

# Stereo Review

SEPTEMBER 1985 • \$1.95

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by Christie Barter and Gordon Sell

## U.K. DUBBING-DECK BAN?

A judgment by the British High Court that cassette dubbing decks encourage consumers to make copies of copyrighted prerecorded tapes has led the United Kingdom's record industry to seek a ban on the machines. The BPI (British Phonographic Industry) is trying to get manufacturers to withdraw them from the market or at least to modify them so they will not copy any tape that has had the erasure-prevention lugs removed.



## MOBILE MUSIC

Philips Records is celebrating the one hundredth anniversary of the automobile this year by introducing "On Tour," a series of audio cassettes "designed specifically for in-car use." Drawn from the Philips classical catalog and recorded on chromium-dioxide tape, the series includes eighteen cassettes, each offering up to ninety-two minutes of playing time. Most of them are programmed with the works of a single composer—from Bach and Mozart to Tchaikovsky and Grieg—in performances by the label's leading artists. Each bears a suggested list price of only \$6.98.

Time-Life Music, on the other hand, is currently on the move with "The Portable Mozart Collection." Included on sixteen chrome-tape cassettes are some of the composer's most popular works—symphonies, concertos, chamber music, and vocal music—all performed by top international artists. The set comes in a specially designed carrying case along with a portable stereo cassette player and a 244-page book entitled *Mozart: The Man, The Musician* by Arthur Hutchings. The total cost is \$175 plus shipping and handling. To order call 1-800-621-8200 (in Illinois 1-

800-972-8302). For further information call 1-212-355-0011.

## LONGER-RANGE FM STEREO

A system that will allow noise-free FM stereo reception out to a range equaling mono has been invented by engineers at the CBS Technology Center and NAB (National Association of Broadcasters). FMX, as the system is called, compresses the audio on the 38-kHz L - R subcarrier and shifts its phase by 90 degrees to keep it from interfering with conventional stereo detectors. FMX-equipped tuners will detect and expand the subcarrier so that the noise is 23 dB below current FM stereo levels. In test transmissions CBS was able to achieve a three- to fourfold increase in stereo coverage. According to Emil Torick of CBS, FMX integrated circuits would add no more than a few dollars to the cost of a radio; the broadcast equipment would also be relatively inexpensive.

## MORE HANDEL

Just as we were putting the finishing touches on Stoddard Lincoln's Handel discography ("Basic Handel," page 146), the three PolyGram Classics companies announced several rereleases and new recordings, some of which will be reviewed in future issues. They include, from Deutsche Grammophon, reissues of the opera *Giulio Cesare* and the oratorios *Messiah* and *Samson*, all conducted by Karl Richter, along with *Israel in Egypt*, *Saul*, and *Judas Maccabaeus* conducted by Sir Charles Mackerras; from Philips a new *Solomon* conducted by John Eliot Gardiner and a new *Messiah* by Colin Davis; and from London yet another *Messiah*, this one recorded in Chicago, Sir Georg Solti conducting.

## TECH NOTES

The NAB (National Association of Broadcasters) is actively promoting an overall improvement of AM sound quality, encouraging radio stations to add AM stereo service, and working with radio manufacturers to improve the quality and fidelity of AM receivers. . . . Denon has added Dolby HX Professional headroom-extension circuitry to its top-of-the-line cassette decks. . . . ADS has upgraded the drivers in its L Series speakers, resulting in a small but significant change in the sound quality. . . . Boston Acoustics is putting new drivers in its A40 and A70 speakers; the new versions can be identified by a "Series II" designation. . . . TDK has improved the tape formula and cassette shell of its AD and D cassette tapes. . . . Monster Cable has introduced video interconnect cables. . . . The soundtrack of *Girls Just Want to Have Fun* was recorded using the Barcus-Berry Electronics (BBE) signal-processing system. . . . Blaupunkt's ARI traffic-reporting system is now on line with two Dallas/Ft. Worth stations. . . . Grundig, a well-known name in European electronics, is planning to become a more significant factor in the U.S. car-stereo market, as well as in home audio and video.

## CD JUKEBOX

The Seeburg Phonograph Corporation, one of the country's leading jukebox manufacturers, has announced that it expects to begin marketing a coin-operated CD player early next year. The player, which will hold between sixty and a hundred album-length CD's, is being designed so that a paying customer can punch up one or more individual tracks. Seeburg also expects that record companies will begin to make special compilations for the new box, especially for promotional purposes.



FERRY ALLEN



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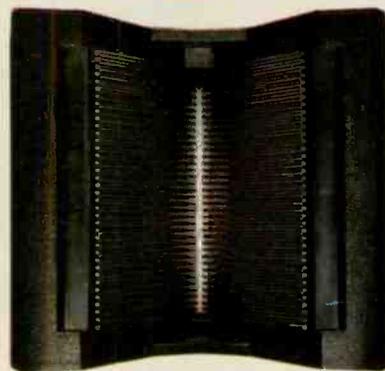


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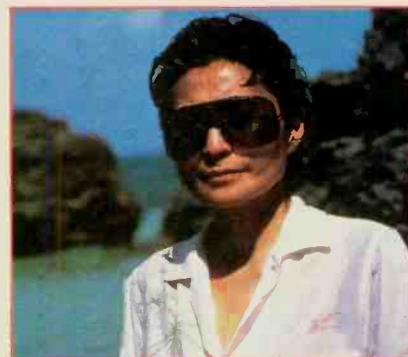
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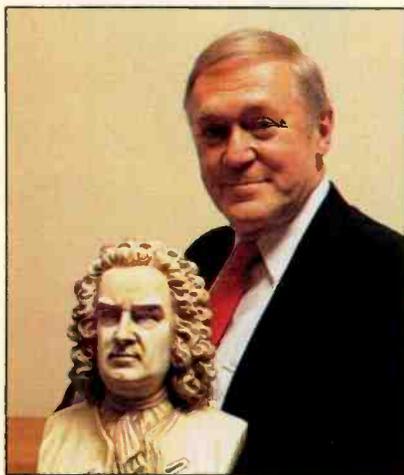
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by William Livingstone



Contemplating the bust of Bach

## Bad Words

**S**TEVE SIMELS'S article "Rock Gender Benders," which appeared in our April issue, contained a few words that offended some of our readers. Several of them actually wrote in to cancel their subscriptions.

One man wrote to say that his subscription was running out, and he had decided not to renew. Although he too was offended by the bad words in Simels's article, his reason for giving up STEREO REVIEW was not linguistic, but philosophical. He said he could no longer condone this magazine's policy of treating various kinds of music as being of equal value only different.

To keep that reader happy—and subscribing—we would have to take the stand that classical music is "better" than rock. Well, we've never been willing to do that. We have not hesitated to make judgments on the quality of any composition or performance, but we have not rated classical music as "better" because it is older, more complex, or more learned. Nor have we rated popular music as "better" because it is more accessible, more democratic, or more successful in record sales.

If we can be said to have a musical mission, it is to help our readers expand their tastes by encouraging them to listen to the best available recordings of a wide vari-

ety of music. My own tastes have continued to grow through reading the magazine. I used to think Bach's greatest masterpieces would be forever beyond me, but Stoddard Lincoln's "Basic Bach" (June) helped me to open my ears to the Passions and the Mass in B Minor, which I'm enjoying during the Bach/Handel birthday year.

Lincoln's buyer's guide to Handel begins on page 146 of this issue.

I'm glad Lincoln is not a purist about the playing of Baroque music only on authentic instruments. He wrote that Bach's harpsichord music is equally beautiful and effective when played on the modern piano, and he recommended John Williams's performance of Bach's lute music on a modern guitar.

For purists "transcription" is a dirty word, which is odd because the Baroque composers transcribed so much of their own music so that it could be played on instruments other than the ones for which it was first written. Bach and Handel did not make arrangements of their music for the combination of flute and accordion, but I think they might have been amused by Deutsche Grammophon's new release "The Cambridge Buskers Handel Bach."

In addition to many distinguished straight performances of the work of Bach and Handel, Deutsche Grammophon is bringing out another amusing tribute to these composers in "Bach/Handel 300," a selection of their pieces transcribed for the synthesizer by Graziano Mandozzi in the manner of Wendy Carlos's "Switched-On Bach."

Mandozzi is STEREO REVIEW's kind of musician in that he is interested in expanding musical tastes. In the liner notes to the new album he addresses synthesizer players and computer freaks and says, "Since the 'classics' have only taken a few hesitant steps in the direction of 'pop,' it's up to you to make a start in the opposite direction and try a move towards the 'serious' stuff."

This record could be a wonderful first step toward the serious stuff for a lot of people. To find out how to get a free copy, see page 149. I think Bach and Handel would have loved this birthday tribute. I'm sure they would not have thought "synthesizer" was a bad word. □

## Stereo Review

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## CD Converts . . .

Daniel Sweeney's "The Compact Disc Is Here to Stay" in July was correct on most counts, but, incredibly, he failed to mention the most attractive feature of the new medium. I couldn't care less about marketing strategies, retailer preferences, or the digital vs. analog debate. CD's are winners because they have no ticks, scratches, hiss, pops, or clicks—by God, you can hear the music! Add their virtual sonic immutability to the totally silent background, and you have the reasons I'll never purchase another black vinyl disc.

MAX G. RODEL  
San Francisco, CA

Hooray! The Compact Disc *is* here to stay! The excellent series of articles on CD's in STEREO REVIEW's July issue shows that anything less is less than the best in audio reproduction. Actually, the spokesmen Daniel Sweeney talked to made predictions that are *very* conservative. In Japan, where I was recently, the selection of CD software is so enormous that I had difficulty deciding *which* version of a certain classical piece to buy. And with Sony D-5's (known in

Japan as the D-50) very commonplace there, and more than thirty-five other CD player models available, any argument against the success of the Compact Disc format is implausible.

In any case, Telarc's CD of Aaron Copland's *Fanfare for the Common Man* (CD-80078) should convince any digital doubting Thomases.

RAYMOND CHUANG  
Sacramento, CA

## . . . and a Skeptic

In July's "Best of the Month" review of the CD version of Riccardo Chailly's recording of the Bruckner Seventh, David Hall says that in the closing elegy of the work he heard a sonority and presence "not experienced even in the concert hall." Does this statement not confirm what we "skeptical audiophiles," as Mr. Hall refers to critics of the CD format, have been saying? If sounds are heard from a recording that cannot be found in a live musical experience, they are artificial by definition. In a nutshell, this artificiality is what we skeptical audiophiles dislike so much.

CHARLIE SMITH  
San Francisco, CA

## Road Music

"Who needs car stereo?"

Several million people, apparently, including me. I am one of those "very unfortunate" people—as Harlan Spore called us in his July letter criticizing STEREO REVIEW for its car stereo coverage—who spend more than fifteen minutes a day in a car. My job is about a half hour's drive from my home, and I enjoy passing the time listening to music of my choice. In fact, I enjoy it enough to have spent several hundred dollars on my car system (and almost as much on a system for my four-wheel-drive truck!).

Apparently Mr. Spore has not spent much time locked in rush-hour expressway traffic. A little Mozart can go a long way toward soothing frazzled nerves. If you don't like loud commercials and announcers bending your ears, car stereo is for you.

THOM DAY  
McNabb, IL

Contrary to Harlan Spore, I would like to applaud STEREO REVIEW for all its fine equipment reviews, road tests, and special features on car stereo. North

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# Stereo Review

Little Rock must be quite a fine home town, Mr. Spore, if no place farther than fifteen minutes away from it is worth driving to.

SKIP TANNEN  
Bethel, VT

### *And the loser is . . .*

Where did you get the bow-wows who chose the winning entries in your Rodrigues cartoon caption contest (July)? I believe in hiring the handicapped, but judges in a contest like this should have at least a normal sense of humor. I thought ALL of the runners-up were funnier than Thomas Briggles' winning entry, and at least five of the twenty I sent in were better than they are.

Get ready for me in the contest next January. I'm already thinking up funny lines and you haven't even published the new drawing yet. So you won't think I'm a sore loser, I'm only planning to give you about two dozen more chances.

RAYMOND BAUM  
Hoboken, NJ

My condolences to Messrs. Burkhard, Bass, Laird, Bernstein, Kraack, Alter,

Sax, Libbey, and Lansdon, as well as Ms. Bowman. I wasn't a judge, but I think *all* of their captions for the Rodrigues cartoon were funnier than the one that won. (My suggestion would have been, "Take it for a walk, man!" but I forgot to mail it in.)

Better luck next year!

GEORGE SCHNEIDER  
Woodside, NY

It takes only a brief application of logic to see that the judges' caption choice for the Rodrigues cartoon contest is illogical. Mr. Tweakingham would not have to discard the entire system for clipping; replacing the amplifier would be sufficient.

RON KONOPKA  
Potsdam, NY

### *A Fan's Lament*

Despite being a subscriber to STEREO REVIEW for ten years, I've found the past year's issues to be the most interesting ever. It seems as if a new-found sense of humor has gotten loose, and even the old, predictable how-to articles have become as interesting as the first time I read them.

One criticism, though. I only wish that the professional standards exercised by your technical experts and writers were demanded of your recording reviewers. Many of your reviews would be better suited for *Circus* or *Rolling Stone*, where it's okay to throw objectivity out the window and let social and political factors outweigh the music itself. I'm tired of critics who've lost touch with what John Q. Public likes to listen to, no matter how unfashionable.

Finally, whatever became of the idea of a Rodrigues cartoon collection?

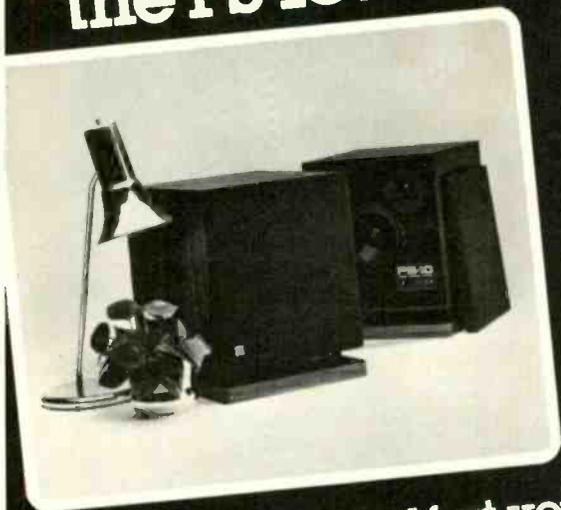
TIM CAWLEY  
Davenport, IA

*The Rodrigues cartoon collection is still seeking a book publisher as enthusiastic about the idea as we are.*

### *Carla Olson*

Thank you for the mention and picture of Carla Olson of the Textones in July's "Record Makers." You forgot to say, though, that she also did a fine job of subbing for Tom Petty in the video for Dwight Twilley's *Girls*. And the Textones are more than "a pretty solid

## Some Critical Comment About the PS-10!



"The overall sound is smooth, clean, and detailed. **Bass is surprisingly well maintained** for so small a speaker. Imaging is also outstanding, with firm, stable stereo localizations and a good sense of spaciousness and depth."

— The Editors,  
High Fidelity

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— Len Feldman,  
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— Paul Terry Shea,  
Rolling Stone

"In our listening test, the PS-10s delivered a **smooth, balanced sound**... its compact size and unobtrusive looks should enable it to fit in almost anywhere both aesthetically and acoustically."

— Julian D. Hirsch,  
Stereo Review

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# Marlboro 25's

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Warning: The Surgeon General Has Determined  
That Cigarette Smoking Is Dangerous to Your Health.

Lights: 10 mg "tar," 0.7 mg nicotine - Kings: 16 mg "tar,"  
1.0 mg nicotine av. per cigarette, FTC Report Feb '85

of five more cigarettes per pack.



Famous Marlboro Red  
and Marlboro Lights in the  
convenient 25's pack.

little mainstream rock outfit"; they're one of the best rock-'n'-roll bands in all of L.A.!

By the way, you can now see the Textones' video of the title track of their "Midnight Mission" album—and, yes, Carla *does* sing her lines herself!

DAN WATROUS  
Glendora, CA

## Botany Lesson

In June's "Systems" feature, the Audio Pro B2-50 subwoofer is described as being "under the fern in the lower right photo." I'm no botany expert, but that's no fern, that's a palm tree. Ferns are fine, but as a Florida native I'm partial to palms. In fact, one could say I'm frond of them.

DAVID S. HALL  
Gainesville, FL

## Michael Tilson Thomas

As an admirer of Michael Tilson Thomas, I very much enjoyed Roy Hemming's article on him in the July issue. Since older recordings of excellence deserve a little ballyhoo as well as new releases, I would like to commend

to your readers Thomas's remarkable recording with the Boston Symphony Orchestra of Charles Ives's *Three Places in New England* and Carl Ruggles's *Sun-Treader* (Deutsche Grammophon 2530 048). The album is quite simply an adventure to the boundaries of music's potential to touch the soul. We are fortunate to live at the intersection of Ives, Ruggles, Thomas, and sophisticated, affordable music recording and reproduction technology.

ROBERT MERKIN  
Northampton, MA

*The album you recommend has been deleted, but DG has rereleased the Ives side on 410 933-1 together with two other Ives recordings by the BSO, Symphony No. 4 and Central Park in the Dark, both conducted by Seiji Ozawa. A different recording by Thomas of Ruggles's Sun-Treader, with the Buffalo Philharmonic, is included in the CBS collection of the composer's complete works (M2 34591).*

## Amy Grant

I was delighted to see a review of Amy Grant's album "Straight Ahead" in the

July issue. This three-time Grammy Award winner has been overlooked by most mainstream music listeners for too long. I hope that Alanna Nash's review will be a catalyst for many STEREO REVIEW readers to make a point of hearing this fine young talent.

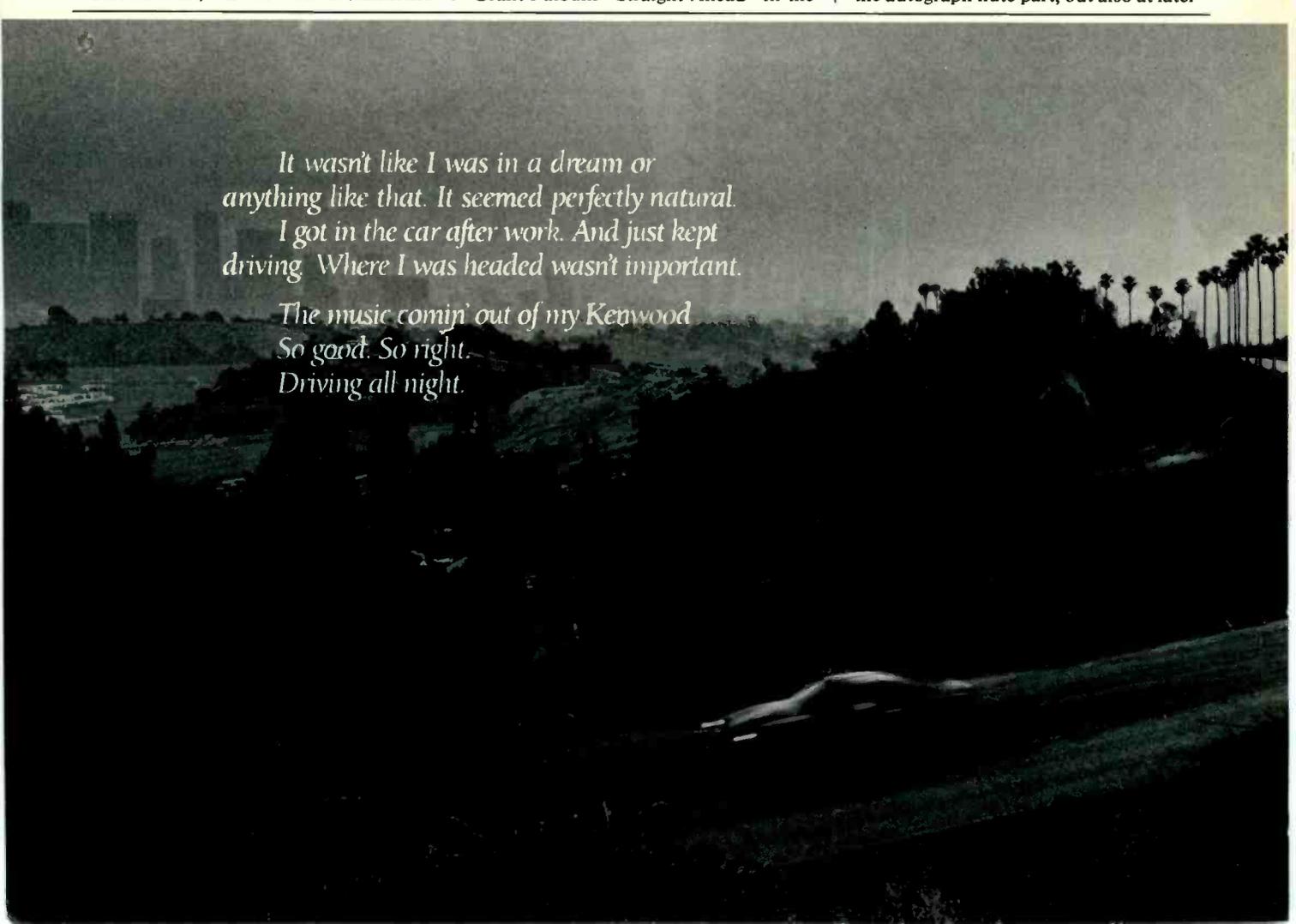
KENT E. MADDEN  
San Rafael, CA

## Bach's Rhythms

In an otherwise complimentary review of Helmuth Rilling's CBS recording of the Bach B Minor Mass (June), Stoddard Lincoln refers to "misapplied French rhythmic alterations in some of the flute playing." He was surely thinking of the lombardic rhythm used in the "Domine Deus" section. Rilling's explanation of this procedure in his book on the Bach Mass (Prestige Press, 1984), which I translated into English, might be of interest: "The rhythmic treatment of the motives consisting of groups of two slurred eighth notes is of decisive significance in the shaping of the piece. . . . the principal motive of the movement is notated in lombardic rhythm not only in the first measure of the autograph flute part, but also at later

*It wasn't like I was in a dream or  
anything like that. It seemed perfectly natural.  
I got in the car after work. And just kept  
driving. Where I was headed wasn't important.*

*The music comin' out of my Kenwood  
So good. So right.  
Driving all night.*



places in the autograph violin II and viola parts. . . . Bach intended this rhythm to be used in the principal motive, even where he did not explicitly notate it."

GORDON PAINE  
Fullerton, CA

### Basic Bach

Thank you so much for Stoddard Lincoln's interesting and very informative guide to recordings of Bach's music (June). It's a great idea for a series, and I hope that you continue it for other classical composers.

STEPHEN G. HARRIS  
Kanagawa, Japan

See "Basic Handel" in this issue. A similar buyer's guide to Domenico Scarlatti will be included in a future issue.

### Jazz Listings

Please stop listing the contents of jazz albums as, say, "April in Paris, I Got Rhythm . . . , and four others." Tell us what the others are. You wouldn't say that a classical album contains "Eine Kleine Nachtmusik, the Moonlight Son-

ata, and four others." Why not show the same consideration to jazz fans?

Yes, jazz is more of the performer's art, classical music more of a composer's art, but it does matter to jazz buffs what tunes are being played. We also have our favorite (and less favorite) composers and pieces. When you review a new Stan Getz album, we want to know that he has recorded a favorite Arlen song, an obscure Strayhorn tune, and two originals—not "four others."

DANIEL LOVE GLAZER  
Chicago, IL

*We'd rather print more jazz reviews than more exhaustive listings. We abbreviate classical listings too when an album includes many short pieces.*

### Spineless

I was not especially pleased with the lack of a spine on the July issue. I use STEREO REVIEW for reference on music and equipment. It's convenient to glance at a shelf and find the issue of my choice. Come on! Go back to a decent binding for our magazines, please!

GREG DOUGLAS  
Caldwell, ID

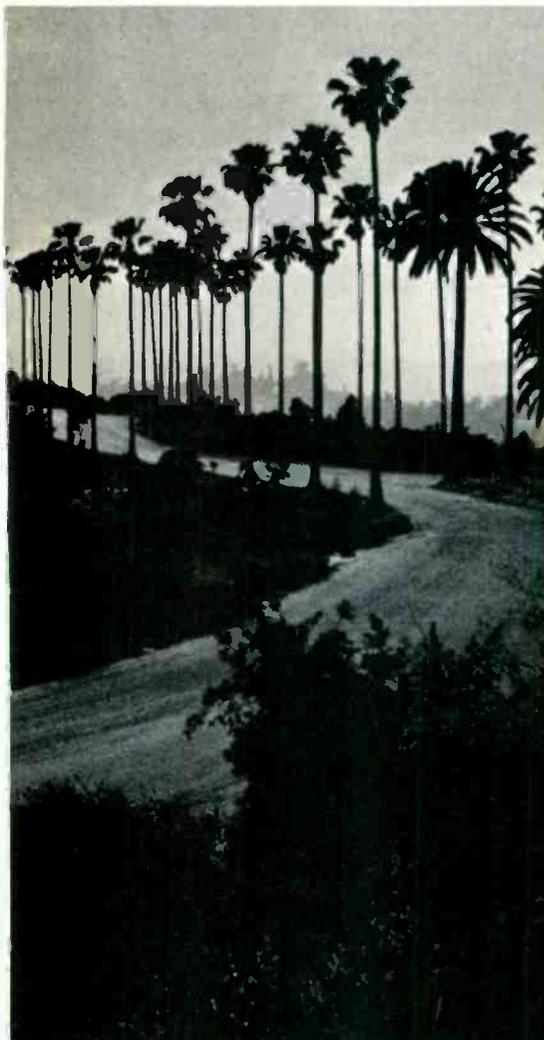
*We're thinking about it, but making no promises. Decency doesn't depend on binding methods. —Ed.*

### Perfectionism

It seems that with the recent tendency toward perfection in audio reproduction has come an equal need for perfection in audio magazines. I have noticed more and more criticisms of STEREO REVIEW's new design and of minor component-specification errors. As a thoroughly satisfied reader, I'm writing to offer well-deserved praise. As audio magazines go, STEREO REVIEW is simply without parallel. I am sure that many fellow readers who have begun to take for granted your publication's nearly flawless presentation of news and reviews would be hard pressed to name another with the equivalent depth or experience.

With the massive amount of information that must be processed by the STEREO REVIEW staff, minor flaws should certainly be tolerated. Keep up the great work; we really do appreciate your efforts!

TIM WITORT  
Turlock, CA



The opportunity to indulge in the enriching moments of life should never be taken away. That's why Kenwood invented the theft-proof KRC-838—a simple flip of a lever releases the head unit so you can keep it with you. Without losing the preset memory.

Its superior audio features include a high-power amplifier, separate bass and treble controls, 24 station presets, auto-reverse, a 4-channel bi-azimuth tape head for flawless tracking, Tape Scan, Dolby® B and C, and a Tuner Call that plays the radio during fast forward or rewind.

The KRC-838. Designed by Kenwood to enhance the finer moments in your life.

For the Kenwood dealer nearest you, call 1-800-CAR-SOUND.  
\*Dolby and the double-D symbol are trademarks of Dolby Laboratories Corporation.



**KENWOOD**  
STEREO FOR YOUR CAR

CIRCLE NO. 29 ON READER SERVICE CARD



Teac.



Hi Fi in the extreme.

**The Teac PD-300  
Compact Disc Player  
won't add anything  
to your music.  
No hiss. No pops.  
No wow. No flutter.  
Which means nothing  
comes through but the  
music, pure and clear.  
Random memory  
programming lets you  
choose the selections  
you want to hear in the  
order you want to hear  
them. You can repeat,  
edit, search, and seek  
with the touch of a  
finger.  
When music is your  
passion, listen to Teac —  
made purely for music.**

**TEAC**

CIRCLE NO. 21 ON READER SERVICE CARD

## NEW PRODUCTS

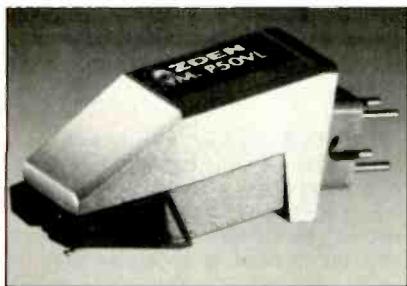


### Thorens

A new chassis/suspension design and drive-motor system are featured in Thorens Series 300 turntables. The turntables have solid-core chassis separated into two side-by-side parts. One part incorporates the drive motor and controls; the other part, suspended by three adjustable leaf springs, incorporates the tone arm and platter-bearing assembly. The dual-chassis design is said to provide exceptional stability and isolation from structure-borne shocks and acoustic feedback. A low-speed, low-voltage synchronous motor drives the platter with a belt. The flat-surface platter mat is said to provide excellent record/platter coupling.

The Model 318 (shown) is a semiautomatic turntable with a high-gloss piano-type finish. Specifications include rumble lower than  $-50$  dB unweighted and  $-70$  dB weighted (using DIN 45539) and wow-and-flutter less than or equal to 0.04 percent (using DIN 45507). Price: \$350. The semiautomatic Model TD 320 is finished in wood veneer. Price: \$500. An armless version, the TD 321, is \$395. Thorens, Epicure Products, Dept. SR, 25 Hale St., Newburyport, MA 01950.

**Circle 120 on reader service card**



### Azden

The YM-P50VL from Azden is a P-mount cartridge that comes with an adaptor so it can be used in a standard headshell as well. It has a Vital brand line-contact nude stylus, and the cantilever is a tapered tube. Output voltage is 4 millivolts at 5 cm/s at 1,000 Hz. Frequency response is given as 10 to 24,000 Hz (no tolerance stated) and channel separation as 30 dB at 1,000 Hz. Recommended tracking force is 1

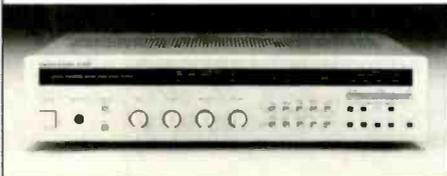
to 1.5 grams. The cartridge itself weighs 5.9 grams. Price: \$150. Azden Corp., Dept. SR, 147 New Hyde Park Rd., Franklin Square, NY 11010.

**Circle 121 on reader service card**

### Harman Kardon

Three new receivers from Harman Kardon feature high instantaneous current capability in order to drive and control nearly any speaker precisely, even those with low impedances. "Ultra-widebandwidth" circuitry, passing frequencies between 0.5 and 150,000 Hz, is designed to eliminate phase shift. The active/passive phono-equalization sections are intended to produce precise RIAA equalization with a low level of negative feedback. Negative feedback for all three models is given as 25 dB.

The hk495i (shown) is a digital-synthesis quartz-locked receiver rated to



deliver 45 watts per channel into 8 ohms from 20 to 20,000 Hz with 0.08 percent total harmonic distortion. High-current capability is given as 20 amperes. There are eight station presets and two tape monitors with tape copy. The phono section has two RIAA equalization networks, one for low-frequency boost and high-frequency rolloff, the other to maintain the same low level of negative feedback at all frequencies from 20 to 20,000 Hz. Price: \$435.

