4765. CA res add tax.

Wait till you hear the quality of your message and your caller's messages. And wait till you have all its automated features making your life incredibly easier.



# Ego Basher

*Just follow the blinking lights for the most challenging game of your life. There are 12 levels. It's fully automated. And, it knows if it's going to checkmate you up to 11 moves ahead. Good luck!*

By Drew Kaplan

It's you against the computer. And, I hope you're smart, because your ego is in for a real joy ride.

You're at war with the latest breakthrough in computer chess. Forget bothersome buttons and complicated deciphering of calculator displays.

This computer uses 'sensor technology' to interpret what you've done, and it simply lights 2 LEDs to tell you where it wants to attack.

It's the newest version of 'follow the bouncing ball'. Now it's follow the blinking light. So, let the war begin!

It's smart. It has 12 levels of difficulty and its brain is a 6502 microprocessor which, by the way, is the same system found in an Apple®.

And since this chess computer doesn't have to balance your checkbook, it uses all of its 20K ROM and 4K RAM to make your life miserable.

Its estimated playing strength is over 2000 U.S. Chess Federation rating points. So, it qualifies as a candidate Master.

Of course, it's easy pickings at level one. But, since I can't beat it above level 3, I've got 9 levels to bruise my ego.

## SIMPLE TO USE

Notice that I said "simple to use", not simple to beat. Using this computer is incredibly easy. Just move the hand-carved wooden men. The computer will know exactly what you've done.

Then it's the computer's turn. Two LEDs will light to show you the man the computer wants to move. Then two more light to show you where to move the man.

It's simple. It's easy. And there are no buttons to push. You can concentrate on your game, not on the computer.

## BUT, THERE ARE BUTTONS

The only button you really need is the new game button. But, look at this.

There's help. Just touch a button and the computer will join your team. It will

pick your best possible move. A second button touch will send the computer's brain back to pick its best move.

You'll be amazed at how much you will learn and how your game will improve when you compare your choice of moves with the computer's choices.

You can cheat. Let's say you make a really dumb move. After you see what the computer is going to do to you (horrors, you've lost your Queen), you make the computer take back its last move and then you take back yours.

And that's not all. If you're the type of person who says "If only I had my Queen back, I could beat this thing." No problem. You can add back in, any piece anywhere, with the push of a button.

Well, forget cheating. With this feature, you can set up mate solution problems, play games published in the newspaper or set up a classic game in mid-play to really sharpen your skills.

Limits for all. This computer won't let you make an illegal move. And if you move its man to the wrong location, it emits an unpleasant sound and flashes the lights re-showing you where it wants to go (you dummy). It's really easy.

Much more. You can do a lot with the powerful brain of this computer. Not only can you add back in a piece you lost, you can take one of the computer's away.

This computer does everything a chess master would do. It has Castling, Pawn Promotion and En Passant. So, good luck.

As I said, I can't pass level 3. And I don't even want to talk about levels 5-12. And here's a nice extra.

You won't have to wait for this computer. With its powerful microprocessor, it thinks while you're playing (I think it knows what you're going to do).

It reacts in 5 seconds on level 1, 30 seconds on level 3 and so on. It even knows 3,000 opening positions.

You can take back up to 256 moves. It

recognizes stalemates and draws. And, it's so powerful that it can solve mate problems up to 11 moves out.

## WOW, IT'S REAL CHESS

But, playing chess is what it's all about. I love computers. But, I also like to feel the pieces in my hand.

And between the hand-carved chess pieces and the Nutwood housing, this chess set is as beautiful as it is smart.

It's very smart. It's very tough. But it's incredibly easy to use. Every move is even audibly confirmed. It's 14½" X 14" X 1¾". It operates from standard AC.

It's made in the U.S. by Fidelity Electronics, one of the largest chess computer manufacturers. And it's backed by their standard limited warranty.

## TRY BUTTON FREE CHESS RISK FREE

If you like a challenge and your ego is strong enough to withstand losing to a computer, come on down. And, even if you can't beat it, at least you can display it as a lovely piece of furniture.

If you aren't 100% satisfied, even if you just lose too often, return it in its original box within 30 days for a refund.

To order your Fidelity Button Free, 12 Level Chess Computer risk free with your credit card, call toll free, or send your check, not for its \$249 suggested retail price, but for just \$149 (\$7 P&H). Order No. 4763. CA res add tax.

Whether you're a novice or a master, one of the 12 levels is sure to keep you humble. Chess taxes intelligence, not reflexes, which is why it's always been a game for Kings and Diplomats.



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**Super New \$10 Dialing Bonus!**



# Name Dialing 2-Line Winner

*It's the best phone this writer has ever used. From its elegant good looks to its superb 2-line speakerphone, it's a class act. And, it dials up to 200 numbers by THE NAME of the person you want to call. Now, with \$10 portable bonus!*

By Drew Kaplan

It's love. Here's a name dialing 2-line conferencing speakerphone that will revolutionize your concept of telephones.

As president of DAK, I've tested hundreds of phones. I've never used a better sounding, more useful phone, at home or at the office. Let me tell you some of the reasons why.



## FIRST, IT DIALS BY NAME

I hate having to remember phone numbers. With this phone, all I do is push the 'H' button when I want to dial Home. The 'D' button dials DAK. And, the 'I' button dials my insurance broker.

Most other dialers make you remember location numbers, such as '26' for 'Mom'. So, you're really just substituting one number for another. Now all I need to remember is the person's name.

Where I have more than one name that begins with the same letter, I can scroll through the names before it dials, or enter just the first 3 letters.

It's quick, it's easy and you'll never have to remember or look up and dial anyone's number again. Each memory location can hold up to 32 digits and you can store up to 200 different names. It has a memory capacity of 4096 digits.

If you dial special codes, this phone lets you dial them separately or combined, as you desire. You can even dial manually after automated dialing.



And speaking of manual dialing, you don't even have to push the speaker-

phone button to dial. When you touch the first number on the dial, the phone seizes the line, turns on its speaker, and you'll have on-hook dialing.

So, you'll never have to lift the receiver unless someone answers the line.

## FORGOTTEN HANDSET

This phone has the latest K2 handset. It gives you traditional Phone Company fit and feel, yet, I find it even more comfortable to use.

But, you'll probably never use it. The speakerphone is so powerful, so clean, and so easy to use, you'll never pick up the handset unless you need privacy.

I've used good speakerphones before, but this speakerphone's quality rivals an in-person conversation. How's that for a description of a phone you can try for a 30 day risk free trial!

## 2-LINE MASTERPIECE

You can select Line 1 or Line 2. And, you can push 'Conference' to combine both lines. There are LEDs that show which line is 'In Use', 'On Hold', or 'Ringing'. And, each line has a different ring.

Installation is a breeze. It plugs into one standard modular 2-line jack or two modular 1-line jacks. Just plug it in.

## PAGES OF HELPFUL FEATURES

There's a large LCD display that shows the name and number you want to call. An automatic timer tells you how long you've been talking. And, a clock appears whenever you hang up.

You'll have Mute, Tone/Pulse switching, Pause, Flash, Battery Backup (2 C cell batteries included) and Automatic Redial which will redial a busy number for you, every 30 seconds.

It's made by Colonial Data, a research company partially owned by a large interconnect (big business phone systems) company. It's 9½" wide. And, it's backed by their standard limited warranty.

**PUT NAME DIALING ON YOUR LINE**

## RISK FREE

It's the best sounding speakerphone I've ever heard. Dialing by names instead of numbers is a quantum leap in both technology and convenience.

Now I don't have to remember peoples' phone numbers. I just touch a 'C' for customer and let the phone do the rest.

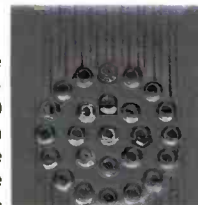
If you're not 100% convinced, as I am, that this is the best sounding, most useful phone you have ever used, simply return it in its original box within 30 days for a courteous refund.

To order your Name Dialing 2-Line Speakerphone, with God only knows how many features, risk free with your credit card, call toll free or send your check for just \$129 (\$4 P&H). Use Order No. 4335 for Silver-Grey. Or, use Order No. 4452 for Ivory. CA add tax.

## SPECIAL BONUS.

Take a pocket size version with you. It actually dials up to 200 numbers by name when you hold it up to the mouthpiece of any tone phone. It's also a calculator, timer, alarm and clock. One is yours as a bonus, only with each phone you buy. It's just \$10 (\$2 P&H). Order No. 4893. It's available and a great value separately for just \$69 (\$2 P&H). Order No. 4894.

In DAK's electronic world, where a new best is achieved almost every day, this phone stands out as the 'best' best I've ever had the pleasure of introducing.



Here's a phone mouthpiece's eye view of the dialer. It speaks True Tone.



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HELP US HELP YOU!

# PARTICIPATE IN THE STEREO REVIEW BUYER POLL

Stereo Review wants to know more about our readers. How much equipment you buy (and how often), how much you spend on it, what sort of product features you like. That will help us create a better, more informative magazine, specially geared to your tastes and preferences.

To gather this important information, we've created the Stereo Review Buyer Poll. And we need your help to make it work.

If you've bought any equipment within the past 30 days, we'd like you to participate (see instructions below). We'll use the information you give us to keep manufacturers up to date on the buying habits of stereo enthusiasts—the most knowledgeable group of audio buyers in the country. And in the long run, that will mean better service for you.

## HOW TO PARTICIPATE

You can participate in the Stereo Review Buyer Poll by sending in the Reader Service Card appearing next to this page. We've provided space for you to list any equipment purchased in the past 30 days. Any kind of audio/video equipment qualifies.

For example:

### Home Audio Components

- Amplifier ■ Receiver/Tuner
- Speakers ■ Turntable
- Cassette Deck ■ Equalizer
- CD player

### Portable Stereo

- Portable Cassette Player
- Portable CD Player
- Headphones

### Car Stereo

- Tuner ■ Cassette Deck
- Speakers

### Home Video

- VCR ■ Camcorder
- Videodisc Player
- Stereo TV

Fill in the type of equipment, manufacturer, model number, and price you paid. Include all the equipment you bought this month. Then print your name and address and drop it in the mail (we pay the postage). It's that simple!

★ ★ ★ Free Information Service ★ ★ ★

Get free literature on stereo products featured in this issue. Simply fill out your name and address, circle the number on the card that corresponds to the key number at the bottom of the advertisements and mail this card today.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32  
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64  
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**STEREO REVIEW BUYER POLL**

1. In the past 30 days, have you purchased any audio or video equipment or accessories?  
A  YES B  NO → Thank You!

2. Which type(s) of equipment did you purchase in the past 30 days?  
A  Home audio B  Portable stereo  
C  Car stereo D  Video

3. In the space below, please write in the type (speakers, car CD player, stereo VCR, etc.), the make, the model number and the price paid for each item purchased in the past 30 days.

TYPE	MAKE	MODEL	PRICE PAID
Car stereo	Alpine	KA-5923	\$379.00
Speakers	BBB	BS3-10	\$450.00
car stereo/cassette deck	Speaker	KT 9372(A)	\$1099.00

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## LOOK FOR THE BUYER POLL EVERY MONTH

The Stereo Review Buyer Poll will appear in every issue—just check the Table of Contents for that month's location. You can participate in any month in which you purchased audio/video equipment. Of course, even if you don't join our Poll, you can still send in the Reader Service card to get information about products advertised in that month's issue.

We hope you'll participate regularly in the Stereo Review Buyer Poll. Your answers are important to us—and you'll find the resulting benefits important to you.

Thanks for helping us out!

# Stereo Review



## **Beyond Digital Ready**

**M**any speakers today are supposed to be digital ready. But what happens if there's something *beyond digital*?

The original Bose® 901® Direct/Reflecting® speaker was ready for digital back in 1968, because it reproduced music with realism and impact never before heard from a speaker. Today's Bose 901 Series V adds some 350 design improvements to the original's legendary performance. Unlimited power handling and very high efficiency make the Series V speaker ideal for listening to the best that audio presently has to offer—the digital compact disc. And while no one can predict exactly what the future has in store, one thing is certain: it will sound better on the Bose 901 system. Audition the complete line of Bose speakers at your authorized Bose dealer. For more information, write: Bose Corporation, Dept. SR, 10 Speen Street, Framingham, MA 01701.

**BOSE**  
Better sound through research.



## BEST RECORDINGS OF THE MONTH

*Stereo Review's critics choose the outstanding current releases*

### LIVELY MOZART CONCERTOS FROM LIN AND LEPPARD

**T**HERE have been some very distinguished recordings of Mozart's violin concertos over the years, and there are now at least a half-dozen compact discs on which No. 3 is paired with No. 5. The performances of these two works by Cho-Liang Lin and the English Chamber Orchestra under Raymond Leppard on a new CBS Masterworks release can stand beside the very best, and they come with an appropriate additional piece, the Adagio in E Major, K. 261, which Mozart composed for the violinist Antonio Brunetti as an

alternative slow movement for the A Major Concerto (No. 5). The recordings by Arthur Grumiaux, with Colin Davis conducting, remain in a class by themselves, and Anne-Sophie Mutter's debut recording, with Karajan, is still very attractive. But Mutter's very unhurried tempos contrast so sharply with Lin's more animated pacing that her performances, for all their tonal beauty, begin to seem a little excessive in terms of style. Lin's tone is pretty handsome in its own right, with a warmth that is as embracing as it is unforced, and he and Leppard, like Grumiaux and Davis before them, are not only more enlivening but more attuned to what we may regard as authentic Mozart style.

Leppard knows a thing or two about authenticity of style and, in fact, is about to bring out a book on the subject. His contributions to the present enterprise—in addition to conducting, he composed cadenzas for both the concertos and for the

Adagio, and he also provided the annotation—bespeak an unusual level of involvement, which is radiantly apparent in the performances themselves. He and Lin seem to have achieved the sort of partnership one hopes for in chamber music, with a good sense of spontaneity and plenty of real give and take, elements eminently to be desired in any concerto performance but especially apt in material in which intimacy is as characteristic as brilliance. This release may not displace existing favorites for all listeners, but it is outstanding for the refreshing quality of the music making, the vibrant sonic frame provided by CBS, and the apt little bonus in the form of the K. 261 Adagio. *Richard Freed*

**MOZART: Violin Concerto No. 3, in G Major (K. 216); Violin Concerto No. 5, in A Major (K. 219); Adagio in E Major (K. 261).** Cho-Liang Lin (violin); English Chamber Orchestra, Raymond Leppard cond. CBS ◊ IM 42364, © IMT 42364, © MK 42364 (62 min).

*Cho-Liang Lin: attuned to the authentic Mozart style*



JACK MITCHELL/AUDREY MICHAELS

### JACKSON'S "BAD": GOOD MUSIC FOR EVERY TASTE

**N**O doubt Michael Jackson has found himself his own toughest act to follow. Given the record-shattering success of his "Thriller," which went on to become the best-selling album of all time after its release five years ago, the big question is whether his new album, "Bad," is a worthy successor. Its gestation period has been elephantine, the longest in his fruitful career—although he was busy in the interim doing other things, including co-writing *We Are the World* and starring in a film fantasy for the Disney outfit. But all such considerations aside, the answer must be a resounding "Yes," for "Bad" represents a new level of musical assertiveness for Jackson, who wrote eight of the ten songs (nine of the eleven on the compact disc) compared with three and a half for "Thriller." They were chosen from a total of sixty-two he wrote before

## BEST RECORDINGS OF THE MONTH

the album went into production. At a boyish twenty-nine, Jackson is obviously quite serious about the state of his art, regardless of all the hype about his eccentricities. Now his compositional voice is being projected as prominently as his performance presence, which has been formidable ever since he dazzled the public as the prodigious eleven-year-old lead singer-dancer of the Jackson Five.

Many of the same ingredients that made "Thriller" live up to its name are apparent in this set: state-of-the-art technology in mingling human and electronic sounds, an all-but-uncontainable energy that bubbles upward to captivate the listener, and a careful straddling of musical genres. Sassy rock textures are interspersed with mellow rhythm-and-blues cadences, and sheets of synthesized sound give way to a jazz lick or two.

Like "Thriller," "Bad" is designed to appeal to a vast cross section of tastes, leaving followers of various musical camps with the impression that Jackson has spoken

*Michael Jackson: engaging energy*

directly to them. He is continually engaging, whether cooing the ingenious ballad *I Just Can't Stop Loving You* or shouting about being *Bad*. The buckles and black leather cannot really harden him—even in the title song he's more like an irritated kitten than a hood. He is all raw, nervous energy on propulsive numbers like *Speed Demon* and *Smooth Criminal*, all lyrical beauty in *Liberian Girl*. Stevie Wonder joins him in a roof-raiser called *Just Good Friends*, and what sounds like a cast of thousands, including the Andraé Crouch Choir and the Winans, helps make *Man in the Mirror* a riveting experience.

What you like best here will depend on your tastes, but it would take a tin-eared soul to remain totally unresponsive. Perhaps "Bad" won't break the records set by "Thriller," whose sales were boosted by Jackson's lavish, pioneering video productions. But "Bad" is good enough to keep him well ahead of his imitators.

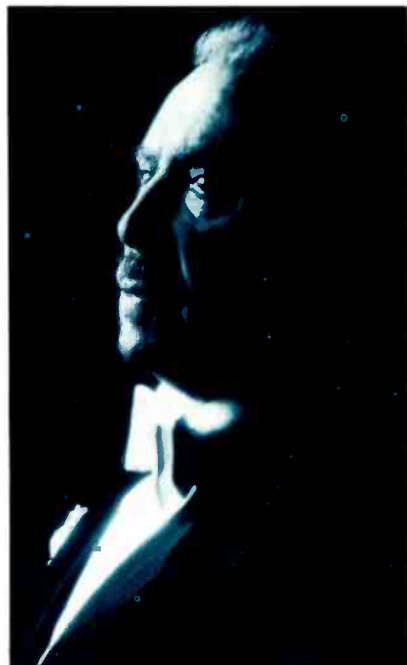
*Phyl Garland*

**MICHAEL JACKSON:** *Bad*. Michael Jackson (vocals); vocal and instrumental accompaniment. *Bad*; *The Way You Make Me Feel*; *Speed Demon*; *Liberian Girl*; *Just Good Friends*; *Another Part of Me*; *Man in the Mirror*; *I Just Can't Stop Loving You*; *Dirty Diana*; *Smooth Criminal*; *Leave Me Alone* (CD only). EPIC ● OE 40600, © OET 40600, © EK 40600 (49 min).

### MIRACULOUS BEETHOVEN FROM ARRAU AND DAVIS

**T**HE second installment in Claudio Arrau's cycle of the Beethoven piano concertos with Colin Davis and the Dresden State Orchestra is the Fourth Concerto, and it is a performance that must rank, musically and sonically, with the very greatest ever committed to discs. The slightly more deliberate than usual pacing Arrau and Davis adopt for the opening movement, one of Beethoven's crowning musical achievements in both form and substance, sets the tone for the whole perform-

ance. Not even the legendary Artur Schnabel, in his three recordings of the Fourth Concerto, surpassed the architectural strength and passion of this reading.




*Claudio Arrau: power and poignance*

As for the incomparable slow movement, with its dramatic dialogue between piano and orchestra, I expect that it will be many a moon before I again experience, on records or off, such power and poignance. The rondo finale, usually something of a relaxation after what has gone before, becomes an immensely exciting affair here. For a pianist of any age, a performance such as this would constitute a major achievement. For Arrau, now in his mid-eighties, it is nothing short of a miracle, especially as he has chosen to use the longer of Beethoven's two cadenzas for the first movement. Arrau's execution is of the utmost brilliance and passion, and the support given him by Sir Colin Davis and the Dresden State Orchestra is entirely on the same level. This is a collaboration among equals, with the orchestra displaying immense body and drive, in the strings especially. In short, this is a wholly integrated interpretation of a great masterpiece accomplished on a heroic scale, and we are doubly



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## BEST RECORDINGS OF THE MONTH

fortunate that the Philips recording is fully worthy of the musical accomplishment.