The hk395i is a digital-synthesis receiver with 30 watts per channel, five AM and five FM presets, seek tuning, an LED signal-strength meter, and an infrasonic filter. High-current capability is given as 16 amperes. Price: \$335. The hk385i is a 30-watt analog receiver. Like the other models, it can handle two sets of speakers, and its current capability is also 16 amperes. Price: \$235. Harman Kardon, Dept. SR, 240 Crossways Park West, Woodbury, NY 11797.

**Circle 122 on reader service card**

### Scott

Scott's new top-of-the-line receiver is the 388RS, a digital-display AM/FM model rated at 85 watts per channel into 8 ohms from 20 to 20,000 Hz with no



more than 0.03 percent total harmonic distortion. Tuning is accomplished with a phase-locked synthesizer and a four-section varactor front end. The auto-scan tuning has an override for manual search/scan and step-by-step tuning. Tone contouring is done with a defeatable five-band graphic equalizer, a loudness button, and both infrasonic and high-frequency filters. The receiver has two tape-monitor circuits with dubbing facilities, switching for two pairs of speakers, and slide controls for volume and balance.

The digital display shows frequency, signal strength, center tuning, and up to fourteen preset station and memory identifiers. There are separate auto-range peak-hold fluorescent power indicators for each channel. Price: \$549.95. H. H. Scott, Dept. SR., 20 Commerce Way, Woburn, MA 01888.

**Circle 123 on reader service card**

### Imaged Stereo

The Imager speaker from Imaged Stereo uses two 8-inch cone drivers with controlled frequency-response parameters, but no conventional crossover network, to cover the musical spectrum. The driver cones, one plastic and one paper, have different frequency ranges and radiation characteristics. The high-



frequency response is augmented by two soft-dome vented tweeters. The left and right speakers in each pair are connected to each other by cables having polarized plugs. The signals thus passed between the speakers are said to recreate the "complete imaged sonics" of the original live performance. The crossed signals have changes in their frequency balances, and the interconnects exchange phase information between the two speakers.

# NEW PRODUCTS

The manufacturer recommends that the speakers be placed on the supplied steel stands, a few feet from a common rear wall and as far apart as possible. The speaker terminals are five-way gold-plated binding posts. Frequency response is given as 40 to 20,000 Hz. The nominal impedance is 4 ohms, and recommended amplifier power ranges from 10 to 300 watts. Sensitivity is 93 dB with a 1-watt input at 1 meter. The speaker cabinet, 25 x 14½ x 11½ inches, is walnut veneer. Price: \$795 per pair. Imaged Stereo, Dept. SR, 15445 Ventura Blvd., Sherman Oaks, Calif. 91413. **Circle 124 on reader service card**

## Yamaha

The first four units in Yamaha's new line of high-end audio components, called the Audiophile Series, are the T-2X tuner, B-2X power amplifier (shown), C-2X preamplifier, and NS-2000 speakers. The tuner's Computer Servo Lock tuning and digital fine tuning allow the frequency to be set to an accuracy of 1 kHz. Ten stations can be



programmed into memory. Price: \$600. The auto Class A power amplifier can deliver 170 watts per channel into 8 ohms, but it is smaller and runs cooler than comparably rated conventional pure Class A amps. Massive electrolytic capacitors enable the B-2X to handle a peak current of up to 50 amperes. Price: \$1,500.

Designed for wide-range frequency response and low distortion, the C-2X preamp has independent power supplies for inputs and outputs. The volume and tone controls use a 0-dB buffer amp to lower the output impedance and distortion. Inputs are provided for a turntable and five line-level sources. The three-way NS-2000 speaker systems have 13-inch carbon-fiber woofers, beryllium midranges, and dome tweeters. The enclosures, made of hand-selected woods, have rounded baffle boards, flush-mounted drivers, and offset grilles to minimize edge diffraction and the consequent degradation of imaging. Yamaha Electronics, Dept. SR, 6660 Orangethorpe Ave., Buena Park, CA 90620.

**Circle 125 on reader service card**

## Rhoades

An audio processor, the Rhodes TE-600 Teledapter contains stereo-synthe-

sis circuitry for mono programs and an ambience processor for a "concert hall" effect with stereo sources. The processor connects in the tape-monitor loop of a receiver or amplifier. Dynamic Noise Reduction, adjustable with a knob, re-

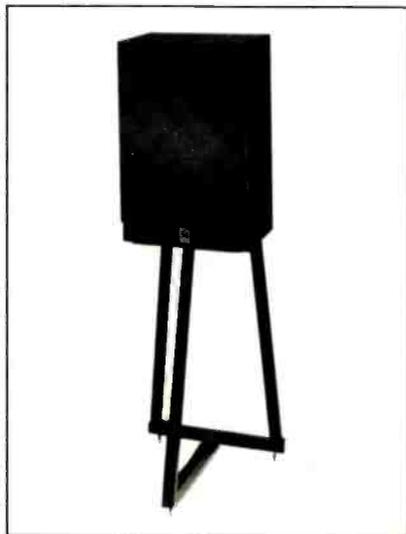


duces high-frequency hiss and noise. As many as three stereo or four mono inputs can be routed through the Teledapter. Input impedance is rated at 48,000 ohms and output impedance at 100 ohms. There is both a 75-ohm video-monitor output and a built-in Channel 3/4 modulator. The unit measures 8½ x 2½ x 7 inches. Price: \$149.95. Rhoades, Dept. SR, P.O. Box 1052, Columbia, TN 38401.

**Circle 126 on reader service card**

## Linn

The Linn Index speaker combines an 8-inch KEF B200 woofer and a Tongan soft-dome tweeter in an acoustic-suspension cabinet. It features a seven-element crossover. Internal wiring is fifty-strand, 20-ampere cable. The speaker terminals are individually machined 4-mm banana sockets designed for positive electrical connection. Frequency response is given as 60 to 20,000 Hz (no



tolerance stated). Sensitivity is rated as 87 dB sound-pressure level with a 1-watt input as measured at 1 meter. Power-handling capability is 50 watts.

The black woodgrain cabinet measures 17 x 11 x 8 inches and weighs 18 pounds. Recommended placement is close to the back wall. Price: \$295 per pair; the optional stands shown are available for \$75 per pair. Audiophile Systems, Dept. SR, 6842 Hawthorn Park Dr., Indianapolis, IN 46220.

**Circle 127 on reader service card**

## Numark

Numark's VS 3200 is a combination signal-processor and switcher intended to centralize audio control functions for video equipment. Connected in the tape-monitor loop of a preamplifier or integrated amplifier, it offers dynamic-range expansion, equalization, noise reduction and stereo synthesis for the audio part of a video program. Separate audio and video monitor switches allow dubbing audio and video from any



source to any recorder in the system.

The audio level can be adjusted with the aid of the peak-hold meters and left-right master faders. There is a ten-band octave equalizer. Dynamic Noise Reduction reduces hiss, and the expander slider reverses the effects of compression in the source recordings. A switchable ENHANCER control creates synthesized stereo from mono audio tracks. There are three VCR inputs plus an antenna/CATV input. Connections for one VCR are on the front panel along with a microphone jack. The VS 3200 measures 18⅞ inches wide, 3½ inches high, and 10½ inches deep. Price: \$349. Numark, Dept. SR, 503 Raritan Center, Edison, NJ 08837.

**Circle 128 on reader service card**

## Polk

The Polk Mobile Monitor X is a round two-way car speaker with a 6½-inch trilaminate polymer driver and butyl rubber surrounds. The crossover network is a complex isophase design, and the tweeter is protected with an

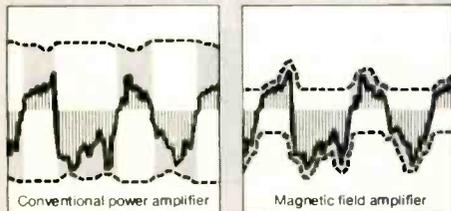


# MOBILE MUSICALITY.

**THE CARVER CAR AMPLIFIER** introduces Magnetic Field Amplifier technology to automotive high fidelity. Finally, the traditional weak link between car stereo decks and modern speaker design has been replaced with Carver technology. Into 1/10th of a cubic foot, Bob Carver has engineered a complete 120 watts RMS per channel amplification system with the fidelity, accuracy and musicality demanded by the most critical reviewers and audiophiles.

**ESSENTIAL POWER.** Even before the exciting advent of car Compact Disc players, an abundance of power has been necessary to reproduce, without distortion, the frequency and dynamic range produced by modern decks.

Unfortunately, conventional amplifier technology is particularly unsuited to delivering this needed power to the specialized car interior environment. Like their home stereo counterparts, traditional car designs produce a constant high voltage level at all times, irrespective of the demands of the ever-changing audio signal—even those times when there is no audio signal at all! Because automotive amplifiers must, obviously, derive their power from the host vehicle, such an approach results in substantial drain to delicately balanced automobile electrical systems.



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

The Carver Magnetic Field Car Amplifier is signal responsive. Highly efficient, it produces only the exact amount of power needed to deliver each musical impulse with complete accuracy and fidelity. Thus the Carver Car Amplifier not only reduces overall long-term power demands, but produces the large amount of power necessary for reproduction of music at realistic listening levels without the need for oversize power supply components. Important considerations in the minuscule spaces which quality car design allocates to add-on electronics.

**INTELLIGENT POWER.** A hallmark of all Carver amplifiers is the careful integration of sophisticated speaker and amplifier protection circuitry. The Carver Car Amplifier is no exception.

Speakers are protected with a DC offset internal fault protection design which turns off the power supply at first hint of overload. An overcurrent detector mutes audio within microseconds of a short circuit, as does an output short circuit monitoring circuit. Together, these three circuits eliminate the potential need to replace fuses, revisit your autosound installer, or worse yet, replace expensive speakers due to a moment's indiscretion with your deck's volume control.

**ASSIGNABLE POWER.** Integrated bi-amplification and bridging circuits, along with The Carver Car Amplifier's compact configuration make it ideal for multiple-amplifier installations.

The built-in 18dB/octave electronic crossover allows use of two amplifiers in a pure bi-amplification mode without addition of extra electronics. Or, at the touch of a button, one Carver Car Amplifier can become a mono amplifier for subwoofers while the other Carver Amplifier handles full range. Or, for astonishing dynamic and frequency response, two Carver Car Amplifiers may be operated in mono mode into 8 ohms for a 240 watt per channel car system which will truly do justice to digital without taxing your car's electrical generation system.

**INNOVATIVE POWER.** Can 1/10th of a cubic foot of space hold yet more innovations? Yes.

Carver has addressed the ongoing problem of head-end/power amplifier level matching: Output of current car decks varies widely from brand to brand and model to model. The result can be a less than perfect match. The Carver Car Amplifier incorporates circuitry which compensates for variations in head-end output, reducing noise and optimizing signal-to-noise ratio. In addition, Carver has added a subsonic

filter which removes inaudible power-robbing infrasonics before they can tax the amplifier and speakers. Finally, a delayed turn-on circuit activates the Carver Car Amplifier after your head-end unit has powered up, to eliminate starting pops and thumps.

**ACCURATE POWER.** It goes almost without saying that a product Bob Carver designs for the road carries the same superb electronic specifications that his home audio products are known for.

The Carver Car Amplifier is flat from 20Hz to 20kHz, down -3dB at 16Hz and 30kHz. Not coincidentally, the usual specifications given for Compact Discs. A signal-to-noise ratio of over 100dB means that, in even the most quiet luxury sedan, you will never be annoyed by hiss. The other specifications are equally as impeccable. You may peruse them in our literature or in independent reviews soon to appear.

**ACQUIRABLE POWER.** The remarkable Carver Car Amplifier is currently available for audition at Carver dealers across the country.

It is worth the journey. Whether you have a car system in need of the sonic excitement possible with abundant power, or are in search of the perfect complement to a new high-performance automobile, you owe it to yourself to experience the logical extension of Carver technology—the Carver Car Amplifier M-240.

Power Output Stereo Mode: (continuous RMS power output per channel, 8ohm channels driven, at 13.8 VDC input). 120 W into 4 ohms, 20 Hz to 20 kHz with no more than 0.15% THD.

Power Output Bridged Mono Mode: (Referenced to 13.8 VDC input) 240 W into 8 ohms, 20 Hz to 20kHz with no more than .15% THD.

Input Sensitivity: Variable 250mV to 4V

Signal to Noise Ratio: (Referenced to 120 W, A weighted into 4 ohms) Greater than 100 db

Crossover: 115 Hz, 18 dB/octave

Weight: 4.7 lb.

CIRCLE NO. 49 ON READER SERVICE CARD

The Carver Car Amplifier



## CARVER

POWERFUL

MUSICAL

ACCURATE

Carver Corporation, P.O. Box 1237, Lynnwood, WA 98036

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# NEW PRODUCTS

automatic self-resetting circuit. The housing and grille are of steel, and the mounting ring allows the clearance to be adjusted. Frequency response is given as 35 to 25,000 Hz. Power range is 5 to 150 watts, and rated sensitivity is 92 dB with a 1-watt input measured at 1 meter. The nominal impedance is 4 ohms. Price: \$199.90 per pair. Polk Audio, Dept. SR, 1915 Annapolis Rd., Baltimore, Md. 21230.

**Circle 129 on reader service card**

## AKG

The handmade AKG P-100 Limited Edition moving-iron phono cartridge operates on the variable-reluctance principle. The coils are sealed in wax to prevent corrosion and to damp internal resonances within the cartridge body. The beryllium cantilever is shaped by sandblasting to reduce its mass. The cantilever is passed through a small opening in a gold-plated vertical support and held in position by a vulcanized-rubber elastomer cup. Free motion at right angles to the cantilever is per-



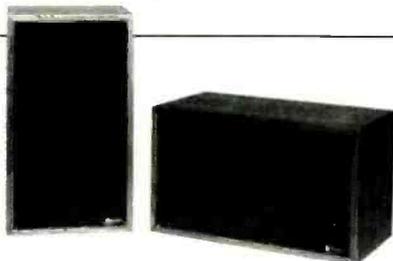
mitted, but axial movement is restricted, which is said to stabilize the pivot point, assure precise spatial imaging, and reduce distortion. All cantilever parts are artificially aged before they are assembled.

The vertical tracking angle is adjustable over a  $\pm 2.5$ -degree range for correct tracking of records that deviate from the standard cutting-stylus VTA. Two styli are available: a multifaceted diamond tip (P-100LE) or a Van den Hul II (P-100vdH). The styli are not user-replaceable. Price: \$1,000. AKG Acoustics, Dept. SR, 77 Selleck St., Stamford, CT 06902.

**Circle 130 on reader service card**

## 3D Acoustics

The new Model 303 speaker system from 3D Acoustics couples a 6½-inch controlled-output woofer with an 8-inch rear-mounted passive radiator and a 1-inch foam-encased cloth-dome tweeter. The crossover frequency is 2,500 Hz. Rated frequency response is 44 to 20,000 Hz  $\pm 2.5$  dB. The mini-



mum amplifier-power requirement is 25 watts rms, the maximum power-handling capability 150 watts. The oiled walnut-veneer cabinet measures 19 x 11 x 10½ inches. Price: \$389 per pair. 3D Acoustics, Dept. SR, 652 Glenbrook Rd., Stamford, CT 06906.

**Circle 131 on reader service card**



## Counterpoint

A combination of vacuum tubes and solid-state electronics is used in the Counterpoint SA-12 hybrid power amplifier, rated at 80 watts per channel into 8 ohms and 120 watts into 4 ohms. The vacuum-tube front end is paired with a MOSFET output stage. An automatic muting circuit protects speakers from turn-on and turn-off transients without the use of relay contacts, which are said to degrade the circuit. Frequency response is given as 5 to 140,000 Hz. The SA-12 can be rack-mounted. It comes with a 3-year transferrable warranty. Price: \$995. Counterpoint, Dept. SR, P.O. Box 12294, La Jolla, CA 92037.

**Circle 132 on reader service card**

## Sanyo

Sanyo's VCR 7250 Beta Hi-Fi videocassette recorder features the new Super Beta video technology. Super Beta involves shifting the frequency of the luminance subcarrier 800 kHz higher for a wider luminance bandwidth, which is said to improve picture quality by as much as 20 percent. The dynamic range



of the Beta Hi-Fi soundtrack is rated at 80 dB. Recording level and balance are adjustable. The front-loading VCR 7250 provides fourteen-day/eight-event

programming, a 105-channel cable-compatible tuner, Beta Scan picture search, a pause/still-frame control, and automatic rewind. The supplied infrared remote control switches the power, changes TV channels, selects the VCR or the tuner, and selects play, scan, rewind, fast-forward, stop, pause/still, and record functions. Price: \$679.95. Sanyo, Dept. SR, 1200 W. Artesia Blvd., Compton, CA 90220.

**Circle 133 on reader service card**

## Triad

Three different formulations of Triad cassette tape—MG-X (metal, shown), EM-X (high-bias metal), and F-X (normal-bias)—will be distributed in the U.S. in 90-minute lengths by Harman America. The MG-X and EM-X formulations are made with a special crystal-forming process that produces needle-shaped ferrous-hydroxide particles said to be "near perfect" in uniformity of size and composition. The process is also said to cost less than previous methods of producing metal tape. Coercivity for the MG-X tape is rated as 1,150 oersteds and retentivity as 3,300 gauss. Maximum output level at 315 Hz is +5.0 dB compared with the Type IV



reference tape. For the EM-X cassettes, intended for use in machines lacking a Type IV bias setting, the particles are divided to reduce coercivity and permit recording with the high-bias (Type II) setting. The normal-bias Triad F-X tape has a rated coercivity of 380 oersteds and a retentivity of 1,800 gauss.

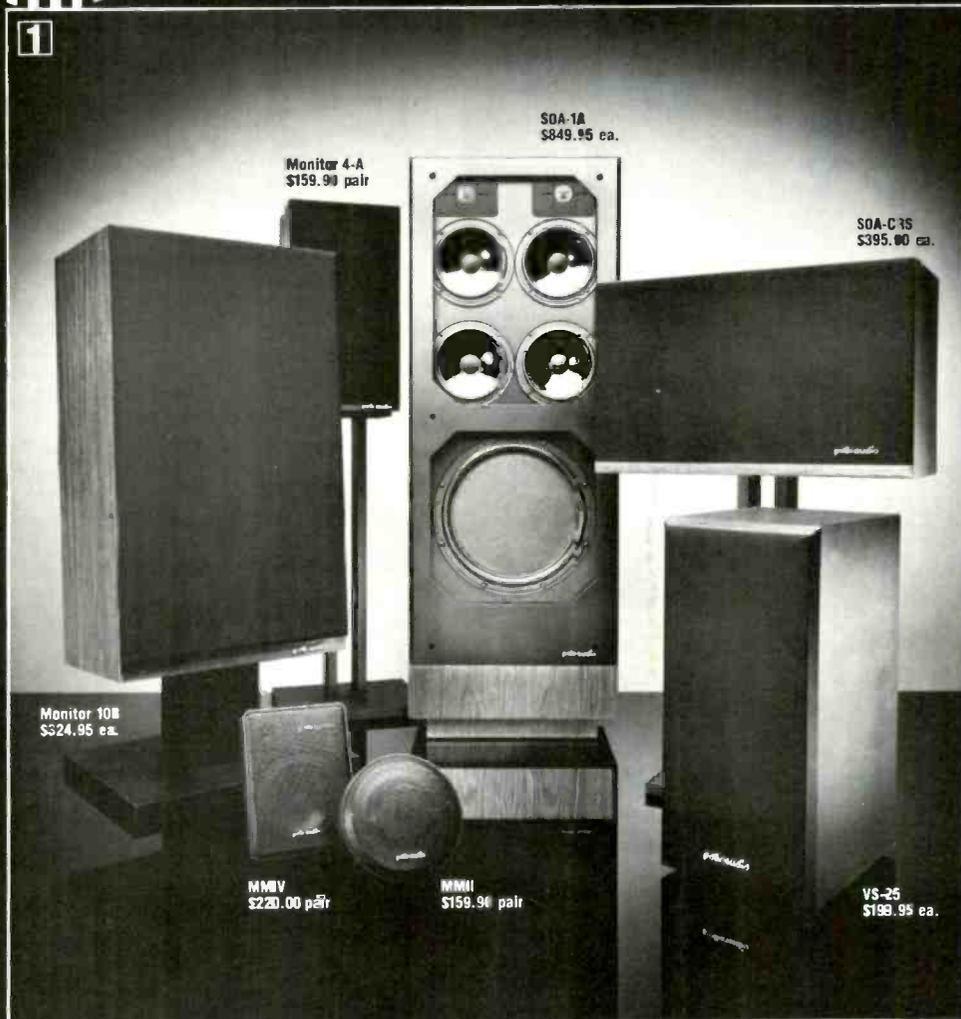
The shell halves of all Triad cassettes are said to be finished with an accuracy of 1 micrometer. Micro-dot friction sheets are used for more stable tape running. Prices: MG-X, \$4.59; EM-X, \$3.99; F-X, \$3.39. Harman America, Dept. SR, 5000 Brush Hollow Rd., Westbury, NY 11590.

**Circle 134 on reader service card**

## Hifonics

Four new car amplifiers by Hifonics feature built-in power-line filters and a

# Of The Many Reasons Why Polk Speakers Sound Better.™



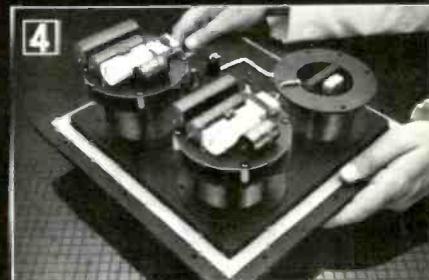
Polk's total dedication to a philosophy of quality results in dramatically better sounding speakers for your home and car (\$39.95 - \$850.



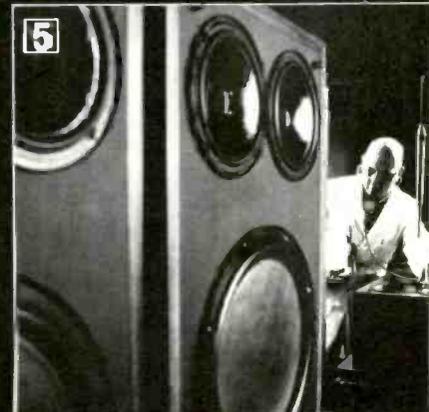
Polk's exclusive new Silver Coil Dome Tweeters achieve widely dispersed silk smooth, crystal clear high frequency reproduction.



Polk's exclusive Trilaminar Polymer Cone Drivers reproduce clean, clear better defined bass and midrange.



Polk's incredibly complex Isophase Crossover Systems achieve seamlessly smooth, coherently musical sound.



Polk's extraordinarily thorough quality control program is your assurance of sonic excellence and total satisfaction.

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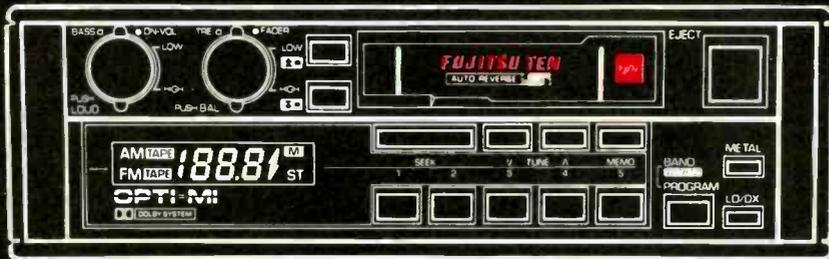
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## NEW PRODUCTS



floating ground to eliminate engine noise. Handmade of heavy-gauge finned aluminum with epoxy-fiberglass printed-circuit boards, the amplifiers operate by delayed, remote turn-on from the head unit. All are protected against shorts, overloads, and overheating. The Vulcan model is rated at 40 watts per channel, the Odin at 65 watts, the Thor at 100 watts, and the Zeus (shown) at 200 watts, all with less than 0.05 percent total harmonic distortion. The four models share the following specifications: signal-to-noise ratio, 90 dB; slew rate, 15 volts per microsecond; dynamic headroom, 1 dB. Prices range from \$195 to \$575. Hifonics Corp., Dept. SR, 171 Highwood Ave., Leonia, N.J. 07605.

*Circle 135 on reader service card*



### Cambridge Audio

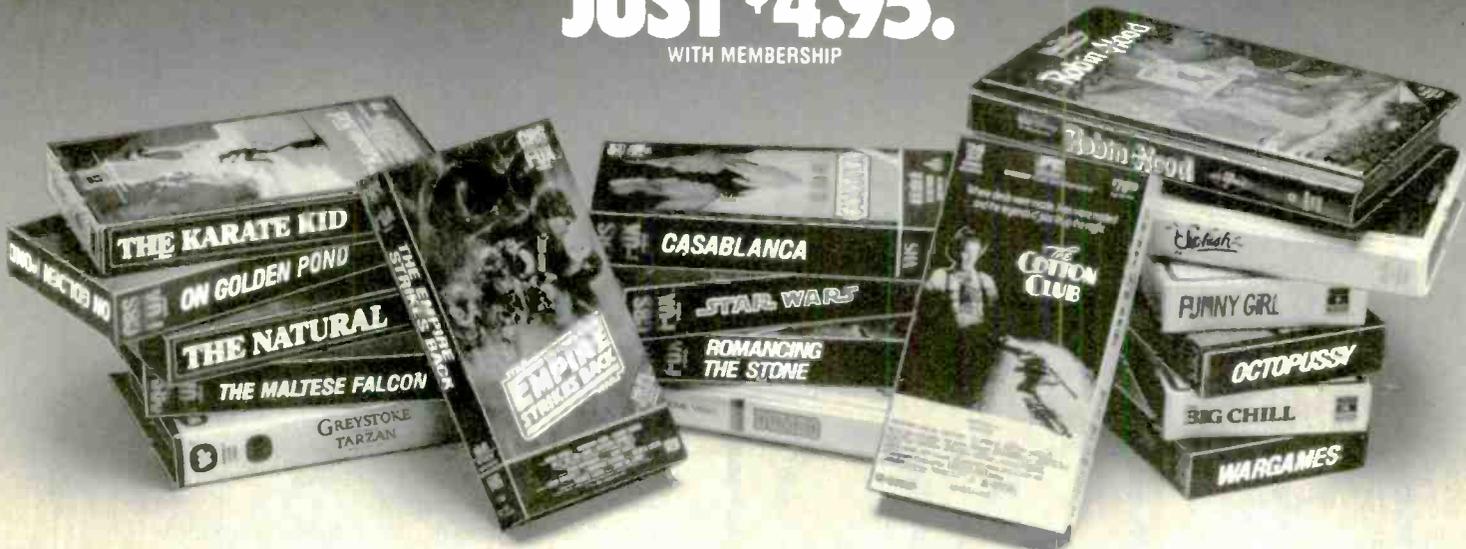
The CD1 Compact Disc player from Cambridge Audio has three different analog output sections based on different configurations of a family of linear-phase shunt feedback filters. Buttons on the front panel select one of these processing loops.

The disc transport is mounted on a high-mass leaf-spring suspension to isolate it from external vibrations above 1 Hz. The CD1 uses six digital-to-analog converters arranged to form a weighted summing system, with an additional loop of digital filtering; the combination is said to improve the resolution of low-level signals and the accuracy of conversion. Unconverted digital signals are also fed to a direct digital output. Functions include fast search and skip in both forward and reverse, pause, stop, and repeat. The CD1 has a volume control on the front panel and can be directly connected to a power amplifier. Price: \$2,000. Cambridge Audio, Michael Baskin Co., Dept. SR, 4650 Arrow Hwy. #F4, Montclair, CA 91763.

*Circle 136 on reader service card*

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## 60 TOP HITS TO CHOOSE FROM

TITLE	SELECTION NUMBER	TITLE	SELECTION NUMBER	TITLE	SELECTION NUMBER
THE EMPIRE STRIKES BACK	0910092	JANE FONDA'S WORKOUT CHALLENGE	5260042	ROBIN HOOD (Walt Disney)	5299092
ROMANCING THE STONE	0894092	CASABLANCA	0607082	EXCALIBUR	6021082
SPLASH	5304022	TOOTSIE	1509042	TIGHTROPE	6051082
THE BIG CHILL	1527022	DUMBO	5251052	BACHELOR PARTY	0926012
WARGAMES	0828002	THE AFRICAN QUEEN	0611022	COUNTRY	5341072
RISKY BUSINESS	6033082	ON GOLDEN POND	0523082	BODY DOUBLE	1713052
THE NATURAL	1649052	THE LONGEST DAY	0577032	REVENGE OF THE NERDS	0925022
STAR WARS	0564162	DIRTY HARRY	6017082	GREYSTOKE—THE LEGEND OF TARZAN, LORD OF THE APES	6045042
YENTL	0895082	STRIPES	1513082	EDUCATING RITA	1693012
COTTON CLUB	3100032	FUNNY GIRL	1511002	THE ROAD WARRIOR	6028052
CADDYSHACK	6023022	CHRISTINE	1580062	SUPERMAN III	6040092
MAKING MICHAEL JACKSON'S THRILLER	7103012	OCTOPUSSY	0856052	TWILIGHT ZONE—The Movie	6034072
KING KONG (The Original)	5502022	PORKY'S	0775112	ANNIE	1516052
POLICE-ACADEMY	6049002	CLOSE ENCOUNTERS OF THE THIRD KIND—Special Edition	1510012	THE MUPPETS TAKE MANHATTAN	0923042
ARSENIC & OLD LACE	0735102	THE RIGHT STUFF	6043062	ALIEN	0002322
THE COMANCHEROS	0762242	NATIONAL LAMPDON'S VACATION	6039022	THE MAGNIFICENT SEVEN	0534212
KARATE KID	1710092	HIGH ROAD TO CHINA	6022012	THUNDERBALL	0709142
PRIVATE BENJAMIN	6018072	ARTHUR	6024092	BUTCH CASSIDY & THE SUNDANCE KID	0517302
SHE WORE A YELLOW RIBBON	5504002	ROOSTER COGBURN	1018082	PURPLE RAIN	6048012
RED RIVER	7507032	NEVER SAY NEVER AGAIN	6042072	THE MALTESE FALCON	0508072

# "Frighteningly close to perfect"



# ADS



OPTIONAL RC1  
REMOTE CONTROL UNIT

The Atelier CD3 Compact Disc player is the newest example of the ADS philosophy:

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Take the time and trouble to design an original.

We did.

We used 16-bit digital to analog converters for each channel and two-times oversampling to insure exceptional accuracy, low distortion, and outstanding signal-to-noise ratios.

We developed digital/analog filtering that not only eliminates sampling and conversion noise but allows less than 2 degrees of phase shift from 20-20kHz.

We designed an advanced error correction system with a unique variable correction window. This system focuses only on the data in error and eliminates unnecessary large-scale correction of the music signal.

The resulting sound of the CD3 is smooth and clear, free from the shrillness often associated with less advanced CD players. Frequency response, as *Digital Audio* described it, is "frighteningly close to perfect."

Of course, the CD3 shares the rational, uncluttered design of other Atelier components. Front panel controls are simple and logical. More complex functions, such as indexing, time and track display, toggling and 30 selection programming are hidden on a push-to-release pivoting panel.

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For more information or the location of your nearest ADS dealer, call 800-824-7888 (in CA 800-852-7777) or write to ADS, 415 Progress Way, Wilmington, MA 01887.

## The new ADS CD3.



## SHERWOOD CRD-301

by Julian Hirsch and  
Christopher Greenleaf

**T**HANKS to heavy competition in the car stereo business, nearly all the features that make on-the-road listening satisfying can now go into your dash for a fairly modest investment. Sherwood's CRD-301, an AM/FM receiver/tape player with autoreverse, is an example of today's more affordable flexibility.

The CRD-301's integral amplifier is rated to deliver 12 watts per channel into 4-ohm loads from 50 to 20,000 Hz with no more than 0.5 percent total harmonic distortion. It can drive one pair of speakers, and there is a pair of line-level preamplifier outputs for connection to an optional external power amplifier and a second pair of speakers. A fader between the two outputs is engaged by pushing the balance-control ring.

The digital-synthesis quartz-PLL tuner section has six preset buttons, each usable for one AM and one FM station. Pushing the manual rotary tuning knob starts an automatic station-scanning sequence, in which each receivable frequency is sampled for 5 seconds; a second push locks the tuner onto the selected station. Pushbuttons select the band, stereo or mono for FM, and local or distant sensitivity settings. LED's in the display panel show station frequency, band, and the presence of an FM stereo signal. A suppressor keeps impulse noise from the engine electronics at bay.

Inserting a cassette triggers the automatic tape loader and switches the unit from its radio mode to tape playback. When the eject button is pressed the cassette is ejected and the CRD-301 reverts to radio operation, returning to the last frequency tuned in. The cassette is also ejected when the car's ignition is turned off. An automatic music sensor (AMS) can be used during fast wind in either direction to find the beginnings of recorded selections. Tape



type (120- and 70- $\mu$ sec equalization) and Dolby B noise reduction are manually selected and indicated on the display. A ring concentric with the volume knob controls both bass and treble.

The control panel of the CRD-301 has few frills, yet it offers all the basic controls one would expect on home components. The chassis measures  $7\frac{1}{8}$  inches wide, 2 inches high, and  $7\frac{1}{2}$  inches deep; it fits standard dash openings, as do the adjustable shafts. Weight is 3 pounds. Price: \$380. Sherwood, Dept. SR, 13845 Artesia Blvd., Cerritos, CA 90701.

### Lab Tests

The mono usable sensitivity of the CRD-301's FM tuner section measured 24 dBf (4.35 microvolts, or  $\mu$ V), somewhat short of the rated 17.3 dBf (2.0  $\mu$ V). Other FM performance parameters were generally good, although the capture range was marginal. The stereo indicator came on at about 16 dBf (1.75  $\mu$ V), but there was no channel separation below about 20 dBf (2.75  $\mu$ V), where it measured 4 dB at 1,000 Hz. At 30 dBf (8.7  $\mu$ V), which we would consider the lowest useful signal level for stereo reception on this receiver, the separation was 14 dB, and it improved to 33 dB at 65 dBf and higher levels.

Because of the automatic channel-blending action, the 50-dB quieting sensitivity measured nearly the same for mono and stereo, 26 and 28 dBf (5.5 and 6.9  $\mu$ V), respectively. However, the "stereo" signal at that level was so blended as to be essentially mono. Using the LOC (local) switch reduced the tuner's sensitivity by 20 dB.

We ran into an unusual situation in measuring the alternate-channel selectivity, which is rated as 65 dB but appeared to be at least 105 dB!

We can only conjecture that the tuner's operating conditions were affected by the very strong signal (on the order of 1 volt) that we had to inject 400 kHz away from the tuner frequency to make this measurement. When we changed the frequency spacing to 300 kHz, much more normal results were obtained, but this is not a standard spacing. The adjacent-channel selectivity, measured with a 200-kHz spacing, was a reasonable 5 dB.

The audio amplifier clipped at 16 watts into a 4-ohm load. Clipping occurred at the line-level preamplifier outputs at 1.55 volts, which is more than enough to drive a separate power amplifier. The tone-control characteristics were good. The only measurement we made on the AM tuner section was of its frequency response, which was down 3 dB at 75 and 2,100 Hz.

The cassette player for the most part delivered the kind of performance we would expect from a good car receiver. Although its flutter was acceptably low, the speed was fast by 2.8 percent, an excessive figure that may have reflected an internal misadjustment on our test sample. The frequency response in the forward and reverse directions differed appreciably at high frequencies, indicating an azimuth error in the reverse direction. The A-weighted tape signal-to-noise ratio (S/N) was 60 dB with Dolby B, an acceptable if not outstanding reading.

A possible indication of something amiss in our test sample was the audible high-frequency squeal that emerged from the mechanism whenever the tape was in motion. However, the noisy transport had no detectable effects in our measurements, and it is not likely to be audible in normal use. That aside, the CRD-301 worked well in our bench tests. The AMS music-sens-

ing system operated as claimed. We felt that the station-selector buttons were too close to each other and to the adjacent knobs, making it difficult to operate them without risk of changing a control setting.

Otherwise, the CRD-301 was an easy receiver to use. Because its output amplifiers are bridged, the speaker outputs must be totally isolated from each other and from the car's chassis ground. The label on one of the speaker wires of our sample was incorrect, which might have caused trouble if we had not caught it before applying power. *J.H.*

## Road Tests

The Sherwood CRD-301 accompanied me up and down the Eastern urban corridor, and we encountered every imaginable reception and road-surface condition over the seven hundred or so miles we traveled together. As usual, the rugged, painfully familiar streets of our New York City test route revealed both the good and not-so-good characteristics of this unit.

The printed material accompanying the CRD-301 had led me to expect better resistance to impulse noise and general electrical interference than I actually encountered in AM reception. Graininess and a lack of bass made the AM band enjoyable only for spoken programming. As is to be expected, both the AM and FM bands yielded far more listenable stations with the distant sensitivity setting than when I switched to local. The convenient manual tuning knob and the scanning function were both easy to use. In FM, the range for stereo was typically thirty miles or so; the signal quality fell off rapidly beyond that, necessitating a switch to mono. The mono range was good but not above average. Adjacent strong FM stations butted in now and again, but this happened more in fringe reception areas than closer to the transmitters. Multipath presented few problems to the tuner, and when it did react to this normal irritant of mobile FM listening, the effect was relatively unobjectionable.

The sound from FM and tapes (with either normal or high-bias equalization and with or without Dolby B) was typically clean and open. The midrange had a polished

## HIRSCH-HOUCK LAB MEASUREMENTS

**FM mono usable sensitivity**  
(75-ohm input): 24 dBf (4.35  $\mu$ V)

**Mono 50-dB quieting sensitivity**  
(75-ohm input): 26 dBf (5.5  $\mu$ V)

**Stereo 50-dB quieting sensitivity**  
(75-ohm input): 28 dBf (6.9  $\mu$ V)

**Tuner signal-to-noise ratio at 65 dBf:** 58 dB

**Tuner distortion at 65 dBf:** 0.225%

**FM frequency response** (-3-dB limits): 20 to 15,500 Hz

**Stereo separation at 100, 1,000, and 10,000 Hz** (at 65 dBf): 33, 33, and 45 dB

**Capture ratio at 65 dBf:** 3.1 dB

**AM rejection at 65 dBf:** 64 dB

**Alternate-channel selectivity:** not measurable

**Adjacent-channel selectivity:** 5 dB

**Image rejection:** 48 dB

**AM tuner frequency response** (-3-dB limits): 75 to 2,100 Hz

**Tape playback frequency response**  
(standard BASF test tapes, -3-dB limits): 120- $\mu$ s EQ, 31.5 to 16,000 Hz forward, 31.5 to 14,000 Hz reverse; 70- $\mu$ s EQ, 60 to 11,000 Hz reverse

**Tape signal-to-noise ratio**  
(referred to 250 nWb/m at 315 Hz, 120- $\mu$ s EQ): 46.5 dB unweighted; 60 dB with Dolby B and A-weighting

**Flutter:**  $\pm$ 0.23% CCIR-weighted peak; 0.14% JIS-weighted rms

**Tape speed accuracy:** +2.8% in either direction, at the beginning or end of the tape

**Fast rewind time (C-60):** 97 seconds

**Tone-control range:** +10, -12.5 dB at 100 Hz;  $\pm$ 10 dB at 10 kHz

**1,000-Hz clipping power output**  
into 4 ohms: 16 watts

**1,000-Hz clipping output**  
at line-level jacks (standard EIA load): 1.55 volts

feel, as did the smooth treble. All the bass I wanted was right there if the program source had it in the first place. I did miss a loudness control to balance off the lower midrange against the bass, but I found the slope of the treble control satisfactory.

The six presets are stacked in pairs of narrow, vertically oriented buttons with very light springing that presents almost no resistance to a casual touch. Mistakes in using them were frequent and maddening. Landing on two buttons at once was easy enough, but the fact that the first preset button is immediately next to the memory button meant I unintentionally reprogrammed this preset almost every time I used it. Also, pushing in the balance ring to adjust the fader control often involved a brush with the even-numbered presets. Other control-layout details that bothered me were the prominence of the tape-reverse button, which is fairly seldom used, and the lack of prominence of the eject button.

Reverse tape play had marginally crisper treble than the nominal forward direction. Mild but definite flutter was noticeable in both directions with most music, especially on the InSync solo-piano cassette I use for testing steadiness. Random mechanical shocks had little effect on the transport, but vibration sometimes imparted a burbling character

to the sound. Our sample of the CRD-301 emitted a scraping mechanical whine in any tape-transport mode. Automatic tape loading and ejection were very smooth. As with many car decks in which the tape-function buttons are also tuner controls, you have to remember to return the tape-type selector button to its out position for stereo FM reception.

The line-level outputs made it possible (and very simple) to compare the performance of the CRD-301's integral amplifier, driving two 4-inch speakers, with that of my test car's very powerful AudioMobile power amplifier and its six-speaker array. Except with obviously enormous transients and at very high listening levels, the little built-in amp showed neither strain nor any tonal degradation, and it appeared to handle normal peak demands with aplomb.

Like many other car stereo systems, the Sherwood CRD-301 uses floating grounds for the speaker and line-level outputs. Reasonable care in isolating these grounds from the car's chassis and loose metal projections will protect the receiver. On our test sample, the left-hand negative speaker lead was mislabeled. The manual, however, is carefully written in clear English, a welcome change from the kind of manuals we usually get!

*C.G.*  
**Circle 147 on reader service card**

10 mg. "tar", 0.8 mg. nicotine  
av. per cigarette by FTC method.

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*You've got what it takes.*

# *Salem Spirit*

*Share the spirit.  
Share the refreshment.*

Warning: The Surgeon General Has Determined  
That Cigarette Smoking Is Dangerous to Your Health.



by Julian Hirsch



## Speakers for Video

**F**OLLOWERS of the audio industry, or in this case the audio/video industry, will no doubt have noticed in advertisements and store showrooms the recent introduction of "video speakers," or speakers claimed to be "video-ready." But it is not obvious to me why a speaker used to play sounds from video sources should differ from the familiar audio speakers we have been using for years. In fact, makers of these new models seem to be basing their main selling points on an assumption that, while it may not be false, is certainly not valid in all cases and is unnecessarily restrictive to boot.

The assumption is that speakers used for video-source sound will be located right next to the TV set or video monitor, the way most advertisements show them. Many video-speaker ads caution the prospective buyer about the magnetic fields emanating from a conventional speaker and the havoc they can wreak with the color reproduction on a TV screen placed next to it. The caution is justified to some

extent, since the electron beams traveling within a picture tube are easily steered in the wrong direction by stray magnetic fields, and a typical loudspeaker does have a magnetic field surrounding it.

There are two common ways to keep a speaker's magnetic field inside its cabinet: (1) using metal shielding and (2) mounting a second magnet on each driver to contract the external field. (According to Andy Petite of Boston Acoustics, the second approach actually increases the magnetic flux at the speaker's voice coil, and therefore its potential efficiency.) The limited number of video-oriented speakers I have examined all seemed to be very well shielded. I could measure no significant level of magnetic flux at any point on the outside of the speaker enclosures, and the speakers could be placed directly against the side of a TV set without affecting the picture in any way.

As it happens, I routinely check a test speaker's external flux levels (using a sensitive gaussmeter to measure magnetic-field strength) whether or not it is claimed to be video-ready. As a rule, the results of these tests are not mentioned in our equipment test reports since they are of little importance in audio applications.

With, say, a high-quality three-way dynamic loudspeaker, I would normally find a strong magnetic field out to about 6 to 8 inches in front of the midrange and high-frequency drivers and out to a foot or more in front of the woofer. Moving out another 3 or 4 inches, however, usually reduces the field so much as

to make it unmeasurable. A speaker driver's magnetic field is essentially concentrated along a line through the axis of the driver, and while it may extend some distance out from the front and rear of the cabinet, it is much weaker out to the sides.

I have obtained an unacceptable loudspeaker-caused color change in a portion of a video picture, but only by placing a small speaker directly on top of the monitor. Raising the speaker about 2 inches solved the problem, thereby illustrating an important law of electromagnetics: magnetic-field intensity decreases rapidly as the distance from the field's source increases. Moving a speaker only a couple of inches further away from a picture tube will generally solve any color-change problem it may be causing.

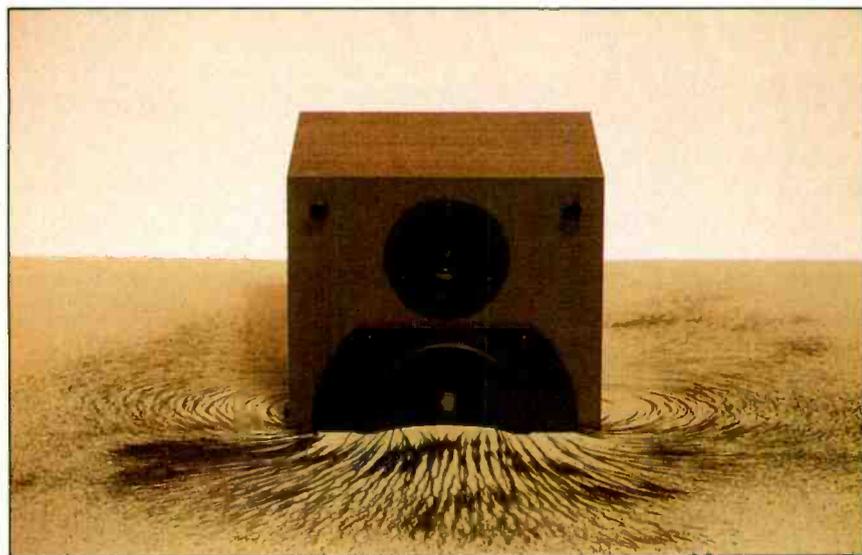
Just about any speaker you are likely to use with a video system will have *no* effect on the picture if the speakers and the monitor are separated by at least 6 inches. But placing speakers even that close to the screen makes no sense to me, for the simple reason that you cannot get a reasonably wide stereo image from such a placement—certainly not an image suitable for both music and video-sound listening. Apparently, however, many manufacturers and ad-copy writers believe that the speakers *must* be close to the screen to prevent a "disembodied" sound stage that will not appear to come from the source shown in the picture.

My experience in using pairs of speakers for TV sound over more than twenty-five years contradicts this view. Even with the speakers placed 6 feet away on either side of the TV screen, a mono sound source will appear to come from the picture tube. It is not associated with the actual location of the speakers regardless of the viewer/listener's position in the room. Even a single speaker a number of feet from the screen does not usually sound like a separate source, perhaps because the visual stimulus of the picture tends to focus the viewer's auditory attention on the screen.

More to the point, placing both speakers close to the monitor almost always results in too little space between them (4 feet or less)

### Tested This Month

KEF 104.2 Speaker  
 Technics SB-R100 Speaker  
 Mission 707 Speaker  
 Sansui S-X1130 Receiver  
 Harman Kardon VCD  
 1000 VHS Hi-Fi VCR  
 Nitty Gritty 2.5FI  
 Record Cleaner  
 Barcus-Berry BBE 2002R  
 Signal Processor



BARNABY HALL

The external magnetic field created by a typical dynamic loudspeaker is shown by this classic experiment using iron filings scattered around the cabinet.

for effective stereo sound. If your room is very small, or if you sit very close to the TV screen, such spacing might be satisfactory. But in general it should be avoided, especially if you intend to use the speakers for both audio and video-sound reproduction.

While removing the close-placement requirement opens up the choice of video-system speakers to include nearly all high-fidelity loudspeakers, specifically video-ready units might still have a few advantages. Most video speakers, for example, have a moderately high sensitivity, which enables them to deliver a comfortably high sound level without making excessive power demands on an amplifier. The amplifiers in so-called video receivers usually carry moderate power ratings (20 to 50 watts) and should be able to drive any video speaker to a more than adequate volume level without strain. Typical video-speaker sensitivity ratings are 90 dB sound-pressure level (SPL) or higher. In contrast, some home-audio speakers have sensitivity ratings as low as 83 or 84 dB SPL and thus need up to four times as much amplifier power to produce the same volume. If your video speakers are also to be used as your primary audio-system speakers, and especially if you already have a high-power audio amplifier, you may wish to make your selection

from standard audio lines rather than choosing specifically video speakers.

In general, a speaker that sounds good in an audio-only system should do equally well in a video application. Since video programs rarely have an audio quality comparable to that of a good LP or CD (unless it comes from a hi-fi video cassette or video disc), you might be tempted to economize slightly in the overall sound quality of the speakers. That could be a mistake if

the audio role of your video system is to be exploited to any great degree, although extended bass and treble response may not provide as much listening benefit with TV sound as with audio-only sources. As always, a *smooth* overall response is more important than overall flatness or extension into the very high or very low frequencies.

There will never be a *disadvantage* in using a better speaker than the video sound might require, any more than there would be in purely audio applications, but you might encounter decorating problems if your speakers are very large. A pair of columnar, floor-standing speakers, for instance, can be visually overpowering in a small viewing room. With large speakers, the integration of sight and sound will usually be better if the speakers and TV screen form a line across one wall of the room and if they are roughly the same height. On the other hand, you don't really need large speakers for your TV system; compact box speakers on pedestals or on a shelf can do just as well.

Good speakers can enhance your enjoyment even if you are just watching an ordinary mono TV program. It is sometimes hard to appreciate the limitations of the typical TV set's audio section until you replace it with a full-range high-fidelity system. □



"... Dahn, da-dahn, dahn, dahn, duh-dahn! Yeah, I heard that tune before—lotsa times. So that's Der Rosenkavalier and your name is Richard Strauss and you wrote that? Gee! Here, Mr. Strauss, have a drink!"



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PHOTOS BY RED AXON

## KEF 104.2 SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE KEF 104.2 combines many of the familiar qualities of KEF speakers—a low degree of coloration, stable stereo imaging, a handsomely finished cabinet—with a novel design that's intended to provide the high efficiency needed to reproduce wide-dynamic-range program material without excessive amounts of amplifier power. The three-way columnar system features a unique bass-driver configuration consisting of two upward-firing 8-inch drivers mounted entirely within the cabinet. The drivers operate in opposite phase in separate enclosures about 18 inches apart. The air volume

between them, which loads the front of the bottom driver and the back of the top driver, opens to the outside through a frontal port about 4½ inches in diameter.

The 104.2's bass system operates only up to about 150 Hz, and it appears that the internal air volume works with the port size and the crossover network to optimize its performance in that range. In addition to the considerable stiffening imparted to the cabinet by its internal partitions, the frames and magnet structures of the two bass drivers are rigidly joined by what appears to be an aluminum bar about ½ inch in diameter. The velocity of

the air pumped through the port by the two woofers is considerable, but air turbulence is minimized by a smoothly rounded plastic bezel in the port. The internal volume is too small to support resonant modes at frequencies of 150 Hz or lower, and higher modes are suppressed by several collars of plastic foam surrounding the vertical rod that joins the driver frames.

The KEF 104.2's other drivers are inside a separate sealed enclosure mounted on the front of the cabinet above the woofer port. In a vertical line on its front surface are two 4-inch Bextrene-cone drivers with a 1-inch dome tweeter between them. The tweeter crossover frequency is not specified, but KEF does state that the speaker's frequency response is 55 to 20,000 Hz  $\pm 2$  dB measured at 2 meters distance on the reference axis. The company also gives the directional characteristics of the system in terms of the upper ( $-2$ -dB) response limits at several angles to the reference axis in both the horizontal and the vertical planes. The 104.2 is a high-efficiency speaker, by high-fidelity standards, being rated to deliver a sound-pressure level (SPL) of 92 dB at 1 meter on axis with a pink-noise input of 2.83 volts. It is recommended for use with amplifiers rated to deliver between 25 and 200 watts to 4-ohm resistive loads.

It is this last rating that points up one of the most unusual qualities of the KEF 104.2. The speaker has been designed to have a virtually constant impedance of 4 ohms across the audio range—in other words, to look like a 4-ohm resistor to the driving amplifier. It is commonplace to contrast the performance of amplifiers under laboratory conditions, where they are required to drive resistive loads of 4 or 8 ohms, with their performance in the "real world," where they drive very complex loads that bear little resemblance to an electrical resistance of any value. The constant 4-ohm impedance of the KEF 104.2 enables an amplifier to perform as well in its intended application as in a laboratory test. In addition, since most amplifiers will deliver considerably more power to 4-ohm loads than to 8-ohm loads, the 104.2 can develop the maximum possible program

sound level from a given amplifier.

There is yet another bonus from a constant-low-impedance design: the frequency response of the system will not be affected by the resistance of the speaker cable used with it, which can impress the shape of a speaker's impedance curve on an otherwise flat amplifier response. KEF's instructions indicate that any kind of speaker wire should be perfectly satisfactory with the 104.2 as long as the total resistance in series with each speaker is less than 0.2 ohm (up to 12 feet for 14-gauge wire or 20 feet for 12-gauge wire).

The 104.2's constant resistance was achieved with the aid of KEF's extensive computer-aided design and engineering facilities, which were able to design impedance-correcting networks for each driver as well as the frequency-shaping and level-matching networks needed to perform the crossover functions. According to KEF, an electrical time delay in the crossover network tilts the optimum listening axis up about 10 degrees from the horizontal in order to give optimum sound quality for listeners seated about 10 feet from the speakers.

The KEF 104.2 has no user-adjustable level controls. Its only external feature, aside from the midrange and high-frequency drivers and their black grille cover, is a pair of heavy-duty insulated binding posts on the rear of the cabinet. These posts will accept stripped wires, lugs, or banana plugs (but not dual banana plugs since the terminals are spaced 1½ inches apart). The cabinet is handsomely veneered in walnut and measures 36 inches high, 11 inches wide, and 16¾ inches deep. Each speaker weighs 70½ pounds. Small, removable rubber cabinet feet are supplied. The KEF 104.2 is sold in matched pairs, for \$1,600 per pair. KEF Electronics, Ltd., Dept. SR, 695 Oak Grove Ave., Menlo Park, CA 94025.

## Lab Tests

We installed a pair of KEF 104.2 speakers as recommended, about 2 feet from the wall behind them and 4 feet from the side walls of the room. The room response was very smooth, varying less than ±4 dB from 150 to 20,000 Hz. The woofer



*This cutaway drawing shows the unusual construction of the KEF 104.2's bass system. The push-pull low-frequency drivers operate totally within the cabinet, their output reaching the outside via a large, front-panel port.*

response, measured at the port opening, reached its maximum at 70 Hz, falling at 18 dB per octave below 60 Hz. The output also decreased, to -5 dB, at 130 Hz and more steeply above that frequency. A close-miked measurement of the response of one of the midrange drivers showed a maximum at 250 Hz, with an 18-dB-per-octave decline below 150 Hz and about a 6-dB-per-octave rolloff above 250 Hz. Our close-miked tweeter measurements indicated that the crossover took place at about 3,000 Hz.

Splicing the close-miked bass and midrange curves to the room-response curve in an unambiguous manner was even more difficult than usual, and the composite curve showed an appreciable peak at the woofer's maximum-output frequency. This peak did not appear in our quasi-anechoic FFT response measurements, nor was it particularly obvious in listening tests. The FFT response (at 1 meter) was flat within ±3 dB from 180 to 20,000 Hz, with the major departure from flatness being a dip of about 5 dB at 3,000 Hz. The response dip was apparently the result of an interference effect between the midrange and high-frequency drivers; not only did it fail to show up in our room measure-

ments, but it disappeared when we measured the speaker's response 45 degrees off its reference axis.

The off-axis response diverged steeply from the axial response above 8,000 Hz, a result of the tweeter's directivity. KEF suggests that angling the speakers toward the center of the room may improve imaging under some circumstances, although in our room this was not necessary. The phase linearity of the system was excellent at middle and high frequencies, as shown by the overall group-delay variation of about 0.1 millisecond from 4,000 to 20,000 Hz and of less than 0.5 millisecond as low as 1,000 Hz.

The 104.2's sensitivity was almost exactly as rated, with a 91-dB SPL measured 1 meter from the speaker when it was driven by 2.83 volts of pink noise in the octave centered at 1,000 Hz. The impedance varied only between 3.3 and 4.6 ohms from 20 to 20,000 Hz. This was not only the most uniform speaker impedance we have ever measured, but its very uniformity attests to its almost purely resistive nature. The woofer distortion, at a constant drive level of 2.5 volts (corresponding to a midrange output of 90 dB), was less than 1 percent from 140 to 75 Hz, rising gently to 2.15 percent at 40 Hz and 4 percent at 30 Hz.

*The KEF 104.2's sounded as smooth as they measured, with a somewhat "warm" character. Their kinship with the other top KEF models, particularly the 105.2, was obvious.*

Finally, our pulse power-handling tests produced some of the most prodigious power figures we have yet come up with (in part the high figures resulted from our using a different amplifier than we usually have for these tests and operating it in the bridged mode). With a sine-wave signal on for 1 cycle, then off for 128 cycles, the 100-Hz woofer limit was 1,127 watts. At 1,000 Hz, the system withstood 1,806 watts, and at 10,000 Hz the limit was 1,670 watts. All these figures refer to

the amplifier's output at its clipping point; the speaker did not clip or otherwise show signs of overload in any of these measurements.

## Comments

The KEF 104.2 speakers sounded as smooth as they measured, with a somewhat "warm" character resulting from a slightly emphasized bass output in combination with a gently declining midrange and high-frequency response. The kinship of these speakers to the other top KEF models (specifically the 105.2, with which we are quite familiar) was obvious. The sound was balanced, certainly without any obvious emphasis in the higher frequencies, yet not in the least dull or muffled. Of course, it is quite possible that in another room the bass output of the 104.2's would be less prominent, but the weight of the speakers discouraged us from experiments in placement.

Since our tests suggested that the 104.2 could deliver extremely high sound levels without distortion, we put them to the test with a CD that opens with an enormous bang (Telarc CD-80098, whose first selection is the Strauss *Explosions Polka*). With the playback gain set so that a 0-dB (maximum) digitally recorded signal would drive the amplifier to clipping (well over 1,000 watts per channel into 4 ohms), we were treated (?) to a good simulation of a gunshot at close range. There was a true physical impact as well as a very loud sound, but no damage resulted to amplifier, speakers, or ears. The experiment reinforced our view that there is no such thing as having too much power for playback of a wide-range CD, assuming that the speakers can handle it. These can.

Priced at little more than half as much as KEF's renowned 105 series, the 104.2 delivers sound of very similar quality and quantity from a much smaller and visually less obtrusive cabinet. It demonstrates quite dramatically the ongoing progress in speaker design. Certainly KEF has realized well its stated goals of wide dynamic range, low coloration, stable stereo imaging, and pleasing appearance in the Model 104.2.

Circle 140 on reader service card



## TECHNICS SB-R100 SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**ECHNICS describes the SB-R100 as a "flat speaker system" primarily in reference to its shape, and in that respect the phrase is both apt and accurate. In addition, however, our experience with this unusual speaker suggests that, while a truly flat frequency response has yet to be achieved in a loudspeaker, the SB-R100 comes closer to that goal than many far more massive and expensive speakers we have tested.

The two-way SB-R100 measures only about 12 $\frac{3}{8}$  inches square and a mere 2 $\frac{9}{16}$  inches deep, so its physical flatness is indisputable. It is part of a line of super-slim audio components recently introduced by Technics that includes a combination stereo receiver/cassette deck that is the same depth as the SB-R100 and the similar but slightly larger SB-R200. The components in this line are designed to be hung on a wall (!), but the receiver/cassette player can also be placed flat on a table, and the speakers come with stands that support them at a slight backward angle when they are placed on a bookshelf or other flat surface.

Our tests were limited to the SB-R100 speaker. Both models feature a novel concentric planar-driver array using the honeycomb construction introduced a few years ago in several larger Technics speakers. From the outside, the SB-R100 appears to have a single 9-inch flat-diaphragm driver with several concentric bands on its surface. Closer examination reveals that the woofer is a 7-inch-diameter ring with a 1 $\frac{1}{8}$ -inch tweeter at its center. Surrounding the woofer diaphragm is an annular ring, about 9 inches in diameter, that serves as a passive radiator for the woofer. Each of the three sections of the speaker is decoupled from its neighbors, enabling them to move independently within their respective frequency ranges. The crossover frequency is 1,000 Hz.

The SB-R100, including its metal-mesh grille, is finished in black and weighs 10 pounds. It has no level controls. The tweeter is protected against damage from excessive input by an automatic thermal circuit breaker, which can be reset by pressing a button on the rear of the

speaker. Also on the rear are spring-loaded connectors that accept the stripped ends of the speaker wires. In addition to the table stand, a bracket is supplied to hang the speaker on a wall like a picture. Technics recommends wall mounting for best bass response.

The honeycomb radiating surfaces of the drivers are formed plastic and have a very high ratio of stiffness to mass, thus greatly reducing the amplitudes of many of the resonant modes of vibration that occur on a conventional paper or plastic cone. The radiating surfaces are in the same plane, which improves the phase coherence of the acoustic output. Despite its small size, the SB-R100 is rated to handle up to 100 watts of music program input (its companion receiver is rated at 30 watts output).

The Technics SB-R100 is sold in pairs. Suggested retail price per pair is \$260. Technics, Dept. SR, One Panasonic Way, Secaucus, N.J. 07094.