I am not sure that I like the idea of a solo piano work, the C Minor Variations, as an encore to the concerto, if only because the different acoustic surround, which is rather tight and bright, comes as a jolt after the rich ambience of the Dresden locale. Nevertheless, Arrau plays Beethoven's splendid set of variations, founded on a chaconne-style descending figure, with brilliance and virility. But the concerto is, of course, the true *raison d'être* for this disc. No matter how many previous recorded versions of it you may have, don't pass up this one.

David Hall

**BEETHOVEN:** *Piano Concerto No. 4, in G Major, Op. 58; Variations in C Minor (WoO 80)*. Claudio Arrau (piano); Dresden State Orchestra, Colin Davis cond. PHILIPS 416 144-1, © 416 144-4, © 416 144-2 (51 min).

### THE DUKES OF STRATOSPHEAR: RETRO-COOL

IT has been said that there's a thin line between affectionate parody and unabashed nostalgic tribute, and in "Psonic Pspot" the Dukes of Stratosphear—actually XTC performing under an appropriately psychedelic *nom de disque*—walk that line with remarkable alacrity. The album is, in fact, one of the coolest, dead-on evocations of the grandeur, and the foolishness, of Sixties pop music ever recorded, a veritable *Remembrance of Things Past A-Go-Go*.

Of course, that will come as no surprise to anybody who enjoyed XTC's last album, "Skylarking," over which the ghost of "Sgt. Pepper" also hovered most appealingly. But unlike "Skylarking," which used Sixties studio contrivances as a jumping-off point for songs that actually addressed the present, "Pspot" is strictly historical homage.

It's not hard to guess how an album like this could happen. Clearly, the XTC lads spent a night lis-



*The Dukes of Stratosphear: the grandeur and the foolishness*

tening to all the obscure B sides of their favorite old 45's, realizing that the stuff was hopelessly dated and often inherently ridiculous—until some half-remembered chord change or guitar lick flashed by and they were goners, swooning with guilty pleasure. You can hear that kind of epiphany all over "Pspot," with its uncanny re-creations of bands ranging from the Move (*Collideascope* is a brilliant pastiche of *Blackberry Way*, one of my favorite Move songs) to the Beatles (*Shiny Cage* could be a "Revolver" outtake) to the Beach Boys (*Pale and Precious*), with nods along the way to such Day-Glo icons as the Small Faces, Moby Grape, and, most endearingly, the Hollies—*Vanishing Girl* could be the greatest Graham Nash song Graham Nash never wrote.

Yes, this kind of retro-chic is getting to be a glut on the market, and, yes, an album like "Psonic Pspot"

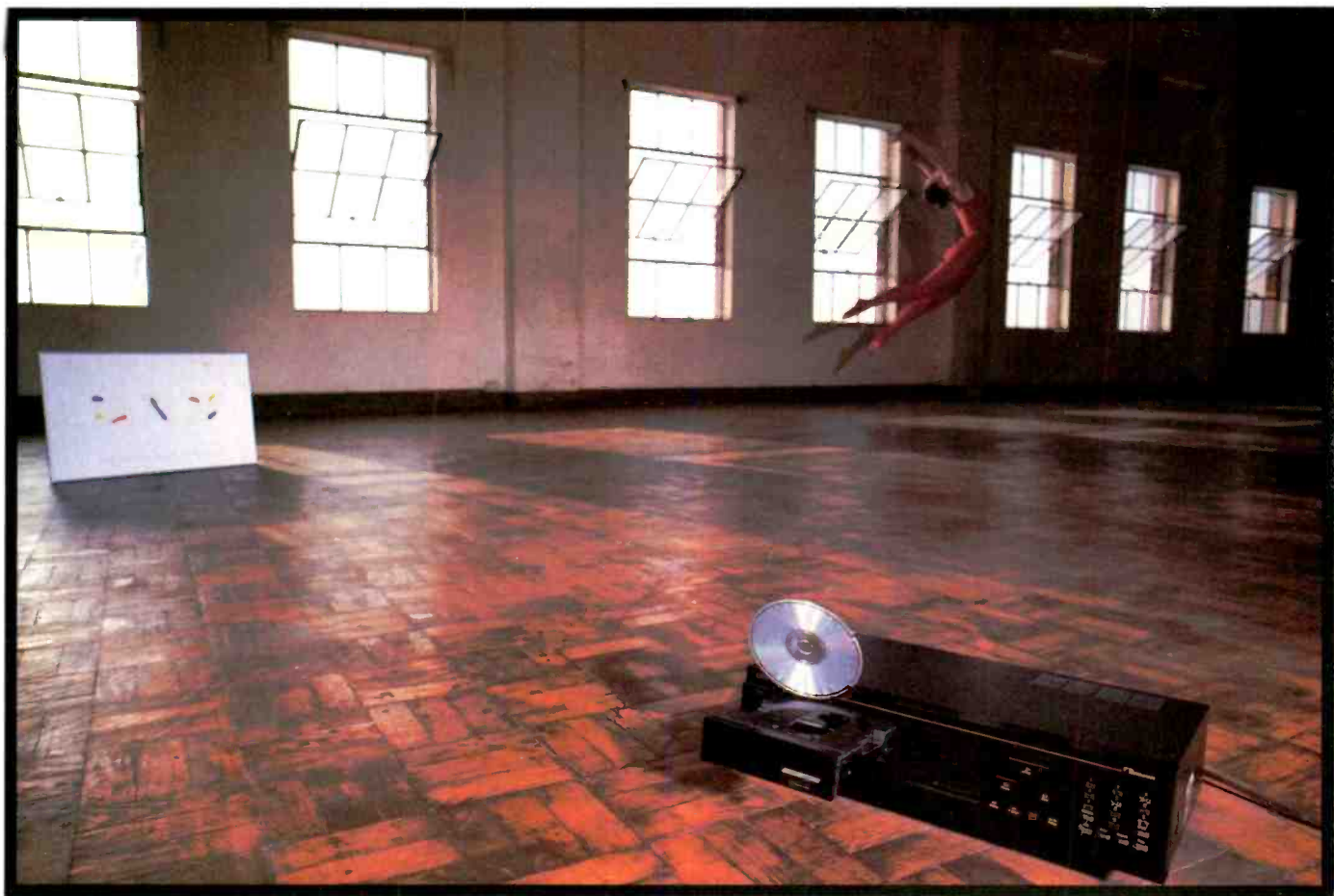
can verge on being a little too clever for its own good. Still, the album can either be taken straight, as stylish, well-crafted pop music with eccentric antecedents, or as the most knowing insiders' satire since Neil Innes demolished the Beatles with his soundtrack to *The Rutles*. Which means that "Psonic Pspot" is something you ought to hear even if you *don't* have a Nehru jacket hanging somewhere in the back of your closet. It is, indisputably, the "Oh, wow!" album of the year.

Steve Simels

#### THE DUKES OF STRATOSPHEAR:

**Psonic Pspot.** The Dukes of Stratosphear (vocals and instrumentals). *Vanishing Girl; Have You Seen Jackie?; Little Lighthouse; You're a Good Man Albert Brown (Curse You Red Barrel); Collideascope; You're My Drug; Shiny Cage; Brainiac's Daughter; The Affiliated; Pale and Precious*. GEFGEN GHS 24169, © M5G 24169. © 2-24169 (36 min).

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*Discs and tapes reviewed by  
Robert Ackart, Richard Freed,  
David Hall, Stoddard Lincoln*

**BACH: Organ Works.** *Prelude and Fugue in E Minor (BWV 548); Prelude and Fugue in A Major (BWV 536); Toccata and Fugue in D Minor (BWV 565); Liebster Jesu, wir sind hier (BWV 633); Jesus Christus, unser Heiland (BWV 666); Prelude and Fugue in G Major (BWV 541); Fugue in G Minor (BWV 578); Ricercar a 6 (BWV 1079); Schmücke dich, o liebe Seele (BWV 654); Vater unser im Himmelreich (BWV 682); Fugue in G Major (BWV 577).* George Ritchie (organ). TITANIC © TI-158 (72 min).

Performance: *Magnificent*  
Recording: *Superb*

This recording is magnificent in every way. The repertoire, ranging from the overpowering to the intimate, was carefully chosen to reveal the tremendous variety of Bach's organ music. The Be-dient organ at Cornerstone in Lincoln, Nebraska, one of the finest Baroque organs in the country, has a commanding presence. And George Ritchie is an organist who is thoroughly conversant with Baroque performance practice and understands subtleties of temporal expression, using them to impart urgency to the music. Don't miss this one. *S.L.*

**BARTÓK: Concerto for Two Pianos and Orchestra; Sonata for Two Pianos and Percussion.** Katia and Marielle Labèque (pianos); Sylvio Gualda, Jean-Pierre Drouet (percussion); City of Birmingham Symphony Orchestra, Simon Rattle cond. ANGEL © 4DS-47446, © CDC-47446 (52 min).

Performance: *Sympathetic*  
Recording: *Cushioned*

These are, of course, two performances of essentially the same music. The sonata, a unique masterwork Bartók and his wife introduced in Basel in 1938, was recast by the composer as a concerto so they would have a piece to perform with American orchestras (they gave the première in New York, with Fritz Reiner conducting, in 1941). Whether many listeners will really want both versions, let alone wish to hear them one after the other, I would not presume to guess, but Katia and Marielle Labèque make a good case for them. Simon Rat-



Pascal Rogé

## ROGÉ'S POULENC

**F**OR the last decade or two Gabriel Tacchino has been our most persuasive advocate of Poulenc's piano music, but now it would appear he must share that distinction with Pascal Rogé, who brings a similar sense of authority and unmistakable personal enjoyment to this still too-little-heard material. It works out fairly conveniently too, for the only title in Rogé's new Poulenc collection on London that is duplicated in either of Tacchino's two recent ones for EMI's French affiliate, Pathé Marconi, is *Les Soirées de Nazelles*, a set of variations framed by a *Prélude* and an especially frisky *Final* (all thoroughly characteristic of Poulenc, who, we are told, unaccountably hated the work). Actually, even this isn't quite a duplication, for Tacchino plays only five of the eight variations, but Rogé plays the piece without cuts.

The rest of Rogé's program is made up of more familiar stuff, all of it similarly characteristic yet offering abundant variety and contrast from one item to the next: the well-known *Pastourelle*, transcribed from the original orchestral piece Poulenc contributed to *L'Eventail*

*de Jeanne*; the *Trois mouvements perpétuels*; nine of the fifteen *Improvisations*, including No. 12 (*Hommage à Schubert*) and No. 15 (*Hommage à Edith Piaf*); the two *Novellettes* from the Twenties and the one of 1959 on a theme by Falla; the *Valse*; and the *Trois pièces (Pastorale, Hymne, Toccata)* of 1928. Perhaps only a composer who was a fine pianist himself could have conceived such pieces. Surely only a pianist equipped with wit, warmth, and charm of his own as well as fine technique can take us inside Poulenc's unique world to share its delights as fully as Rogé does. London, for its part, has come through with a showpiece recording in terms of unobtrusively realistic piano sound. To be sure, there have been several more "important" piano recordings lately, but we haven't had one as pleasurable as this one in years. *Richard Freed*

**POULENC: *Les Soirées de Nazelles; Three Novellettes; Pastourelle; Trois mouvements perpétuels; Valse; Nine Improvisations; Trois pièces.*** Pascal Rogé (piano). LONDON ● 417 438-1, © 417 438-4, © 417 438-2 (67 min).

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Katia and Marielle Labèque: sympathetic Bartók

tle's sympathetic conducting helps in the concerto, though momentum sags just a bit in the opening movement (as it does in the sonata) and the sonic focus tends to cushion some of the music's angularity and crispness. If the sonata alone is what you're after, the classic recording by Martha Argerich, Stephen Bishop-Kovacevich, and a pair of crack Dutch percussionists is the one to go for, and Philips advises that it will soon be available on CD. *R.F.*

**BEETHOVEN: *Christus am Ölberge*, Op. 85.** Monica Pick-Hieronimi (soprano), Seraph; James Anderson (tenor), Jesus; Victor von Halem (bass), Peter; National Chorus and Orchestra of Lyons, Serge Baudo cond. HARMONIA MUNDI ● 5181, © 405181, © 905181 (53 min).

Performance: *Very good*  
Recording: *Excellent*

Though *Christ on the Mount of Olives* was composed in 1801, the period of the Second Symphony, Beethoven did not see fit to have his youthful oratorio published until a decade later, hence the late opus number. The scenario encompasses, in extremely condensed form, Christ's Passion, from His being taken by the soldiers on the Mount of Olives at Gethsemane to His acceptance of divinely decreed destiny.

The music, while recalling elements

of late Haydn and Mozart, also looks forward here and there to *Fidelio*. It is by no means negligible, if only because one senses in it the mature Beethoven in the process of becoming. For example, there is the somberly dramatic orchestral introduction, the Florestan-like first aria for Jesus, the chorus of soldiers and Disciples toward the end, a Queen of the Night-style aria for the Seraph, and the evocation of Peter's anger.

There have been few recordings of the work, and none has had a long catalog life, but those I have heard in the past decade, from Deutsche Grammophon and Angel, have been excellent. This latest one, digitally recorded by Harmonia Mundi with Serge Baudo conducting, is likewise first-rate, being particularly fortunate in its solosits. Baudo elicits warm and spirited response from his Lyons-based chorus and orchestra, and the acoustics of the French city's Maurice Ravel Auditorium make for ideal sonics. Too bad that an English translation of the text, sung in German, is not provided. *D.H.*

**BEETHOVEN: *Piano Concerto No. 4; Variations in C Minor*** (see *Best of the Month*, page 136)

**BEETHOVEN: *Piano Concerto No. 5, in E-flat Major, Op. 73*** ("Emperor"). Murray Perahia (piano); Concertge-

bouw Orchestra, Bernard Haitink cond. CBS ● IM 42330, © IMT 42330, © MK 42330 (39 min).

Performance: *Spirited*  
Recording: *Very good*

Murray Perahia gives us a young man's treatment of this proto-Lisztian Beethoven masterpiece. Not that his interpretation is superficial in any way, as witness the tenderly spun-out slow movement, but his playing has an ease and breeziness that are both exhilarating and beguiling. I especially like his brisk pacing of the finale, which in too many performances becomes rhythmically tiresome. Bernard Haitink and the Concertgebouw support the soloist *con amore* within a splendidly spacious surround. The piano is decidedly front and center, but not obtrusively so.

There are, of course, many fine recorded versions of Beethoven's *Emperor* Concerto, but anyone who wants a particularly zestful reading will be thoroughly satisfied with this one. *D.H.*

**DVOŘÁK: *Symphony No. 7, in D Minor, Op. 70; The Golden Spinning Wheel, Op. 109*.** Scottish National Orchestra, Neeme Järvi cond. CHANDOS ● ABRD 1211, © CHAN 8501 (64 min).

Performance: *Very good*  
Recording: *Rich*

Dvořák's greatest symphony has been extremely fortunate in its recordings. I can't recall one that wasn't worthy of the work, and all those on CD, including this newest one, are richly satisfying. I feel Carlos Paita's performance with his Philharmonic Symphony Orchestra is the most inspiring of all, and I would not think of doing without it, but those who regard thirty-seven minutes as less than full value for an entire CD may be happier with this new Chandos release, on which Neeme Järvi and his Glasgow ensemble are nearly as persuasive in the symphony and offer a very substantial bonus.

Järvi's phrasing in the symphony is not quite as pointed as Paita's, especially in the scherzo and in the glorious horn solos in the slow movement, and the Chandos recording, for all its richness, is not quite as well defined as Lodia's, but these differences may seem less pronounced to some listeners than to others. *The Golden Spinning Wheel* is first-rate in every respect. *R.F.*

**FRANCK: *Symphony in D Minor; Symphonic Variations for Piano and Orchestra*.** Jorge Bolet (piano); Concertgebouw Orchestra, Riccardo Chailly cond. LONDON ● 417 487-1, © 417 487-4, © 417 487-2 (61 min).

Performance: *Beefy*  
Recording: *Sumptuous*

This past year seems to have been open season on the popular Franck Symphony in D Minor, what with new digital



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Jorge Bolet: glittering pianism in Frank's *Symphonic Variations*

recordings by Muti, Plasson, Giulini, and now the Concertgebouw's future principal conductor, Riccardo Chailly. None of these new versions, however, impels me to give up the earlier, predigital ones by Monteux, Paray, or Beecham.

Chailly takes a decidedly Brucknerian view of this symphony, with a first movement that clocks in at 20:38 instead of the usual eighteen minutes or so. Within the time frame he has chosen, however, he elicits an impressive performance from the orchestra. The middle movement is not quite so slow, and the pizzicato harmonic underlining is handled in striking fashion. The general pacing of the finale is reasonable except for a singularly brooding treatment of the material paving the way for the triumphant peroration. If you are looking for a Teutonic treatment of the Franck D Minor, this is it.

The *Symphonic Variations* is a distinctly superior work compared with the symphony, both for its craftsmanship and its lack of pretension, and it makes a welcome encore. The soloist, Jorge Bolet, responds to the more som-

ber aspects of the music, though he still infuses it with all the glittering pianism for which he is justly renowned. I would have liked a bit more sparkle and humor in the later pages, but the recording as a whole is gorgeous. The piano-to-orchestra balance is flawless. *D.H.*

**HANDEL: *Imeneo*.** John Ostendorf (bass-baritone), Imeneo; Julianne Baird (soprano), Rosmene; D'Anna Fortunato (mezzo-soprano), Tirinto; Beverly Hoch (soprano), Clomiri; Jan Opalach (baritone), Argenio; Brewer Chamber Chorus and Orchestra, Rudolph Palmer cond. VOX CUM LAUDE © MCD 10063 two CD's (113 min).

Performance: *Excellent*  
Recording: *Excellent*

Even as Baroque opera plots go, the one for *Imeneo*, Handel's next to last opera, is slim, but the music he wrote for it is some of his ripest. Each succeeding aria seems to penetrate deeper into the emotions of the characters, until we forget about the fragile plot and become absorbed in the personalities the singers portray.

Several unusual features make the opera especially interesting. The leading roles are scored for two sopranos, a mezzo, a baritone, and a bass-baritone. Since there was nothing written for a castrato or tenor, the roles can be filled as Handel specified without recourse to countertenors or a contralto, as is so often necessary in modern realizations of Baroque operas. The ensembles are also unusual, especially the trio that ends Act II, in which Rosmene's two suitors, Imeneo and Tirinto (whose part is given to a mezzo-soprano), are musically pitted against each other while Rosmene vacillates between them. In the third act Handel set up an even more intriguing contrast between the suitors by having them perform different settings of the same text and then joining them in a duet.

The most curious turn is the final duet, which we might expect to be sung by the happy lovers, Rosmene and Imeneo. But Handel apparently wanted to end the opera with soprano and mezzo voices, so he arranged a duet between Rosmene and her rejected fiancé, Tirinto. The opera thus ends on an odd note as the two bid each other farewell.

The cast in this recording is superb, with not one weak link. As Rosmene, Julianne Baird brings both lyricism and pathos to her dilemma in a performance that is at once expressive and stylish. Beverly Hoch is brilliant as her flighty sister, Clomiri, especially in her coloratura ornamentation. D'Anna Fortunato makes a powerful Tirinto, revealing perhaps the most passion of all in the hopeless situation of the losing suitor—and it is wonderful for a change to hear a rich mezzo voice singing a male role in a Baroque opera. John Ostendorf uses his dark voice to its fullest effect in the title role, yet he lightens its sound when necessary for the demanding coloratura. And although Argenio, the father of Rosmene and Clomiri, is a small part, it is richly sung by Jan Opalach.

Conductor Rudolph Palmer is sure in his tempos and keeps things moving along, although I wish he had allowed the recitatives to be a little less stately and waited for the vocal lines to be finished before adding the traditional cadences. The Brewer Chamber Orchestra plays its original instruments crisply, with appropriate brilliance in the obbligato writing, and Edward Brewer's harpsichord continuo is tastefully inventive.

For Baroque music fans, this release is an absolute must. Not only is the performance first-rate, but it proves that a group of American musicians, given the chance, is just as capable of re-creating a large-scale Baroque vocal work as their English, French, or German colleagues are. *S.L.*

**KODÁLY: *Budavári Te Deum; Missa Brevis*.** Éva Andor, Alice Ekert, Klára Makkay, Éva Mohácsi (soprano); Márta

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Szirmay (contralto); József Réti (tenor); József Gregor (bass); Hungarian Radio and Television Chorus, Budapest Symphony Orchestra, János Ferencsik cond. HUNGAROTON/QUALITON IMPORTS ● LPX 11397, © MK 11397, © HCD 11397-2 (54 min).

Performance: *Excellent*  
Recording: *Very good*

In Hungary, Kodály is perhaps even more revered than Bartók. He was much less of an international modernist

and his music is, in general, more traditional (hence, more accessible) than that of Bartók. Kodály stayed home and became teacher to more than one generation of young Hungarian musicians. He organized music education in the Hungarian schools, instituting universal musical literacy via his famous system for teaching sight-singing to school children. And Kodály's music, as strongly as any major twentieth-century output, is vocally oriented.

The *Te Deum*, written in 1936 for the

250th anniversary of the recapture of Buda Castle from the Turks, is a traditional but stirring version of the old Latin hymn. The *Missa Brevis* is deeper, more original, more inventive, and, to these ears, more Hungarian. It was written near the end of World War II and is highly personal in tone. The celebratory tone of the *Te Deum* does not mean a lot to me, but the *Missa Brevis* strikes me as an important and moving work. It gets an excellent performance under the direction of János Ferencsik, Hungary's leading conductor, and the recorded sound is very good indeed.

*Eric Salzman*

**MOZART: Violin Concertos Nos. 3 and 5; Adagio in E Major** (see Best of the Month, page 135)

**MOZART: Serenade in B-flat Major ("Gran Partita," K. 361).** Academy of St. Martin-in-the-Fields, Neville Marriner cond. PHILIPS ● 412 726-1, © 412 726-4, © 412 726-2 (48 min).

Performance: *Slave*  
Recording: *Mellow*

With the *Gran Partita* Serenade, Mozart reached a peak in the body of his work intended for outdoor performance. His intricate weaving of pairs of oboes, clarinets, basset horns, and bassoons, along with four French horns and a double-bass, creates an ever-changing wash of mellow sonorities as every possible combination of instruments is called into play. Sir Neville Marriner leads a spacious performance of the work that nicely captures the different characters of the movements while building them into a whole of surpassing beauty. *S.L.*

**D. SCARLATTI: Sonatas. C Major (K. 502); C Major (K. 460); C Major (K. 461); D Minor (K. 516); D Minor (K. 517); D Major (K. 478); D Major (K. 479); F Major (K. 518); F Minor (K. 519); G Minor (K. 546); G Major (K. 547); B-flat Major (K. 529); B-flat Major (K. 544); B-flat Major (K. 545).** Trevor Pinnock (harpsichord). ARCHIV © 419 632-2 (56 min).

Performance: *Pushed*  
Recording: *Good*

Trevor Pinnock is a superb harpsichordist; his Bach, Handel, and Rameau are unsurpassed. Not so his Scarlatti, however. You get the impression that his technique takes priority over his musicality as he pushes breathlessly through pauses and cadences. The frustrating thing is that occasionally he does turn a phrase and allow time for a pause. His reading of the B-flat Major Sonata, K. 544, for instance, is elegant indeed. If only the same could be said for the other thirteen performances in this collection. *S.L.*

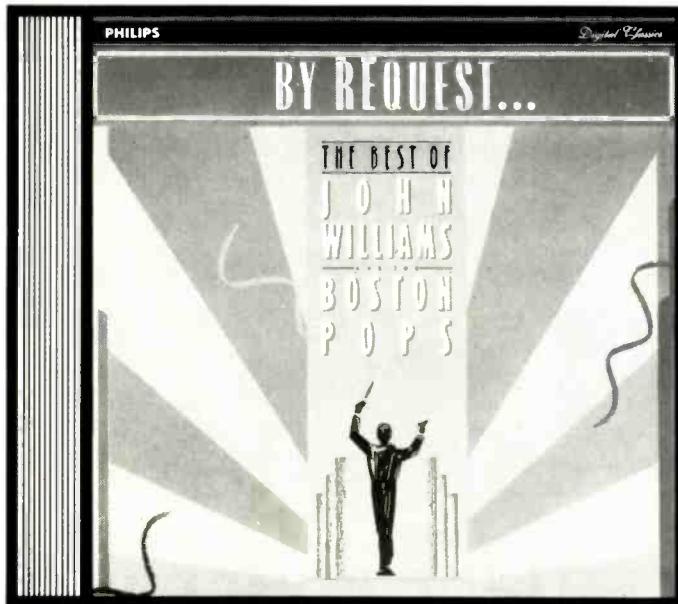
**SCHUBERT: Quintet in C Major, Op. 163 (D. 956).** Robert Cohen (cello);

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Gennadi Rozhdestvensky

## STRAVINSKY'S BALLET MUSIC

**G**ENNADI ROZHDESTVENSKY, surely one of today's major conductors, does not make as many recordings as he ought to—at least not in the West—and it was a brilliant idea on Nimbus's part to have him do Stravinsky's great early ballet music, *Petrushka*, *The Firebird*, and *The Rite of Spring*, with the London Symphony Orchestra. The Russian conductor's long association with ballet music, as documented in landmark recordings of the three Tchaikovsky masterworks and several Prokofiev scores, made the choice of repertoire a natural, and there is a real sense of occasion about the new releases.

Rozhdestvensky has the LSO at the very top of its form, the recorded sound is of demonstration quality—vivid, well "lit," ideally balanced—and the covers of the two CD booklets reproduce the original Benois design for *Petrushka* and Chagall's 1945 design for *The Firebird*. The performances themselves are nothing less than superb. Rozhdestvensky's occasionally deliberate pacing tends here and there to reduce the sparkle in *Petrushka* and to "monumentalize" *The Rite*, but momentum is well maintained within his concepts, and the brilliant playing and stunning sound combine to make these presentations especially appealing.

The one consideration possibly operating against these two excellent CD's is that of the respective couplings. If Nim-

bus had packaged *Petrushka* and *The Rite* together, as various other labels have done, we'd have had the strongest possible contender against other CD versions in the catalog. The pieces offered with these titles on Nimbus, while they are performed and recorded on the same level of distinction, may tend to get in the way rather than enhance their appeal. I'm delighted that Rozhdestvensky chose the original, 1911 version of *Petrushka* instead of the 1947 revision favored by so many other conductors, but the 1910 suite from *The Firebird*, which concludes with the Infernal Dance and omits the ballet's finale, is less satisfying than the standard 1919 suite. And a more logical coupling for the Symphony in Three Movements, which accompanies *Petrushka*, would be the Symphony in C. Questions of couplings aside, however, no praise can be too high for what Rozhdestvensky and Nimbus have achieved together.

Richard Freed

**STRAVINSKY:** *The Firebird, Suite (1910); The Rite of Spring*. London Symphony Orchestra, Gennadi Rozhdestvensky cond. NIMBUS © NI 5087 (59 min).

**STRAVINSKY:** *Petrushka (1911); Symphony in Three Movements*. London Symphony Orchestra, Gennadi Rozhdestvensky cond. NIMBUS © NI 5088 (60 min).

Amadeus Quartet. DEUTSCHE GRAMMOPHON ● 419 611-1, © 419 611-4, © 419 611-2 (56 min).

Performance: *Comfortable*  
Recording: *All right*

In conversations with musicians over many years, I've been struck by the number citing Schubert's final chamber-music masterwork as the last sound they would want to hear in their lives or as the music they would choose for their own memorial services. The thought struck me again upon receiving this recording, because it arrived just after the news of the death of the Amadeus Quartet's revered violist, Peter Schidlöf. That distinguished ensemble had performed for four decades without a single change in personnel. Schidlöf's surviving colleagues have announced that they will not attempt to replace him. Thus, his death brings to an end the long and productive activity of one of the most admired performing entities of our time, and this recording, the very last made by the Amadeus Quartet (in March 1986), may indeed be regarded in a certain memorial context.

In the Amadeus's two earlier recordings of the Schubert quintet, both with William Pleeth as second cellist (one in mono for HMV and a stereo remake for Deutsche Grammophon), the first-movement repeat was omitted. In this new one, with the admired young English cellist Robert Cohen, the repeat is taken, which is a definite advantage in terms of overall balance. The performance otherwise is a comfortable one, if a little overemphatic here and there. It has most of the familiar virtues of the ensemble's earlier versions, but it is neither as smoothly performed nor as handsomely recorded as some of its rivals on CD. The Alban Berg Quartet with Heinrich Schiff, on Angel, makes a strong impression even without the first-movement repeat, and even stronger, perhaps, is the version by the Cleveland Quartet with Yo-Yo Ma on CBS, which not only includes the repeat but is a bargain at "mid-price." R.F.

**SCHUMANN:** *Arabeske, Op. 18; Papillons, Op. 2; Symphonic Etudes, Op. 13*. Vladimir Ashkenazy (piano). LONDON ● 414 474-1, © 414 474-4, © 414 474-2 (56 min).

Performance: *Grand-scaled*  
Recording: *Excellent*

Having completed his survey of Chopin's piano music, Vladimir Ashkenazy is now addressing himself to a survey of Schumann, only a handful of whose solo works he has recorded before. That some of Ashkenazy's ideas about the material have changed over the years is evident in the layout here of the Symphonic Etudes. In his earlier recording, made more than twenty years ago, he inserted all five of the supplemental etudes between Nos. 9 and 10; this time around he plays three of them after No.





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James Levine and Anna Tomowa-Sintow: glorious Strauss

3 and the remaining two after No. 8. A more significant difference is in the playing itself, which now has become a little self-consciously grand, with less of the spontaneity and poetry that distinguished that earlier performance.

The new approach is felt even more forcefully in the other pieces in this collection. The *Arabeske* will come as a jolt to listeners who have regarded that piece as flowing and generally tranquil, if somewhat ruminative. Here it is declaimed with grand and solemn gestures, hinting at deep hidden meaning. In *Papillons*, too, there is a rather over-emphatic quality, as if Ashkenazy were staking a claim, or perhaps carving a testament now that he has turned fifty.

Artists on Ashkenazy's level, of course, sometimes set standards early on that they themselves find hard to match, but they are compelled to go on exploring, reconsidering, expanding, refining. It almost goes without saying that there is a great deal of wonderful playing on this disc, and much pleasure to be had from it—pleasure enhanced by the extremely realistic reproduction of the piano sound. But I couldn't help noticing the contrast with the unforced authority, the more poetic response, of Ashkenazy's earlier account of the Symphonic Etudes. R.F.

**SIBELIUS:** *Finlandia, Op. 26; Valse triste, Op. 44; Karelia Suite, Op. 11; The Swan of Tuonela, Op. 22; Pohjola's Daughter, Op. 49.* London Symphony Orchestra, Gennadi Rozhdestvensky cond. SAPHIR/KOCH IMPORT SERVICE © INT 830.822 (55 min).

Performance: *Highly dramatic*  
Recording: *Mostly very good*

Anyone who remembers Gennadi Rozhdestvensky's Sibelius album re-

leased on Melodiya/Angel a decade or more ago, or who has had the good fortune to hear some of his Sibelius symphony cycle recorded by Melodiya in the early 1970's, will know the Soviet conductor to be a formidable interpreter of the Finnish composer. Certainly his strength is much in evidence on this imported CD.

The opening of *Finlandia* gets an exceptionally broad treatment that adds a special dimension of dramatic effectiveness to what ensues, and *Valse triste* becomes a mini-drama after Edvard Munch. If the timpani in the opening movement of the *Karelia Suite* mark the beat rather too prominently, the final *Alla marcia* is jauntier than I have ever heard it. The English-horn solo work in *The Swan of Tuonela* may not be the greatest, but the reading as a whole is superbly atmospheric, and the very soft bass drum is heard to marvelous effect. In conveying the elaborate and fantastic occurrences in *Pohjola's Daughter*, Rozhdestvensky holds back on the tempo until the climax—an unorthodox but curiously effective interpretive gambit.

There are plenty of competitive recorded versions of these works, in varied program sequences, but Sibelius enthusiasts will find much that is provocative in this one, and the recorded sound is excellent throughout. D.H.

**SMETANA:** *Piano Music* (see Collection—Ivan Moravec)

**R. STRAUSS:** *Ariadne auf Naxos.* Anna Tomowa-Sintow (soprano), Ariadne; Kathleen Battle (soprano), Zerbinetta; Agnes Baltsa (mezzo-soprano), Composer; Gary Lakes (tenor), Bacchus; Hermann Prey (baritone), Music Master; Otto Schenk (speaking role),

Majordomo; others. Vienna Philharmonic Orchestra, James Levine cond. DEUTSCHE GRAMMOPHON © 419 225-1 two LP's, © 419 225-4 two cassettes, © 419 225-2 two CD's (125 min).

Performance: *Glorious*  
Recording: *Topnotch*

In 1955, Angel released an *Ariadne auf Naxos* conducted by Herbert von Karajan over which Strauss lovers rejoiced. "This is it!" they said. "Never can there be a comparable *Ariadne*." Well, there can. And there is. It is a different *Ariadne* from that first full-length recording—I doubt, for example, that any other soprano will soon achieve Elisabeth Schwarzkopf's near-crazed characterization in the title role, or that any other tenor will encompass the clarion ring of Rudolf Schock's ardent wooing. But the new *Ariadne* has other, equally attractive values.

First, there is James Levine's conducting, characterized by a sensitivity and cohesion one rarely encounters. While he brings excitement to all of the big climaxes, he sees the "smaller" moments, particularly those of the *Vorspiel*, as chamber music, which was Strauss's intention. The result is a delight to hear. That Levine has the Vienna Philharmonic as his "instrument" is a many-faceted asset. Perhaps no other ensemble in the world knows better or plays more lovingly this very special piece, now a favorite among Strauss operas.

Of her several recordings, this one shows Anna Tomowa-Sintow to best advantage. Hers is a pure, warm, melting soprano, and while I consider her somewhat limited as a singing-actress, here she pours out Ariadne's two demanding arias and her share of the Love Duet with unstinting amplitude and beauty of tone.

Mention of the Love Duet requires noting that I feel Gary Lakes falls a bit short as Bacchus. His tenor is large and true, but it is not large enough for the final sections of the opera, and he seems to expend every effort to achieve the musical climaxes. It's a perfectly respectable performance, but it is not overwhelming.

In contrast, Kathleen Battle's Zerbinetta is staggering. Her moments of flirtation, her infatuation with the Composer, her performing with the comedians, her rendering of the celebrated aria—what a performance! Any Zerbinetta is inevitably judged by the role's imposingly difficult and—out of context—rather thankless coloratura display. Battle sings the *text*. To her, it is the hoyden's advice to the love-sick princess that is important; the notes follow, for the most part exquisitely.

Agnes Baltsa makes the Composer's youthful passion convincing; one warms to his dedication to music, to his dependence on the Music Master (sympathetically portrayed by Hermann Prey), to his wonder at encountering

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Zerbinetta. Baltsa beautifully projects these qualities, necessary to our understanding of Strauss's beguiling lad, and she delivers the so-called Composer's Aria with affecting ardor.

The Comedians perform gracefully, the three Sprites sing with soaring enchantment, and Otto Schenk is deliciously supercilious as the Majordomo. In fact, there are many memorable cameos in this glorious performance, and the recorded sound could hardly be improved upon. R.A.

**VIVALDI: *Il cimento dell'armonia e dell'invenzione, Op. 8: Nos. 1-4* ("Le quattro stagioni"); No. 5 ("La tempesta di mare"); No. 6 ("Il piacere").** I Solisti Italiani. DENON © 33CO-1471 (61 min).

Performance: *Clean*  
Recording: *Fine*

This recording offers the first half of Vivaldi's Op. 8, which consists of twelve violin concertos gathered under one title, *Il cimento dell'armonia e*

*dell'invenzione* (*The Trials of Harmony and Invention*). The first four concertos are known as *The Four Seasons*, and at this writing they are available on CD in nearly thirty different versions.

I Solisti Italiani is an offshoot of the late Renato Fasano's well-known I Virtuosi di Roma, and, as you'd expect, the newer ensemble carries on the tradition of fine modern Italian string playing. For I Solisti, Baroque articulation and ornamentation do not exist, only a stream of exquisite, continuous sound. Their performances of these concertos are distinguished by a clean tone and beautifully contoured musical lines, and the recording is first-rate. S.L.

#### COLLECTION

**IVAN MORAVEC: *Live in Prague.*** Smetana: *Poetic Polka in G Minor, Op. 8, No. 2; Four Czech Dances; Souvenir of Pilsen.* O. F. Korte: *Piano Sonata.* Suk: *Love Song, Op. 7, No. 1; Humoreska, Op. 7, No. 2.* Ivan Moravec (piano). NONESUCH ● 79146-1, © 79146-4, © 79146-2 (49 min).

Performance: *Excellent*  
Recording: *Very good*

The six marvelous pieces by Smetana are the only works in this recital likely to be at all familiar, and they have not been presented so appealingly since Rudolf Firkusny last recorded them. All the performances here were recorded live, and that may have something to do with the level of communicativeness in them, which strikes me as exceptional even for Ivan Moravec, whose name, of course, connotes the authority, elegance, and commitment that are also so much in evidence in this recording.

The Piano Sonata by Oldřich František Korte (born in 1926) was introduced by the composer in 1954. It is a striking and thoroughly accessible fifteen-minute piece in two movements, the first scintillating in its vitality, the second somewhat more retrospective. While it has not been without its champions (Maurizio Pollini is cited along with Moravec in Bernard Jacobson's excellent notes), I wonder that there haven't been more of them. It makes for a strong beginning for this imaginative recital program, and it would be a refreshing addition to our regular concert fare.

Josef Suk, grandfather of the well-known violinist Josef Suk, is represented by two utterly charming pieces, an expansive *Love Song* composed in his late teens, the period in which he produced his remarkable Serenade for String Orchestra, and a brief *Humoreska* that's more outrightly "salonish" than those of his teacher and father-in-law, Antonin Dvořák. I would have been happier if the applause had been excised from the recording, but the audience is well behaved throughout the performances, and the piano sound is especially vivid and well defined. A lovely batch of discoveries. R.F.