## Lab Tests

Initially we listened to the SB-R100 speakers mounted on shelves (with their stands) as well as hung on the wall. The wall position produced better sound, we felt, so we used that placement for our measurements and later listening tests. The averaged room-response curve was impressively flat through the midrange and high frequencies, within  $\pm 3$  dB from about 200 to 20,000 Hz. The bass response, with the microphone close to the speaker, was at its minimum at 700 Hz and had a small peak at 140 Hz; it fell off rapidly at lower frequencies, to about  $-20$  dB at 50 Hz. When the bass response was spliced to the room curve, the overall composite frequency-response variation was  $\pm 4$  dB from 90 to 20,000 Hz.

The quasi-anechoic axial frequency-response measurements made with our IQS FFT analyzer were generally similar to the room-response curves. A 6-dB overall variation from 180 to 20,000 Hz is certainly good performance for any speaker, and especially for one in this price range. The polar response showed moderate directivity above 7,000 Hz, and the overall group-delay variation was 0.4 millisecond

from 4,000 to 20,000 Hz, reaching 2 milliseconds or more in the woofer's range (below 2,000 Hz).

The speaker's sound-pressure level (SPL) at 1,000 Hz, measured at a 1-meter distance, was 86 dB with the standard input of 2.83 volts. The input level needed to produce the 90-dB SPL at which we measure bass distortion was 4.47 volts. The

*Despite their objectively thin bass, these speakers did not sound at all bass-shy. Perhaps their smooth midrange and high-frequency response compensates for the absence of gut-thumping bass.*

distortion was about 5 percent in the range from 90 to 100 Hz, increasing rapidly at lower frequencies to 10.7 percent at 70 Hz. Clearly, low-bass response is not the forte of the SB-R100, although one could hardly expect stronger bass in view of the speaker's extremely small volume and radiating surface area combined with its relatively high efficiency. By sacrificing efficiency, the SB-R100's bass range could have been extended, but since it was designed to be used with a 30-watt receiver, we feel that the Technics engineers chose the optimum compromise.

Measured impedance reached a minimum of 6.5 ohms at 1,750 Hz, but over most of the audio range it was 7 to 9 ohms (the two bass resonances of this ported speaker were at 50 and 115 Hz). We drove the speaker with short tone bursts to determine its peak power-handling ability. At 100 Hz there was an audible rasping sound with an input of 42 watts (based on the measured 15-ohm impedance at that frequency). At 1,000 Hz the acoustic waveform clipped at 51 watts (into 8 ohms), and at 10,000 Hz we observed a soft rounding of the speaker's waveform at 90 watts (into 10 ohms).

## Comments

The Technics SB-R100 is a very unusual speaker, and not only be-

cause of its size and mounting options. When we first heard the speaker in Japan last year, we were very favorably impressed by its smoothness and generally easy sound. We have had similar initial reactions in the past, however, only to be disappointed when the speakers finally reached us for extended listening and lab measurements. But that was not the case this time. Frankly, we were not entirely prepared for the sound we heard from the diminutive and rather unassuming SB-R100.

During much of the listening period, we also had on hand some large, expensive, highly regarded speakers from another manufacturer, and comparisons, if not entirely reasonable, were unavoidable. The most obvious difference between the SB-R100 and the others was, not surprisingly, in bass response. But when the program did not have a substantial bass content (below 100 Hz), it was often necessary to walk up to the speakers to determine which pair was playing!

Another surprise was finding that, despite their objectively thin bass, these speakers did not sound at all bass-shy. Perhaps their smooth, uniform midrange and high-frequency response allows them to deliver the essence of the music with sufficient fidelity to compensate for the absence of gut-thumping bass. Our reaction to these speakers was shared by more than one visitor who was amazed to hear what they could do, especially when reproducing a high-quality LP or a Compact Disc.

It is difficult to describe the sound character of the SB-R100 speakers, beyond their lack of deep bass. The sound is just plain good—good enough that we never felt the urge to switch to larger speakers during our extended listening sessions. If you are short on floor or shelf space and can spare a couple of square feet of wall space, and if you won't mind a pair of solid black squares on your wall, the Technics SB-R100 may well be the answer to your audio prayers. And if you like deep bass, a pair of these would make nearly ideal satellites for a three-piece system with a subwoofer. In any case, the price is right, and so is the sound.

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## MISSION 707 SPEAKER SYSTEM

*Julian Hirsch, Hirsch-Houck Laboratories*

**I**N size and price, the Model 707 lies roughly in the middle of the Mission speaker line. It is a compact, two-way bookshelf system based on an 8-inch woofer operating in a ported enclosure. The woofer cone is plasticized, with a foam-plastic surround. At 2,200 Hz the system crosses over to a  $\frac{3}{4}$ -inch-dome tweeter whose voice coil is damped and cooled by Ferrofluid in its magnetic gap.

The Mission 707 has a nominal impedance rating of 8 ohms and a relatively high rated sensitivity, 92-dB sound-pressure level (SPL) at 1 meter when driven by 1 watt. The speaker is recommended for use with amplifiers rated to deliver from 20 to 100 watts per channel. Its rated frequency response (under

unspecified conditions) is from 50 to 20,000 Hz  $\pm$  3 dB.

The cabinet of the Mission 707 is 18½ inches high, 9⅞ inches wide, and 10⅝ inches deep. Each system weighs 16 pounds. The cabinets are available finished either in walnut or in black. Removing the black cloth grille reveals an off-white front panel with a vertical alignment of the woofer at the top, the tweeter just below the center, and the bass port at the bottom. The front panel is actually made of plastic, about 1 inch thick, and is designed to be much more rigid than conventional chipboard panels. The insulated binding-post connectors in the rear can accept stripped wire ends, lugs, and single or dual banana plugs. The Mission

707 is sold in pairs for \$449 per pair. Mission Electronics Corp. of America, Dept. SR, 5985 Atlantic Dr., Unit 6, Mississauga, Ontario L4W 1S4, Canada.

### *Lab Tests*

The averaged room response of the Mission 707 was very uniform over a large part of the audio range, from 1,000 to 20,000 Hz. While there were the usual irregularities caused by room resonances and multiple signal paths from the speakers to the microphone, the 3-dB overall variation of the smoothed curve through that range of more than four octaves was exemplary. For this measurement the speakers were mounted about 18 inches in front of the wall and 25 inches from the floor. The same placement produced very satisfactory listening results and was in general accordance with the manufacturer's suggested procedure.

The measured response between 130 and 1,100 Hz was also very smooth and flat, but it averaged 2 to 3 dB higher than the output at the higher frequencies. We measured the woofer response separately, with close microphone spacing, and the combined cone and port response (the effective acoustic crossover between the two was at about 90 Hz) was at maximum between 100 and 250 Hz, dropping off at higher frequencies to about -6 dB at 1,000 Hz and at lower frequencies to -6 dB at 45 Hz. There was some ambiguity in splicing the woofer response to the room response to form a composite response curve. Our final curve showed a  $\pm$  4.5-dB variation between 35 and 20,000 Hz. The actual response of the Mission 707 in the bass and lower midrange (and, thus, its overall response flatness) is likely to be greatly affected by how the speakers are placed in a specific room and by the room's dimensions.

Quasi-anechoic response measurements with the IQS FFT analyzer showed an axial response (1 meter from the speaker) of  $\pm$  5 dB from 180 to 20,000 Hz. Much of this variation was caused by a dip at 5,000 Hz that was apparently caused by unavoidable reflections from room boundaries (it did not show up in the room-response measurements).

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Discounting this anomaly, the anechoic response was an impressive  $\pm 1.5$  dB from 180 to 15,000 Hz. A comparison of the response measured on the speaker's axis with that 45 degrees off axis showed typical differences between the two curves of no more than 3 dB up to and beyond 10,000 Hz, and only about 10 dB at 20,000 Hz, confirming the excellent horizontal dispersion of the dome tweeter. The speaker's phase linearity was also very good; the group delay varied only  $\pm 0.2$  millisecond over the tweeter's range, with occasional excursions to about 0.5 millisecond down to about 500 Hz.

The sensitivity of the Mission 707 was even higher than rated. An input of 2.83 volts of pink noise in an octave band centered at 1,000 Hz produced a 94-dB SPL at a 1-meter distance. The system's impedance curve had maxima of 25 to 35 ohms at 23, 95, and 1,500 Hz, minima of 7, 6, and 5 ohms at 55, 200, and 8,000 Hz, respectively. Given this performance, the impedance probably should have been rated as 6 ohms, but the manufacturer's 8-ohm figure is not unreasonable.

We measured the woofer distortion (separately at the cone and port) at frequencies from 100 Hz down to 30 Hz. The drive level was maintained at 1.8 volts, corresponding to our reference midrange-output SPL of 90 dB. The harmonic distortion was about 1.3 percent at 100 Hz, 2 percent at about 70 Hz, and a very respectable 8 percent at 30 Hz.

Finally, we drove the speaker using single-cycle sine-wave tone bursts, with duty cycles of 1 on and 128 off, to establish its short-term (dynamic) power-handling ability. By simultaneously viewing the amplifier's electrical-output waveform and the speaker's acoustic-output waveform on a calibrated oscilloscope, we determined how much voltage could be applied to the speaker before its output became distorted. In many cases the amplifier clipped before the speaker did.

We ran the tone-burst test at frequencies of 100, 1,000, and 10,000 Hz. For each measurement, the rms voltage of the single-cycle input was squared and divided by the measured speaker impedance at that fre-

quency to derive an equivalent power in watts. Since there are no accepted standards for this sort of measurement, we have developed our own somewhat arbitrary procedure. For example, we decided to use the measured impedance at each test frequency, instead of the speaker's nominal rated impedance, because we felt it was more realistic. In fact, however, the actual "dynamic" impedance of a speaker (the voltage divided by the current) during a short energy burst may be much lower than any steady-state value. In any event, the Mission 707 was able (somewhat to our surprise) to absorb the full output of the amplifier at the two higher frequencies. At 1,000 Hz the amplifier clipped at 477 watts, and at 10,000 Hz it clipped at 1,560 watts! Only at 100 Hz did the woofer cone reach its excursion limits, with audible distortion at 134 watts input.

### Comments

The Mission 707 proved to be an exceptionally balanced and clean-sounding speaker. While its *apparent* bass was not as strong as our measurements might imply (remember, bass response is strongly affected by a speaker's acoustic environment), it was certainly not lacking in any substantive respect. The smoothness and wide range of

the speaker's output was evident from first listening, and these qualities more than compensated for any real or imagined limitations in the lowest audible octaves.

The Model 707 is not only an exceptionally efficient small speaker, but it is one that can handle huge dynamic-power inputs without damage or serious distortion. This quality implies that it can be played quite loud—and, more important, that it can produce the high peak levels of CD's and the best LP's.

From its externals, there is little to show that the Mission 707 is more than "just another bookshelf speaker." It is light in weight, low in price, unpretentious in styling and finish (we thought our black-finished samples had a rather utilitarian appearance), and hardly unique in its specifications. However, a few minutes of listening (before making any measurements) left us with a strong impression that this speaker had been designed by someone with definite goals and the ability to realize them in practice. Although the Mission 707 is rather low priced by today's standards, it has the smoothness and balance of a far more expensive speaker. A lot of things have been done right in its creation, and the proof is in the listening.

*Circle 142 on reader service card*



"... Please try to understand, Dr. Kondrilov, we're not denigrating your 5-ton zinc-lined speaker with the high-pressure-steam woofer and laminated-carp-skin tweeter. But we'd like to see your research and development put to a more commercial use, something we can make some money on. . . ."

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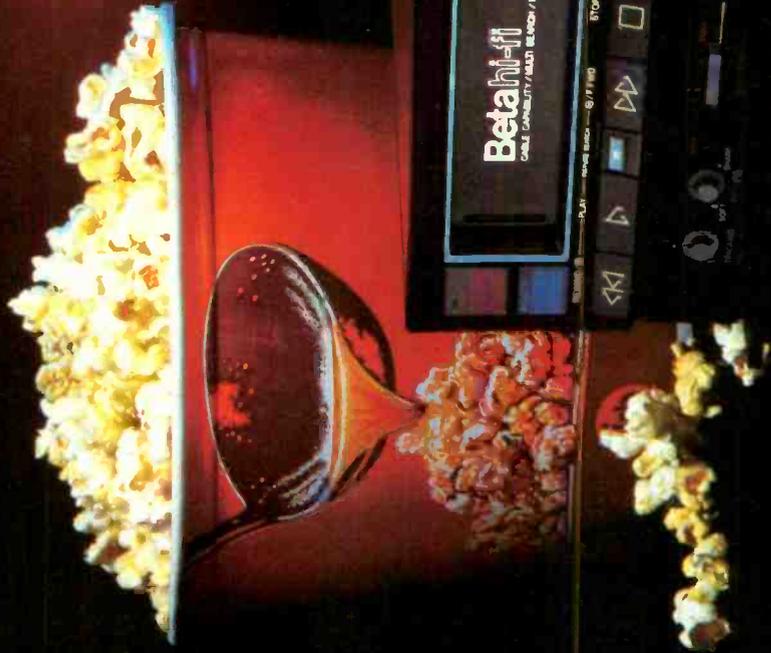
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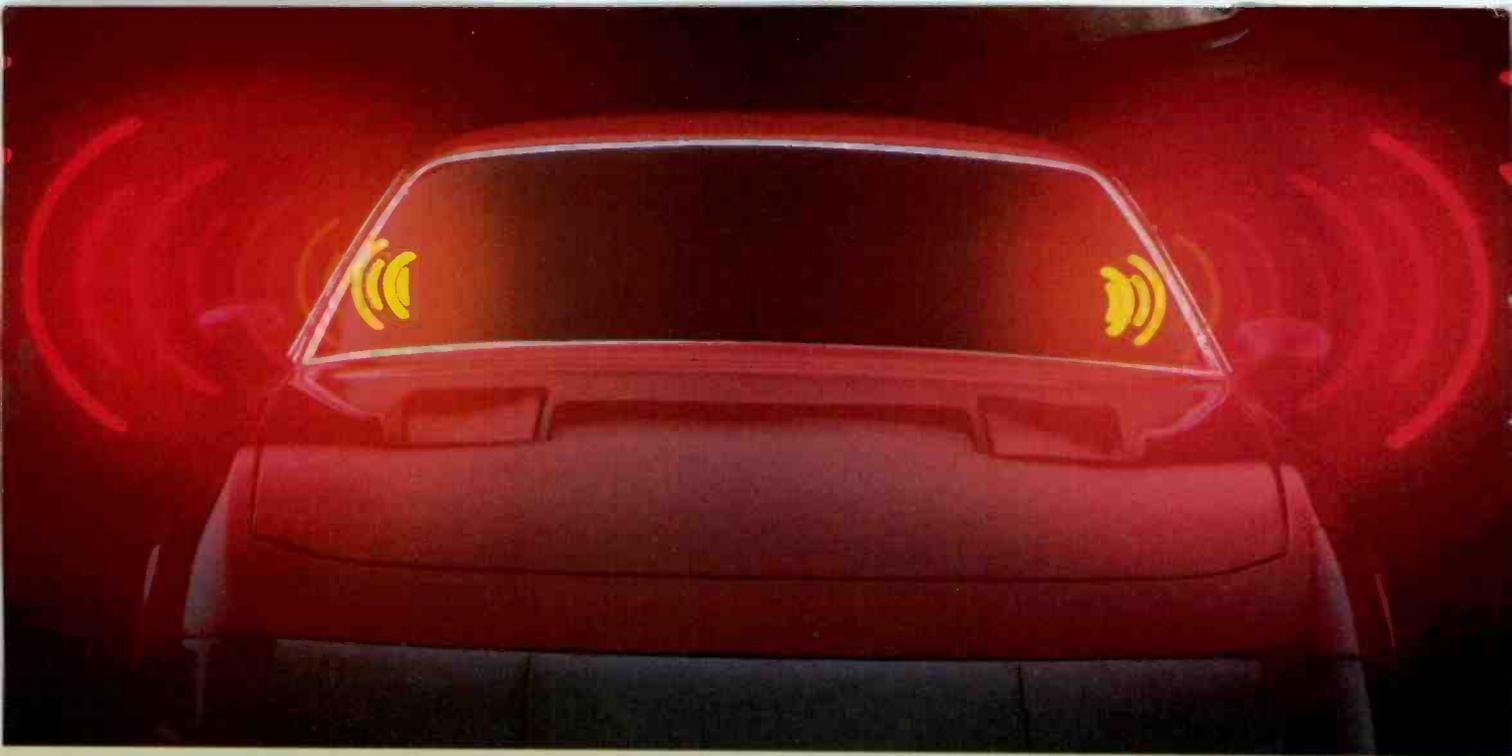
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## SANSUI S-X1130 AUDIO/VIDEO RECEIVER

*Julian Hirsch, Hirsch-Houck Laboratories*

**S**ANSUI'S S-X1130 is possibly the most versatile receiver currently available for the audio/video enthusiast. The moderately large and heavy component contains a stereo/mono FM tuner, a stereo/mono AM tuner, a preamplifier that has a phono input suitable for either a moving-magnet (MM) or a moving-coil (MC) cartridge as well as the usual tuner, tape, and high-level signal inputs, and a husky stereo power amplifier. The power-amp section is rated to deliver at least 130 watts per channel into 8-ohm loads from 20 to 20,000 Hz with no more than 0.005 percent total harmonic distortion. All these audio features alone—especially the ability to decode automatically AM-stereo broadcasts in any of the four approved systems—would make the S-X1130 noteworthy, but there's more.

The S-X1130 can also operate with several video components, including a television set or video monitor, a video-disc player, and one or two VCR's. Front-panel pushbuttons select the program source—which can be audio only (as from a turntable or CD player) or combine audio with video (as

from a VCR)—and interconnect the appropriate components for dubbing audio or video programs.

One of the two VCR's that the S-X1130 can accommodate plugs into front-panel jacks and can be used for playback only. The other connects to jacks on the rear apron of the receiver, and its audio and video outputs can be processed within the S-X1130 before going to an external TV receiver or video monitor and speakers. The primary reason for this arrangement is to make use of the unique audio/video control features of the S-X1130, which are especially useful for dubbing video tapes.

A small knob on the receiver's front panel fades audio and video levels simultaneously, and another allows replacement of the audio portion of a video program with another audio source. A third control adjusts the sharpness of the video image, which is useful for maintaining video quality during dubbing. Small pushbuttons select stereo or mono from video sources and turn on a noise filter to reduce high-frequency hiss in a video soundtrack. Pressing the MULTIDIMENSION button can increase the chan-

nel spread of some stereo programs, and it can provide a pseudo-stereo effect from a mono program by means of frequency contouring and interchannel phase shifting. When these control functions are applied to a video program from a VCR or video-disc player, the modified program can be recorded or supplied to the antenna input of an external TV receiver (on Channels 3 or 4) by using the S-X1130's built-in modulator.

Most of the other features and controls of the Sansui S-X1130 are typical of fine stereo receivers and need not be described in detail. The multicolored information display on the front panel shows the radio band, tuned frequency, and signal strength, the selected program source, the status of such front-panel control buttons as SUBSONIC (filter) and LOUDNESS, the power output from each channel, and whether a stereo transmission (AM or FM) is being received. Most controls are light-touch buttons or plates, and the only full-sized knob is the volume control. The tone controls (bass, midrange, treble) and the balance control are small horizontal sliders.

The Sansui S-X1130 is 17 inches wide, 16 $\frac{3}{8}$  inches deep, and 6 $\frac{3}{8}$  inches high. It is finished in black with gold front-panel markings, and it weighs 36 pounds. Price: \$950. Sansui Electronics Corp., Dept. SR, 1250 Valley Brook Ave., Lyndhurst, NJ 07071.

## Lab Tests

The Sansui S-X1130 has no external heat sinks, and during our one-hour one-third-power preconditioning period its top plate became very hot—uncomfortable to the touch, though not dangerous. During normal operation it never became more than mildly warm.

The receiver's measured 8-ohm dynamic headroom of 3.1 dB is unusually good. Apparently the amplifier's distortion rating of 0.005 percent applies only to the power-amplifier section, which can be operated separately from the preamplifier by removing a pair of jumper links on the rear panel. It is our policy, however, to measure the distortion levels of integrated amplifiers and receivers through a high-level preamplifier input, which is their normal mode of operation. This difference in measurement procedure perhaps explains our higher than rated distortion figures, but in any case the distortion was quite inaudible. The measured rise to 0.045 percent at 1 watt reflects the contribution of noise at lower-power outputs. The distortion characteristics were quite similar with lower-impedance loads.

The receiver has a **SPEAKER IMPEDANCE** selector switch on its rear apron that can be set for either 8- to 16-ohm or 4- to 8-ohm speakers. Though it is apparently intended to prevent overheating or other damage from extended high-power output operation into low load impedances, we could find no difference between the two settings in either clipping-power output, dynamic-power output, or distortion. The 8/16-OHM setting was therefore used for all amplifier measurements.

The S-X1130 was stable with reactive simulated speaker loads. We found that the power-level display was grossly inaccurate over much of its range (at an indicated 100 watts, the actual output was only 12 watts!), but this has no bearing on the actual performance of the receiver. A pushbutton switch increases the display's sensitivity by a factor of ten; the error noted was measured at the "normal" sensitivity setting.

The tone controls had conventional response characteristics, and

## FEATURES

- Digital-synthesis AM/FM stereo receiver
- Automatic decoding of all approved AM-stereo transmission systems; switchable to mono
- Electronic pushbutton tuning with seek and scan functions
- Memories for eight FM and eight AM stations
- Connections and switching for two pairs of speakers, two audio tape decks, two VCR's, and a video-disc player, including dubbing functions
- Video and audio outputs to TV set or video monitor
- Video/audio fading control and audio mixing control
- Noise filter for video-component audio channels
- "Multidimension" pseudo-stereo circuit for video or audio program sources
- Sharpness control for improved picture quality when dubbing video signals
- Stereo/mono button for video sources
- Stereo headphone jack (1/4-inch phone) on front panel
- Mono microphone-input phone jack and level control on front panel
- Input connections for one VCR on front panel
- Pushbutton source selector for phono, FM, AM, auxiliary/CD player, one tape deck
- Monitor/playback button for second tape deck
- Pushbuttons select MM or MC phono inputs, "subsonic" filter, loudness compensation
- Horizontal sliders for tone controls and balance
- Display panel shows radio band, tuned frequency, correct tuning, signal strength, stereo reception, selected program source, other control settings, audio power output for left and right channels (calibrated from 0.01 to 200 watts)
- Pushbutton selects tenfold increase in power-display sensitivity
- Wide/narrow FM i.f.-bandwidth selector button
- Rear apron contains audio and video input and output jacks, preamplifier-output/main-amplifier-input jacks (joined by removable jumpers), VHF antenna input and output jacks ("F" connectors), connectors for an AM loop antenna and a 300-ohm FM antenna, 75-ohm FM "F" type coaxial connector, insulated speaker binding posts, speaker-impedance selector switch, and three a.c. outlets (one switched)

the loudness control boosted both low and high frequencies as the volume was reduced (the response modification came on abruptly at a volume-control setting of about -20 dB and remained unchanged as the volume was reduced further). The **SUBSONIC** filter began to roll off the response at about 100 Hz, and it was down 10 dB at 20 Hz. **RIAA** phono equalization was unusually accurate.

We measured the response of the **MULTIDIMENSION** circuit by driving only one channel and measuring the frequency response at the output of both channels as well as the phase difference between them. The output of the undriven channel had a reasonably uniform response over the audio range; it was at the same average level as the driven channel. The driven channel, however, had a reduced output between 60 and 600 Hz, reaching a minimum of -20 dB at 200 Hz, and a fairly flat but elevated (+6- to +7-dB) output between 2,000 and 20,000 Hz. The phase difference between the two

channels changed with frequency, typically being between 90 and 180 degrees; the channels were in phase only at 140 Hz.

The FM tuner of our test sample of the S-X1130 was slightly misaligned. As a result, minimum distortion occurred when the signal frequency was set about 30 kHz higher than the frequency display indicated. Although the change in distortion from this procedure was not great, it had an appreciable effect on the usable-sensitivity measurement and on the measured tuner distortion with a 65-dBf input. With a digital synthesis tuner like this, an ordinary user cannot detune to achieve minimum distortion, nor could this be done by ear even if it were possible, since the distortion is audibly insignificant in any case. Therefore, we made all our tuner measurements as though the misalignment did not exist.

As sometimes happens, the maximum stereo quieting, a very low -80.7 dB, was not attained until the input signal was increased to 85

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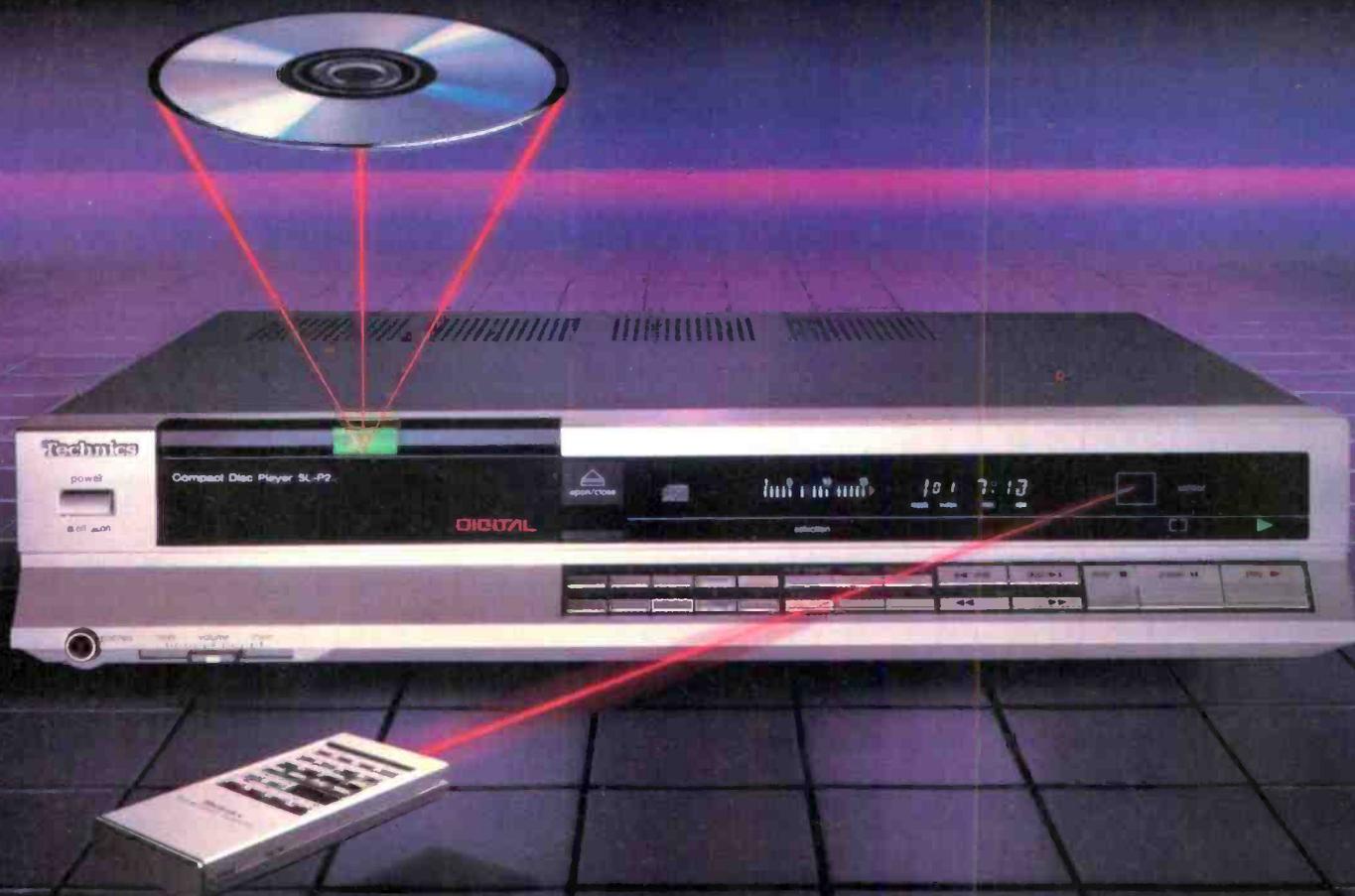
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dBf (10,000  $\mu$ V). The capture ratio and AM rejection were excellent, as was the 75-dB image rejection. The alternate- and adjacent-channel selectivity measurements were both very good, using either the wide or narrow i.f. bandwidth. In view of the modestly reduced distortion using the wide bandwidth, without any significant reduction in selectivity, we would recommend using the wide setting at all times (in the absence of a specific interference problem). The 19-kHz pilot-carrier leakage into the audio was very low, and power-line hum was exceptionally low.

The AM tuner section's frequency response was somewhat broader than in most tuners we have tested. No measurements could be made on the stereo performance of the AM tuner, although we did listen to a number of stereo broadcasts.

## Comments

It is unfortunate that the FM tuner of the Sansui S-X1130 receiver we tested was misaligned, since almost all our criticism of its performance derives from that flaw. Luckily, it was misaligned by only 30 kHz. A larger error would have prevented the TUNED indicator from coming on and would have kept the receiver constantly muted unless it were switched to mono, which is the only way to disable the muting circuit. On the other hand, a larger misalignment might well have prevented the receiver from leaving the factory in the first place, and we would never have encountered the problem!

Still, we are happy to report our very positive impressions of this unusual and versatile product. Despite the misalignment of our sample, its FM tuner is one of the better ones we have seen recently, with good to excellent measured performance in practically every category. The noise level, in particular, was lower than we generally measure from either a receiver or a separate tuner. Even the AM tuner is a cut above the norm in sound quality (though still far from "hi-fi").