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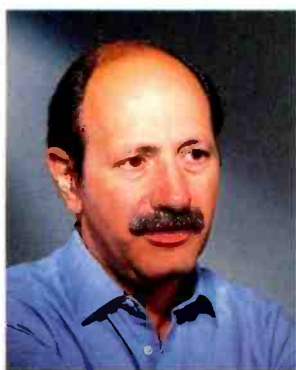
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**A**CCORDING to James Levine, artistic director of the Metropolitan Opera, there is a new wave of world-wide interest in Richard Wagner's four-part cycle *Der Ring des Nibelungen*. If you are subject to this hunger for the *Ring*, or if you are looking for a crown to add to a basic library of opera on compact disc, there are five complete sets to choose from, and in different ways all are good.

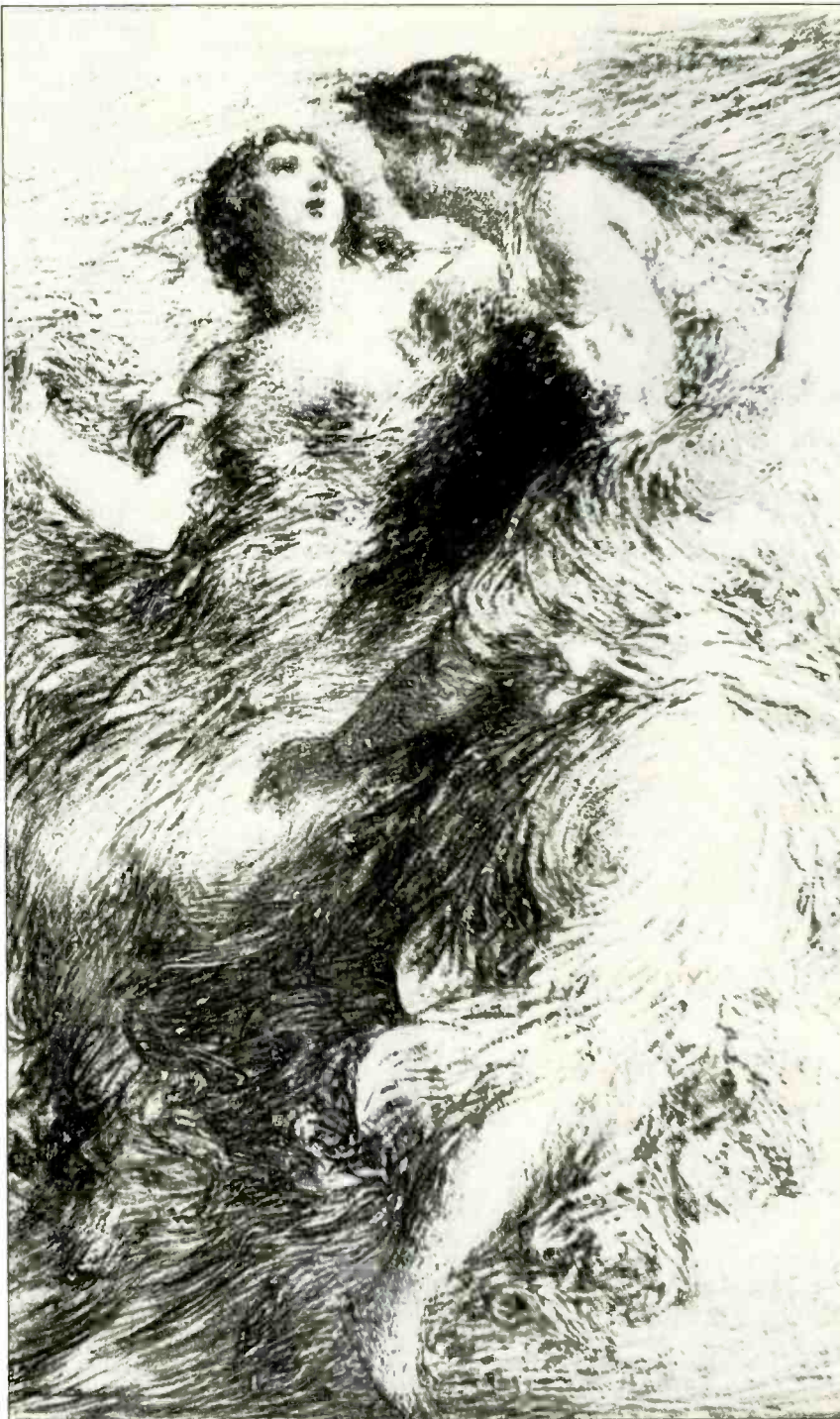
The latest to be released is the oldest. Conducted by Hans Knappertsbusch, it is a live recording of a 1957 performance at the Bayreuth Festival (Music and Arts CD 253/256, fifteen CD's).

This treasurable document preserves the subtly nuanced characterization of Wotan by Hans Hotter in his prime and the gleaming portrayal of Brünnhilde by Astrid Varnay, a great dramatic soprano insufficiently recorded and insufficiently appreciated in the United States. Ramon Vinay is a sensitive Siegmund, and Birgit Nilsson, still in her thirties, is an ardent Sieglinde (and Third Norn). The role of Siegfried is shared by veterans Bernd Aldenhoff (in *Siegfried*) and Wolfgang Windgassen (in *Götterdämmerung*). These higher voices are balanced by the deep, dark Germanic sounds of basses Gustav Neidlinger (Alberich) and Josef Greindl (Fafner, Hunding, and Hagen). All told, it's a splendid cast.

Most interesting, however, is the work of Knappertsbusch (1888-1965), a great Wagnerian man of the theater. He disliked studio recording, and this *Ring* shows what he actually delivered in the opera house, a performance that is moving in a deeper way than some of the more theatrical later recordings. His tempos are generally slower than those of other *Ring* conductors, which imparts a tone of gravity and stature to the performance and permits an excellent projection of the text. For this reason the scenes with the Rhinemaidens, for example, are more effective here than in other sets.

Despite its aura of authenticity and tradition, this is no mere historical document, but an exciting and satisfying musical experience. The singers perform with such conviction that they make every word and note count. The result is a profound statement of what the critic Gustav Kobbé called "the beautiful metaphysical motif on which the plot of *The Ring of the Nibelung* is based."

Generally the balances favor the singers over the orchestra. Although the mono sound is quite listenable, it cannot capture the range and breadth of the orchestral climaxes. Stage noises and coughs from the audience are only momentarily distracting, but there is a good bit of tape hiss. So, wonderful as the performance is, technical limita-



"The Rhinemaidens," lithograph (1886) by Henri Fantin-Latour

tions keep me from putting it in first place. Give it strong consideration when you are ready to buy your *second* recording of the complete *Ring* cycle.

Unlike the other versions, this one is available only as a complete set. A libretto is not included, but one will be mailed to anyone who provides proof of purchase.

**M**Y number-one recommendation is still the London set (414 100-2 LM15, fifteen CD's) in which Georg Solti conducts the Vienna Philharmonic and a marvelous cast that includes Nilsson, Hotter, Neidlinger, Windgassen, Christa Ludwig, George London, and Kirsten Flagstad. The first complete *Ring* on

records, it was made in the early years of stereo (1958-1965), and it remains a sonic marvel. Taking a symphonic approach to the work (with balances that tend to favor the orchestra), Solti conducts a thrilling performance that is unsurpassed in grandness of scale.

◆ Using generally lighter voices and stressing instrumental color and phrasing, Herbert von Karajan takes a more lyrical chamber-music approach to the *Ring* on Deutsche Grammophon (414 141-2 to 414 155-2, fifteen CD's). There is beautiful playing by the Berlin Philharmonic and some striking interpretations by such singers as Helga Dernesch, Helge Brilioth, Gundula Janowitz, Oralia Domínguez, Jon Vickers, Régine Crespin, and Zoltan Kéléman, among others, but in my opinion the performance does not measure up to the heroic dimensions of the work. A first choice only for avid Karajan fans, it is an intriguing alternate view of the *Ring* for the rest of us.

◆ Recorded a decade later than the Knappertsbusch set, Karl Böhm's performance from the Bayreuth Festival (Philips 415 475-2 to 415 488-2, fourteen CD's) has the same aura of authenticity and tradition. It has similar balances between voices and orchestra and the same advantages and disadvantages of live performance. The sound, however, is a great deal better. Nilsson, Windgassen, Greindl, and Neidlinger are joined here by Theo Adam, Martha Mödl, Leonie Rysanek, and Martti Talvela. An alternate first choice, this set provides a compromise between the more intimate Karajan interpretation and the epic Solti version with the added immediacy of a live performance at Bayreuth.

◆ The only digital recording of the *Ring* so far is one by the Dresden Staatskapelle conducted by Marek Janowski (Eurodisc 610 058-233 to 610-081-235, eighteen CD's). Slow to get started, the cycle does not hit its stride until it gets to *Siegfried*, although there are good performances earlier by Jessye Norman (Sieglinde) and Peter Schreier (Loge), for example. This set, which also features Theo Adam, Siegmund Nimsgern, Siegfried Jerusalem, and Jeannine Altmeyer, should be given first choice only by those for whom digital sound is of paramount importance.

**I**N addition to conducting the Met's new production of the *Ring*, Levine is recording it (digitally, of course) for Deutsche Grammophon with the Metropolitan Opera Orchestra and soloists. Over the next two years, that set will be issued in installments, beginning with *Die Walküre* sometime in 1988. But if you're hungry for the *Ring*, you probably want it *now*, and you won't go completely wrong with any one of the currently available sets.

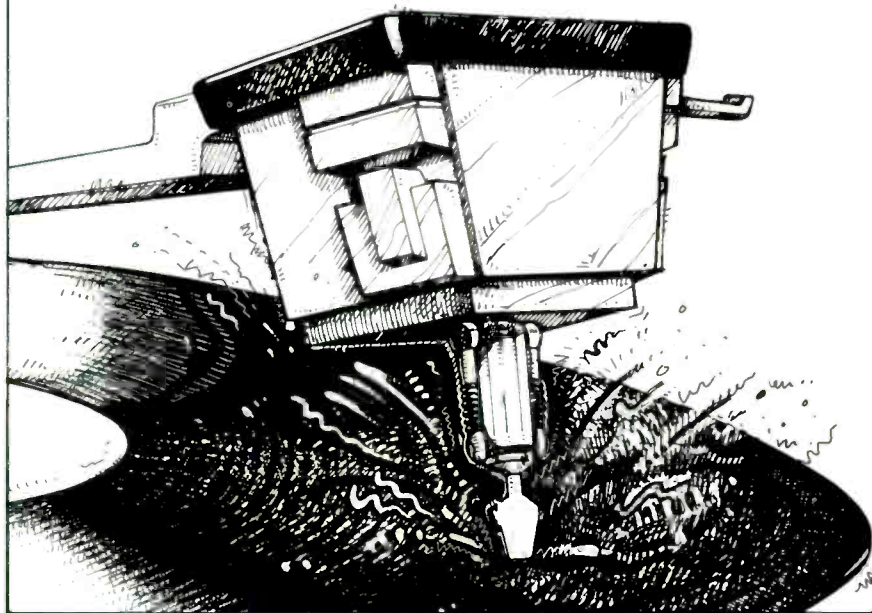
*William Livingstone*

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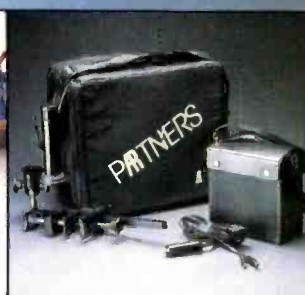
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*Discs and tapes reviewed by  
Chris Albertson, Phyl Garland,  
Alanna Nash, Mark Peel,  
Steve Simels*

**JOHN ADAMS: *Strong*.** John Adams (vocals); vocal and instrumental accompaniment. *Strip This Heart; Passion; Strong; What Do You Want from Me; No Turning Back; Don't You Think It's Time*; and four others. A&M SP 5164, © CS 5164, © CD 5164 (39 min).

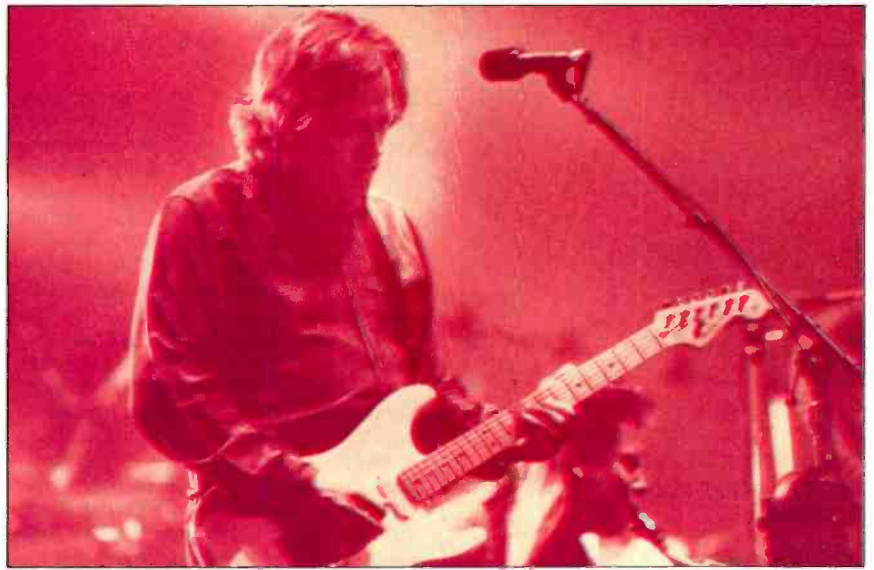
Performance: *Blue-eyed angst*  
Recording: *Good*

On the back cover of this solo debut, John Adams, late of the British band Private Lives, looks unsettlingly like an androgynous waiter with a rose in his lapel. That's fairly fitting, for inside Adams serves up some steamy fare indeed.

Essentially an up-dated, sensual soul singer, Adams lays silky vocals over a sophisticated lava of jazz, funk, pop, Latin, and African rhythms—very heavy on the bass lines—and builds a musical featherbed of smart seduction. There are some irritants—the instrumentals, which are totally uncredited on the sleeve, tend to overpower the vocals, perhaps because the record was produced by five different people in two countries, and since the emphasis here is on mood rather than lyrics, I can't report much on what Adams actually says except for the song titles, which he repeats a lot.

But Adams knows what makes for effective tension and release, so you can just sort of drift off into fitful fantasy and throw intellect to the wind. The album has a decidedly shiny sound to it—lots of synthesizer work—but there's also a powerful muscle flexing somewhere underneath it all. Keep an eye on this guy. *A.N.*

**CARLOS ALOMAR: *Dream Generator*.** Carlos Alomar (Photon Midi Converter into Macintosh Plus Total Music 1.14 into Kurzweil 250, Yamaha DX7, Oberheim OB8, Prophet 5, Emulator II Plus, PPG Wave 2.3 with Waveterm, Akai 5900 Sampler, Prophet 200, Oberheim Matrix 6R, FB01, Akai 612, Kramer Pacer guitar, Fender Stratocaster, Alembic and Guitarman guitars); vocal and instrumental accompaniment. *Hallucination; Siamese Dreams;*



*David Gilmour: a primary musical force*

## PINK FLOYD'S BRILLIANT FORMULA

**W**HEN Roger Waters sued his old mates David Gilmour and Nick Mason early last year in an attempt to prevent them from using the name "Pink Floyd," it was more than just a monumental act of ego or sour grapes. It was Waters's way of protesting the normalization and institutionalization of the band he founded.

The new Columbia album, "A Momentary Lapse of Reason," reminds us that there are really *two* Pink Floyds—before and after "Dark Side of the Moon." The early Floyd was a bunch of mad experimenters who produced spacey (and still interesting) albums like "Ummagumma" and "Saucerful of Secrets." Once they discovered how to turn space-rock into Platinum with "Dark Side of the Moon," Pink Floyd slipped into a potent but predictable formula. The new record is a good example, and if there were any doubt about the primary musical force behind the later sound, this release resolves it.

Gilmour, with the assistance of Bob Ezrin, who produced "The Wall," has imprinted "A Momentary Lapse of Reason" with all the familiar Pink Floyd trademarks—the heaving modulations, the folk-songs-launched-into-the-cosmos melodies, the busy undercurrent of sound effects, and the measured, weary cadence of the lead vocals. At times the formula works brilliantly. This band knows how to invest a moment with a sense of anticipation and meaning. In the opening *Signs of Life*, for example, the sound of oars lapping the water as a boat reaches shore yield to stately cathedral-organ chords; Gil-

mour then introduces an eerie guitar figure that is doubled by a faintly audible whistle, and synthesizers simulate a night filled with insects and twinkling stars. In *Dogs of War*, marching strings seem to breathe with adrenalin-fueled terror. In *Terminal Frost*, piano, guitar, and saxophone exchange haunting melody lines over a wind-swept synthesizer icescape scoured by pounding drums.

But what strikes you most about "A Momentary Lapse of Reason" is the ordinariness of the themes and the inevitability of their development. The big issues—like famine, war, and the lonely isolation of life in a mechanized world—are paraded out, given their ten minutes, and sent back to inventory. What's missing is the overarching theme Roger Waters would have insisted on to hold this album together. Waters has proved by his two solo albums that he's determined to continue taking risks. That he falls on his face more often than he succeeds is, I think, a greater reproach to Gilmour and Mason than his court action, for they've stopped taking chances altogether.

*Mark Peel*

**PINK FLOYD: *A Momentary Lapse of Reason*.** David Gilmour (guitars, vocals, keyboards, sequencers); Nick Mason (electric and acoustic drums, sound effects); vocal and instrumental accompaniment. *Signs of Life; Learning to Fly; The Dogs of War; One Slip; On the Turning Away; Yet Another Movie; Round and Around; A New Machine, Part 1; Terminal Frost; A New Machine, Part 2; Sorrow.* COLUMBIA OC 40599, © OCT 40599, © CK 40599 (50 min).

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- Ⓛ = DIGITAL-MASTER LP
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## TECHNICS TECHNICAL REPORT



**WHY DISC JOCKEYS, RADIO STATIONS AND JUST PLAIN MUSIC FREAKS WILL BE TECHNICALLY CRAZY ABOUT TECHNICS CD PLAYERS.**

### HIGH-RESOLUTION DIGITAL FILTER

The high-resolution digital filter contributes to the excellent sound quality of Technics CD Players. The 88.2 kHz double oversampling circuit "moves" the unwanted noise components farther away from the music than they might otherwise be. As a result, the filter circuit can be more gentle with the critical musical signal than a system using analog filters and no oversampling. This helps reduce "phase shift" or "group delay" for an accurate musical sound.

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#### TECHNICAL SPECIFICATIONS FOR SL-P720

Frequency Response	4-20,000 Hz $\pm$ 0.2 dB
Dynamic Range	94 dB
Total Harmonic Distortion	0.0025% (1kHz)
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Wow & Flutter	0.0009%

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*Global Alpha 9; Winkin', Blinkin', and Nod; Insomniac; and four others. PRIVATE MUSIC/RCA 2019-1, © 2019-4, © 2019-2 (50 min).*

Performance: *Dry ice and laudanum*

Recording: *Good*

Like Nile Rodgers and Stevie Ray Vaughan a few years back, Carlos Alomar is a guitarist whose career is getting a big shot in the arm from his association with David Bowie. Unlike Rogers and Vaughan, Alomar had the misfortune of contributing to a truly dreadful album ("Never Let Me Down"). So "Dream Generator" has to stand on its own. It doesn't quite make it.

"Dream Generator" is heavily synthed New Age trance music. Alomar puts his guitar through a battery of computers, converters, samplers, and emulators. Most of the time, the notes are so weighted down with excess electrons they can barely squeeze through your woofers; when they do, they drop down onto the carpet in big, messy blobs. Side one is particularly ponderous, heavy-handed, and silly. There are some nice guitar licks in *Siamese Dreams* and some John Abercrombie-like buzz-saw effects on *Global Alpha 9*, but the settings are bloated and awkward.

Side two is much better—more like a Kitaro to side one's Rick Wakeman. Here, the buzz-saw effects are off in the distance, while in the foreground a Zen synth redolent of dry ice and laudanum slowly works its way up your sinuses. With titles like *Dream Generator*, *R.E.M.*, and *Feline Lullaby*, this music is not recommended for use in your car stereo system. *M.P.*

**THE ART OF NOISE: *In No Sense? Nonsense!*** Anne Dudley and J. J.eczalik (keyboards, computers, sound effects); vocal and instrumental accompaniment. *Galleons of Stone; Dragnet; Fin du temps; How Rapid?; Opus for Four; Debut; E.F.L.*; and nine others. CHRYSALIS OV 41570, © OVT 41570, © VK 41570 (42 min).

Performance: *Spike Jones meets HAL 9000*

Recording: *Excellent*

Two years ago, you couldn't pay me to play Art of Noise. Even though their second album, "In Visible Silence," was terrifically ingenious, it was strictly machine-made. I rejected it on principle. Now I'm not so sure I was right. Today it's hard to find rock or pop that isn't made—or at least made easy—by computers, synthesizers, midis, and sequencers. At least the Art of Noise doesn't pretend to be anything but the technobrats they are. So, after my fill of artificial brass, artificial strings, artificial reeds, and artificial percussion, I'm getting into sound-effect records. This is a great one.

Leather soles clicking up marble steps, slamming doors, clanging iron-

works, dragsters and jet planes, snips of conversation, digitized vocals—these, along with the more conventional simulated organs, horns and string choirs, are the tools of Art of Noise. "In No Sense? Nonsense!" is a collage of music fragments and sonic effects sprinkled over thudding dance beats and melodramatic orchestral themes. It's full of surprises and, more important, big yucks. My favorite joke here is *A Day at the Races*. It begins with that tinkling wind-chime effect used to set the mood on bad jazz and Earth, Wind & Fire albums—you get used to hearing it in a few bars, then it goes away. In *Day at the Races* it continues while you keep waiting for the real song to start, then it stops. Track over.

But the most obvious fun is Art of Noise's variations on the *Dragnet* theme. The familiar fanfare is, of course, intrinsically funny owing to the associations the listener brings to it—the memory of hundreds of wonderfully dreary police interrogations come streaming forth as the deadpan voice-over intones, "This is the city. I carry a badge. Just the facts, ma'am." Art of Noise milks the material for all its worth, shimmying the vocals back and forth, up and down, puncturing the heavy dance beat with gunshot bursts from the brass section. It's a guaranteed party favorite. *M.P.*

**BELLAMY BROTHERS: *Country Rap.*** The Bellamy Brothers (vocals); instrumental accompaniment. *Too Much Is Not Enough; Kids of the Baby Boom; One Too Many Times; D-D-D-D-Divorce; Country Rap; Where the Light Comes From;* and four others. CURB/MCA ● MCA-5721, © MCAC-5721, © MCAD-5721 (35 min).

Performance: *Sprightly*

Recording: *Nice*

The Bellamy Brothers, Howard and David, have never been the kind of musicians you turn to for depth, sensitivity, or insights, something readily proven by such hits as *Let Your Love Flow* and *If I Said You Had a Beautiful Body Would You Hold It Against Me*. They are a radio act en route to Muzak, capable of turning out catchy phrases and melodies and making the grocery shopping a little less tiresome. Here, on their new album, they are joined on one cut by their female equivalents, the Forester Sisters, who help them bounce through some ersatz r-&-b.

As long as you don't expect very much, you're all right with the Bellamys. Essentially a pop-styled, yet acoustic-based, duo that skirts the fringe of country music, the Brothers have now moved into a more overt soft-rock sound, and the result is probably their most honest album. The songs are always facile, and they occasionally take a poke at social commentary, as in *Kids of the Baby Boom*, an unflinching, if opportunistic, attempt at self-revela-

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CIRCLE NO. 4 ON FEEDER SERVICE CARD



Howard and David Bellamy: soft rock skirting country's fringe

tion, and the rousing *D-D-D-D-Divorce*. Producer Emory Gordy, Jr., has provided a snappy, polished background, but even he can work only a certain number of miracles. The Bellamys still sound like the soundtrack to the latest teen rollover flick. *A.N.*

**THE BRANDOS:** *Honor Among Thieves*. The Brandos (vocals and instrumentals); Joe Kernich (keyboards). *Gettysburg; A Matter of Survival; Nothing to Fear; Honor Among Thieves; Strychnine*; and four others. RELATIVITY 8192-1, © 8192-4, © 8192-2 (35 min).

Performance: *Doesn't click*  
Recording: *Excellent*

The Brandos are being touted as the Great White Hope of post-Creedence roots-rock, and Lord knows one wants to like an album that mates thoughtful lyrics with big, ringing guitars. Still, there's something unconvincing about "Honor Among Thieves" that I can't quite put my finger on. The Brandos' basic sound is attractive, and the two cover songs are exceptionally well chosen (an obscure but excellent Creedence tune and an even more obscure garage-rock beauty from the near-legendary Sonics). But when leader Dave Kincaid starts to sing, you can almost hear a neon sign flashing, "This is a BIG STATEMENT!" Whether that's because he's trying too hard or merely has an

obnoxious voice, I'm not prepared to say. In any case, this is a band that seems a little too studied for its own good. *S.S.*

**SAWYER BROWN:** *Somewhere in the Night*. Sawyer Brown (vocals, instrumentals); instrumental accompaniment. *Somewhere in the Night; Little Red Caboose; This Missin' You Heart of Mine; Still Hold On; In This Town; Old Photographs*; and four others. CURB/CAPITOL CLT-46923, © CCT-46923, © CDP-46923 (32 min).

Performance: *Shallow*  
Recording: *Very good*

Sawyer Brown is the five-man group that won the infamous *Star Search* TV competition in 1983 and the Country Music Association's Horizon Award in 1985. They are also the winners of my personal Great Country Music Rip-Off contest. In "Somewhere in the Night" they offer ten samples of shallow shuck and jive that make Exile and Alabama look like world-class philosophers. And this is an *improvement* over their other stuff. *A.N.*

**GENE CLARK AND CARLA OLSON:** *So Rebellious a Lover*. Gene Clark (vocals, guitar); Carla Olson (vocals, guitar); other musicians. *The Drifter; Gypsy Rider; Every Angel in Heaven; Del Gato; Deportee (Plane Wreck at Los Gatos); Don't It Make You Want to Go*

*Home*; and five others. RHINO RNLP 70832, © RNC 70832.

Performance: *Believable*  
Recording: *Good*

Conceptually, this would seem to be an unlikely record: An ex-Byrd meets an L.A.-punk fellow traveler for a mostly acoustic album of country duets. But the results are thoroughly winning. Gene Clark and Carla Olson may not be George Jones and Tammy Wynette, but their voices fit so perfectly in "So Rebellious a Lover" that they might have been genetically engineered to sing together, and the unassuming, rough-hewn instrumentals provided by various country stalwarts (including another ex-Byrd, Chris Hillman, on mandolin) are unerringly right.

The song selection is a well-thought-out olio of the old and new—a little Gram Parsons, a honky-tonk version of John Fogerty's *Almost Saturday Night*, even a Woody Guthrie tune the Byrds did *after* Clark left the band—and the whole thing has a sort of low-key authority that neither principal has ever really exhibited on his or her own. Highly recommended, especially to those who felt the recent Ronstadt/Partridge/Harris "Trio" record was just a little too slick. *S.S.*

**DEF LEPPARD:** *Hysteria*. Def Leppard (vocals and instrumentals); vocal accompaniment. *Women; Rocket; Animal; Love Bites; Pour Some Sugar on Me; Armageddon I*; and six others. MERCURY 830 675-1, © 830 675-4, © 830 675-2 (63 min).

Performance: *Lite metal*  
Recording: *Compressed*

Def Leppard is trying to win back the market share they lost during a four-year hiatus. Heavy metal owes a big debt to Def Leppard, which gave it a respectable face for MTV at a time when most metal bands couldn't get on the rock-news update if they'd performed an act of self-immolation live at the Hollywood Bowl. The competition is fierce right now. But metal mavens will make room for "Hysteria," not only because the group crammed sixty-three minutes of music into the album, which is like getting twenty free minutes of air time, but because it's loaded with the anthemic guitar pyrotechnics and vocal harmonies you expect from this kind of music.

I happen to like the stuff Def Leppard does that isn't heavy-metal business-as-usual—the swaying, syncopated beat of *Animal*, positively frivolous by metal standards, and the zippy, playful *Armageddon II*, which isn't at all the duke 'em, nuke 'em reverb holocaust the title would lead you to expect. There are even some Top 40 high-pop harmonies buried in here.

Abba dons chain mail? Not exactly. But Def Leppard has a keen ear for melody and something resembling good



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CIRCLE NO. 2 ON READER SERVICE CARD



Dan Cook and Chris Camp of the Drñls: stylistic detours

taste in its arrangements, both of which put them at least a small step above the motley metal masses. *M.P.*

**THE DRÑLS:** *Spacetime*. Jeff Allen (vocals); Chris Camp (guitars, synthesizer, vocals); Dan Cook (bass, synthesizer, vocals); other musicians. *We've Got Our Love; Love Will Set You Free Tonight; Into the Dreamlight; (Livin' in the) Ultra-Modern World; Everyday Girls in Space*; and five others. SCAM 001, © 001.

Performance: *Impressive*  
Recording: *Very good*

These guys contributed the standout track to a recent compilation on CD of new rock from Nashville, and "Spacetime" demonstrates it was no fluke. The largely irrelevant sci-fi trappings aside, the Drñls are a first-rate modern pop/rock outfit. The overall sound is a sort of lush synth-pop crossed with what might be called light metal, but within those parameters they navigate a surprising variety of stylistic detours, from the ironic white-boy funk of *Rock You Down* to the soaring lyricism of *Love Will Set You Free Tonight*.

Even more impressive, the Drñls are capable of genuine wit, as in *Everyday Girls in Space*, which suggests that princesses of all ethnic backgrounds will love low-gravity planets because no matter how much they eat they won't gain weight. Add to all that a tastefully opulent production that strikes just the right balance between the synthetic and the hands-on (Steve Earle's drummer pounds away whenever machines prove inadequate to the task), and you have a most impressive debut. *S.S.*

**THE DUKES OF STRATOSPHEAR:** *Psonic Psonspot* (see *Best of the Month*, page 138)

**JOE ELY:** *Lord of the Highway*. Joe Ely (vocals, guitar); David Grissom (guitars); Bobby Keys (saxophone); other musicians. *Lord of the Highway; Don't Put a Lock on My Heart; Me and Billy the Kid; Letter to L.A.*; and six others (seven others on CD). HIGHTONE 8008, © 8008, © 8008 (44 min).

Performance: *Fabulous*  
Recording: *Excellent*

There are some mysteries that may never be solved. One that's puzzling me at the moment is why Texas rocker Joe Ely isn't a household word, and if you listen to his new album, "Lord of the Highway," I suspect you'll be as mystified as I am. Simply put, this is blues-based, beer-soaked rock-and-roll at its grungy best: swaggering, funny music in the same Rolling Stones/Faces mode as the Georgia Satellites but much more authentic and hooky. There's nothing profound going on here, just lots of great loud guitars, superbly supple work from an ace rhythm section, and some very smart songs.

Picks to click: *My Baby Thinks She's French*, surely one of the odder lover's complaints in memory, and *Everybody Got Hammered*, perhaps the ultimate rock-and-roll paean to the Existential Hangover. Highly recommended. *S.S.*

**THE FABULOUS THUNDERBIRDS:** *Hot Number*. The Fabulous Thunderbirds (vocals and instrumentals); other musicians. *Stand Back; Hot Number; Wasted Tears; It Comes to Me Naturally; Love in Common*; and five others. CBS ASSOCIATED FZ 40818, © FZT 40818, © ZK 40818 (40 min).

Performance: *Disappointing*  
Recording: *Very good*

The Thunderbirds are basically a high-class bar band, and bar bands are usual-

ly consistent to a fault, which more or less sums up "Hot Number." It's a consistent retread of its far more entertaining predecessor, last year's "Tuff Enuff." True, the level of performance remains high—*How Do You Spell Love* (the answer, M-O-N-E-Y) is a particularly appealing, sweaty r-&-b stomper—but, apparently by design, nothing has been added to or subtracted from the basic formula. So while this isn't exactly a dishonorable record, it is just your basic now-that-we've-gone-Platinum, let's-not-rock-the-boat effort. Sort of the blues equivalent of "Whitney." *S.S.*

**RICHIE HAVENS:** *Simple Things*. Richie Havens (vocals); vocal and instrumental accompaniment. *Drivin'; Passin' By; I Don't Wanna Know; Runner in the Night; Songwriter*; and four others. RBI RBIR 400, © RBIT 400, © RBIC 1400 (41 min).

Performance: *Still rousing*  
Recording: *Very good*

Richie Havens never had a great voice, but there was something quite compelling about the way he delivered a song when he emerged on the pop scene twenty years ago. Armed only with a guitar, he would push a song like *High Flyin' Bird* to the max, gradually building up the kind of excitement that few artists could match, and he demonstrated his electrifying style on numerous occasions in the coffee houses of New York's Greenwich Village in the early Sixties. But it was his extraordinary performance at the 1967 Monterey Pop Festival that finally brought him to national attention.

Havens is currently staging a comeback, but with a difference. In his new album, "Simple Things," he surrounds himself with synthesizers, electric guitars, electronic drums, acoustic instruments, a string section, background vocalists, and a forty-one-voice choir in various combinations. The updated Richie Havens does not play a guitar himself, and some of the intensity of the old days is gone, but the honesty and feeling that distinguished his past performances remain intact.

This is a fine album that ought to please Havens's original fans and gain him a score of new ones, but much as I like the music, and the clarity with which it is captured on the CD, I must say I dislike the so-called CD-wallet, or cardboard jacket, that houses it. Of course, it is the music that counts, and I would not have gone to the trouble of replacing the wallet with a standard jewel box if I didn't think the disc warranted the extra protection. *C.A.*

**GEORGE HIGHFILL:** *Waitin' Up*. George Highfill (vocals, acoustic guitar); the Teardrops (instrumentals); Pete Anderson (guitar); Byron Berline, Brantley Kearns (fiddle); other musicians. *Waitin' Up; The Brand New Mister Me; Billfold Size; My Sweet Love*

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Ain't Around; Still Tryin'; Mad Money; and four others. WARNER BROS. 25618-1, © 25618-4.

Performance: Some good tunes
Recording: Appropriately lean

With the stamp of Pete Anderson on him, George Highfill arrives in the big-time arena with an all-access pass and a lot to live up to. Since Anderson is Dwight Yoakam's producer, and since Highfill, like Yoakam, comes out of the Los Angeles neo-honky-tonk scene, comparisons are inevitable. Anderson even stepped in on "Waitin' Up" to add the big, fat guitar tremolos that stand out in Yoakam's albums, further augmenting Highfill's band, the Teardrops, with Yoakam's fiddler.

That's about where the similarity ends, though. Highfill, bearing none of Yoakam's pretty-boy looks or too-cool stances, is short on flash and zing. A native of Oklahoma, he steps up to the microphone like a man used to all-day dinners and lazy afternoons, replacing Yoakam's tight seriousness with a relaxed and sometimes pointed sense of humor, as in the title song, a tune out of the Bakersfield school about a wife who waits up "to do battle with the one she loves." Another of his songs tells of a man who carries a picture of his pretty, faithless love in his wallet. That way, she's always there with him, Billfold Size. And Still Tryin' takes an un sentimental look at a man who manages to sabotage any personal happiness he might have with his loved ones. All three songs, while lacking the poetic quality of much of Yoakam's work, side up to the classic honky-tonk genre and rightfully take their place among the best of the boozers-and-losers bunch.

Highfill isn't much of a singer—a duet with Katy Moffatt especially points that up—but he's a decent sort of guy, you can tell, and pleasant short-term company. Whether he has the stuff to keep him in the national performing arena for long, however, remains to be seen.

MICHAEL JACKSON: Bad (see Best of the Month, page 135)

REBA MCENTIRE: The Last One to Know. Reba McEntire (vocals); vocal and instrumental accompaniment. The Last One to Know; The Girl Who Has Everything; Just Across the Rio Grande; What You Gonna Do About Me; The Stairs; and five others. MCA © MCA 42030, © MCA 42030. © MCA 42030 (33 min).

Performance: Topnotch
Recording: Ditto

In the ten years since she began recording, Reba McEntire has developed into a first-rate singer and an exemplary interpreter of material, as she proved in her last two albums, "Whoever's in New England" and "What Am I Gonna

Do About You." In the last five years alone, she has won every significant music-industry award and, more important, carved a legitimate place for herself alongside country music's foremost female stylists.

With her newest record, "The Last One to Know," which she co-produced with Jimmy Bowen, the Oklahoma native displays even more confidence in her already powerful delivery, nailing her notes with greater clarity, and honing a style that is at once urgent, emotional, and forceful. Here, too, she reaffirms her maturing gift for songwriting (I Don't Want to Be Alone) and her genius for picking strong, through-the-peephole vignette songs that hammer both the head and the heart.

Foremost in that category is What You Gonna Do About Me, a song about divorce from a child's point of view. But McEntire also explores darker social themes, particularly the plight of Mexico's impoverished, in Just Across the Rio Grande, and the horror of wife abuse, in The Stairs. Surprisingly, she manages to pull off both songs without sounding sanctimonious, trendy, or overly sentimental, a coup for a woman who tends to cry on stage.

As her three music videos suggest, McEntire is a consummate actress. But as with her previous albums, she infuses "The Last One to Know" with a genuine and uncommon sense of conviction and commitment to her craft. And that, together with fine songs and a soprano that throbs with emotion, makes for another winner of a record.

MOTORHEAD: Rock 'n' Roll. Motorhead (vocals and instrumentals). Rock 'n' Roll; Eat the Rich; Blackheart; Stone Deaf in the U.S.A.; and five others. GWR/PROFILE PAL 1240, © PAC 1240, © PCD 1240 (33 min).

Performance: Stone-age
Recording: Okay

Motorhead plays good cop-bad cop with you. The good cop is the dual lead-guitar attacks of Phil Taylor and Wurzel, metallic blues played at Tokamak accelerator speeds. The bad cop is lead singer Lemmy, whose cave-dwelling vocals are so murderously grizzly you have to wonder how bad the other three Motorheads must be to let him sing. What I like about Motorhead is the absolute lack of conceit or pretension. They know they're beasts, and they don't come on as anything else. With heavy metal populated by so many uglies convinced they're God's gift to the ladies, these Quasimodos are sort of charming. Sort of.

MICHAEL MARTIN MURPHEY: Americana. Michael Martin Murphey (vocals, guitar); vocal and instrumental accompaniment. A Face in the Crowd; A Long Line of Love; Out of Touch; Worlds Apart; You're History; My Darling Wherever You Are; I'm Never Gonna



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na *Let You Go*; and three others. WARNER BROS. 25500-1, © 25500-4.