For the first time, we had the opportunity to listen at length to stereo AM transmissions from a number of stations. Our impression of the sound was that, while it was

## HIRSCH-HOUCK LAB MEASUREMENTS

**FM Tuner Section** (wide i.f. bandwidth unless specified)

**Usable sensitivity** (mono): 16.5 dBf (3.7  $\mu$ V)

**50-dB quieting sensitivity:** mono, 13 dBf (2.5  $\mu$ V); stereo, 37 dBf (39  $\mu$ V)

**Signal-to-noise ratio at 65 dBf:** mono, 82.5 dB; stereo, 76 dB (80.7 dB at 85 dBf)

**THD + noise at 65 dBf:** mono, 0.27% (narrow bandwidth, 0.41%); stereo, 0.17%

**Capture ratio at 65 dBf:** 1.2 dB

**AM rejection at 65 dBf:** 75 dB

**Image rejection:** 75 dB

**Alternate-channel selectivity:** wide i.f. bandwidth, 64 dB; narrow bandwidth, 80 dB

**Adjacent-channel selectivity:** wide i.f. bandwidth, 4 dB; narrow bandwidth, 8 dB

**Stereo threshold:** 30 dBf (17.4  $\mu$ V)

**19-kHz leakage:** -75 dB

**Hum:** -82 dB

**Stereo channel separation:** at 100 Hz, 42.5 dB (wide i.f.), 38 dB (narrow i.f.); at 1,000 Hz, 46 dB (wide), 38.5 dB (narrow); at 10,000 Hz, 36.5 dB (wide), 33.5 dB (narrow)

**AM frequency response:** -6 dB at 23 and 3,500 Hz; 30 to 9,000 Hz +0, -1 dB; -4 dB at 15,000 Hz

**FM frequency response:** 30 to 15,000 Hz (+0, -3.5 dB at 15,000 Hz)

**Audio Amplifier**

**1,000-Hz output power at clipping:** 171 watts into 8 ohms; 150 watts into 4 ohms; 76 watts into 2 ohms

**Clipping headroom** (relative to rated output): 1.2 dB (8 ohms)

**Dynamic power output:** 264 watts into 8 ohms; 200 watts into 4 ohms; 100 watts into 2 ohms

**Dynamic headroom:** 3.1 dB (8 ohms)

**Harmonic distortion** (THD + noise) at 1,000 Hz into 8 ohms: 1 watt, 0.045%; 10 to 50 watts, 0.015%; 130 watts, 0.025%

**Maximum distortion** from 20 to 20,000 Hz into 8 ohms: 0.13% at 20,000 Hz (130 watts)

**Slew factor:** greater than 25

**Sensitivity** for a 1-watt output (into 8 ohms): MM phono, 0.56 mV; aux, 14 mV; microphone, 0.054 mV (at maximum gain)

**Phono-input overload** (MM): 78 to 80 mV

**Microphone overload:** about 10 mV

**A-weighted noise** (referred to a 1-watt output): MM phono, -71.5 dB; aux, -77 dB

**Phono-input impedance:** 50,000 ohms and 110 picofarads (MM); 100 ohms (MC)

**RIAA phono equalization error:**  $\pm 0.4$  dB from 20 to 20,000 Hz

**Tone-control range:** +9.5, -10 dB at 100 Hz; +8, -8.5 dB at 1,000 Hz; +8.5, -9.5 dB at 10 kHz

unquestionably stereo, it was still AM, with all the traditional limitations of that medium. Most of the time, setting the AM mode button to mono produced a quieter and more listenable sound. At our location, AM reception is usually noisy and unsatisfactory, so we could expect no more from this or any receiver. If you can get reasonably quiet AM reception in mono, there is a good chance that the S-X1130 will give perfectly satisfactory stereo AM as well. Certainly its automatic decoding of the different AM stereo modulation systems is a major advantage—actually a necessity in many reception areas.

The S-X1130 performed the other r.f. and audio functions flawlessly. Indeed, for all its versatility and apparent front- and rear-panel complexity, it is a very easy receiver to use. Its sound, as might be expected, was superb from all sorts of sources, including FM, CD, and phono (with

both MM and MC cartridges). The loudness compensation, like most we have used, made the sound bass heavy at typical listening levels. Although we made little use of the S-X1130's video functions, we could appreciate the flexibility offered by its fading and mixing capabilities. The value of the MULTIDIMENSION feature is something you will have to judge for yourself. We rarely find such pseudo-stereo circuits worthwhile, even if (as in this case) they do pretty much what they are claimed to do.

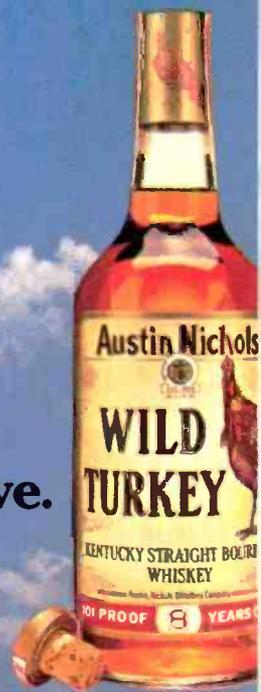
The Sansui S-X1130 is a lot of receiver. It does so many things so well that its purchase may be justified even if you don't require its video facilities right now. Video and audio will be sharing the home-entertainment market from now on, and this well-powered, well-performing receiver is unlikely to become obsolete for a long time.

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## HARMAN KARDON VCD1000 VHS HI-FI VCR

*Julian Hirsch, Hirsch-Houck Laboratories*

**H**ARMAN KARDON refers to the VCD1000 as a "high-fidelity audio/video cassette deck," which is certainly an apt description of the first video-cassette recorder to bear the Harman Kardon name. To help meet the standards established by that name, the VCD1000 employs the VHS Hi-Fi system for its high-fidelity audio tracks. It is also one of the few VCR's available at this time that can decode stereo TV sound as well as an independent mono secondary audio program.

The VCD1000 has most of the usual operating conveniences of a deluxe VHS-format VCR, including one-touch timer recording, programmed timer recording, and an infrared wireless remote control that duplicates virtually every front-panel control function. The machine records and plays tapes at all three VHS speeds: SP, which can

record up to 2 $\frac{2}{3}$  hours on a T-160 cassette, and LP and EP, which respectively double and triple the available time.

In the VHS Hi-Fi system, the stereo audio program is recorded just ahead of the video through separate hi-fi audio heads on the rotating head drum (the VCD1000's helical-scan system uses two video heads and two hi-fi audio heads). The audio channels are recorded as FM subcarriers in the video frequency range and penetrate relatively deep into the tape's magnetic coating. The video program is subsequently recorded close to the surface and erases only a portion of the audio. To keep the two programs separate, the audio and video heads are mounted on the rotating drum with an azimuth-alignment difference of about 30 degrees, which effectively eliminates crosstalk between them.

The basic tape-transport controls

are large pushbuttons on the front panel below the front-loading cassette door. Controls for selecting the tape speed and the recording source or the playback mode (stereo, mono, one track only, etc.), for programming the recorder or setting its clock, and for adjusting the headphone listening level are behind a hinged door at the lower right of the panel. A removable cover on top of the cabinet hides the controls for the sixteen channel presets.

The VCD1000 is housed in a black cabinet with a pale gold, satin-finish front panel that matches the appearance of other Harman Kardon audio components. The recorder is 17 $\frac{1}{2}$  inches wide, 15 $\frac{3}{8}$  inches deep, and 4 $\frac{3}{8}$  inches high, and it weighs 22 pounds. Price: \$850. Harman Kardon, Dept. SR, 240 Crossways Park West, Woodbury, NY 11797.

### *Lab Tests*

We measured only the audio performance of the Harman-Kardon VCD1000, concentrating on its hi-fi mode (although some measurements were also made of the normal longitudinal mono audio track, which is recorded together with the

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hi-fi stereo tracks for playback compatibility with standard VHS machines). We operated the VCD1000 with a 25-inch color monitor to judge its video functions, and in its audio-only mode we used it in a regular component audio system.

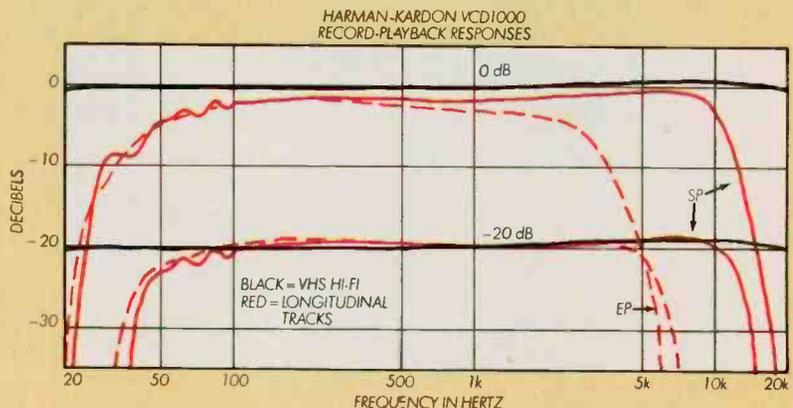
The hi-fi record-playback frequency response of the VCD1000 was excellent even when judged by the high standards applied to hi-fi VCR's. The response was the same at the indicated 0- and -20-dB recording levels and varied less than  $\pm 1$  dB from 20 to 20,000 Hz. The small departure from flatness consisted of a broad rise between 1,000 and 20,000 Hz, with a maximum of less than 1 dB from 8,000 to 10,000 Hz. Even the longitudinal frequency response, measured at the fastest speed (SP), was remarkably good (see graph).

The recording signal level is shown on two horizontal rows of LED's, which change from green to red at 0 dB and higher. The maximum indication is +8 dB. In order to raise the VCD1000's playback distortion to the 3-percent level we use as a reference for analog tape decks, we had to apply an input of more than +12 dB, well off the scale. The frequency-modulation recording system used in VHS Hi-Fi VCR's has low distortion until its linear limits are exceeded, and then it clips suddenly (like an overdriven amplifier). Even at +10 dB, the VCD1000's distortion was only about 0.5 percent. We decided to use the +8-dB indication as our criterion for the deck's maximum recording level, since an ordinary user would have no way of knowing how much additional signal was being applied once the +8-dB level had been reached.

Referred to +8 dB, the A-weighted signal-to-noise ratio (S/N) of the VCD1000 in its hi-fi mode was 84 dB, which is considerably better than that of any analog cassette deck and for all practical purposes comparable to the S/N of a digital disc system (almost no program material one is likely to record on a hi-fi VCR will have a dynamic range approaching 84 dB). The flutter was barely measurable, around 0.005 percent. The normal audio track, recorded at an effective tape speed of only 1 1/16 ips or less, had a

## FEATURES

- Receives and decodes stereo TV sound transmissions and secondary audio programs
- Records and plays back at all three VHS speeds (SP, LP, EP)
- Unattended timer-controlled recording of up to four events over fourteen days
- Sound recording from TV broadcast, camera, TV/FM simulcast, or any external high-level audio source
- Electronic four-digit index counter/clock
- Twin-slider audio recording-level controls
- Separate peak-reading LED audio level indicators for each channel marked from -20 to +8 dB (red above 0 dB)
- Defeatable automatic level control (ALC) for audio recording
- Instant (one-touch) timer
- recording bypasses normal programming procedure for recordings up to 2 hours long (in 30-minute increments)
- Digital-synthesis TV tuner has programmable presets for sixteen VHF, UHF, or cable channels (A-W)
- Wireless infrared remote control for all normal recording and playback functions, preset channel selection, and video slow motion, high-speed search, and still frame (pause)
- Front-panel mini phone jack for stereo headphones with separate volume control
- Normal longitudinal audio track can be switched to record either a mono (L + R) signal or a secondary audio program
- Switchable audio output allows selection of stereo, mono, or the left or right channel alone



## HIRSCH-HOUCK LAB MEASUREMENTS

**Record-playback frequency response in hi-fi mode** (referred to 1,000-Hz level): 20 to 20,000 Hz  $\pm 0.9$  dB

**Record-playback frequency response in normal mode at -20 dB** (referred to 1,000-Hz level): SP speed, 50 to 12,000 Hz +1, -3 dB; EP speed, 50 to 5,400 Hz +1, -3 dB

**Harmonic distortion (THD + noise)** at 1,000 Hz in hi-fi mode: 0.27% at 0 dB; 0.52% at +10 dB

**Signal-to-noise ratio in hi-fi mode** (A-weighted, referred to +8-dB signal level): 84 dB

**Record-playback flutter:** hi-fi

mode, 0.004% JIS-weighted,  $\pm 0.006\%$  DIN-weighted; normal mode, 0.07% JIS-weighted,  $\pm 0.1\%$  DIN-weighted

**Input sensitivity** for 0-dB recorded level: 42 mV with manual level control; 210 mV with fixed level

**Input overload level:** 3.7 volts

**Playback level** at 1,000 Hz from 0-dB signal: 0.25 volt

**Headphone playback level** at clipping (600-ohm load): 0.67 volt

**Rewind time** for T-90 cassette: 207 seconds

**Stereo channel separation** in hi-fi mode: 67 dB at 1,000 Hz, 45 dB at 10,000 Hz

distortion of about 2.5 percent at any level above 0 dB and reached 3 percent at +10 dB. Its flutter was  $\pm 0.1$  percent weighted peak and 0.07 percent weighted rms.

### Comments

Our only criticisms of the Harman-Kardon VCD1000 concern relatively minor aspects of its tape

transport. For one thing, the large pushbuttons must be pressed with considerable force if they are to operate reliably. Also, on our test unit the memory-rewind function, which is supposed to stop rewinding the tape when the index counter returns to 0000, was inoperative. And, even though we expect a certain amount of mechanical noise from any VCR, the sounds emanating from the VCD1000 when its play and stop buttons were pressed seemed inconsistent with the recorder's classy appearance and superb audio quality.

VHS Hi-Fi VCR's tend to have very similar audio-performance characteristics because of standardization of the encoding system and the decoding circuits. Compared with others we have tested, the VCD1000 has a slightly flatter frequency response, roughly the same flutter (completely negligible), and a slightly lower S/N measurement. But its audio performance can perhaps be summarized best by pointing out that a tape dubbed on it from a CD could not be distinguished from the original in an A/B playback comparison. Almost as impressive was the sound from the normal longitudinal audio track, which was very near to high-fidelity quality at the SP speed. Of course, at the slowest tape speed—only  $\frac{7}{16}$  inches per second!—the highs were dulled, but even at this snail's pace the frequency response extended at least 5,000 Hz, which is better than AM radios.

A hi-fi VCR like the VCD1000, though entirely analog in its operation, offers audio performance very close to that of digital media. It is a logical bridge between the best conventional analog audio cassette (or open-reel) tape deck and the digital Compact Disc. The electrical performance and sound quality of the Harman Kardon VCD1000 represent the current state of the art for VHS Hi-Fi VCR's, and we really cannot fault it in either of these respects. Although our judgment of its video quality was totally subjective, this too appeared to be at least as good as that of any other VCR we have tested. The VCD1000 deserves investigation by any quality-conscious audiophile or videophile.

Circle 144 on reader service card



## NITTY GRITTY 2.5FI RECORD CLEANER

*Julian Hirsch, Hirsch-Houck Laboratories*

**S**OME people still seem to think that digital Compact Discs are impervious to damage (they aren't), but there is no argument about the sensitivity of analog records—LP's and 45's—to the effects of dirt and dust. And more and more devices and preparations are becoming available to maintain pristine record surfaces or to restore them to neglected discs.

Most record-cleaning systems are based on a manual application of some sort of cleaning solution, which is brushed, wiped, or sprayed onto a disc. This is usually followed by wiping or buffing with a soft brush or pad. We have used many of the popular record-care systems, and they seem to remove visible surface particles without (as far as we can tell) harming the records in any way.

A record-cleaning machine could be expected to achieve more consistent results than a simple hand applicator, but the professional-quality devices of this type that have been available for a number of

years cost more than \$1,000 apiece. We therefore welcomed the opportunity to test a record-cleaning machine from the Nitty Gritty company, the Model 2.5FI, that lists for only \$399, a price most serious record collectors can afford.

To use the 2.5FI, a record is placed on the spindle at the top of the machine with the side to be cleaned face down on top of the two radial Vac-Sweep brushes. These soft, felt-like brushes extend from the label area to the outside of a 12-inch LP (adaptors are available to enable the 2.5FI to clean 7-inch 45's and even Compact Discs). Pressing the FLUID INJECTOR button on top of the machine for a second or so pumps enough special cleaning fluid up from the built-in 4-ounce reservoir to saturate one of the brushes. The cleaning fluid, called Purifier 2, is said to contain a de-greaser, a static neutralizer, a mild detergent, and a surfactant.

The rest of the cleaning operation is fully motorized. The edge of the record engages a rubber puck. When

the three-position rocker switch on the machine is held in one of its two ON positions, a motor rotates the puck, which causes the record to move across the fluid-saturated brushes, scrubbing the grooves. Normally one revolution of the disc is sufficient, unless it is unusually dirty. Then the switch is moved to its other ON setting, turning on a powerful vacuum motor that sucks the fluid off the record through the narrow gap between the two brushes while the record continues to rotate slowly. Although most of the fluid is removed during the first revolution, letting the record turn three times allows the vacuum to dry off the brushes as well.

Removing the clean, dry disc from the machine leaves behind the dry debris that was removed from the surface and grooves. This material is removed from the Vac-Sweep brushes, to be pulled into the machine by its vacuum system, with a small supplied hand brush. The record can then be turned over and returned to the machine to clean its other side.

The Nitty Gritty 2.5FI has a case of solid oak with a plastic top. It is about 15 inches wide, 9 inches deep, and 9 inches high, and it weighs 13¼ pounds. A smoky plastic cover is optional. Replacement Vac-Sweep brushes and rubber rim-drive pucks are available, as is a small 30× microscope for examining the record grooves; it's not necessary for normal use but is helpful for judging the effectiveness of the system. Nitty Gritty Record Care Products, Dept. SR, 4650 Arrow Hwy. #F4, Montclair, CA 91763.

## Lab Tests

We were unable to make any quantitative measurements of the performance of the Nitty Gritty 2.5FI. Measurements of various forms of tracing distortion from test records showed no changes before and after cleaning. Measurements of playback surface noise using quiet-groove rumble-test records also revealed no detectable changes as a result of cleaning. Then again, these results do indicate that the 2.5FI doesn't *degrade* the quality of already-clean surfaces.

At this point we decided on draconian measures. Nitty Gritty had

supplied us with several blank (unmodulated-groove) records molded of clear vinyl. Examination of the grooves with the Nitty Gritty portable 30× microscope confirmed their pristine state. Then we poured the contents of a vacuum-cleaner bag over both sides of one of the records, shook off the larger pieces, and wiped the disc with a tissue to remove any loose particles. A subsequent microscopic examination revealed a scene resembling the surface of Mars as photographed by our Viking spacecraft.

We then gave the disc a single standard-duration cleaning with the 2.5FI. Under the microscope hardly a single particle could be seen. Only a few scratches, from sand grains in what was certainly an abrasive mixture, distinguished the cleaned surface from its original state. As far as we were concerned, this was a convincing demonstration of the ability of the Nitty Gritty system to remove foreign matter from within the grooves of a record (instead of from its surface only). As an additional check, we attempted to clean the reverse side of the disc with a popular hand-held brush and its proprietary solution. Although this cleaning system removed most of the surface particles and a surprising amount of the larger material in the grooves, the microscope confirmed that its total effectiveness was far below that of the 2.5FI (its cost is also far less, of course).

## Comments

Our limited but rather severe tests proved to our satisfaction that the Nitty Gritty 2.5FI is a very effective record-cleaning system. It performed much better than one of the most highly regarded manual systems in a direct comparison. Obviously, we cannot judge its merits relative to those of the dozens of other cleaning systems to which we did *not* compare the 2.5FI, though we would hardly expect any manually operated cleaner to match this one, which uses three powerful (and very audible) motors.

Of course, there's no avoiding the question of whether the sort of thorough cleaning done by the 2.5FI actually *improves* the sound of a record, as many people claim. Besides the obvious reduction in the number of ticks and pops caused by dirt in the grooves, we did not find any particular audible benefits. But time did not allow for careful listening to many hundreds of records both before and after cleaning, and those we did hear were in pretty good shape even before cleaning. Therefore, while we could not say that the cleaning improved the sound quality, we will readily admit that thorough removal of dust and grime from inside the grooves of a record can hardly hurt its listenability. And the Nitty Gritty machine certainly does that job superbly.

Circle 145 on reader service card



"A color corrector! Say, that's what I need for my video player! Linda Lovelace and Marilyn Chambers have been looking a little peaked lately. . . ."

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## BARCUS-BERRY BBE 2002R SIGNAL PROCESSOR

*Julian Hirsch, Hirsch-Houck Laboratories*

**T**HE BBE 2002R from Barcus-Berry Electronics is a unique audio signal processor intended for use in home music systems (similar BBE models are available for professional applications). The manufacturer states that it will "improve the sonic clarity" of virtually any reproduced sound. Like most other signal-processing accessories, the BBE 2002R is normally connected into the tape-monitor loop of an amplifier.

According to Barcus-Berry, the BBE 2002R is designed to compensate for the reactance of a dynamic speaker system, which at most audio frequencies results in a phase difference between the amplifier's voltage output and the current through the speaker load. The manufacturer asserts that this phase shift, which can vary widely over the audio frequency range, degrades the transient response of a dynamic speaker and that the BBE 2002R avoids this effect by applying an inverse phase and amplitude correction to the signal before it reaches the speaker.

The BBE processor operates in three separate frequency ranges. Low frequencies receive a slight bass boost at 50 Hz, with some phase shift. Only a phase correction is applied in the midrange, and the high-frequency gain is controlled dynamically in accordance with the middle- and high-frequency pro-

gram content. The action of the BBE 2002R is said to be based on an internal model of a speaker's impedance characteristics that was developed by BBE engineers from measurements on a number of popular speaker systems. None of the correction characteristics are derived from the speakers in the user's reproducing system.

The principal audible effect of the BBE signal processing is said to be an enhancement of "brightness" and clarity without any accompanying stridency or unnatural sound quality. It is also said to improve voice intelligibility by eliminating "frequency-band masking when important sibilant and consonant elements are represented in the program signal."

The BBE 2002R is housed in a black metal cabinet that measures 16½ inches wide, 7 inches deep and 2¾ inches high and weighs only 5½ pounds. The front panel contains a single knob and four pushbuttons that switch the power, bypass the processor circuitry, introduce a 3-dB low-frequency boost, and control the tape-monitor-loop jacks that are provided in the rear of the 2002R to replace those in the amplifier to which it is connected. Small colored lights below the pushbuttons show when they are active, and two groups of lights (amber, green, and red) show whether the signal level is in the normal operating

range that is required by the 2002R's circuits.

The single control knob adjusts the sensitivity of the processor to match available signal levels. When it is set correctly, the green (center) light should be glowing much of the time, with occasional excursions into the red, and the amber light should glow only during very low-level passages. The BBE 2002R controls both stereo channels independently. It is designed to operate with a nominal maximum signal input of 0.7 volt (up to 7 volts can be applied before clipping occurs). Since it is a unity-gain device, the output is at the same amplitude as the input. Price: \$499. Barcus-Berry Electronics, Inc., Dept. SR, 5381 Production Dr., Huntington Beach, CA 92649.

### *Lab Tests*

The signal-controlled dynamic operation of the BBE 2002R made it impractical to measure its operation by our usual practice of injecting a test signal and measuring the output characteristics. The chosen test signal could affect the response of the circuit to another frequency, and we would need access to the 2002R's internal control and signal paths for a meaningful definition of the circuit operation. The same problem also exists with other signal-controlled devices such as Dolby noise-reduction circuits and various dynamic-range expanders.

Since we do not, in general, make any internal modifications to products we are testing, and since in any case we had no technical information on the circuitry of the BBE 2002R, we were able to measure only the basic parameters of gain, clipping levels, distortion, and

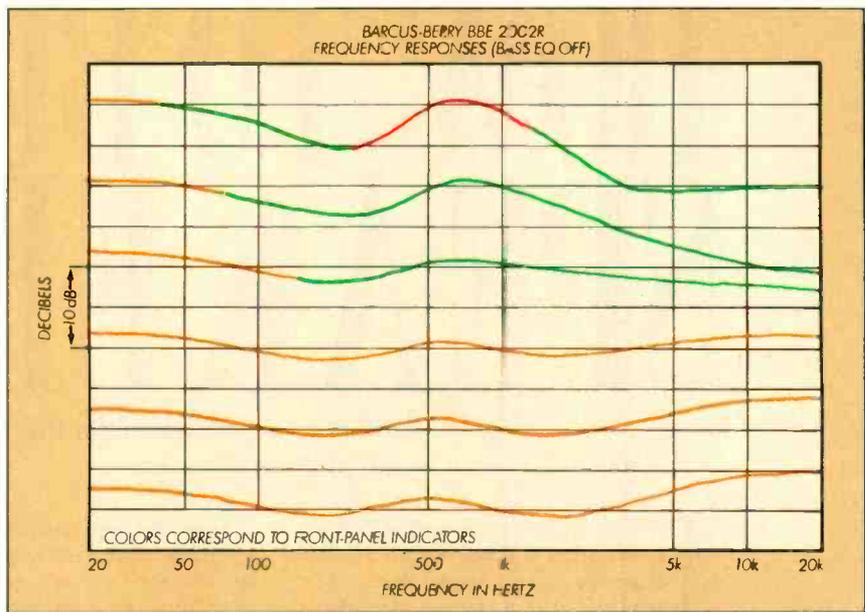
noise. We also did frequency-response measurements at several signal levels to discover, if possible, how the frequency response was affected by level.

The gain was exactly 1.0 (as rated) when the green (normal) signal level lights were on, and it varied over a range of approximately +4, -2 dB between the adjustment extremes of the front-panel control. The clipping output at 1,000 Hz was 7 volts (also as rated), and the input overload limit was 8 volts (when the overall gain had been reduced slightly by adjustment of the front-panel level control).

The output noise, referred to the rated 700-millivolt signal level, was -85 dB unweighted and -91 dB with A-weighting. The harmonic distortion was affected considerably by which of the level lights were on (this appeared not to be a function of either the absolute level or the control setting exclusively, but rather of both). At an output of 700 millivolts, with the green light on, the 1,000-Hz distortion was 0.65 percent, mostly second-harmonic. This was a "worst-case" measurement, since turning the level adjustment in either direction reduced the reading considerably. When the processor circuitry was bypassed, the distortion was only 0.0012 percent.

The frequency response at intermediate signal levels (enough to activate the green lights over much of the audio range) showed a smooth variation of a little more than 10 dB overall from 20 to 20,000 Hz. As the level was decreased and the amber light remained on over the entire band, the response flattened out somewhat to a 6-dB overall variation (see graph). The BASS EQ button boosted the entire bass response, from 200 Hz down, by about 3 dB, and its effect was measurable up to more than 400 Hz.

The most revealing measurement was of the square-wave response of the BBE processor. The results were very similar over a wide range of frequencies, from 100 to 10,000 Hz: the shape of the square wave was changed radically. Each transition of level initiated a sharp spike, presumably the attack-transient emphasis described in the Barcus-Berry literature. Aside from this effect, the square wave was rounded off,



indicating a drastic phase-response change if nothing else. In any case, the output square wave bore little resemblance to the input signal we used in this test.

### Comments

If a speaker's impedance could produce the same sort of waveform change as the BBE 2002R in the current passing through the speaker from a true square-wave voltage input, then the manufacturer's claims for this product might be justified on theoretical grounds. Not having made such measurements, I cannot confirm or deny their theoretical validity. But I know of no independent study showing that the acoustic output of a dynamic speaker driven from a voltage source like a high-fidelity amplifier is dependent on the current waveform (assuming that the amp's current-output limits are not exceeded).

Only listening tests can demonstrate what all this signal modification can, and cannot, do. Quite simply, the operation of the BBE 2002R had exactly the effects on sound quality that the manufacturer claimed for it. The sound with the processor on was definitely brighter (and, as a result, often more detailed), but it was never strident or unpleasant, and we heard no degradation from its use. In fact, once we turned it on, we tended to keep it on, since it had no undesirable audi-

ble effects and after a short period of listening with it on, turning it off actually made the unprocessed sound seem a bit dull!

We felt, however, that the effect of the 2002R was not very different from that of a good treble tone control—one that affects only the highest audio frequencies—and some comparisons we made between the processor and such a control tended to confirm that suspicion. While the tone control's effect was definitely not identical to that of the BBE system, it might not be easy for many people to justify a \$500 expenditure in order to enjoy the possibly superior results from using the 2002R.

Be that as it may, the BBE 2002R seemed to meet or surpass all its key measurable performance specifications we were able to test, and it had essentially the subjective sound qualities that the manufacturer ascribes to it. Everything we heard from it sounded good, and it had no discernible flaws. Not too many products we test can justify the same conclusions.

Whether the BBE 2002R's relatively subtle form of sound enhancement is worth its cost for you, we cannot say. You will have to listen to it and decide for yourself whether its advantages over a simple treble tone control are great enough to justify its purchase.

**Circle 146 on reader service card**

# HOW TO BUY SPEAKERS

*Practical advice for making difficult buying decisions*

by Larry Klein

**I**F you've been shopping for a new pair of speakers, or reading the hi-fi magazines and product directories in preparation for doing so, you should by now be fairly confused. Welcome to the club! Since even professional speaker designers can't agree about what makes speakers sound good, it's not surprising that speaker shoppers faced with hundreds of brands and models to choose from find it difficult to make buying decisions.

The advice offered here has been culled from more than twenty years of answering readers' questions about audio. You won't find it a definitive guide to choosing a speaker, but it should help you avoid some of the worst pitfalls that beset the shopping process.

## *Ear Training*

Just because you came into the world factory-equipped with two working ears, don't assume that you're automatically a good judge of sound quality. Your ears need some sonic training before you can appreciate the nuances of audio reproduction—the same way you need some musical training to appreciate all the subtleties of a musical performance. When a listener is insensitive to sonic nuances, he perceives the sound a speaker makes as a more or less homogenized auditory event. An untrained listener may not even notice such typical speaker problems as overemphasis of the upper bass frequencies, a peaky midrange, or loss of the very high frequencies. Worse, he may prefer the sound of speakers with such problems.

How can you get the necessary ear training? The best way I know is to be initiated by an experienced audiophile. Get acquainted with some audiophiles through a local hi-fi club, or find a reliable, cooperative audio dealer, and schedule some ear-training sessions. Listen to friends' hi-fi systems too. Only after you are aware of the general differences between good and not-so-good sound can you start comparing particular speakers. But don't give up if you can't decide exactly which speakers sound better than all the others. Remember, even experts sometimes find it impossible to make definitive judgments. Here are some clues about what to listen for, starting at the low frequencies.

**Bass.** Many people confuse a 70-Hz bump in a speaker's frequency response with true low-bass performance. Real bass, which can extend down to 20 Hz, has a "thud," an impact you *feel* as well as hear.

It's a lot easier to find well-defined low bass performance in recordings today than it used to be, because Compact Discs do not have the bass limitations of conventional records. Listen to some recent CD's and audiophile LP's and use them to compare speakers. (For some suggestions, see David Ranada's "Music to Judge Speakers By," page 54.) While some speaker systems audibly "break up" when called on to reproduce low bass at a high volume, others will deliver only the higher bass harmonics, omitting the fundamental frequencies that give low bass its physical impact, its "thud." I prefer a speaker that omits





ROY PENNILETON

fundamental frequencies to one that breaks up, because the first kind of behavior often indicates that a little bass boost from an equalizer or tone control will work wonders.

In any event, remember that the bass reproduction is very much affected by the size, shape, and furnishings of the listening room and by the placement of the speakers within it.

**Midrange.** If a speaker disproportionately emphasizes the middle frequencies (roughly defined as between 400 and 3,000 Hz), singers will take on a forward, projected quality—which some people like. Unfortunately, that quality is usually accompanied by a nasal coloration on female voices, brass instruments, and woodwinds. The sound also takes on a kind of hollowness, something like what you would hear if you talked into your cupped hands. Accurate reproduction of the midrange has a lot to do with how efficient a speaker seems to be, and how loudly you can play it.