Performance: *Lethargic*  
Recording: *Very good*

Despite his considerable songwriting and vocal talents, Michael Martin Murphey appears to be a singer who sells records on the strength of individual songs, like *What's Forever For* and *Disenchanted*, and not on the basis of any appreciable following outside his native Texas. So it's good that Murphey recorded this album's spritely duet, *Face in the Crowd*, with newcomer Holly Dunn. That tune, already a hit single, is one of the few signs of life on "Americana," a hodgepodge of an album that seems oddly out of sync with itself. Murphey has his moments here, as in Paul Overstreet and Thom Schuyler's unabashedly sentimental *A Long Line of Love*, but for the most part, the album is instantly forgettable. *A.N.*

**PRINCE: Sign "o" the Times.** Prince (vocals and instrumentals); the Revolution (vocals and instrumentals); other musicians. *Sign "o" the Times; Play in the Sunshine; Housequake; The Ballad of Dorothy Parker; It; Starfish and Coffee; Slow Love; Hot Thing; Forever in My Life; U Got the Look; If I Was Your Girlfriend;* and five others. PAISLEY PARK/WARNER BROS. 25577-1 two LP's, © 25577-4 two cassettes, © 25577-2 two CD's (90 min.).

Performance: *All over the map*  
Recording: *Very good*

This latest effort from the diminutive Minneapolis funkster is pretty much what you'd expect—an ambitious, sprawling, stylistically wide-ranging song cycle linked only by a preoccupation with what my mother used to refer to as X-E-S spelled backwards. And I gotta tell you, even forgetting the obvious health hazards, I'm beginning to worry about this guy. He's all id, like some impossible musical version of Harpo Marx. Take the song *It*, for example, which is about just that. Prince informs us, over and over, that he wants to do "it" literally "all the time." Good for him, I guess, but I think he should lighten up. I mean, I like doing "it" as much as the next guy, but only some of the time.

Of course, there's more in this release than heavy breathing. As with most double albums, there's a lot of stuff that might uncharitably be described as filler, but in general the level of invention and performance is remarkably high for what is pretty much a one-man show. Yes, Prince is still flashing his often unsettling Beatles influences—*Hot Thing*, for example, can't make up its mind whether it's an unpretentious bit of dance/funk or just a parody of *Tomorrow Never Knows*—but much of the rest is harmonically advanced and stylistically daring. *U Got the Look*, for example, is an absolutely killer rock-



Prince: ambitious, sprawling, daring

and-roll dance track (despite the presence of Sheena Easton), and *I Could Never Take the Place of Your Man* is a flat-out great song, the kind of sophisticated power pop that suggests an unlikely collaboration between Stevie Wonder and Nick Lowe. Even more surprising is *The Cross*, a semi-devotional tune that builds into the most fuzzed-out, industrial-strength Velvet Underground-styled cacophony in years; if Lou Reed ever hears it, he's going to think Prince has been raiding his private tape collection.

True, nothing on "Sign 'o' the Times" is as obviously grabby and commercial as the bulk of "Purple Rain." What the new album reminds me of most, actually, is Fleetwood Mac's similarly eccentric "Tusk," but there's no use pretending there isn't some very good music here or that it's not the work of one of rock's most gifted creators working at something like his peak form. In short, you should hear it—even if, as some have suggested, the whole idea of rock-and-roll becomes ludicrous in an era of safe sex. *S.S.*

**RATTLESNAKE ANNIE.** Rattlesnake Annie (vocals); vocal and instrumental accompaniment. *Funky Country Livin'; Country Music Hall of Pain; Somewhere South of Macon; Callin' Your Bluff; Been Waitin' That Long; Lonesome On'ry and Mean; Long Black*

*Limousine;* and three others. COLUMBIA B6C 40678, © 6T 40678.

Performance: *Troubadour*  
Recording: *Nice*

Rattlesnake Annie, music journalist John Lomax III has observed, "is so country she makes the Judds sound like Marie Osmond." He's right. So authentically old-time country/folk and rural blues that it's hard to believe a major label signed her, Rattlesnake Annie McGowan—she got her moniker from the rattler she wears as an earring—is something of an amalgam of Jean Ritchie, Kitty Wells, Mother Maybelle Carter, and Bonnie Raitt. On the one hand, she sings, as she does in *Country Music Hall of Pain*, her most mainstream song here, about love gone bad, sad, and mad. But then she quickly turns around with *Goodbye to a River* and protests, in an old-fashioned-sounding song (very Jean Ritchie) the building of a power plant and the defiling of nature. From there, in a strong duet with Willie Nelson, she segues to *Long Black Limousine*, a classic old-time country theme, à la Mother Maybelle, of a dreamer's last ride. And in between she lays down four of Lonnie Mack's most infectious country-blues tunes, including *Funky Country Livin'* and *Been Waitin' That Long*.

Annie isn't for everyone—her voice is pliant, if decidedly down-home—but

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her two previous albums, self-produced and self-promoted, have made her a cult artist in Europe. Her new one, a strong, evocative collection of acoustic music, should tell you why. *A.N.*

**LES RITA MITSOUKO:** *Présentent The No Comprendo.* Catherine Ringer (vocals, guitar, midi, keyboards, strings); Fred Chichin (guitar, bass, drums, keyboards); other musicians. *Les Histoires d'A; Andy; C'est comme ça; Vol de nuit; Tonite; Someone to*

*Love;* and four others. VIRGIN 90616-1, © 90616-4.

Performance: *Eccentric*  
Recording: *Good*

Look, the French annoy me sometimes too. But make allowances for Les Rita Mitsouko, a thoroughly eccentric and charming French duo, neither of whom are named Rita. Imagine ragtag melodies suggestive of cabaret songs, tavern singalongs, and nursery rhymes set to a reckless, rock-and-roll rhythm-guitar

accompaniment, and you'll have an idea of the singularly energetic and original sound of "Les Rita Mitsouko présentent The No Comprendo."

Vocalist Catherine Ringer, a kind of Edith Piaf in black leather and spiky hair, is at once playful and imposing. She sounds as if she's having fun, but you get the feeling she might turn into a homicidal psychopath if you don't take her seriously. Her collaborator, guitarist Fred Chichin, is smart: he stays out of her way, a spirited but low-profile accompanist cranking out growling, strutting riffs. The album is aptly named "No Comprendo," since the lyrics in most of the songs are sung (and printed) in French. Actually, I have no interest in having them translated. Finding out the real meaning of "un filet de mailles plombées telle un bombardier" could only be a letdown. *M.P.*

**RONNIE ROGERS:** *Tough Times Don't Last.* Ronnie Rogers (vocals); vocal and instrumental accompaniment. *Tough Times Don't Last; Good Timin' Shoes; Double Datin'; Don't Know What I'm Doin'; Let's Play Hooky; Eyes of the Young;* and four others. MTM/CAPITOL ST-71065, © 4XT-71065, © CDP-71065 (41 min).

Performance: *Hit bound*  
Recording: *Okay*

MTM Records, which has signed more dull, lifeless performers than Ed Sullivan, has finally come up with a winner in Ronnie Rogers. A singer/songwriter who's heavier on the songwriting than the singing, Rogers is a charming one-man hit factory. Adept at slick radio nuggets as well as rough-hewn country blues and shuffles, he keeps his sentiments simple, reminiscing about high-school days (*Double Datin'*), touting a night out on the town (*Good Timin' Shoes*), and flirting with mid-morning love (*Let's Play Hooky*). It's all humble blue-collar stuff, to be sure, but Rogers fashions the kind of hooks that rumble around in the brain, and he reels you in more often than not. A pleasant diversion, and then some. *A.N.*

**DIANA ROSS:** *Red Hot Rhythm and Blues.* Diana Ross (vocals); vocal and instrumental accompaniment. *Dirty Looks; Stranger in Paradise; Summer-time; Shine; Tell Me Again;* and four others. RCA 6388-1-R, © 6388-4-R, © 6388-2-R (38 min).

Performance: *Partially successful*  
Recording: *Very good*

Diana Ross had a good idea in focusing her new album on rhythm-and-blues, the roots of the music she's been singing since the Sixties, but the result is only partially successful. The very essence of r-&-b is deeply felt emotion, and that's the ingredient too frequently missing here.

The production is imaginative, often simulating earlier styles, as in *Shock*

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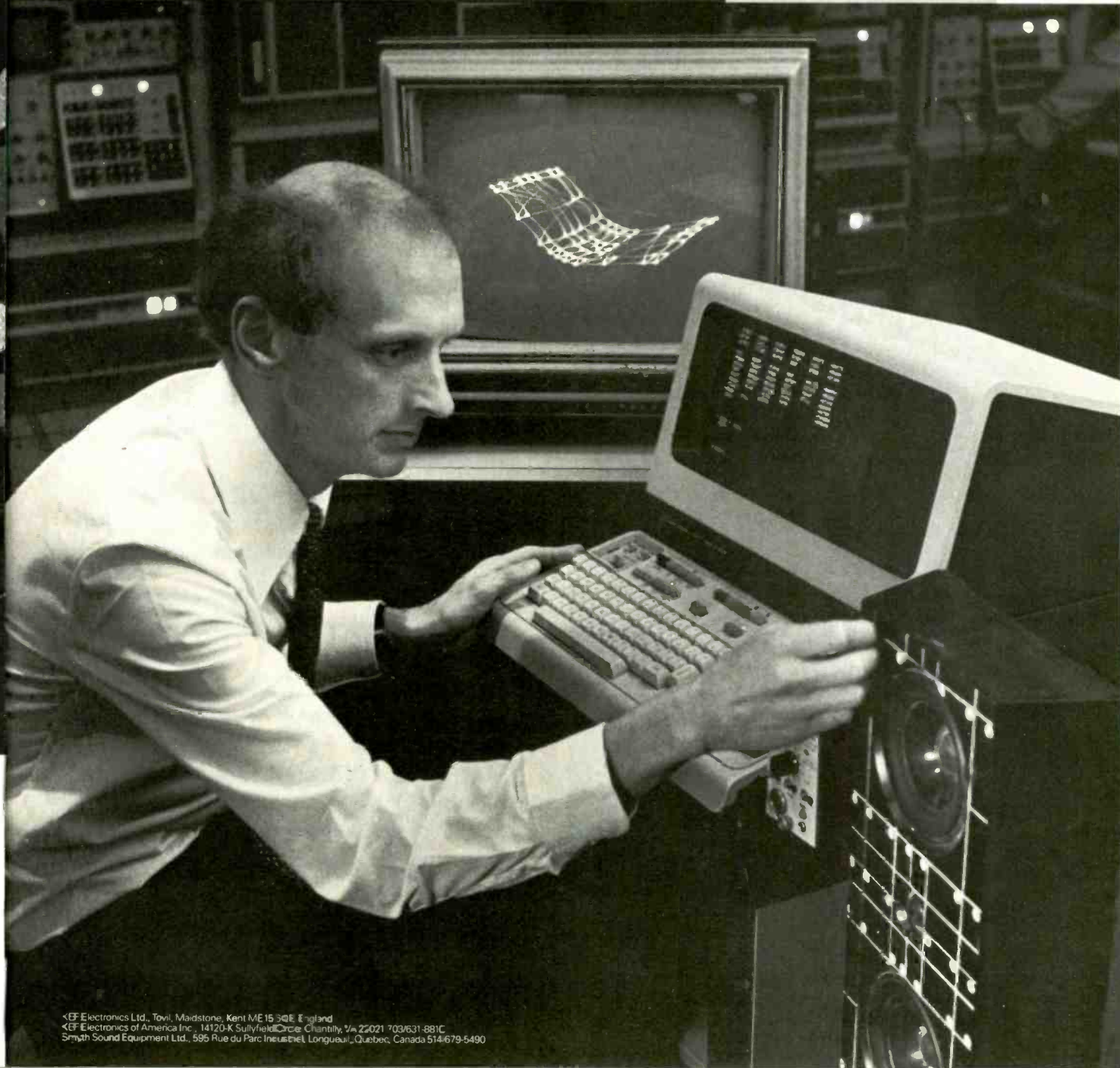
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*Waves*, which sounds like a resurrected Supremes song, but Ross's vocal performance is generally thin and unconvincing. She's at her best when she abandons pretension and delivers this contemporary material with the coolly detached polish we have come to expect of her, as in the rousing opener, *Dirty Looks*. It succeeds on all counts, but it owes more to Janet Jackson than to vintage Motown.

Two other high points are *Cross My Heart*, with its lush, richly textured backgrounds, and *It's Hard for Me to Say*, which Ross co-wrote with Luther Vandross, who backs her here. Another winner is a spirited reworking of the oldie *There Goes My Baby*. Now that was rhythm-and-blues! Ross might have come up with something really special if she had looked for a few more choice items from the archives, serving them up in modern arrangements. As it is, this set promises more than it delivers. *P.G.*

**THROWING MUSES: *The Fat Skier*.** Kristin Hersh (vocals, guitars); Tanya Donnelly (vocals, guitars, percussion); Leslie Langston (bass, cello, violin); David Narcizo (drums, percussion, vocals). *Garoux des larmes; Pools in Eyes; A Feeling; Soap and Water; Soul Sol-*

*dier*; and two others. SIRE 25640-1, © 25640-4.

Performance: *Stark*  
Recording: *Good*

Throwing Muses is a full frontal assault, as close as you can come to a sweat-drenched night-club riot in the safety of your living room. "The Fat Skier" is rock at its most urgent and basic—three guitars, a drum kit, and a singer. No synths or computers. Not even a keyboard. Nonetheless, within those self-imposed limits, the Muses manage to create some unusual sounds while hammering away in their frenzy.

Vocalist Kristin Hersh is what punk might have been if it had been able to sing—husky, snarling, sexy, her voice stops and starts, chatters at 90 mph, even kicks into a punk yodel when conditions dictate. If she were a guitar, she'd be a Stratocaster raining torrents of power chords in clipped, staccato bursts. The real guitars here make the perfect foil for Hersh, laying back a little and furnishing shifting, arpeggiated melody lines and weird, atmospheric embroidery.

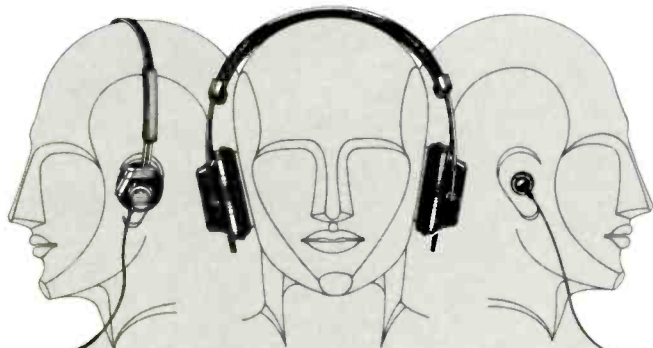
"The Fat Skier" is tougher than any ten heavy-metal records. That three of the four Muses are women makes it all the more remarkable. *M.P.*

**THE VAGRANTS: *The Great Lost Album*.** The Vagrants (vocals and instrumentals). *Respect; I Can't Make a Friend; Beside the Sea; I Don't Need Your Loving*; and six others. ARISTA AL-8459, © AC-8459.

Performance: *Blast from the past*  
Recording: *Not bad, considering*

Here's further proof, if any were needed, that Sixties mania continues unabated—a first-ever album by a band that's been defunct for nearly twenty years, a band that only made singles. And on a major label. The Vagrants, to be sure, are already a minor footnote in rock history, for one of them was the young Leslie West, who later became famous doing fatso Eric Clapton imitations in the more successful group Mountain. They were, in fact, pretty much the best of the White Soul, Hammond-organ bands that flourished in the wake of the Young Rascals, and their claim to fame was the almost-hit version of *Respect* included here. It was good in its day, and it holds up pretty well, although honesty compels me to observe that the similarly obscure Rationals (from Detroit) did an even better version at the same time.

The rest of "The Great Lost Album" is made up of obscure B sides and out-



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DMP is a jazz-oriented record label, specializing in albums for the digital medium.

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## NEW RELEASES

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- Manfredo Fest (BRAZILIANA)**  
 Piano legend George Shearing says it best in his review: "a breakthrough...both fresh and enthusiastic...it's good to see that Manfredo is back." Fest's music combines invigorating rhythms with inventive keyboard technique.
- Flim & the BB's (NEON)**  
 The fourth "Killer BB" CD marks a departure for this award-winning jazz quartet, reflecting their varied jazz,



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- Warren Bernhardt (HANDS ON)**  
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takes, none of it terribly earthshaking. But if you're old enough to remember what it was like going to a rock club in 1968, when you chose the evening's drugs as carefully as you chose your clothes, it will give you a lot of flashbacks. S.S.

**WENDY AND LISA.** Wendy Melvoin (vocals, guitars); Lisa Coleman (vocals, keyboards); vocal and instrumental accompaniment. *Honeymoon Express; Sideshow; Waterfall; Blues Away; Song About; Everything but You;* and five others. COLUMBIA BFC 40862, © BCT 40862, © CK 40862 (49 min).

Performance: *Going places*  
Recording: *Very nice*

One greets the debut album of former Prince back-up musicians Wendy Melvoin and Lisa Coleman with an equal mix of titillation and trepidation. Will they take on the Purple One's early licentious character? Will they focus on sexual shock, androgyny (their publishing company is Girl Brothers Music), or latter-day spiritualism? Or will they probe the substantial and classically trained musicianship that gleamed through the cracks of Prince's carefully orchestrated stage performance?

Whatever you want to call this, it is distinctly Prince- and funk-influenced, and yet it is a separate music. Alternately more melodic and more jazz-based than the heavily synthesized Prince, the duo's style turns on Wendy's gift for writing melodic lines, unusual tempos, and intriguing bass and guitar parts and Lisa's ease with song structure, chording, and coloring on the piano and synthesizers. Both women handle lead vocals, with Wendy sounding the more earnest and textured of the two, Lisa the more seductive.

The real surprise of this album, produced by Wendy and Lisa themselves with Bobby Z, former drummer of the Revolution, is not the degree of competence or the up-front ease with which they take center stage, but the conventional homogeneity and pop style of their approach. While their pieces teem with structural sophistication and lyrical fire, some of the songs, including *Stay, Blues Away, and Song About*, sound perfect for, say, Dionne Warwick or Melissa Manchester. On the other hand, *Chance to Grow* is creamy jazz—shades of Keith Jarrett or Bill Evans—while *Sideshow* and *Waterfall* call on harder influences for a muscular beat and washes of vocals. And then there's *Everything but You*, with its minimalist pinpointing, and *The Life*, which conjures up the early Joni Mitchell.

Obviously, Wendy and Lisa have put a lot of fiery energy into this head-turning debut, but I suspect that it is only a hint of what they can do, as they progress on their tour of self-exploration without Prince. If this album is a quiet killer, their next should be a psychopath on the make. A.N.

**JOHN BASILE: *Quiet Passage.*** John Basile (guitar); other musicians. *Until Tomorrow; Estate; Firm Roots; Under the Influence;* and four others. PROJAZZ © CDJ 627 (45 min).

Performance: *Bebopish*  
Recording: *Very good*

Guitarist John Basile has been around for a while, but mostly in the background. "Quiet Passage" brings him front and center, leading a sprightly sextet whose main style is soft bop. Basile plays an amplified guitar, combining his clean, tasteful style with Tom Harrell's crisp trumpet and mellow flugelhorn and riding it gently over a fine rhythm section. The result is pleasing to the ear and filled with enough surprises to engage the intellect. In other words, a mood album of substance. C.A.

**LOUIE BELLSON: *Classics in Jazz.*** Louie Bellson (drums); orchestra and sextet. *In a Mellotone; Flyin' Home; Body and Soul; A Latin Affair; Gut Bucket Buckley;* and five others. MUSICMASTERS ● MMD 20120A, © MMC 40120Z, © MMCD 60120Y (56 min).