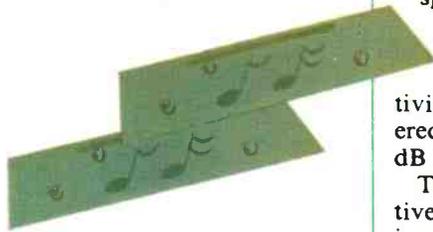
**Treble.** As with low bass, reproduction of high frequencies is best judged using a good CD or audiophile LP. When the highs are present in full measure, they provide sparkle, shimmer, definition, and “air” to the music, particularly in passages scored for such instruments as tambourines, cymbals, castanets, and wire brushes.

### Coloration

If you want high-fidelity reproduction, go for neutral-sounding speakers. While speaker designers differ tremendously on how to achieve their goals, most of them would agree that the principal goal for a speaker system is to create an accurate acoustic analog of the electrical audio signal supplied to it by the amplifier. A speaker system should have *no* tonal character or sound quality of its own. Otherwise, it will overlay its built-in tonal qualities on whatever program material it is reproducing. Sometimes the coloration of a speaker may seem to enhance the sound of a record, but it degrades fidelity, and in the long run *any* coloration in a speaker will become fatiguing or irritating.

Coloration is not mysterious. It almost never comes about because of crossover phase problems, distortions in the performance of individual drivers, or other factors that are difficult to track down. Gross audible differences between different

**D**on't give up if you can't decide exactly which speakers sound better than all the others. Remember, even the experts sometimes find it impossible to make definitive judgments.



speaker models are almost entirely ascribable to differences in their octave-to-octave frequency response. Such effects as shrillness, honkiness, and boominess—or, on the positive side, openness, clarity, inner detail, etc.—result almost completely from a system's *measurable* frequency balance.

### Size and Specs

Small speaker systems can sound almost as good as large ones, and sometimes even better. A talented designer, working within the limitations imposed on him by box size and the cost of drivers and crossovers, can produce small, inexpensive systems with the same overall sound quality as his larger systems. The small ones just won't be able to play as loudly or reach as far into the low bass. The size of a speaker, then, is not a primary factor in its performance.

On the other hand, speaker power ratings can be important—though frequently misunderstood. Loudspeakers come with two different power ratings, usually labeled *minimum required power* and *maximum power capability*. Since neither specification has an officially sanctioned definition, however, comparing these ratings can be difficult or meaningless.

Let's look at the minimum power rating first. In general, if a manufacturer says that his speaker requires a minimum amplifier power of, say,

15 watts, you can take him at his word. In effect, the minimum power rating is an oblique but more easily comprehended way of stating a speaker's *sensitivity*.

Sensitivity ratings, which *are* fairly standardized, tell you how much sound a speaker will put out with a given input signal. The rating usually appears in the spec sheets as something like “88 dB SPL/W/m,” which translates into a statement that the speaker will produce a sound-pressure level (SPL) of 88 decibels when it is fed 1 watt of audio signal and the sound is measured 1 meter in front of it. These days speaker sensitivities range from a low of perhaps 80 dB to a high of 104 dB (for a few large, horn-loaded models). A sensitivity of about 94 dB SPL is considered high, 87 dB medium, and 81 dB low.

To put these figures into perspective, keep in mind that every 3-dB increase in a speaker's sensitivity is the equivalent of *doubling* the available power from the amplifier driving it. Although amplifier power is relatively cheap nowadays, when you want a lot of it, the cost goes up fast! All other specs being equal, choosing a speaker with greater sensitivity will let you save some money on your amplifier. Unfortunately, the other specs are seldom equal. Unless the speaker is in a large box, its extra sensitivity may have been bought at the expense of low-bass performance (below 60 Hz). So when you are auditioning speakers with high rated sensitivity, make sure that their low-bass output meets your requirements.

The maximum power rating is the other side of the speaker-power coin. One might imagine that the speaker's maximum power capability is simply the amount of input it can sustain without damage. But manufacturers have never been able to come up with a standard way of determining this rating, since it has to summarize a rather complex interaction of factors. Speaker damage can result from heat, mechanical stress, or both; the various drivers in a system can withstand different amounts of power; and different kinds of test signals and music stress speakers in different ways. Given all this, it's clear that no single number can accurately express a speaker's true maximum power capability. Nevertheless, manufacturers do provide numerical ratings as

a rough guide, often to the confusion of consumers.

Perhaps the most common area of confusion concerns overloading. Many hi-fi shoppers are understandably nervous about connecting speakers to an amplifier whose rated power output exceeds the speakers' rated maximum power-handling capability. In most cases, however, the concern is unwarranted as long as you observe normal precautions. For instance, don't drop the tone arm on the record, don't change shielded cables while your system is on, and don't play the *1812 Overture* at live levels.

Keep in mind that as many tweeters are blown out by overdriving an underpowered amplifier (which then produces a dangerous high-frequency waveform) as by excessive power from a large amplifier. Moreover, while small speaker systems are still likely to be more fragile than large ones, recent developments—particularly in high-temperature materials and the wide use of Ferrofluid-cooled voice coils—have substantially boosted the power-handling capabilities of the better small systems.

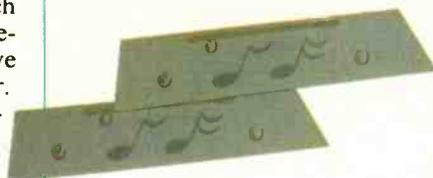
If you're considering buying speakers that seem barely capable of handling the power levels available from your amplifier, you may be able to avoid problems by fusing the speakers. (Note that the "speaker fuses" already included in your amplifier are there to protect your speakers against amplifier breakdown, not amplifier overdrive.) Since the fuse size required for adequate protection of any particular model depends on a *very* complex set of factors, you should check with the speaker manufacturer before installing any fuses.

### *Designer Sound*

Don't make the mistake of getting hung up on design theory or special driver configurations as infallible guides to sonic performance. Speaker designers, like other human beings, usually have a number of available paths to their goals, and the ones they choose may depend on cost factors, the availability of new materials or technologies, personal prejudice, or whatever. A designer's approach may be dictated by how high a priority he assigns, say, to keeping the price low or the size small, to eliminating resonance, to extending low-bass response, to increasing efficiency or power-handling capability, or, lately, to enabling the speaker to be placed next to a TV screen without affecting the picture.



*speaker system should have no tonal character or sound quality of its own. Otherwise, it will overlay its built-in tonal character on whatever program material it is reproducing.*



Since you may not share a particular designer's concerns, and because widely different design approaches can produce equivalent audible results, put aside all considerations of design theory while you are auditioning speakers. Only after you've decided you like the sound coming out of a system does it make sense to get very interested in what's going on inside it.

While most audio dealers are honest, some are not; and while some dealers are well equipped for careful, extended listening comparisons of a variety of speakers, some are not. The best general advice, therefore, is to shop around before buying.

### *Showroom Strategies*

More specifically, be wary of models or brands that a salesperson seems to be pushing particularly hard. The reason may be that the dealer makes more profit on them (because of a higher markup) or that the seller gets a bonus ("spiff") from the manufacturer for each pair he moves out the door. Also, use special care in evaluating the private-label "house brands" sold by some dealers. Since these are not available in competing establishments, price comparisons are impossible. Such speakers aren't necessarily

bad, or even bad buys, but caution is in order when you are faced with high-pressure sales tactics.

Once a common feature of hi-fi life, rigged demonstrations have become much rarer over the years. Still, if you have any suspicion of hanky-panky, make sure that all amplifier tone and loudness controls are switched out, and (if you can) check the settings of any controls on the speakers themselves. And never let a salesman demonstrate speakers using his own specially taped material. Ask to hear a good CD or audiophile disc.

It's often suggested that you take a familiar record or tape along to serve as a "standard of comparison" when auditioning speakers. That can be helpful, but only if you know what the recording sounds like when it's played on a good system. If you've gotten used to hearing it on a second-rate system, you may not like the way it sounds on one with a wider-range response.

Because speaker efficiency varies from brand to brand and from model to model, make sure that the dealer's speaker-switching panel is set to equalize the volume levels of the speakers being compared. Otherwise, psychoacoustic effects will make the loudest pair sound much more "open" and "live"—even if there is no objective difference in their performance to justify this perception.

Placement, too, can be critical. As far as possible, audition speakers in the showroom placed similarly to the way they will be in your home—bookshelf speakers on a shelf, floor-standing units away from the walls, and so on. And, of course, you should avoid speakers with placement requirements that you cannot meet at home. Most speakers sound better when they are installed several feet away from adjacent side and rear walls. In general, systems that radiate from both the front and the rear are usually more sensitive to where they are placed than forward-radiating speakers are.

### *Accessories*

[*WARNING: What you are about to read may be injurious to your preconceptions or those of your audio dealer.*]

Be wary of the speaker "accessories," such as expensive cables and esoteric stands, that may be recommended by salespeople when you

*(Continued on page 195)*

# MUSIC

**T**HE only proof of a loudspeaker's quality is its sound, and the *only* way to judge its sound is by playing music through it. Sure, instrumented tests and measurements can give a rough idea of the weak points in a speaker's performance, but the language of the lab is inadequate for conveying the subjective and highly personal sonic picture a speaker can create. One is compelled to use music as the critical test signal. But *what* music?

Everything! The more different types of recorded sound you can play through a speaker, the more reliable your final evaluation can be because the variations in recording technique and quality will average out, leaving you with a truer picture of the speaker's abilities. It is not enough to take one favorite disc into your dealer's showroom, play your favorite cut through a couple of models, and decide from this "test" that one speaker is "better" than another. It can be done, but such a quick-and-dirty process requires an intimate knowledge of how that record really *should* sound—you'd almost have to be the disc's recording engineer.

The music you choose doesn't have to be of any particular type. Classical, popular, or jazz will do just fine, though many believe (and rightly) that music from acoustic instruments, not electronic or elec-

tronically processed ones, is preferable when listening for sonic accuracy and realism. The usual inference from this, however, is that since classical music is played on acoustic instruments, it is the ideal program material for speaker listening tests. Jazz and folk are all but forgotten. I believe that practically any recorded sound can be advantageously used to evaluate speaker quality—*provided you conduct the test properly and know what to listen for.*

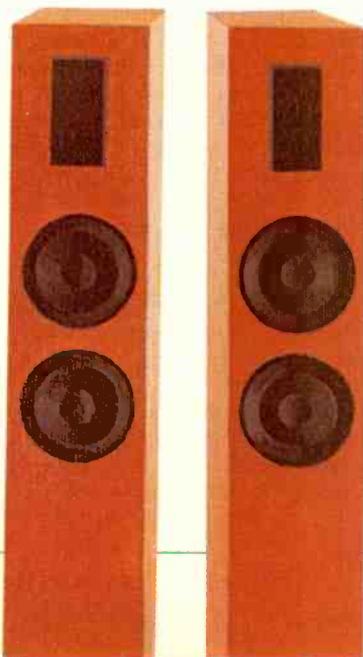
## *Doing a listening test*

There are two important points to remember when doing a speaker comparison: first, the ear is very sensitive to the absolute loudness at which music is played, and second, human acoustical memory is usually very short and very bad. These facts lead to several basic principles for conducting a fair but enlightening speaker comparison.

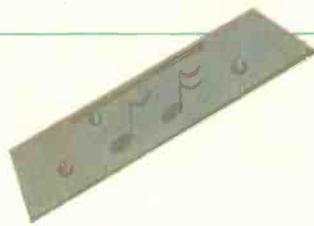
Adjust the sound levels from the two units under comparison (never compare more than two at a time) so that they are as close as possible; use a sound-level meter if one is available. The best signal for level adjustment is a band of midrange-only pink noise from a test disc or CD (try Denon's test CD 38C39-7147, track numbers 84-87). Second best is FM interstation hiss, even though it has an overemphasis of the high frequencies.

You'll probably never get an exact

*by David Ranada*



# TO JUDGE SPEAKERS BY



*Choosing the right recordings  
can make your loudspeaker  
auditions more effective*

level match, especially without a sound-level meter, mainly because the speakers' differences in frequency response and directionality will preclude it, and it's those differences that you're listening for. But some effort at level matching is essential because the ear will tend to prefer the louder speaker regardless of its other characteristics.

If the classic Fletcher-Munson loudness curves tell us nothing else, they reveal that the ear's own frequency response varies with the loudness of the sound. To prevent the choice of a speaker whose frequency balance happens to compensate for your ear's response at the wrong sound level, try to play any recording of an acoustic instrument at the same volume level as you would hear it live. If the recording is well made, there will be only a small volume range where it sounds "right," when the reverberation and the apparent distance from the instrument(s) coincide with the playback level. Of course, some knowledge of the sound of live music is essential in choosing the right level. Here, too, playing a wide variety of music will help average out bias created by errors in volume level.

One of the most important pieces of advice on speaker listening tests concerns how to switch between the models being auditioned. The switch should be *instantaneous*, mainly because any appreciable de-

lay (more than a second) between hearing each unit will make the ear "forget" the sound of the first. If the sounds of the two speakers are similar, a judgment based on widely separated hearings will not be reliable, though a truly bad speaker may stand out even without benefit of a comparison.

There is an often overlooked corollary to the instantaneous-switching rule: switch *within* a musical phrase, preferably during a long-held note. Certainly do *not* switch between speakers at the instant the musical texture changes, since the variations in the music may be interpreted as tonal differences between the speakers.

Concentrate on remembering the sonic differences you hear at the moment of switching, for they will be most obvious at that instant. Most of the differences you hear will probably be in tonal balance and will stem from frequency-response and radiation-pattern differences. You will also probably hear some changes in the sonic image. As you listen to each speaker, take note of the width and depth of the image, how small or large each instrument in the sound stage seems to be, and where each phantom instrument appears. Keep asking yourself which sounds more realistic.

Some recordings may have diffuse images that will not snap into

acoustical focus regardless of the speaker. This is a common property of distantly microphoned pipe-organ recordings, for example, some of which have a fuzzy image even with headphones. But this type of recording, as well as other examples of poor or misguided recording technique, can still be useful in speaker evaluation.

If the speaker under consideration creates a solid sonic image where there should be none, it's not doing its job accurately. Unfortunately, the opposite case is more common: a speaker may fail to create a stable and precise sonic image even when playing a mono recording (a good reason for bringing in those old Elvis or Toscanini records, or at least for switching the amplifier into mono for part of the listening test). It's a good idea, if you are listening for imaging, to audition the test recordings on headphones first to get some idea of what images are there.

**T**he most useful property of many bad pop and jazz recordings is their sometimes aggressive overequalization or processing of certain instruments, including the human voice. Forward-sounding speakers, with a raised midrange response, will sound even more forward, maybe unbearably so. You can use

these bad recordings to eliminate highly colored speakers.

### A sampler

While bad recordings can give you much useful information about a speaker, good recordings are far more valuable. In order to obtain a fairly complete picture of a speaker's performance, you should take along to the audition at least one well-recorded sample of each of the following principal types of program material, each selected to fully exercise a specific portion of the speaker's frequency range. The suggested recordings are all available on both LP or CD, though only the CD record numbers are given. (A carefully taped cassette containing one excerpt from each record will suffice. With practice you won't need more than a few seconds of each selection to be able to draw a firm conclusion.)

□ 1. A full *symphony orchestra* playing a piece dominated by string instruments produces a very wide-band and complex sound that will stimulate all portions of the **lower-middle to high-frequency** portions of the speaker's range. Overall coloration of a speaker system is easily heard with this type of material, which doesn't necessarily have to be classical—movie soundtracks and some pop arrangements can also have enough string writing to be useful. [String orchestra: Tchaikovsky's *Serenade in C Major* on Telarc CD-80080. Full orchestra: Prokofiev's *Fifth Symphony* on RCA RCD1-5035. Full orchestra with chorus: Brahms's *German Requiem* on Telarc CD-80092.]

□ 2. **High-treble frequencies**, up to the limits of audibility, are best tested with wide-band high-frequency noise generators: in other words, *cymbals*. There are, however, very few good recordings of cymbals in any context, jazz, pop, or classical, since they are usually miked so that they cannot possibly sound realistic on any speaker. [The "Sheffield Track Record" and the "Sheffield Drum Record," combined on Sheffield CD-14/20, are exceptions.] *Harpichords* can also be used to explore the high treble. [Trevor Pinnock, "The Harmonious Blacksmith" on Archiv 413 591-2.]

  
The music you choose does not have to be of any particular type. Classical, popular, or jazz will do just fine, though many believe (and rightly) that acoustic instruments are preferable to electronic ones.

□ 3. A well-recorded *female vocalist* will help disclose problems in the **upper midrange and lower treble**. If you don't like operatic singing, choose a folk singer, since these are the two remaining musical categories in which electronic enhancement of vocal timbres is the exception rather than the rule. In fact, I would not recommend operatic voice recordings unless you are familiar with the live sound of the singer. A less studied style of vocal production is closer to speaking and is therefore a more familiar timbre, one that will readily reveal speaker colorations if it is altered. [Joan Baez, "Greatest Hits" on Vanguard 811 677-2; Mavis Rivers, "It's a Good Day" on Delos D/CD 4002; Jessye Norman in R. Strauss's *Four Last Songs* on Philips 411 052-2; Amanda McBroom, "Growing Up in Hollywood Town" on Sheffield CD-13.]

□ 4. The **upper bass and lower mid-range** can be explored in several ways. A *male speaking voice* (a radio announcer, for instance) can sound unnaturally heavy and boomy with many speakers. *Solo cello music* also fits nicely in this range, but it's hard to find a well-made cello recording, one that conveys the instrument's richness without sounding boomy [try the Bach Cello

Suites with Yo-Yo Ma on CBS M2K 37867]. *Baritone and bass vocalists* can be useful, but the earlier caveat about knowing what a trained voice should sound like still applies. And a typical *disco* record's purposely boosted 70-Hz region will often coincide with a speaker's peak in low-frequency response, thereby creating an initially very danceable but ultimately boring, heavy sound quality. Speakers with truly flat response in this region can sound like they have too little bass in pop music. [Michael Jackson's "Thriller" on Epic EK 38112; Hermann Prey in Schubert's *Die Winterreise* on Denon 38C37-7240.]

□ 5. The **deepest bass**, below 50 Hz, can be easily judged using only two acoustic instruments: a *bass drum* or a *pipe organ*. (Synthesizer tones can reach down to 20 Hz, but it's difficult to find any nonclassical records with sustained tones that low.) The problem with using the bass drum for speaker comparisons is that you need a *bass-drum roll*, both because a roll generates the lowest frequencies and because it is sustained long enough for a comparison. This rules out the kick drums in most pop and jazz recordings (use them to test the upper bass). Good pipe-organ recordings are easier to find, and their steady tones can go right down to the lowest limits of audible pitch. Look for pieces in the key of C, since the lowest pedal note of most organs is a low C1 (four octaves below middle C), around 32 Hz. [Ton Koopman, *Bach Organ Toccatas*, Archiv 410 999-2.]

The opening of Strauss's *Also sprach Zarathustra*, which veers between C Major and C Minor, seems to have been written (in 1896) with high fidelity in mind, since it contains a bass-drum roll over a long-held low C1 on the organ. [R. Strauss, *Also sprach Zarathustra*, complete on Philips 400 072-2, the opening only on "Time Warp," Telarc CD-80106.] Unfortunately, ever since *2001: A Space Odyssey*, hit the screens, the piece has been played to death as a hi-fi spectacular. It's embarrassingly hard to be taken seriously as a speaker auditioner in a showroom once those trumpets come in! □

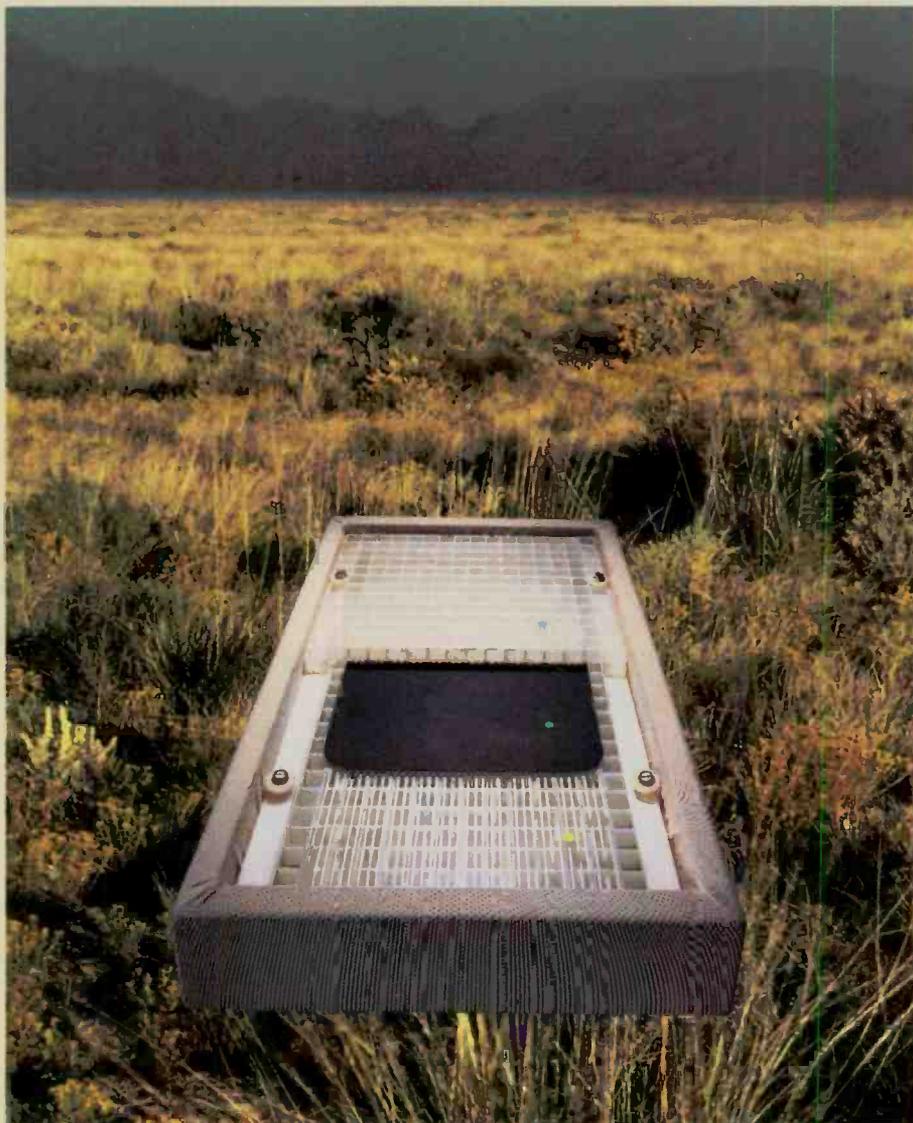
# THE SEARCH FOR THE PERFECT SPEAKER

*For over a hundred years, scientists have been coming up with exotic ways of reproducing sound*

*by Daniel Sweeney*

**I**N 1818, Mary Shelley published her classic novel *Frankenstein*, in which a monster assembled from dismembered corpses is brought to hideous life by a charge of electricity. The nineteenth century was an age of boundless faith in the powers of science, and by the 1860's scientists had begun to discuss very seriously another kind of reanimation—the recording and re-creation of sound waves by mechanical means.

On his way to developing the telephone, Alexander Graham Bell attempted to make a sound-analyzing device in 1874, and, like Doctor Frankenstein, he utilized a dismembered corpse for components. Bell's device, called a phonograph, consisted in part of the tympanum and bones of auriculation from a human ear! With it he succeeded in making graphs of sound waves, but no music. That would have to wait.



*A demonstrator panel for Acoustat electrostatic speakers shows a black, conductive Mylar diaphragm sandwiched between two electrically charged grids. An audio signal fed to the diaphragm causes it to oscillate back and forth, moving air on both sides of the panel.*

## Equal Opportunity

Exotic loudspeakers as a category could really only begin to be defined when the conventional dynamic loudspeaker emerged, and that emergence was a gradual process. In 1880, Thomas Edison designed a horn-loaded, mechanically driven diaphragm actuated by a playback stylus—the first phonograph. Then, in 1898, Sir Oliver Lodge invented a cone loudspeaker, which he called the “bellowing telephone,” that was similar in some respects to today’s loudspeaker drivers.

Lodge did not intend his device for music reproduction. At the time there was no way to amplify an electrical signal, and his speaker offered little advantage over the acoustical gramophones of the period. In 1906 Lee DeForrest devised the first triode vacuum tube, and the means became available to make Lodge’s telephone bellow. The modern loudspeaker should have happened then.

But it didn’t happen, and it wouldn’t happen for nearly twenty more years.

It might not have happened at all if a vastly improved recording medium, the electrically cut phonograph record, hadn’t come along in 1921. Electrically cut records were suspected to possess about 30 dB of dynamic range. The old-fashioned gramophone couldn’t begin to reproduce the information on the disc. As with stereo recordings thirty-five years later, “software” drove the industry.

In 1923, the management of the Bell Telephone Laboratories decided to develop an electronic phonograph complete with a powerful loudspeaker to take advantage of the new recording medium. Two young engineers, C. W. Rice and E. W. Kellogg, were assigned to the project.

In 1923 all loudspeakers were “exotic.” Virtually all of the means for producing sound electromechanically had already been devised by then, but no practical transducer had ever been produced for home use. The early Twenties was truly a time of equal opportunity for all loudspeaker designs.

Rice and Kellogg found a very well-equipped laboratory waiting for them. The lab contained a mighty 200-watt vacuum-tube amplifier and a stack of the new electrically cut phonograph records. It also contained a series of loudspeaker

prototypes that the company had been collecting for the past ten years. These included a compressed-air speaker utilizing a diaphragm-actuated valve that regulated a stream of compressed air, a corona-discharge speaker (known today as a plasma driver), an electrostatic speaker, and Lodge’s cone.

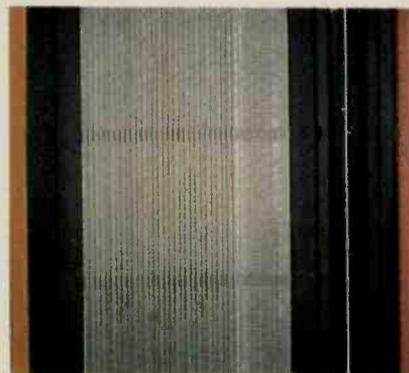
It soon settled down to a duel between the cone and the electrostatic. The outcome would determine the denotations that the terms “exotic” and “conventional” would have with respect to speakers.

## The Electrostatics

Bell Labs’ electrostatic compelled attention. Big as a door, the speaker was bipolar like most of its descendants, and it utilized a single diaphragm made of goldbeater’s skin, which is the membrane of a pig’s intestines. The enormous diaphragm, which was already beginning to rot, was covered with fine gold leaf to conduct the music signal, and in the light of a dozen glowing vacuum tubes the great, glittering panel was mesmerizing—a golden monolith. The heated air in the laboratory was full of the stink of corruption and the sharp smell of ozone, and the two young scientists might have thought of *Frankenstein* and of Bell’s phonograph wrought from a dead man’s ear.

But once the connections were in place and the magic discs began to spin, all such thoughts were forgotten in the shock of discovery. The electrostatic performed brilliantly. Instrumental timbres were repro-

*The Magneplanar Tympani IV, shown below with its cover off, combines planar-dynamic woofer and midrange drivers (left and center) with a ribbon tweeter (right). Shown on the facing page is the Magnat tweeter, a “massless” plasma driver that is not sold in the U.S. because it produces a hazardous level of ozone.*



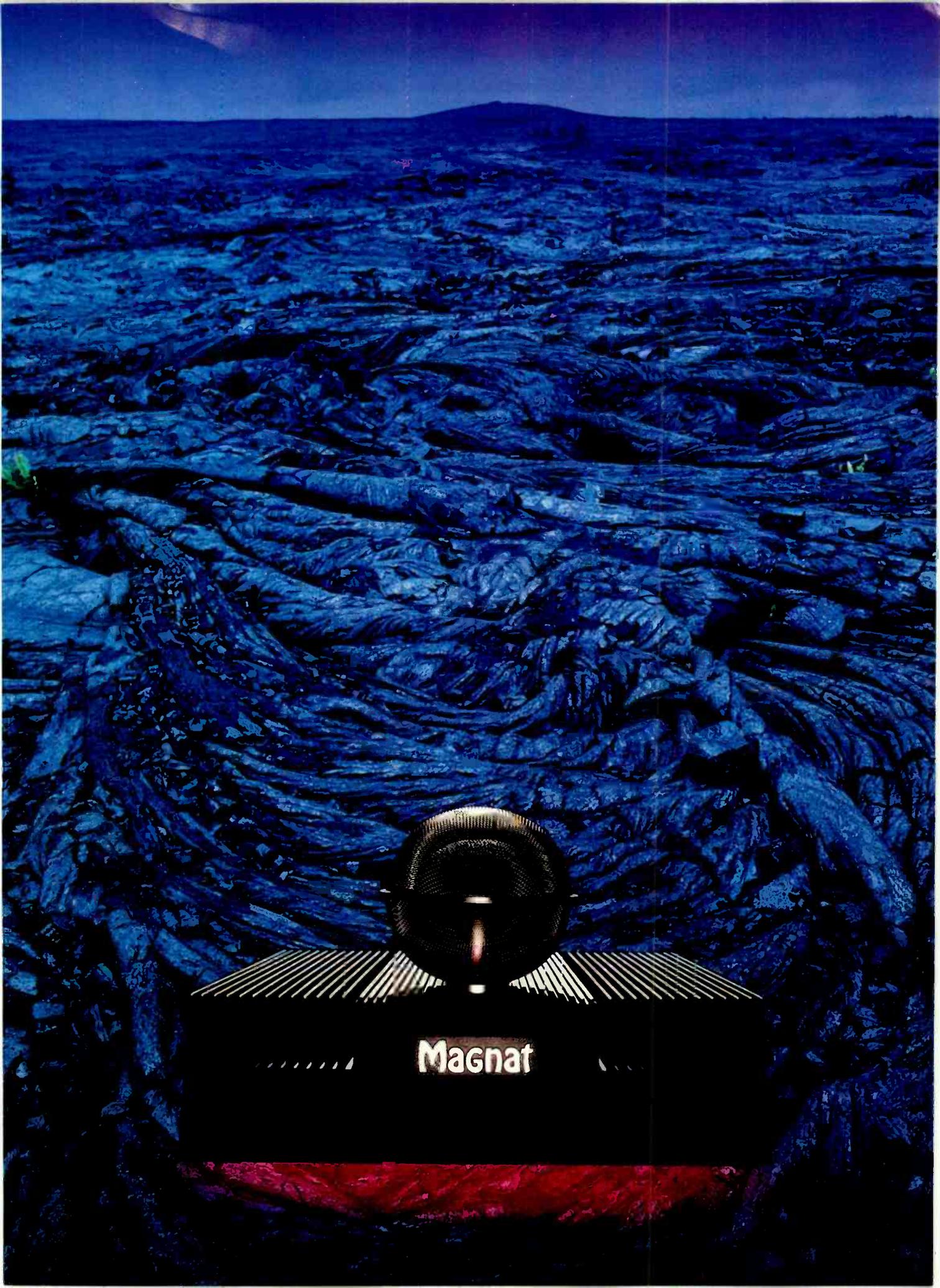
duced with incredible realism, the full volume of symphonic crescendos rattled the windows, and the squawking, wheezing caricature of music produced by the acoustic gramophone was instantly relegated to obsolescence.