Performance: *Well-oiled*  
Recording: *Very good*

Drummer Louie Bellson gained invaluable big-band experience under the leadership of such giants as Tommy Dorsey, Benny Goodman, Harry James, Duke Ellington, and Count Basie, and occasionally he pours it all into a band of his own. For "Classics in Jazz," Bellson assembled some top East Coast studio musicians to play a program heavily laced with familiar strains. The album includes six big-band tracks with arrangements by Tommy Newsom and Sammy Nestico that follow a less innovative path than, say, Toshiko Akiyoshi's charts but are nevertheless effective. The band swings with admirable precision in such flag-wavers as *It Don't Mean a Thing* and *Flyin' Home*.

If you wonder what attracted the cream of big-band leaders to Bellson, listen to his work with a sextet on *Caravan*. I am usually bothered by extended drum solos, but this one has some meat on it. C.A.

**JIM CULLUM JAZZ BAND: *Super Satch.*** Jim Cullum Jazz Band (vocals and instrumentals). *Potato Head Blues; Yes! I'm in the Barrel; Beau Koo Jack; Tight Like This; S.O.L. Blues; West End Blues;* and six others. STOMP OFF S.O.S. 1148.

Performance: *Super*  
Recording: *Excellent*

Remember the group Super Sax? It took well-known saxophone solos, like some

of the classic ones by Charlie Parker, and played them in unison. A gimmick, for sure, but not at all unpleasant. Now cornettist Jim Cullum has taken that idea farther into the past in "Super Satch," an album devoted to classic Louis Armstrong solos given the unison treatment. It works, and the result is even better than that obtained by reeds. The Cullum band is an excellent unit of players who are in complete control of their instruments and exhibit a thorough understanding of the music. Despite minor flaws, this is a superb album of classic jazz approached from a new angle. It is on the Stomp Off label, which means that the technical quality is very high, and the playing time exceeds an hour, which is unusual for an LP. The notes, by British trumpeter John Chilton, co-author of *Louis*, an informative 1971 Armstrong biography, are excellent and refreshingly frank. C.A.

**DEXTER GORDON: *The Other Side of Round Midnight.*** Dexter Gordon (soprano and tenor saxophone); Freddie Hubbard, Palle Mikkelborg (trumpet); Wayne Shorter (soprano saxophone); Bobby Hutcherson (vibraphone); Herbie Hancock (piano); Ron Carter (bass); Billy Higgins, Tony Williams (drums); other musicians. *Berangere's Nightmare #2; Society Red; Tivoli; As Time Goes By; Round Midnight;* and three others. BLUE NOTE ● BT-85135, © 4BT-85135, © CDP-46397 (50 min).

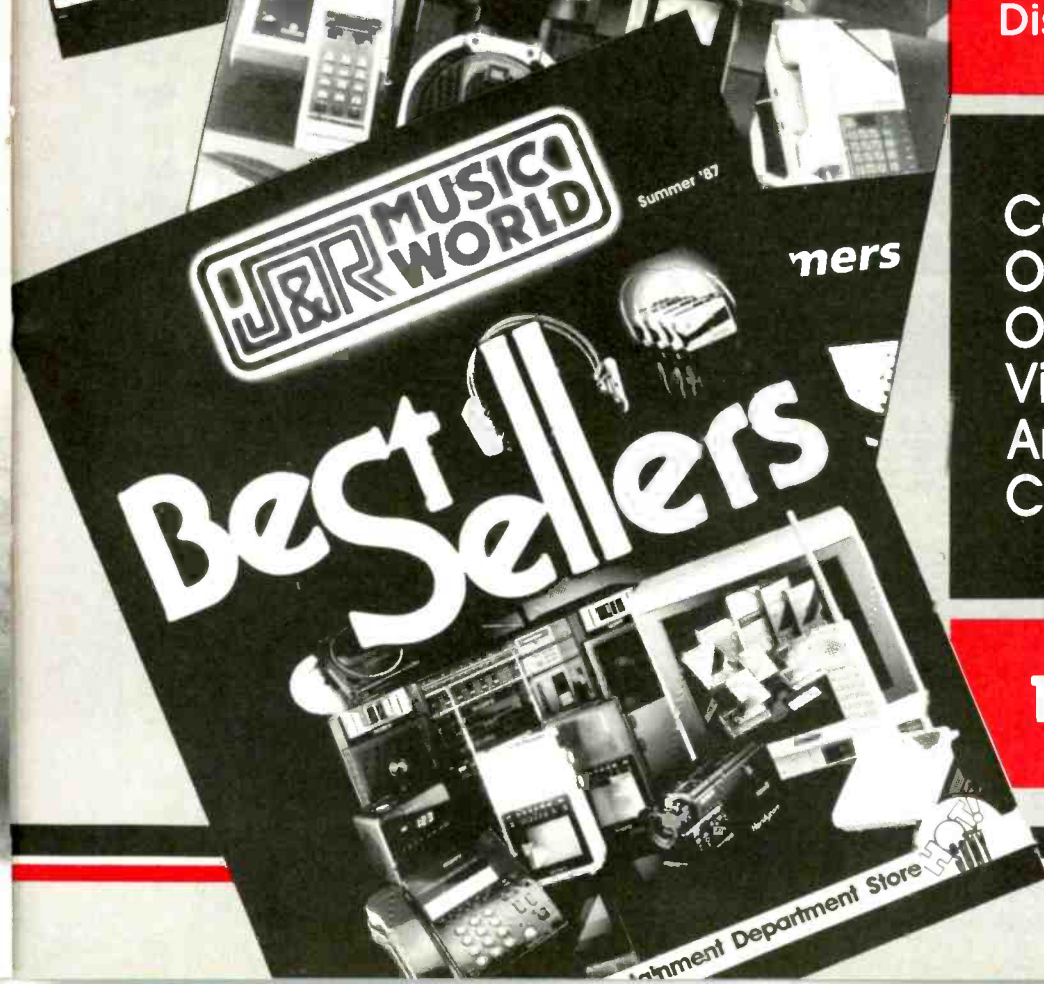
Performance: *Mixed*  
Recording: *Good*

The soundtrack for *Round Midnight*, the French film that starred Dexter Gordon and featured a number of American musicians, included several numbers that could not be accommodated on Columbia's soundtrack LP. It is these numbers that Blue Note has assembled in this album. Despite the Oscar awarded to the soundtrack, this record only reinforces my impression that the whole production was to some extent pieced together from last-minute ideas. I suppose this release was made to look like a Dexter Gordon album because he is the film's star and a Blue Note artist, but he only appears on four of the eight selections, and he isn't in the best of shape on any of them. The tastiest of these leftovers are an impromptu blues performance by Wayne Shorter, Herbie Hancock, Ron Carter, and Billy Higgins and an eventful solo rendition of the film's title tune by Hancock. The rest is digestible, but it won't make your mouth water. C.A.

**STEPHANE GRAPPELLI: *Plays Jerome Kern.*** Stephane Grappelli (violin), (Continued on page 180)



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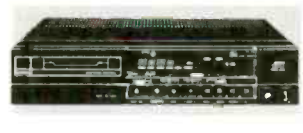
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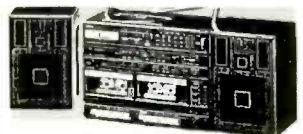
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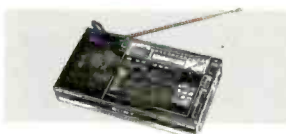
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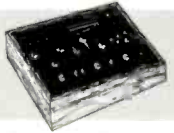


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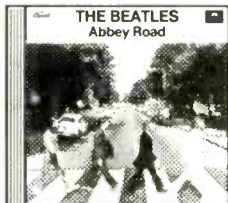
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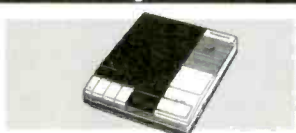


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## SUSANNAH MCCORKLE

**B**Y continuing to improve on near perfection, Susannah McCorkle is making it increasingly difficult to write about her. I am running out of words to describe how much I admire her singing. I thought she had reached the zenith of her artistry with her last album, "How Do You Keep the Music Playing?," but now along comes "Dream," an album in which McCorkle combines the kind of singing style that has brought her raves in the past with ventures into new stylistic areas. Clearly, she is not set on playing it safe. The new album offers more variety than her previous ones and more delightful surprises.

I wish the late Lil Armstrong could have heard McCorkle's treatment of *Just for a Thrill*, which Armstrong wrote some fifty years ago, and Cole Porter never had a better reading of *At Long Last Love*, which opens the album. Except that Frank Wess replaces Al Cohn on tenor saxophone, the accompaniment is the same here as on McCorkle's last album, and pianist Ben Aronov deserves much credit for his arrangements. Wess appears in only

three selections, including the title track, Johnny Mercer's *Dream*, which is taken at a wonderfully lazy pace. You have to be good to sing that slowly.

Susannah McCorkle is good at any tempo, and if you like your songs taken at a brisk pace, be advised that she reaches maximum speed on *I Get a Kick Out of You*. Among the several departures, moreover, are songs like *All of Me*, with King Pleasure's lyrics applied to Illinois Jacquet's tenor solo, and Paul Simon's *Train in the Distance*. I would not have considered these typical McCorkle fare, but given the breadth of material on this new album, maybe there is no such thing.

Chris Albertson

**SUSANNAH MCCORKLE:** *Dream*. Susannah McCorkle (vocals); Ben Aronov (piano); Frank Wess (tenor saxophone); Gene Bertoncini (guitar); Steve LaSpina (bass); Joe Cocuzzo (drums). *Sleepy; All of Me; Bewitched; Train in the Distance; Just for a Thrill; At Long Last Love; Triste; Longings for a Simpler Time; I Get a Kick Out of You; Dream*. PAUSA PR-7208, © PC-7208, © PCD-7208 (41 min).

piano); orchestra, Ettore Stratta cond. *Why Do I Love You?; Can't Help Lovin' Dat Man* (CD only); *Yesterdays; A Fine Romance; Ol' Man River; Long Ago and Far Away; I Won't Dance; Pick Yourself Up*; and three others. GRP ● GR-1032, © GRD-9542 (57 min).

Performance: *Excellent*  
Recording: *Very good*

When he first emerged as a leading force in the celebrated Quintet of the Hot Club of France some five decades ago, French violinist Stephane Grappelli proved his ability to generate jazz heat as well as play pretty in a less rousing way. That he can still do both is well demonstrated on this GRP release devoted to Jerome Kern. The album combines Grappelli's own group, which is similar in make-up to the old Hot Club quintet, with an English string orchestra conducted by Ettore Stratta. The music can get a bit Muzaky at times, for it is clearly a throwback to the jazz-plus-sweeping-strings sessions of the Fifties, but the sound is glorious, and Martin Fossett brings a contemporary feel to the proceedings with his subtle blend of guitar and voice.

Grappelli also plays piano, ever so briefly, on one track, *Long Ago and Far Away*, and he sounds fine, but it is his violin work that shines—as brightly as ever. The dyed-in-the-wool jazz fan may find most of this set too commercial, but there is swing and wonderful invention in them thar strings. C.A.

**ROB MCCONNELL:** *Boss Brass & Woods*. Rob McConnell and the Boss Brass (instrumentals); Phil Woods (alto saxophone). *Out of Nowhere; Greenhouse; Stereo Blue; Jive at Five*; and four others. IMPULSE/MCA ● MCA-5982, © MCAC-5982, © MCAD-5982 (56 min).

Performance: *Hot and polished*  
Recording: *Excellent*

You may remember trombonist Rob McConnell's Boss Brass from the wonderful Concord Jazz album they recorded with Mel Tormé last year. Now the Canadian big band can give you more tingles in a somewhat earlier set recorded with alto-saxophone player Phil Woods as the guest artist. A twenty-four-track digital recording, which sounds great even on vinyl, "Boss Brass & Woods" is a brilliant showcase for the leader-arranger, who wrote all but one of the charts. It is not innovative big-band music but more like a delectable serving of steak and potatoes—hot and tasty. Among my favorite tracks are a slow, pretty number called *Stereo Blue* and Quincy Jones's *Quintessence*, in which Woods surpasses his own 1961 performance of that number with the Jones band, but the entire album is very satisfying. C.A.

**HILTON RUIZ:** *Something Grand*. Hilton Ruiz (piano); Lew Soloff (trum-

pet); Steve Turre (trombone, seashells); Sam Rivers (soprano and tenor saxophones, flute); other musicians. *Puerto Rican Children; Four West; Sunrise Over Madarao; Infinity*; and three others. Novus/RCA ● 3011-1, © 3011-4, © 3011-2 (59 min).

Performance: *Barrio bounce*  
Recording: *Excellent*

Several decades ago, when bebop was still wet behind the ears, the fusion of jazz and south-of-the-border music that Jelly Roll Morton hinted at in the Twenties came into full bloom. Morton described the combination as jazz with a Spanish tinge, but to the post-war labelers it was Afro-Cuban music. Call it what you will, the blend can be exciting, and it is just that in the hands of pianist/composer Hilton Ruiz, whose Novus album "Something Grand" augurs well for RCA's return to jazz.

With an excellent, highly Latin-flavored rhythm section, and three outstanding players from the jazz side of the fence—Lew Soloff, Steve Turre, and Sam Rivers—Ruiz presents an eventful fifty-eight and a half minutes of his own compositions and maintains a rare degree of excitement throughout. A pupil of Harold Mabern, Cedar Walton, and the late Mary Lou Williams, Ruiz already has an impressive track record on the jazz scene, having worked for a number of its top leaders, but he clearly belongs up front, and this album should do much to earn his place there. *C.A.*

**MAL WALDRON AND STEVE LACY:** *Sempre amore*. Steve Lacy (soprano saxophone); Mal Waldron (piano). *Smada; To the Bitter; Johnny Come Lately; Azure*; and four others. SOUL NOTE/POLYGRAM SPECIAL IMPORTS SN 1170, © SN 1170C, © SN 1170CD (43 min).

Performance: *Close encounters*  
Recording: *Very good*

Pianist Mal Waldron and saxophonist Steve Lacy first recorded together thirty years ago, in Lacy's tribute to Thelonious Monk on Prestige/New Jazz. In "Sempre amore" they set their sights on Duke Ellington and Billy Strayhorn. Waldron and Lacy have often appeared together, sometimes to perform unaccompanied duets, but they have rarely exhibited the degree of warmth and reverence that permeates this album. That they have always been true, uncompromising originals is brilliantly reflected in these eight introspective performances of material that, in the wrong hands, might easily have become yet another serving of mock-Ellingtonia. Moreover, they have not attempted to cash in on the Ellington name, which is buried away in the composer credits on the back. Most of the tunes are little known, and only one, *Prelude to a Kiss*, is widely popular, but the artistry Waldron and Lacy bring to all of them deserves a wide audience. *C.A.*

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**BOSTON CAMERATA:** *A Renaissance Christmas*. Dufay: *Kyrie eleison*. Praetorius: *Wie schön leuchtet der Morgenstern; Es ist ein Ros' entsprungen*. Martin: *Nouvelles, nouvelles*. Victoria: *O magnum mysterium*. And fifteen others. Boston Camerata, Joel Cohen cond. NONESUCH ● 79134-1, © 79134-4, © 79134-2.

**THE CHRISTMAS ALBUM.** Andy Williams: *It's the Most Wonderful Time of the Year*. Doris Day: *Let It Snow! Let It Snow! Let It Snow!* Ray Conniff Singers: *Greensleeves*. Tony Bennett: *The Christmas Song*. Johnny Cash: *The Little Drummer Boy*. And fourteen others. COLUMBIA © CK 30763.

**A CHRISTMAS TRADITION.** Randy Travis: *White Christmas Makes Me Blue*. The Forester Sisters: *A Carpenter, a Mother, and a King*. The Nitty Gritty Dirt Band: *Colorado Christmas*. Crystal Gayle: *Have Yourself a Merry Little Christmas*. And six others. WARNER BROS. 25630-1, © 25630-4.

**CHRISTMAS AT ST. LUKE'S.** Bach: *In dulci jubilo*. Billings: *A Virgin Unspotted*. Fauré: *A Virgin and Child*. Pachelbel: *Von Himmel hoch, da komm' ich her*. Mozart: *Laudate Dominum*. And ten others. William Entriken (organ); Choirs of the Church of St. Luke in the Fields, New York City, William Entriken cond. CLASSIC MASTERS CMS-1006.

**PERCY FAITH:** *Music of Christmas*. Percy Faith and His Orchestra. *Joy to the World; Silent Night; Deck the Halls with Boughs of Holly; It Came Upon a Midnight Clear; Good King Wenceslas*; and seven others. COLUMBIA © CK 38302 (mid-price).

**ART GARFUNKEL AND AMY GRANT:** *The Animals' Christmas by Jimmy Webb*. Art Garfunkel, Amy Grant (vocals); Jimmy Webb (piano); other musicians. King's College School Choir; London Symphony Orchestra, Carl Davis cond. *The Annunciation; Just a Simple Little Tune; The Song of the Camels; Carol of the Birds*; and eight others. COLUMBIA FC 40212.

**HONEGGER:** *Une Cantate de Noël*. **POULENC:** *Stabat Mater*. Gabriela Beňačková-Čápková (soprano); Václav Zitek (baritone); Kühn Children's Chorus; Czech Philharmonic Chorus and Orchestra, Libor Pešek cond. SUPRAPHON/DENON © 33CO-1090.

**MAHALIA JACKSON:** *Silent Night*. Mahalia Jackson (vocals); chorus and orchestra, Johnny Williams cond. *Sweet Little Jesus Boy; A Star Stood Still; Hark! The Herald Angels Sing; Christmas Comes to Us All Once a Year; Joy to the World*; and five others. COLUMBIA © CK 38304 (mid-price).

**THE JETS:** *Christmas with the Jets*. The Jets (vocals and instrumentals).

## MUSIC FOR CHRISTMAS

**F**ORTY-FIVE years ago Bing Crosby recorded Irving Berlin's *White Christmas* and added a new dimension to our holiday festivities. Christmas records became as much a part of the season as Christmas trees, cards, and turkeys. White Christmas went immediately to the top of what was then called the *Hit Parade* and did so again and again for years afterwards until a certain red-nosed reindeer got in the way. Two years ago the No. 1 best seller was *Band Aid's Do They Know It's Christmas?*, which raised money for the starving in Africa.

This year A&M has released a charity album called "A Very Special Christmas" containing seasonal songs performed by a bunch of Top 10 superstars; proceeds go to the Special Olympics, an organization serving handicapped children.

The yuletide releases we've received since last year's roundup cater to just about every taste, and the rapidly growing appetite for compact discs is reflected in the number of Christmas titles now available in the new format, up from a mere trickle two years ago. Also included here are a few video titles to add a seasonal glow to your home viewing. Christie Barter

*This Christmas; Christmas in My Heart; All Alone on Christmas Eve; On Christmas Night; Home for Christmas*; and five others. MCA MCA-5856.

**REBA MCENTIRE:** *Merry Christmas to You!* Reba McEntire (vocals); vocal and instrumental accompaniment. *Away in a Manger; On This Day; O Holy Night; The Christmas Guest; Silent Night*; and five others. MCA ● MCA-42031, © MCAC-42031, © MCAD-42031.

**MENOTTI:** *Amahl and the Night Visitors*. Original NBC Television cast recording. Chet Allen (boy soprano), Amahl; Rosemary Kuhlmann (soprano), His Mother; others. Orchestra and chorus, Thomas Schippers cond. RCA © 6485-2-RG.

**JESSYE NORMAN:** *Christmastide*. Jessye Norman (soprano); American Boychoir; New York Choral Society; Empire Chamber Ensemble, Robert DeCormier cond. *This Christmastide; O Holy Night; Hark! The Herald Angels Sing; Joy to the World; Silent Night*; and eleven others. PHILIPS ● 420 180-1, © 420 180-4, © 420 180-2.

**SEASON'S GREETINGS.** Dolly Parton: *Hard Candy Christmas*. Alabama: *Santa Claus (I Still Believe in You)*. The Judds: *Light of the Stable*. Waylon Jennings: *Silent Night*. Deborah Allen:

*Rockin' Little Christmas*. And five others. RCA © 5710-2-R.

**SILENTLY THE SNOW FALLS.** Steve Tilston (guitars, mandolin); Tony Hinnigan (cello); Maggie Boyle (flute); Roland Schmitt (saxophone, flute); Tommy Keane (uilleann pipes). *Christmas Eve; Angels on High; Silent Night; Lo, How a Rose E'er Blooming*; and seven others. SHANACHIE 95007.

**GEORGE STRAIT:** *Merry Christmas Strait to You*. George Strait (vocals); vocal and instrumental accompaniment. *White Christmas; There's a New Kid in Town; Winter Wonderland; Away in a Manger; Santa Claus Is Coming to Town*; and five others. MCA ● MCA-5800, © MCAC-5800, © MCAD-5800.

**ROGER WAGNER CHORALE:** *To Catch a Christmas Star*. Roger Wagner Chorale, Roger Wagner cond. *Carol of the Bells; Sweet Little Jesus Boy; A Merry Christmas Song; Tomorrow Shall Be My Dancing Day; The First Noël*; and seventeen others. DELOS © D/CD-3072.

**WAVERLY CONSORT:** *A Renaissance Christmas*. Praetorius: *In dulci jubilo; Courante*. Gabrieli: *O magnum mysterium*. Josquin des Prez: *Ave Maria*. And nine others. Waverly Consort, Michael Jaffee cond. CBS © MK 34554.

### VIDEOS

**CAROLS FOR CHRISTMAS.** Aled Jones (boy soprano); Farnaby Brass Ensemble; Royal College of Music Chamber Choir, David Willcocks cond. *Hark! The Herald Angels Sing; O Little Town of Bethlehem; I Saw Three Ships; The Coventry Carol; Good Christian Men, Rejoice; Lo, How a Rose E'er Blooming; Silent Night*; and twelve others. HBO/CANNON PTVE3385 VHS Hi-Fi, PTXE3385 Beta Hi-Fi; PIONEER ARTISTS PA-86-178 LaserDisc.

**HANDEL:** *Messiah*. Judith Nelson, Emma Kirkby (soprano); Carolyn Watkinson (contralto); Paul Elliott (tenor); David Thomas (bass); Choir of Westminster Abbey; Academy of Ancient Music, Christopher Hogwood cond. PIONEER ARTISTS PA-86-174 two LaserDiscs.

**MENOTTI:** *Amahl and the Night Visitors*. Robert Sapolsky (boy soprano), Amahl; Teresa Stratas (soprano), his mother; others. Ambrosian Opera Chorus; Philharmonia Orchestra, Jesús López-Cobos cond. VAI 69032 VHS Hi-Fi, 29032 Beta Hi-Fi.

**LEONTYNE PRICE:** *Sings Noël*. Leontyne Price (soprano); Montreal Symphony Orchestra, Charles Dutoit cond. *What Child Is This; Silent Night; Away in a Manger; Un Flambeau; He Shall Feed His Flock*; and others. HOME VISION LEO-01 VHS Hi-Fi and Beta Hi-Fi.



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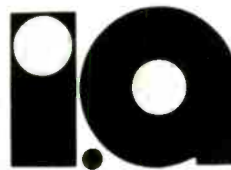
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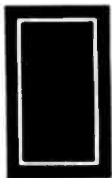
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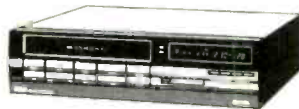
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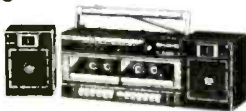
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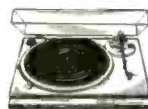
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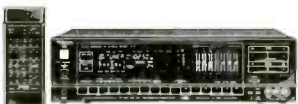
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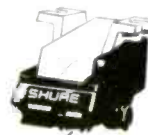
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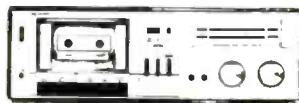
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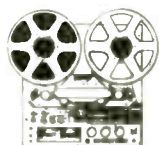
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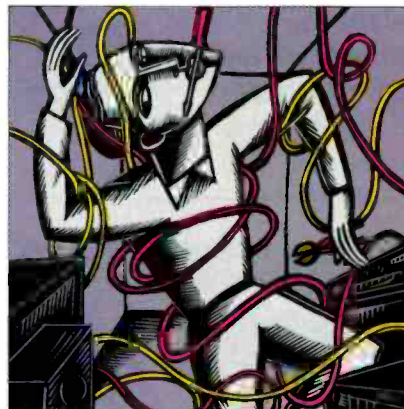
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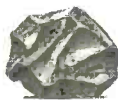


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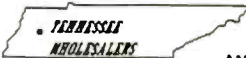
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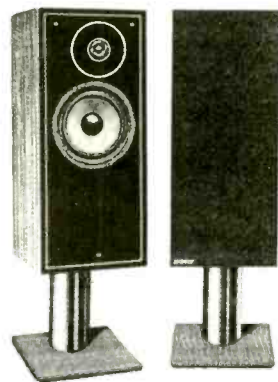
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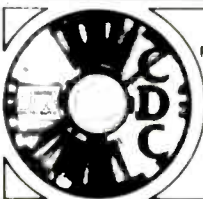
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**Stereo Review**

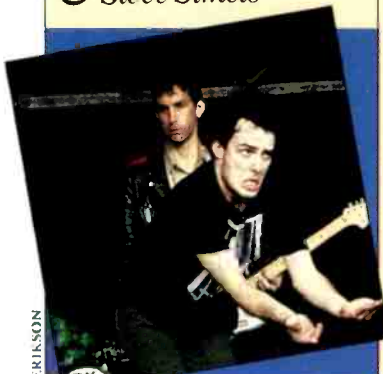
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**DECEMBER**



by *Christie Barter*  
& *Steve Simels*



LOU ERIKSON

*Biafra: case dismissed*

**P**ROPOSERS of free expression will be pleased to note that the obscenity case against the **Dead Kennedys'** lead singer, **Jello Biafra**, has been dismissed in a Los Angeles court. Biafra was hauled up on a misdemeanor charge last summer in connection with a poster by the surrealist Swiss painter H. R. Giger that was included with the 1985 Dead Kennedys album "Frankenchrist."

The vindicated Biafra is not taking it easy, however. He has a spoken-word album just out ("No More Cocons"), and he's currently doing a Lenny Bruce-type one-man show on the college lecture circuit. Our spies caught him at the State University of New York-Stony Brook, where he fielded questions from the audience and performed sketches such as *The Vietnam Never Happened Amusement Park*. □

*Abbado, Bernstein, and Levine in Salzburg*



SCHAFFLER/DEUTSCHE GRAMMOPHON

**D**EUTSCHE Grammophon's traditional summer reception in Salzburg this year brought together a mighty triumvirate: **Claudio Abbado**, **Leonard Bernstein**, and **James Levine**. The three conductors, rarely if ever before seen together, were in town for the celebrated Salzburg Festival. Levine conducted performances of Mozart's *The Marriage of Figaro* and Schoenberg's *Moses and Aaron*, Bernstein conducted concerts by the Vienna Philharmonic, and Abbado led the Vienna Philharmonic and the Chamber Orchestra of Europe.

Levine and Bernstein are represented by major Deutsche Grammophon releases this fall—Levine with his splendid new recording of Strauss's *Ariadne auf Naxos* and Bernstein with the first recording of his opera *A Quiet Place*, which he conducts.

After finishing up in Salzburg, Abbado returned to Vienna, where he is music director of the Staatsoper, to record Rossini's *L'italiana in Algeri*, also for DG. □

**W**E yield to no one in our admiration for singer/songwriter **John Hiatt**, whose "Bring the Family" for A&M has been figuring on *Billboard's* album chart for some time now. And as fans we're obviously not alone. Word has just reached us that **Bob Dylan** will be crooning a Hiatt song on the soundtrack of his forthcoming film, *Hearts of Fire*.

We heard Hiatt live for the

first time recently at Manhattan's Bottom Line, and, accompanied by a superb, blues-inflected little band, he put on one of the most satisfying, funniest shows in memory. □

**I**T'S been said that you can judge people (or musicians, not always the same thing) by the company they keep. If so, then **Mason Ruffner**, the highly regarded Texas bluesman whose "Gypsy Blood" album has drawn critical comparisons with Jimi Hendrix, is clearly somebody you should keep your eye on. We caught him in a New York club recently, and who showed up to play but David Letterman's band-leader, **Paul Shaffer**, perhaps the hardest-working key-



EBET ROBERTS

*Hiatt: Dylan deal*

home to your parents. His performances are so confrontational and physical that, ac-



EBET ROBERTS

*Ruffner, Shaffer, and Edmunds in New York*

board player in rock, and hero guitarist **Dave Edmunds**, who also happens to be Ruffner's producer. Led Zepelin's **Jimmy Page**, an ardent Ruffner fan, did not turn up, but he may do a cameo on Ruffner's next album. We'll keep you posted. □

**R**EMEMBER the "monsters from the id" in the Fifties science-fiction film *Forbidden Planet*? Well, here comes the rock-and-roll equivalent: "Hated in the Nation" (ROIR), a sort of live cassette from the irrepressible **GG Allin**. For those who haven't heard, Allin is a singer (?) who makes the early Iggy Pop look like the kind of nice young man you'd bring

recording to the liner notes, he may not be alive by the time you read this.

Featuring several back-up bands whose names we can't print in a family magazine, and some songs whose titles we can't divulge for the same reason, the recording is either the pathetic ranting of someone in desperate need of professional help or else the most hilarious fifty minutes of pure rock-and-roll outrageousness ever committed to tape. If you want to make up your own mind about it, you can order a copy by mail for \$8 postpaid (New Yorkers should add tax) from Reach Out Records International, 611 Broadway, Suite 725, New York, NY 10012. □





**A**T twenty-two, soprano Eva Lind appears to be Philips Records' "newest hot property," Richard Freed observed last month in reviewing a new recording of Mendelssohn's *A Midsummer Night's Dream* that features Lind. Born in Innsbruck, Austria, Lind made her debut as one of the Flower Maidens in a home-town production of Wagner's *Parsifal*. But she has since graduated to such demanding major roles as the Queen of the Night in Mozart's *The Magic Flute*, which she sang in Vienna at the age of nineteen—with outstanding success.

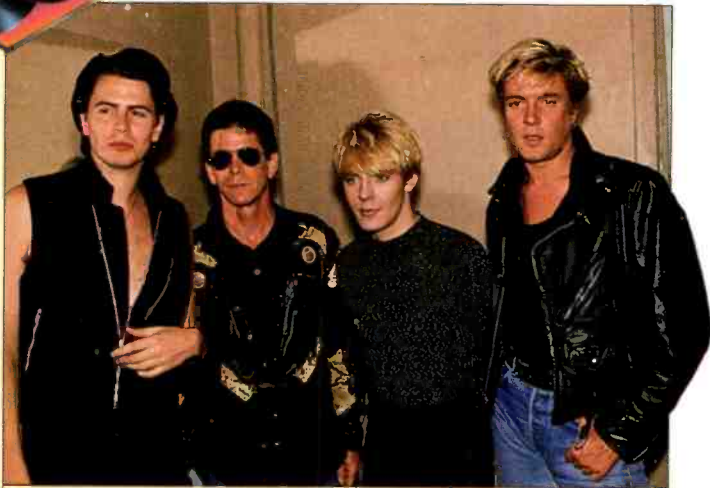
Lind is now a permanent fixture at the Vienna State Opera, and she has just burst on the international scene as a solo recording artist with an album of Viennese waltzes named after Johann Strauss's popular *Frühlingsstimmen* (*Voices of Spring*). Next up is a new Philips recording of Offenbach's *The Tales of Hoffmann*, in which she sings the role of Olympia. □

**W**HEN they finished their recent world tour, Simon LeBon, Nick Rhodes, and John Taylor of Duran Duran did something socially useful for a change—specifi-

cally, they threw a benefit concert for homeless kids at New York's Beacon Theater. Nice touch was convincing Lou Reed to join them on stage for stirring renditions of his *Walk on the Wild Side* and *Sweet Jane*. □

**M**ichel Plasson, who returned to the San Francisco Opera last month to conduct new productions of *The Tales of Hoffmann* and Gounod's *Romeo and Juliet*, is certainly no stranger to opera in his native France. Nor is he afraid to make the grand gesture. He has conducted crowd-pleasing performances of Puccini's *Turandot* at Bercy, the Parisian equivalent of New York's Madison Square Garden, and of *Parsifal* at a converted granary in Toulouse, where he is music director of the Orchestre du Capitole de Toulouse. And with his record company, Pathé Marconi in Paris, he has undertaken a veritable crusade on behalf of the masterpieces of French opera and French music in general, both the exceedingly well known and the exceedingly obscure.

Plasson's latest recording for Pathé, just released on CD in this country, is the virtual-



Duran Duran and Reed: for the children

ly unknown opera *Guercoeur*, by Albéric Magnard, which has been described as a sort of French *Parsifal*. He has also just recorded two similarly "unknown" works by Albert Roussel—*Résurrection* and *Évocations*, both dating from the early years of this century—in honor of the fiftieth anniversary of the composer's death. □

**P**UBLIC television's holiday programming kicks off over the Thanksgiving weekend with *Celebrating Gershwin*, a two-part series. *The Jazz Age*, a ninety-minute survey of George Gershwin's early years, airs on Friday, November 27; *S Wonderful* follows a week later on December 4. Among the artists taking part are Michael Tilson Thomas, Leonard Bernstein, Julia Migenes, Bobby Short, Mikhail Baryshnikov, Bob Dylan, Liza Minnelli, and members of the London Symphony.

On December 18 mezzo-soprano Frederica von Stade hosts *Christmas with Flicka*, and on Christmas Night Leningrad's Kirov Ballet is featured in a performance of Tchaikovsky's *Swan Lake*. □

**G**RACENOTES. We hardly believe it ourselves, but Peter Gabriel is currently producing tracks for a so-called adult-comeback album by former teen star Donny Osmond. . . . In what sounds like a rerun of their chart battles back in 1964, the surviv-

ing Beatles are suing Dave Clark. At issue: Beatles TV performances in those *Ready Steady Go!* home videos Clark produced in 1986. . . .



Plasson: crusader

Snazziest soundtrack album of the year: "I Was a Teenage Zombie" (Enigma), featuring tracks by the Smithereens and Los Lobos. . . . Legendary Sixties soul chanteuse Dusty Springfield, her career revived by the success of her single *What Have I Done to Deserve This*, which she recorded with the Pet Shop Boys, is said to be recording her first solo album since 1983. . . . John Cougar Mellencamp's six-year-old daughter sings in her father's rerecording of *I Saw Mommy Kissing Santa Claus* in A&M's all-star charity album "A Very Special Christmas." Other tracks: Bruce Springsteen singing Charles Brown's *Merry Christmas*, *Christmas (Baby Please Come Home)* by U2, and *Santa Baby* by Madonna. □

EBEL ROBERTS

Lind: from Flower Maiden to Queen of the Night



PHILIPS CLASSICS

TONY FRANK/SYGMA/PATHE MARCONI

by Ralph Hodges



## Live vs. Recorded

A RECENT reader's letter speaks, with passion and comprehensiveness, about the desirability of testing loudspeakers against live music. Well, don't we wish we could do that all the time? Indeed, if we were able to summon up a capable live performance whenever a bit of music seemed in order, few of us would care much about improving the quality of reproduced music.

But practicality aside, live-vs.-recorded listening tests, despite a long history and much evolution, have not proved to be as revelatory as was hoped.

Some years ago, a restaurant in my neighborhood engaged a harpist for evening background entertainment. A marvelous idea, we thought, with visions of Cleopatra's barge and "Peel me a grape." A terrible idea, it turned out; the instrument just overwhelmed a dining area larger than any listening room I've seen lately. The same happened with a string quartet employed by a speaker maker for a lavish party. The guests couldn't have been more appreciative, but we couldn't have been more deafened, either.

Most live music with enough

range and vigor to be of interest for speaker testing is loud enough to be uncomfortable in small rooms. Furthermore, the sense of scale and perspective that the recording microphones impose on the sound of loudspeakers seems impossible to ignore in a small-room, near-field situation. Most successful live-vs.-recorded experiments have taken place in auditoriums, and the loudspeakers involved have come off pretty well. Unfortunately, according to Roy Allison, whose earlier association with Acoustic Research took him deeply into live-vs.-recorded testing methodology, a home speaker is properly designed for the special problems of small rooms, so its performance in large spaces is beside the point.

But let's take nothing on faith and go ahead with a live-vs.-recorded test. The first hurdle is making a recording of the musical ensemble that the speaker can play in an attempt at imitation. This recording must be made anechoically, with no hint of recording-site acoustics. And yet instruments and singers must "sound like themselves."

Brass and voice are rather directional and can project much of their energy effectively toward the microphones. The rest of the instruments are complexly multidirectional, often throwing lower frequencies one way and higher frequencies another. Ordinarily, the walls of a studio or concert stage would gather up the total energy from the instruments and reflect it back to the mikes. But in an anechoic environment, nothing that isn't aimed directly at the mikes ever gets there. As a result, the ensemble is instantly unbalanced and the test instantly flawed.

About all that can be done at this point is to produce your recording, using as many microphones and microphone positions as may be necessary, and then try it out in a listening room to learn if it *seems* to sound like the real thing. And what do we listen to it through? Loudspeakers. Forget it.

Now comes the time for some cunning thought. If the directional characteristics of familiar musical instruments are a problem, find a wide-range source whose directionality isn't problematic and record

that. Audio pioneer Edgar Villchur once used a nickelodeon, but we can do better than that if we wish.

Place a speaker—almost any speaker—in the anechoic environment and play a recording—almost any recording—through it, taping the result. The speaker, if it's of the usual front-firing sort, can be aimed effectively at the microphone for all frequencies. It then becomes, along with the recording we made played through it, a more manageable substitute for a live ensemble. The recording we have made from it is what we also play through the speaker we wish to test. If the speaker under test is perfect, it should be able to imitate the sound recorded from the original speaker perfectly.

This logic, when examined closely, is *almost* irrefutable. What trips it up is another manifestation of directionality. According to Julian Hirsch, this kind of test is reasonably useful when the speaker being tested approximates the directivity characteristics of the ensemble-substitute speaker. When it does not—and it won't in the cases of dipole and multidirectional radiators—the sounds from the two sources become incomparable in a way that eludes description. There may be no sense of *wrongness* with the sound from the test speaker, but there will be an irreconcilable sense of *difference*. If you conclude that this is a major reason for the inability of sound reproduction to match sound *production*, I won't disagree.

Fred Catero, principal of the Catero Records label and a recording engineer of almost unmatched credentials, does live-vs.-recorded comparisons every day, just by stepping between his control room and studio. He has worked in many studios and has not found an instance in which the recorded sound mimicked the live sound to his standards. He has also worked in many control rooms with identical monitor speaker systems and has found no two that sound alike.

Alas, when Fred Catero talks this way, he means it. Comparing a loudspeaker's efforts to live sound would actually be the easy way out, if we could make the test function in a practical way. So far, it seems, we can't. □

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