Rice and Kellogg were impressed enough to devote considerable research to electrostatic-loudspeaker design, but they soon encountered the same problem that has plagued other designers down to the present day. Electrostatic speakers are incapable of either extended bass response or a wide dynamic range unless they utilize several square feet of driven surface. The Bell Laboratories management deemed large loudspeakers unacceptable, and Rice and Kellogg’s work on electrostatics never saw fruition in a practical product. Reluctantly, they advised Bell to go with the cone.

A commercial electrostatic speaker appeared two years later and quickly disappeared. Others followed, but none made any market impact, and essentially the design lay dormant for thirty years. To understand why it was eventually resurrected, one has first to understand some of the very fundamental changes that occurred in the audio industry in the quarter-century after Rice and Kellogg launched the electronic audio age.

In the 1930’s consumer audio almost died in the wake of the Great Depression. The new electronically amplified loudspeaker never really caught on, and most people continued to use old crank-’em-up Victrolas. Home audio made little progress until the conclusion of World War II, but the later 1940’s saw the beginning of a great age of high fidelity, and with it the quest for vastly enhanced performance from all components, including loudspeakers. The cone no sooner became established than it was challenged.

In 1947, the electrostatic was brought back to life under rather unusual circumstances. In that year, a young engineer named Arthur Janszen participated in a research project for the Navy that was undertaken to develop an improved instrument for testing microphone arrays. The test instrument naturally included a loudspeaker, and Janszen found that the cones of the day were too nonlinear in phase and amplitude response to meet his specifications. Janszen believed electrostatics were inherently more



Magnat

linear than cones, and he constructed an improved model using a thin plastic diaphragm treated with a conductive coating. It did what he predicted it would, exhibiting remarkable phase and amplitude linearity.

When the project was concluded, Janszen continued research on the speaker on his own and hit upon the idea of insulating the stationary electrodes to prevent dangerous arcing. In 1952 he brought out a commercial electrostatic tweeter that soon created a sensation among American high-fidelity hobbyists. When it was combined with Acoustic Research woofers, the system was considered by many to be the outstanding loudspeaker of its day.

It would soon be eclipsed by another electrostatic.

In 1955, one Peter Walker published three articles on electrostatic loudspeaker design in *Wireless World*, a British popular electronics journal, in which he set forth the case for electrostatics as well as anyone ever has. Simply stated, electrostatics permit the use of diaphragms that are large in area, light in weight, and uniformly driven over their surface areas by electrical forces. Because of these characteristics, they can have extremely wide, flat frequency response and relative freedom from spurious vibrations. Thus, they should produce levels of distortion no greater than those of the amplifiers driving them.

Walker wasn't just speculating. A year later he brought out an actual consumer product, the famous Quad ESL, that immediately set a standard for the industry.

Initially, at least in England, many in the audio industry predicted that electrostatics would dominate the market for high-quality speakers. Such hopes—or fears—were soon dispelled by the Quad's performance in the field. It wouldn't play loudly, it wouldn't produce low bass, it beamed, it

made some amplifiers oscillate, and it couldn't take inputs of more than 70 watts. Sure, it was accurate, but it was limited. Chamber-music aficionados loved the Quad, but almost everybody else stuck with cones in a box.

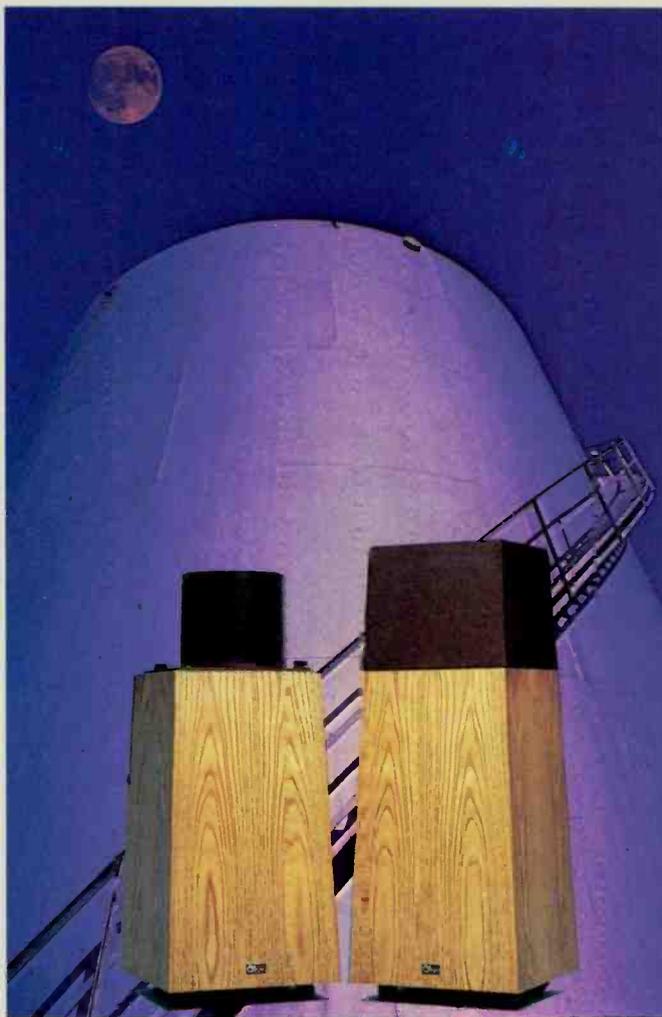
Still, the ideal of a full-range electrostatic was intriguing, and Arthur Janszen, who in due course joined the formidable KLH loudspeaker company, brought out the huge KLH 9 in the early Sixties. The KLH 9, because of its size, could

the design of the Acoustech, the Koss Model One, and the Dennesen line. In a sense, Janszen established a sort of electrostatic dynasty. The chief designer of the JansZen Corporation, Roger West, became the president of Sound Lab, and when the JansZen Corporation was sold, the RTR loudspeaker company got half the tooling and used it to make panels for the Servostatic, a hybrid electrostatic that was Infinity's first loudspeaker. And through it all the JansZen Corporation, sold and re-sold, survived (fitfully) and today produces the electrostatic panels used in Dave Wilson's incredible \$42,000 WAMM loudspeaker system.

And electrostatic speakers themselves survive because they actually do what Peter Walker has claimed they do all along. Moreover, many of their traditional limitations have been alleviated in current designs. Today's electrostatics are insulated or provided with protective circuits. The poor dispersion of early models has been improved by use of delay lines in the electrodes, as in the current Quads and the Stax F-81, or by curving the diaphragm, as in the Martin Logan, or by stretching it across struts, as in the Sound Lab speaker.

### *Ribbons and Their Kin*

Sometime in the late 1940's, a young Canadian inventor and audio enthusiast named Gilbert Hobrough got a little careless with his power amplifier. He unhooked the speaker wires while a music signal was going through them and let the hot lead come perilously close to the electrical ground. The wires began to flutter, and Hobrough was startled to hear music coming right out of them. "Straight wire with gain," he quipped three decades later. "I thought I was on to something." He soon realized that he was hearing an electrostatic effect, but he began to wonder whether a single conductor in a magnetic field would perhaps



*Ohm's Walsh speakers use a single narrow-angle cone firing down. High frequencies radiate from the top, near the voice coil (inside the top cylinder).*

play considerably louder and lower in frequency than the Quad, and it enjoyed the fierce advocacy of many discerning listeners.

Arthur Janszen kept on refining electrostatic-speaker design and became a sort of godfather to the electrostatic-loudspeaker industry in the U.S. He designed or influenced

make a highly effective transducer.

Hobrough did some research and found he'd been anticipated by more than thirty years. In 1925, a patent was taken out in Germany for a loudspeaker utilizing a conducting metal strip in a magnetic field. The device was known as a ribbon loudspeaker. The electrically driven element and the diaphragm were one and the same, a single strip of carefully formed aluminum foil.

A couple of ribbon speakers were marketed in the Twenties and Thirties, but mostly the design languished for over twenty years. Then, around the time that Hobrough was rediscovering it, Peter Walker, the latter-day prophet of the electrostatic, began selling a horn-loaded ribbon tweeter in England. It wasn't particularly successful, but it brought the design to the attention of serious hobbyists. Ten years later, Decca International brought out a commercially successful ribbon tweeter, and a similar British design called the Kelly Ribbon was introduced into the United States by Irving Fried, who combined it with a transmission-line woofer. Finally, in the Seventies, a ribbon speaker was developed by Dick Sequerra for the Pyramid Loudspeaker Corporation. It was the first such device to dispense with the horn.

During the long incubation of the ribbon, a large class of drivers called planar dynamics, a sort of pseudoribbon, came into being. Most of the credit for their introduction must go to Jim Winey, a one-time industrial engineer at the 3M Company who took up hi-fi as a hobby in the Sixties.

Winey, who at first had no thought of making a living in audio, began as an advocate of electrostatics and owned several, including homemade models and a pair of KLH 9's. He savored the performance of the KLH electrostatics, but he was always distressed at their high price. As an industrial engineer, he couldn't help thinking

that some way might be found to make a speaker of equivalent quality for considerably less money, and one day at work he had a brainstorm. He happened to be examining a batch of cheap ceramic strip magnets used in the manufacture of refrigerator doors when it came to him that those same magnets could be used to drive a loudspeaker diaphragm. The strips were cheap, light, and easily cut, and they lent themselves to constructing the sorts of magnet architectures by which

phragm, and the diaphragm itself would be covered by a multitude of fine conductive wires that would accept a signal from the power amplifier and establish attractive and repulsive forces in relation to the fields of the permanent magnets.

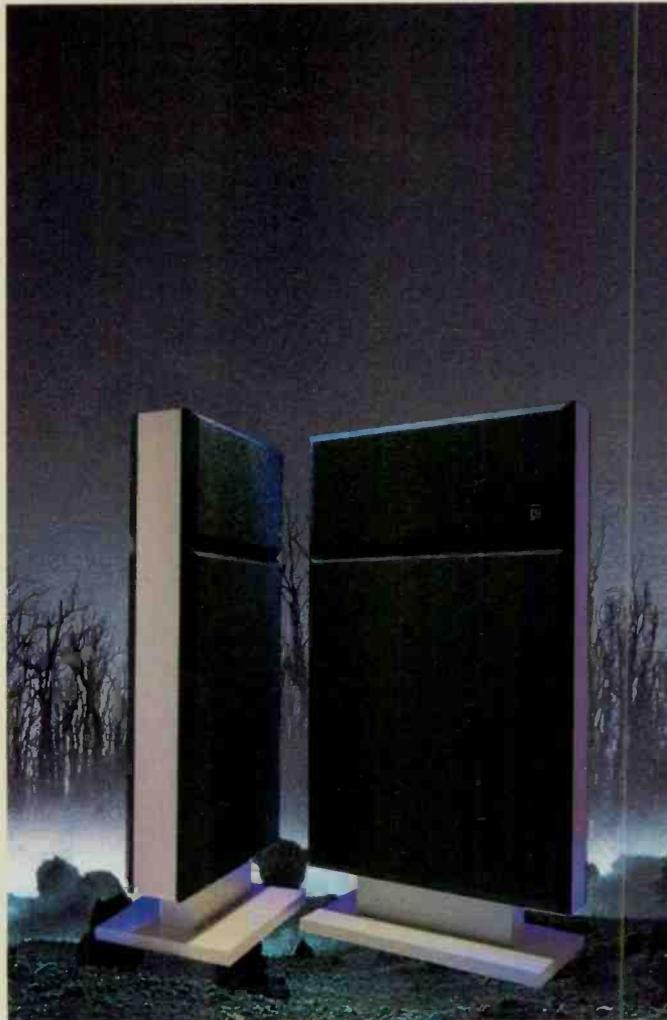
Winey made a working model in 1969, and in 1971 he decided to market his new speaker. Initially dubbed the Magnestatic, and later the Magneplanar, the speaker achieved tremendous success in the emerging esoteric marketplace. Success led to similar products, and various other planar dynamics were developed by such firms as Strathearn, Wharfedale, JVC, Cerwin-Vega, Thorens, and, most notably, Infinity. The patent litigations that have arisen among some of these companies remain unsettled at present.

Planars are often confused with ribbons and are sometimes even marketed as ribbon loudspeakers. But planars surpass traditional ribbons in several respects, most significantly in their reasonable impedances and relative sturdiness.

The magnetic architectures employed in planars dictate that only the fringing flux of the magnetic field will interact with the distributed "voice coil" on the diaphragm, so acoustic efficiency is low. Diaphragm mass is generally significantly higher than in either electrostatics or present-day ribbons because of the combined weight of the inductors and the diaphragm itself, and mass tends to limit bandwidth. Full-range operation is generally less successful than with electrostatic designs, and only one manufacturer, Audire, currently uses a full-range magnetic planar

driver. Interestingly, the top-of-the-line Magneplanar speakers now use planars for woofers and midranges and true ribbons for tweeters. And today Jim Winey is hard at work trying to build a practical midrange ribbon.

By 1978, Gilbert Hobrough had already succeeded in doing just that,



*BES speakers look like electrostatics but work on another principle. Various sections of the diaphragm resonate at different audible frequencies.*

flat, stretched diaphragms could be driven more or less uniformly over their entire surfaces.

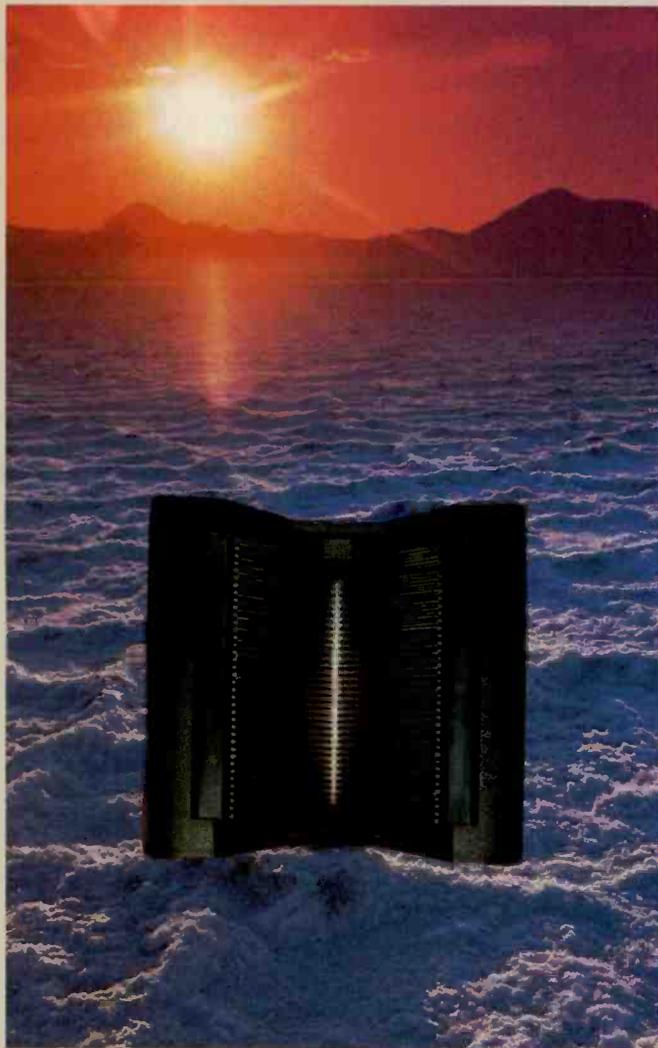
Winey envisioned a loudspeaker resembling an electrostatic in outward form and utilizing a driven plastic diaphragm with a bipolar radiating pattern. The speaker would employ magnets to drive the dia-

and in patenting his own unique approach. In the thirty years since he'd discovered ribbons, he'd gone on to market inventions in the fields of aerial mapping and robotics, and he had managed to subsidize his research on loudspeakers with the profits he'd made in other areas. He sank a million and a half dollars into basic research and developed a ribbon that went down flat to 400 Hz (600 Hz in current production models), would not melt, fracture, or deform, and produced distortion levels of less than 1 percent. Hobrough and his son also patented a unique resonance-canceling bass enclosure to house the polypropylene woofers they mate with the ribbon. Production of their speakers remains limited, but Theodore Hobrough, president of Jumetite Labs, the company that manufactures the speakers, states that current designs could be mass-produced for little more than a conventional cone driver and that ribbon speakers need not be confined to the audiophile of unlimited financial resources.

Within the last three years, Brian Cheney of VMPS Audio in Berkeley, California, Stephen Spencer of Gold Ribbon Concepts in Iowa City, and Leo Spiegel of Apogee Corporation in Massachusetts have all developed ribbon systems with even greater bandwidth than the Jumetite. The Apogee speakers use classical ribbon drivers (a tweeter and a midrange) for frequencies down to 100 Hz and a sort of quasiribbon for the bass. VMPS uses a single ribbon down to 300 Hz and up to 15 kHz, supplementing it with polypropylene woofers and a planar-dynamic supertweeter. The Gold Ribbon Concepts ribbon driver has the greatest bandwidth of all—200 Hz to 30 kHz for a single driver—and it differs from all others in that the ribbon is made of gold rather than aluminum. The ribbon, less than a micrometer thick, is proba-

bly the thinnest loudspeaker diaphragm ever constructed.

Shortly after Jim Winey fabricated his first planar-dynamic loudspeaker, a German physicist named Oskar Heil worked an extraordinarily elegant variation on the ribbon, which he named the Air Motion Transformer. The speaker Heil invented resembles the planar dynamic in that it employs a thin plastic diaphragm printed with a conductive aluminum "voice coil." But



*Heil Air Motion Transformers, used in speakers from ESS, have pleats that are alternately squeezed and opened by the driving signal.*

instead of being stretched taut, the diaphragm is very loosely suspended from an open frame and pleated so that the conductive "coil" is within the magnetic gaps of a vertical stack of magnets. Powerful magnetic forces alternately squeeze the doubled-up lengths of inductor together (and with them

the folds of the diaphragm) and then push them apart. Air is thereby squeezed from between the pleats at audio frequencies.

The concept may sound a bit bizarre, but the configuration makes for extremely high efficiency. The intense magnetic forces bearing on the diaphragm lower its effective mass reactance or acoustic impedance—hence the term Air Motion Transformer. The speaker is in effect an acoustic transformer, just as a horn is. Lower effective mass brings with it extended high-frequency response. The Heil driver can operate from 300 Hz out to 25 kHz with no equalization.

As of this writing, Heil is at work on a fundamental modification of the Air Motion Transformer that will in effect be a new exotic, though when I interviewed him in connection with this article, he snorted at the notion that any of his speakers should be categorized as exotics. "They represent the logical way to build a loudspeaker. It's the others that are exotic."

The last significant member of the ribbon family is at best a distant relative of the others, the BES (Bertagni Electroacoustic Systems) pulsating diaphragm, or geostatic. The BES speaker, like a typical electrostatic or Magneplanar, utilizes an open frame and a planar diaphragm radiating sound front and back. But instead of tissue-thin mylar, the BES uses a sheet of foam plastic contoured to varying thicknesses, something like a relief map in appearance.

The BES is designed to have multiple resonant modes over the surface of the diaphragm. Different sections of the diaphragm

vibrate at different frequencies, and the diaphragm does not move like a piston at any frequency. It can almost be envisioned as an infinite series of tuning forks, rather than a single element, that are vibrating uniformly to a wide range of audio frequencies.

*(Continued on page 194)*

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# Mind Manipulator

Once you've got frequency response, signal to noise ratio and dynamic range whipped, the difference between the sound of your home stereo and the excitement of 'being there live' is all in your head.

By Drew Kaplan

You're no dummy. Close your eyes. Have someone make noises in different parts of the room you're in. You'll have almost no problem determining exactly where each sound was made.

The reason you can locate the sound so easily, is that your brain interprets the incredibly small micro-second differences between the time the sound reaches your right and left ears. Your smart brain continually 'tests' the sound.

## TOO SMART

So, when we all lived in the jungle and relied on sound placement to stay alive, we survived. When we heard lions to the left or tigers to the right, we knew which direction to run.

But when you listen to your stereo system, your brain keeps doing the job it was intended to do. It accurately 'locates' your two speakers.

Unfortunately, too much sound is pinpointed and localized by your brain. Plus, many of the brain's natural location cues are lost in the recording process.

## LOST IN THE CROWD

With so many sounds coming from the two relatively small distinct speaker points, the sound can be muddy, unrealistic and lack live presence.

In a live concert, you are exposed to a wide field of sound, with each instrument coming from a different location.

While stereo does 'spread' the sound, it lacks the 3 dimensional quality that it would have in a field or at a concert.

## ILLUSION

Now from BSR comes a way to manipulate your brain into recreating the perception of a wide 'soundfield'.

Imagine sitting in front of a stage with an orchestra spread out before you. Now imagine the widespread realistic sound you're about to enjoy in your own home.

BSR, utilizing the latest solid state components, the latest hearing research and some innovative designing, is about to paint a panorama of sound throughout your listening area.

There's no change in frequency response. There's no change in distortion. But, wait till you hear the improvement in width, height and depth of your music.

## HERE'S HOW IT WORKS

Normally you hear sound coming directly from your speakers, with some sounds like a vocalist seeming to come from the center.

The BSR Spatial Enhancer compares the signal going to each channel thousands of times each second. It then enhances only the elements of separation.

By a distortion free process, it simultaneously amplifies all side sounds. This makes these sounds appear to come from farther to each side.

The middle will sound richer. And as each part of your music diverges from center, it will be drawn more to the sides as well as forward and back, creating a vastly wider and deeper field of sound.

In addition to losing track of where your speakers are located, you will perceive cleaner, more separated sound. It will sound incredibly richer and drama-



tically more distinct, because instruments will be next to each other rather than on top of each other.

There's an LED meter that shows the amount of separation between the channels. The greater the number of LEDs lit, the more the spatial enhancement. There is NO ENHANCEMENT for monaural signals because there are no left and right cues for the Spatial Enhancer to enhance.

## HURT FEELINGS

I just received a letter from a very happy customer. Happy letters don't usually depress me, but look at what he said about an earlier model of this unit.

"...during the speaking (monaural) part of the record, the Enhancer's LEDs stayed in the center, i.e., no enhancement. When the record got to the music portion, the enhancer did its thing with the reflective sound and enhanced the 'hell' out of it as it was supposed to".

"What I'm saying Drew, is that this Enhancer is absolutely no phony...it enables one to recreate in your own mind, the real recording situation. It is a very positive addition to any stereo.

This is so remarkable to me that I had to write and tell you about it."

Well, the Enhancer is loved, but I'm hurt that he's so surprised that it does what I said it would do. I spend a great deal of time checking out each device, and if they don't do what I say, send them back, and drop me a line telling me where you think I went wrong!

## SIMPLE INSTALLATION

It simply hooks into your tape monitor loop. There are tape in and out jacks and a monitor button so your system's capabilities will remain unchanged.

And, wait till you experience the enhanced sound in your car or with a por-

table stereo. Just a push of the Bypass Button lets you record Enhanced or Non-enhanced sound on your cassettes.

The sound will change dramatically as you rotate the continuously variable enhancement control. It is 8½" wide, 2½" high and 7¼" deep. It's backed by BSR's standard 1 year limited warranty.

## TRY PSYCHOACOUSTIC IMAGERY RISK FREE

Try the BSR Spatial Enhancer complete with tape monitor/recording loop in your system. Let distinct instruments come from a broad range of angles.

And, don't forget to take enhanced cassettes with you in your car or with your portables.

Your whole system will seem larger. It really adds an incredible lifelike presence to your stereo system's sound.

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 BSR Spatial Enhancer risk free with your credit card, call toll free or send your check for DAK's breakthrough introductory price of just \$69 plus \$5 P&H. Order No. 4301. CA res add tax.

Now your own two speakers can sound like a whole concert stage. And if you like the enhancement, please don't be too surprised. If you don't think it does everything I've said and more, make use of DAK's 30 day risk free trial protection.



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# Sound Blaze

*Like the blazing flash and violence released by a lighting bolt striking earth, your stereo system's sound will explode with life. With a 98db signal to noise ratio, a 95db dynamic range, and a 5hz to 20,000hz frequency response, Emerson's new fully programmable CD player is sure to stagger your perception of audio.*

By Drew Kaplan

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 first introduction to digital audio. 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 +0.5db -1 db. Wow! Imagine sound so pure that harmonic distortion is just 0.003%. And, if you're into zeros, 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'.

## NO SOUND AT ALL

CD gives you a signal to noise ratio of 98db. 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 isn't even on and then, suddenly, a thunderclap explodes!

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 95db 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. It's as if the world was just created and you

are listening to newly born, virgin sound. **NOT PERFECT?**

CD isn't perfect. Or rather, it is, and that's a problem. You'll hear everything. You'll hear every note, every instrument, as if you were sitting in the orchestra.

When CD first came out, there were three complaints. 1) It could sound harsh or hard. 2) There weren't enough CDs released. 3) Not all CD discs were really recorded digitally. Here are the answers.

1) Early discs did sound harsh. A characteristic of pressing LPs is that they drop off from 5-10,000hz, so recording engineers tend to boost those frequencies when they mix master recordings.

A few slight cuts with an equalizer bring the first discs back to super smooth sound. The laser disc has a perfectly flat response, so whatever is on the master, won't be masked when you play it back.

2) True again. CDs were in short supply and not many titles were released during the first few months. Now there's a virtual avalanche of thousands of titles, and more are being released weekly.

3) True again. Not all CDs come from digital masters. CDs from digital masters can sound phenomenally better than a conventional LP. (It's earthshaking.)

But, when analog (conventional) masters are recorded in the studios, they are recorded on two inch wide tape at 15 inches per second. They sound great.

Most sound quality is lost in pressing records and copying cassettes. A CD from an analog master isn't quite as good as from a digital master, but its superiority over an LP is still like day and night.

CDs are now a standard format. There's no stylus to wear out and the disc doesn't wear out because nothing touches it.

## WHY EMERSON?

This CD disc player is the latest Japanese made second generation, type.

It has a 3-beam, laser servo system with heavy sampling for superb sound. Plus, it's loaded. You can select up to 9 tracks in any order you like. Then, just sit back and enjoy the sound. There's even a repeat button. So, you can repeat your selected tracks or the entire disc over and over again, forever.

Just touch a button and you can skip to the next track during play, or repeat

the track you are listening to. You can even playback indexed passages within a track. A display shows you the track that is playing, the elapsed time, or the total time of the disc.



Installation consists of simply plugging it into any 'aux' input on your receiver or preamp, nothing special. It's backed by Emerson's standard 1 year limited warranty.

## TRY EXPLOSIVE SOUND RISK FREE

Plug it in. 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 Emerson's Fully Programmable CD Disc Player and experience the sonic thrills of a lifetime, call toll free, or send your check for DAK's market breaking price, of just \$178 (\$7 P&H). Order No. 4304. CA res add sales tax.

It may strain my credibility to describe any device I'm offering for only \$178 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.

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# Top Typewriter \$79 Close-Out

Here's an all electronic typewriter that operates on AC or batteries, plain or thermal paper, by typing on its full size, 132 character keyboard or connecting it to your computer. I just bought one for \$249, but it's yours for \$79.

By Drew Kaplan

It goes where you go. It self-corrects errors. And, it's almost totally silent. For writing letters at home, for students writing reports or for writing 'on the road', this 5 pound electronic marvel really puts out the written word.

You can type on ordinary smooth paper using carbon ribbons (three 18,000 character ribbons included). Or type directly on inexpensive (\$3.50 for 100 sheets) thermal paper without using ribbons.

In June, on a trip home from Chicago, I saw and bought this exact Silver Reed machine, in beige rather than black, from an Airline Magazine for \$249.95. (We have a copy at our store.)

It came packed with 200 sheets of thermal paper and 4 D batteries. For DAK's \$79 price, you get the AC power supply, 10 sheets of thermal paper, 10 sheets of plain paper but no D batteries. Wow, that's about a \$160 saving.

## LOOK AT ALL IT DOES

It's only 12½" wide, 9½" deep and 2" high. Yet its keyboard has identical spacing to an office typewriter.

Plus, there aren't many office typewriters that can boast a built-in capability to print 132 different characters. It's the perfect machine for reports or letters.

It has electronic margins you set by simply touching buttons. You can set up to 16 tabs on a line, and you can select 1, 1½ or 2 line vertical spacing.

There are even incremental spacing buttons that move the paper forward or reverse. The typewriter handles paper up to 8½" wide and types a 7½" line.

## SELF CORRECTION

There are three typing modes. You can 'Direct Print' which types the letter on the paper as you strike the key, just like a conventional typewriter. You can use 'Correct Print', which allows you to type 15 characters before the typewriter starts typing the letters on the page.



In 'Correct Print', you can change letters, words or anything you like when you see an error on the bright LCD display with an electronic contrast control.

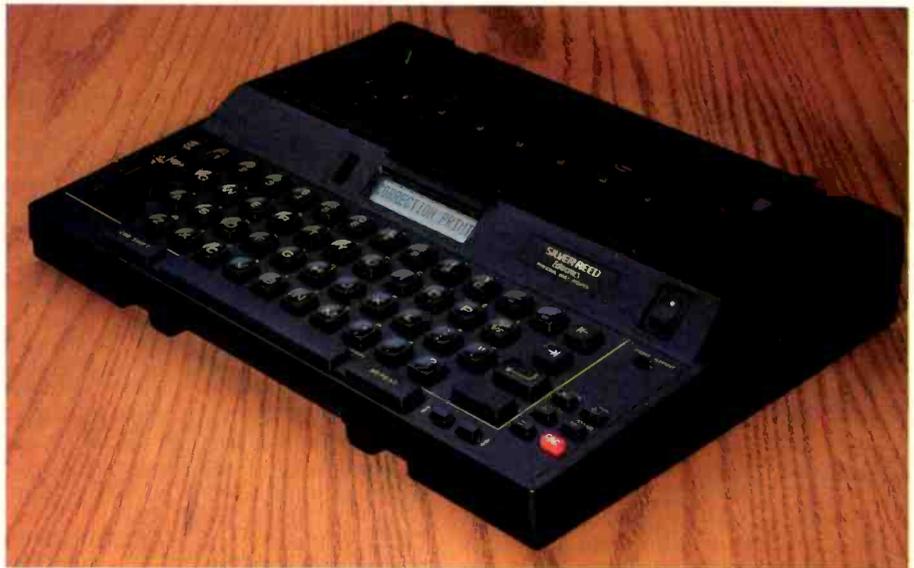
This allows you to see what you type before it's permanently typed. They call this word processing, but as a computer hobbyist, I just call it convenient.

Finally, you'll have a full function calculator. You can lay calculations right into your written text or switch to Non-Print.



## 2ND SHIFT AND MORE

In addition to the regular keyboard, there's a second keyboard with its characters shown above each key. It has useful characters such as ±, °, and foreign



language symbols. Please look below, because the typesetter setting this ad can't reproduce all the symbols.

It also has a 'Repeat' key that lets you infinitely repeat any character.

## DON'T BE MAD

### COMPUTER INTERFACE

Wow, just think, a machine that is sophisticated enough to work with your computer for just \$79. Unfortunately, its interface still costs \$69. But please remember, it was/is a \$249 machine.

Anyway, there's a port that allows you to add Silver Reed's external interface. You'll also need a standard parallel interface in your computer.

You'll have a computer printer with an 11 character per second printing speed. Each clear sharp character is made from a 16x10 dot matrix grid for good looking, super readable type.



## HERE AND THERE

This electronic typewriter is quiet enough to let you type in a library. With its hard protective case (included), it's tough enough to drag to the beach. It's a simply perfect gift for anyone who has to write college or high school reports.



You can type in a mountain cabin or at the kitchen table. Now you can have great

looking reports and letters anywhere.

As I said above, the letters are formed by a top quality 16X10 dot matrix print head. (Many cheap printers have only a 5X7 grid.) You'll have both upper and lower case letters.

But even so, if you want 'presidential letter quality' such as I need coming from my office, you probably need a \$1000 IBM, not a 'computer type' printer.

And, don't forget you'll get the best quality printing from thermal paper or from very smooth 'copy type' paper.

But, you'll love the versatility, ease and low operational cost of this incredible innovation in typing. It's backed by Silver Reed's standard limited warranty.

## TRY REALLY PORTABLE TYPING RISK FREE

Wait till you type a letter. Your entire family is sure to love this rugged machine.

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

To order your Silver Reed All Electronic Typewriter, complete with AC adaptor, 3 Ribbons and 10 Sheets each of Thermal and Plain Paper risk free with your credit card, call toll free, or send your check, not for the \$250 suggested retail.

Don't even send the \$125 printed on the dealer cost sheet. Send just \$79 plus \$5 P&H. Order No. 4318.

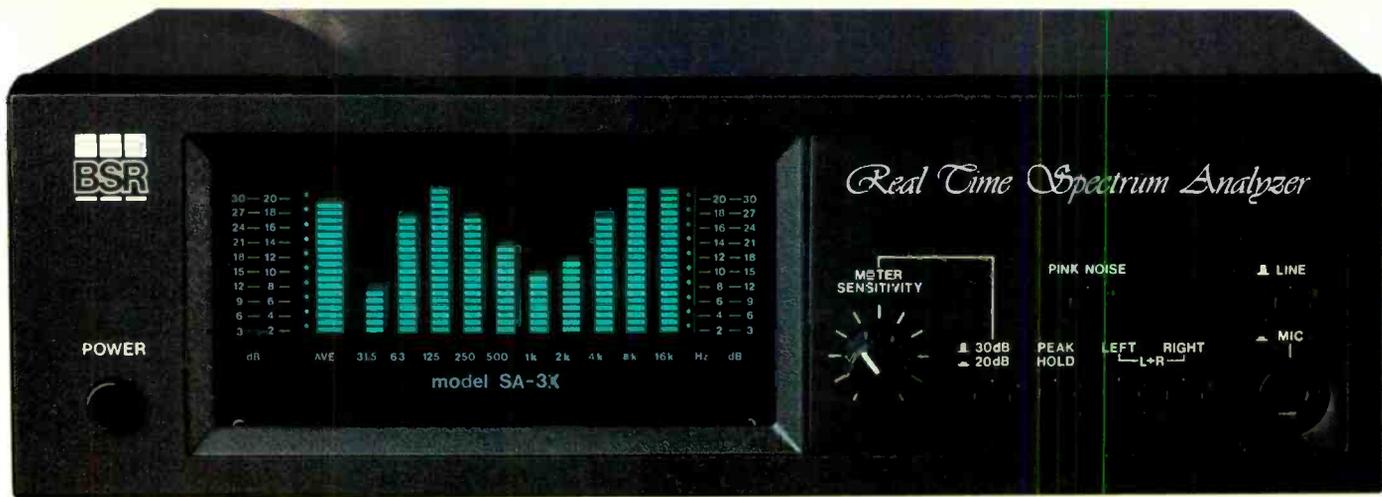
You can order 100 sheet packs of thermal paper for only \$3.50 (\$0.50 P&H) Order No. 4319. Or packages of 4, 18,000 character carbon ribbons (72,000 character total) for just \$7.50 (\$0.50 P&H) Order No. 4320. The computer interface is \$69 (\$2 P&H) Order No. 4321.

This typewriter was impressive at \$250. A totally electronic typewriter that goes where you go for \$79, will sell out fast.



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# The Inquisitor Plus

**Now you can scientifically analyze the relationship between your stereo system and your room, just like the studios do. Plus, you can watch the 10 bands of tonal quality in your music at a breakthrough price.**

Listen to your room. Are your crashing cymbals being absorbed by a couch before you hear them? Are the responses of your speakers flat throughout the audio range? Is your low bass totally obliterated by your forced air heater?

Now you can actually listen to your room. Or, you can test your tapes and components in seconds.

And, with an equalizer, or by moving your speakers or furniture, you can bring your system up to its full printed audiophile specs and more.

Plus, you'll see your music not as a single level on a VU meter, but as a kaleidoscopic parade of 10 individual 20 element VU meters. Each is tuned to a specific octave of the sound spectrum.

The effect is awesome. You can visually isolate a string bass or a cymbal and actually see each individual instrument almost as a wave moving across the display's 220 individual fluorescent elements.

And, look at this. When you are making cassette recordings, you can see the actual component frequencies you are recording. Since high frequencies, rather than the massive VU overloading effects of a string bass, are susceptible to saturation, you can accurately set your recording level for better recordings.

## THE MOUTH AND EARS

It talks. BSR's Analyzer speaks with a voice of pure calibrated Pink Noise. Pink Noise is the scientifically developed composite of all frequencies, generated at the exact same level.

Just connect the Pink Noise outputs to any line or 'aux' inputs in your receiver, equalizer or tape deck.

It listens too. You can monitor the results in two ways. If you are testing a cassette, use its line inputs. If you're testing your system's speakers, use its included matched calibrated microphone.

## HOW TO TEST YOUR SPEAKERS IN THEIR ENVIRONMENT

This is the crucial test. Simply place the calibrated microphone where you normally sit. It has an 18 foot cable.

Turn on the Pink Noise. With one glance at the 220 element display, you can see all the great and not so great frequency characteristics of your system.

You'll be able with the help of an equalizer to 'flatten out' your system's re-

sponse. You'll also be able to see the equality of your channels at all frequencies and make corrections to each channel for environmental differences.

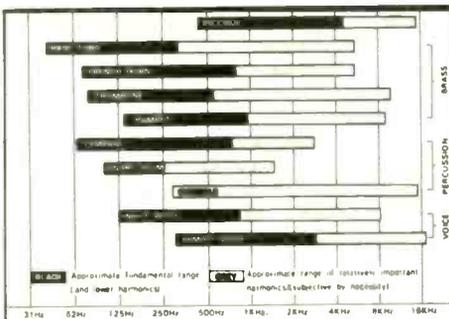


The analyzer works great with any system or equalizer.

Just wait till you move a chair that's near one of your speakers. Or wait till you see how your high frequency response will improve by rotating a speaker 10 or 20 degrees.

Output meters and VU meters only look at the gross power going out. That's why tweek Hi Fi shops will charge up to \$100 to send out a technician with an analyzer like this to set up your system.

You can test the Left, the Right or both speakers. There's a full range sensitivity control and a 20db/30db sensitivity switch. And, there's even a 'Peak Hold button' to freeze the display.



You'll actually see instruments as shown above on the display.

## DON'T PUT IT AWAY

BSR backs this audiophile test equipment with a full 2 year limited warranty, so there's no need to hide it away. If you're like most of us electronic/music nuts, just 'seeing' your music on 220 fluorescent elements will be an experience well worth the price alone. Plus, this is sure to be the most scientifically

impressive component in your system.

## DEAD BASS?

While I was testing the Analyzer, our standard central air/heat came on. Displays for the 31.5hz, 62hz and 125hz all shot up to the top and peaked. In short, there was so much sound level pressure below 125hz, that all signal below 125hz was totally masked.

While there isn't much you can do about the heat, it's surprising that the air coming through the duct had such a massive effect on the sound. Think of the effect when you record with mikes.

Plus, this illustrates the point I made earlier about overloading cassette recordings. A single VU meter would have peaked, so I would be recording the signal I wanted too low, which of course causes an increase in tape hiss.

## FULL CONTROL

There are 20 element fluorescent VU meters for the following 10 frequency bands: 31.5hz, 62hz, 125hz, 250hz, 500hz, 1,000hz, 2,000hz, 4,000hz, 8,000hz and 16,000hz. An 11th shows the average. It's just 8½" X 7" X 2¾".

## PUT YOUR SYSTEM TO THE TEST RISK FREE

Studios use them. So do electrical engineers. Now you can set up your own system, compensate for differences in your room, and much more.

Plus you'll have the most exact and exciting meter system to use when you're recording or to enjoy during play-back.

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

To order BSR's Inquisitor Real Time Spectrum Analyzer with Pink Noise and Calibrated Microphone risk free with your credit card, call toll free, or send your check for DAK's breakthrough price of just \$99.90 plus \$6 for P&H. Order No. 4300. CA res add sales tax.

It's a valuable and educational tool, plus it's an exciting addition to your system.

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# No Button Chess

*Just follow the blinking lights for the most challenging game of your life. There are 8 levels. It's fully automated. And, wait till you see the price.*

It's you against the computer. Chess comes alive with the latest breakthrough in computer technology.

There are no more bothersome buttons to push and complicated calculator displays to decipher. This computer uses 'sensor technology' to interpret what you have done, and simply lights 2 LEDs to tell you what it wants to do.

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 8 levels of difficulty and its brain is an 80C50 Processor running at 6 megahertz with a memory capability of 32,000 bits, so you better come out fighting.

## SIMPLE TO USE

Notice that I said, "simple to use", not simple to beat. Using this computer is incredibly easy. Just move your man. 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 show you where to move the man.

It's simple. It's easy. And, there are no buttons to push. You can concentrate on the game, not on the computer.

## BUT, THERE ARE BUTTONS

The only buttons you really need are the on/off switch and 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 its brain back to pick its best response.

**You can cheat.** Let's say you make a really dumb move. After you see what the computer is going to do to you (hor-

rors, you've lost your Queen), you make the computer take back its last move and then you can take back yours.

And that's not all. If you're the type of person who says, "If I only 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.

**But there are limits.** 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. So, what could be easier?

**There's 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. Plus, you can set up a classic game in mid-play to see how you would do.

This computer does everything a chess master would do. It castles, it has pawn promotion and en passant. So brush up, you'll have to play your best.

Even level one is a challenge. I can't beat this computer at level 4. And, I don't even want to talk about levels 5, 6, 7 and 8. And here's a nice extra.

You won't have to wait for the computer. With its super fast 6 megahertz speed, 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 4 and so on. See if your brain can keep up with this computer.

## WOW, IT'S REAL CHESS

But, when all is said and done, playing chess is what it's all about. And this game is very smart, very tough, but incredibly easy to use. Every move is even audibly confirmed.

It is only 10½" X 11" X 2½". The com-

batants are magnetic and the King stands 2" tall. Using the newest IC technology, this computer operates for more than 500 hours on 4 C batteries.

So, this chess player goes where you go. And, with more than 500 hours of battery life, you don't even need to buy an AC adaptor.

It's made in the United States (isn't that a change) by Fidelity Electronics. They are the largest and best known of the chess computer manufacturers. And, it's backed by their limited warranty.

## TRY NO BUTTON CHESS RISK FREE

If you like a challenge and your ego is strong enough to withstand losing to a computer, why not play just one game.

If you aren't 100% satisfied, even if you just lose too often, you can return this computer within 30 days in its original box for a courteous refund.

To order your Fidelity No Button Chess Computer risk free with your credit card, call toll free, or send your check for DAK's breakthrough price of just \$69 plus \$4 for P&H. Order No. 4306. CA res add 6% sales tax.

Whether you're a novice or a master, one of the 8 levels is sure to keep you humble. Chess taxes intelligence, not reflexes, which is why it's always been a game of Kings and Diplomats.



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# Stealth Bomber Update

The Pentagon may pay billions for the new Stealth Bomber that flies automatically and is invisible to enemy radar. But, you can have Teac's Stealth Automated Cassette Deck with dbx that can even record the full dynamic range of CDs for less than the price printed on Teac's January '85 dealer cost sheet.

Stealth's invisible. Enemy radar can't see it. And, it's the newest electronic marvel to come off the drawing board.

Now, you may be thinking that there's not much in common between a Stealth Bomber and an automated cassette deck. But, wait a moment before you decide.

This automated deck has a 'radar avoidance system' called dbx. No, it's not an MX missile. But, if the Stealth Bomber is invisible to radar, wait till you hear how 'invisible' tape hiss will become to your ears with this dbx deck from Teac.

When you record using dbx, this deck gives you a 90db signal to noise ratio and an amazing 110db dynamic range. This is one of the few decks that can accurately copy CD discs with all of their brilliant impact.

And, with a 30 to 20,000hz frequency response with CrO<sub>2</sub>, and 30 to 19,000hz with normal tape, you'll have vibrant recordings from any source.

## AUTOMATIC PILOT PLUS

The Stealth similarity doesn't end at 'radar avoidance'. While the Bomber controls are still top secret, I can tell you a lot about this deck's automated controls.

From the first button you touch, you'll appreciate this deck's total IC logic control. A DC servo controlled motor drives only the capstan for low flutter and wow, while a second DC motor operates the unwind and rewind functions.

With auto-record mute, you'll have clean intros and exits to your recordings. And, what recordings you'll get.

A Cobalt Amorphous head combined with a Ferrite erase head really transfers a clean signal onto the tape. And linear slide input level controls and 13 element peak reading VU meters make precise level setting a breeze.

## COURSE CORRECTIONS

When you're listening to a tape, you may want to skip to the next song or play the same song over again. Stealth's auto-pilot lets you alter course.

Just push the » button during play to automatically advance to the next song. One touch of the « button will automatically return you to the beginning of the song being played. Wow, the Stealth Deck really does have automatic pilot.

## LOADED WITH EXTRAS

There are no bias switches to remember. This deck automatically selects and displays the correct bias when you insert a cassette. Another really nice feature is an output level control which allows you to match the output of this deck to the rest of your system.



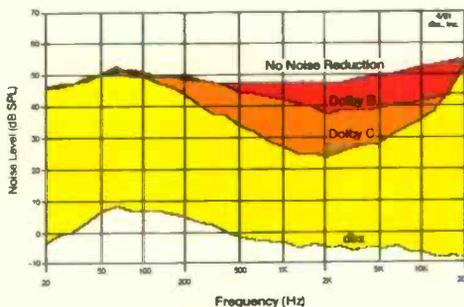
While dbx is the ultimate noise reduction system, complete with its vibrant 110db dynamic range, this deck also allows you to record and play Dolby B.

And, the list goes on. There's memory rewind to aid in locating a specific position on the tape. And, with an external timer like the BSR X10 system, (not included) this deck can be set to automatically record or play at a preset time.

## BUT IT'S THE dbx

You can buy other fine solenoid operated decks. You can even get decks with Dolby C for the \$280 suggested retail price of this deck.

But you just can't get the full-range dynamic hiss free response across the entire frequency range that you can get with dbx.



This graph supplied by dbx clearly shows just how good recording with dbx can be. You can easily test the day and night difference for yourself. The test is described in the next column.

The graph above says it all. dbx will give you cassette recordings that are virtually free from surface noise across the entire frequency range. Not just at the very high end.

Plus, you'll have the incredible vibrance of a 110db dynamic range. (The difference between the very softest and loudest possible sounds.) With this deck

you're ready for CD or any possible recording need.

DAK bought over 4000 of these superb Teac decks to get this market breaking price. As you can see below, the January 1985 price list shows a suggested retail price of \$280 with the dealer cost being \$165. Read on for your price.

Effective January 1, 1985	
Features	Suggested Retail Dealer Cost
V-430X Dolby B NR • dbx Noise Reduction 2 Heads, Cobalt Amorphous, Ferrite 2 DC Motor Transport System IC Logic, Operation Memory Stop One Program Skip, Auto Tape Selector Auto Bias, Mute, Change Volume MPX Filter, cooperate with NR switch 13-dot LED Bar Meter	280 165

It's a top quality deck from a top quality company. And of course, it's backed by Teac's standard limited warranty.

## TRY THE STEALTH DECK RISK FREE

Record some blank tape with no input as I did. Set your tape counter at 000. Start the recorder without noise reduction. At 020, switch in the Dolby B, and at 040, switch in dbx. Then play it back.

You'll be sold just as I was. It's a great deck for a lot of reasons. But dbx would make this deck worth its retail price alone.

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

To order your Stealth Teac Automated Cassette Deck with dbx risk free with your credit card, call toll free, or send your check. Don't send its \$280 suggested retail. Don't even send the \$165 dealer cost. Send just \$148 plus \$7 for P&H. Order No. 4305. CA res add tax.

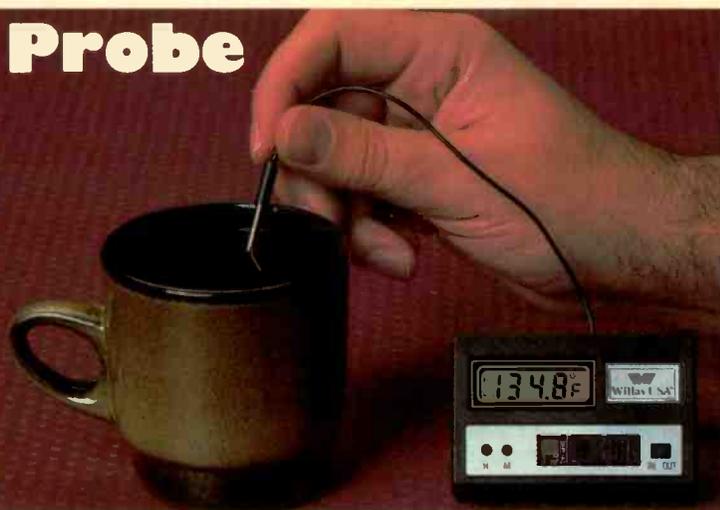
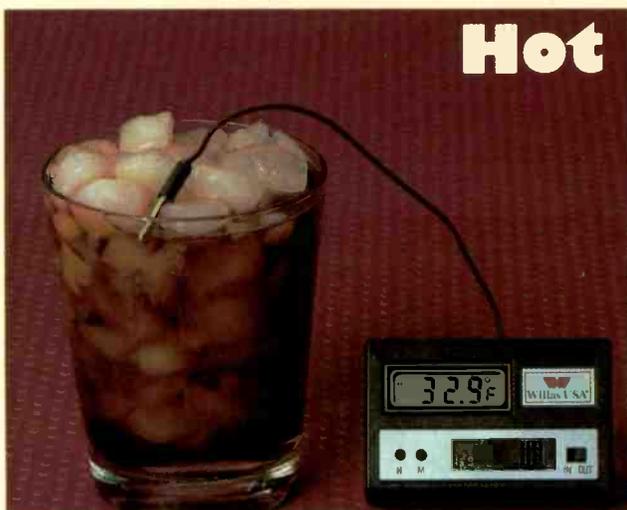
The Stealth Bomber is still on the drawing board. But, you can get your own Stealth Deck and be ready to record CDs, live music or just fabulous sounding copies of records, while our limited supply at this price lasts.



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# Hot Probe



**Now you can test your air conditioner, your hot water heater, your wine or your pool. Here's the latest in temperature measuring devices, at a breakthrough price. Plus, you can even set temperature alarms.**

Does the air conditioner in your car need Freon™? Is your refrigerator set for the right temperature? And, just how hot is your hot water?

Now, with the all new Hot Probe Temperature Sensor for Willas, you can check the temperature of virtually anything from your Jacuzzi, to your aquarium, to your attic, in 1/10 degree increments.

You can measure anything from 0°F to 160°F. The Hot Probe has an attached probe that stretches out to 10". Plus, it has an internal sensor to measure the ambient (surrounding) air temperature.

Now you can measure the temperature drop of your car or home air conditioners. (That's the difference between the room air temperature and the temperature of the air coming out of the duct that's measured by the probe. See picture.)

The extra large LCD display is exceptionally clear. And, because it never shuts

off, it's the perfect room air temperature sensor for your desk or night stand.

If you're like me, you'll be checking the



temperature of everything from your coffee to your bath. When I measured the output air from my typesetter that I use to make this ad, I found it was 107°F.

It's not supposed to be above 90°, so I installed a fan. The Hot Probe might

have just saved me a bundle of money.

## TEMPERATURE ALARMS

Because of the experience with my computer, I got the manufacturer of the Hot Probe to add temperature alarms. You can set alarms to sound if the temperature rises above or drops below any temperatures you have selected.

It operates on one AAA battery (not included) and it's backed by Willas's limited warranty.

## TRY THE HOT PROBE RISK FREE

If you're not 100% satisfied, simply return it within 30 days in its original box for a refund. To order your Hot Probe Sensor risk free with your credit card, call toll free, or send your check for only \$29 (\$3 P&H) Order No 4330.

You may not save an expensive computer like I did, but if your air conditioner is low on Freon™, you might just save your compressor. It's a neat device.

# 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 full 30 to 15,000hz frequency response from this 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, you can mount it on most video cameras.

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 \$67 plus \$3.50 for postage and handling. Order No. 9736.

You'll be able to make superb recordings that were never before possible.

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Olivetti's Underwood

# Medical Blunder Revisited

*Olivetti thought they'd capture the entire medical market by producing a \$645 full size, daisy wheel, all electronic typewriter with full automatic correction in off-white instead of black. Unfortunately their sales force didn't know what to do with it, so DAK closed out over 7500 for \$249. But look what you'll get now for \$217.50.*

By Drew Kaplan

Well, in Olivetti's quest for diversification, they also produced a typewriter with the same keyboard, the same daisy wheels, the same ribbon and the same lift off correction system under their Underwood name. Here's how I described the last machine.

Scalpel, clamps, typewriter. No, Olivetti didn't think that this totally electronic, dual keyboard, full size machine would really be used in operating rooms.

But, they did think that if they produced their legendary Praxis 41 in off-white instead of plain black, they might be able to lock up big hospital contracts.

After all, here was a full size office typewriter with interchangeable daisy wheel printing, whose color would be customized for the medical profession.

With single key lift off correction, errors simply disappear. And, bills could be raised at will. With one touch electronic margin and tab setting, neat itemized bills could be rendered quickly.

And look at this. Vertical rule lines can be automatically added to any or all tab locations. You'll have really professional looking columns for reports.

There's even a switchable second keyboard with scientific and foreign symbols. This typewriter can squeeze 15 characters into an inch so you can fill out all those complicated government forms. And, a front panel switch lets you choose 10, 12, or 15 characters to the inch.

The interchangeable daisy wheels are available in 10, 12, or 15 character to the inch sizes and let you choose formal, informal or even script type faces.

The daisy wheels just pop in or out like typing balls. They are definitely the newest, fastest way to achieve professional true letter quality printing.

**NOT JUST FOR DOCTORS**

Imagine typing a 'werd' and changing it to 'word' automatically. This intelligent machine remembers the last 10 characters you typed and will automatically lift off the incorrect letter with a single key.

If you made a mistake farther back on the page, just touch the correction key first, and then the offending letter. The letter will be lifted off the page.

If you left out a letter, don't worry, there's even a half space key. Plus, if you've made a correction at the beginning of a line, one touch of the 'Relocate' button causes the typewriter to automatically reposition itself to the space after the last character you typed on the line.

Every office convenience is included. You can choose 1 line, 1½ line, or 2 line spacing. And, there's even an express button that returns the print head to the beginning of the line you're on.

A rotating dial shows you how many inches you have of typing space remaining. And, an inch guide lets you easily set tabs and margins without guessing.

And speaking of tabs (you can set 12) and margins, you set them by simply touching an electronic button.

## AND NOW, THE UNDERWOOD 3500

Underwood is an old and respected name in office typewriters. It's owned by Olivetti. The July 1984 dealer cost sheet shows a suggested retail of \$545, with dealer cost at \$347, which is \$37 less cost than the original Medical Blunder.

The biggest difference is that the Medical Blunder had a provision for adding a \$119 computer interface. So, if you're looking for a computer printer instead of a typewriter you're out of luck.

The outer case of the Underwood is about 2" smaller. And, instead of taking 13" paper it only takes 12". But, it types the identical 11" line. The Underwood comes with a large suitcase type carrying

case (but at 21 pounds it's not very portable), the Medical Blunder did not.

The carbon ribbon cartridges, correction rolls and daisy wheels aren't just interchangeable with the Medical Blunder, they're the exact same. And of course, everything is available nationwide and is backed by Olivetti's limited warranty.

## MEDICAL BLUNDER REVISITED RISK FREE

Wait till you feel the keyboard. Wait till you experience the features that will save you time and give you flawless office quality letters. If you're not 100% satisfied, simply return it in its original box within 30 days for a courteous refund.

To order your Olivetti/Underwood 3500 Electronic Typewriter complete with a carbon ribbon cartridge, a snap-in lift off correction roll and a standard daisy wheel



risk free with your credit card, call toll free, or send your check not for the \$545 suggested retail, but for just \$217.50 plus \$11 for P&H. Order No. 4311.

Full size industrial carbon ribbon cartridges with 40,000 character capability are just \$4 (\$1 P&H) Order No. 4176. Snap-in correction rolls with 1100 character correction capability are just \$2.50 (\$0.50 P&H) Order No. 4177.

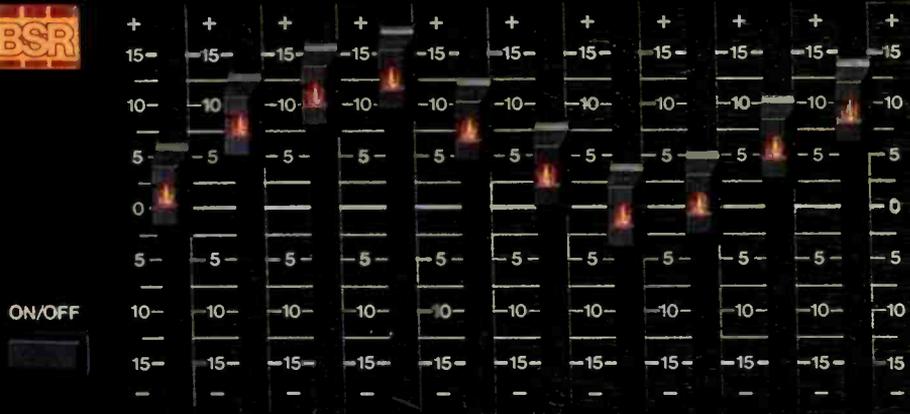
Wait till you experience the joy of automatic correction, electronic typing aids and Olivetti's solid dependability.



LEFT / FREQUENCY (Hz) / dB

31.5 63 125 250 500 1k 2k 4k 8k 16k

STEREO FREQUENCY EQUALIZER



ON/OFF

METER  
HOLD

LEFT ATT RIGHT EQ

model EC

# Smart Sound Detonator

**Obliterate the wall between you and the individual instruments in your music. Infuse your own stereo system's sound with a breathtakingly vibrant 30 to 50% improvement in sound quality that you can measure with this superb BSR Equalizer/Spectrum Analyzer limited \$149 close-out.**

By Drew Kaplan

Close your eyes. Touch a button. And you'll hear your stereo system literally explode with life.

You'll hear the gentle brushes on a snare drum, the startling bone-jarring realism of a thunder clap, or the excitement of a full cymbal crash.

You'll hear string basses and other deep low instruments emerge from bass (that will sound murky by comparison), with such clarity and such definition that you'll feel you can almost touch each instrument.

This astoundingly distinct yet powerful bass adds such a full bodied warm feeling to your music, you'll feel as if you've been lovingly wrapped in a warm soft blanket on a cold winter's night.

**But don't take my word for the sound quality improvement.** With the Pink Noise Generator, Calibrated Electret Condenser Mike and the 220 Element Spectrum Analyzer, you can instantly measure each and every improvement you make.

Plus, there's more. A subsonic filter effectively adds the equivalent of many watts onto the power of your amplifier.

Plus, with its provision for two separate tape decks including two way dubbing, you'll have much more than just greatly improved sound.

You can count on great sound from this top of the line Equalizer/Analyzer. It has a frequency response from 5hz to 100,000hz  $\pm 1$  db. And, it has an incredible 100db signal to noise ratio.

BSR, the ADC equalizer people, make this super Equalizer/Analyzer and back it with a 2 year standard limited warranty. Our \$149 close-out price is just a fraction of its true \$379 retail value.

**FIRST THE EQUALIZER  
YOUR STEREO'S HIDDEN SOUNDS**  
Your stereo can sound incredibly bet-

ter. Just a 5db roll-off at the high end, up around 14,000hz to 16,000hz, can just decimate the harmonics that give you the open feeling you'd experience at a live concert. A similar roll-off at 60hz, causes the fundamental bass notes to just fade away into the 'murk'.

An equalizer isn't some magical device that manufactures sounds that don't exist. Most of the frequencies that will make your music really vibrant, are actually already recorded in your music.

You'll be able to prove this with a few simple tests we'll try when we discuss the Spectrum Analyzer.

You see, certain frequencies are simply not reproduced with as much volume as are the mid-range frequencies which stretch from about 800hz to 2,000hz.

An equalizer simply lets you establish accurate control of all frequencies to fit your equipment, your recordings, your taste, and your listening environment.

## TOTAL MUSICAL CONTROL

And, what a job it can do. It's totally unlike bass and treble controls which simply boost everything from the mid-range down for bass, or everything up for treble. You can boost the low-bass at 31.5hz, 63hz and/or 125hz to animate specific areas or instruments.

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

The high frequencies really determine the clarity and brilliance of your music. The problem is that highs are very directional. Wherever you move in your listening room, you'll find a big difference in high end response, as you'll see when we test the Analyzer.

No recording engineer or equipment manufacturer can even begin to control your listening environment.

You can control the highs at 4,000hz, 8,000hz and/or 16,000hz, to bring crashing cymbals to life at 16,000hz while at the same time you can cut tape hiss or annoying record scratches at 8,000hz.

But there's more. Don't leave out the mid-range. You can boost trumpets at 300 to 500hz or a clarinet at 1000hz. You can boost or cut any part of the frequency spectrum a full  $\pm 15$  db.

## TAPE DECK HEAVEN

You can push a button and transfer all the equalization power to the inputs of two tape decks. Now you can pre-equalize your cassettes as you record them and get all the dramatically enhanced sound recorded right on your cassettes.

This is an especially great feature when you play your cassettes on bass-starved portables or high-end starved car stereos.



## SIMPLY PLUG IT IN

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

Just plug the equalizer into the tape 'in' and 'out' jacks on your receiver or preamp. We even supply the cables.

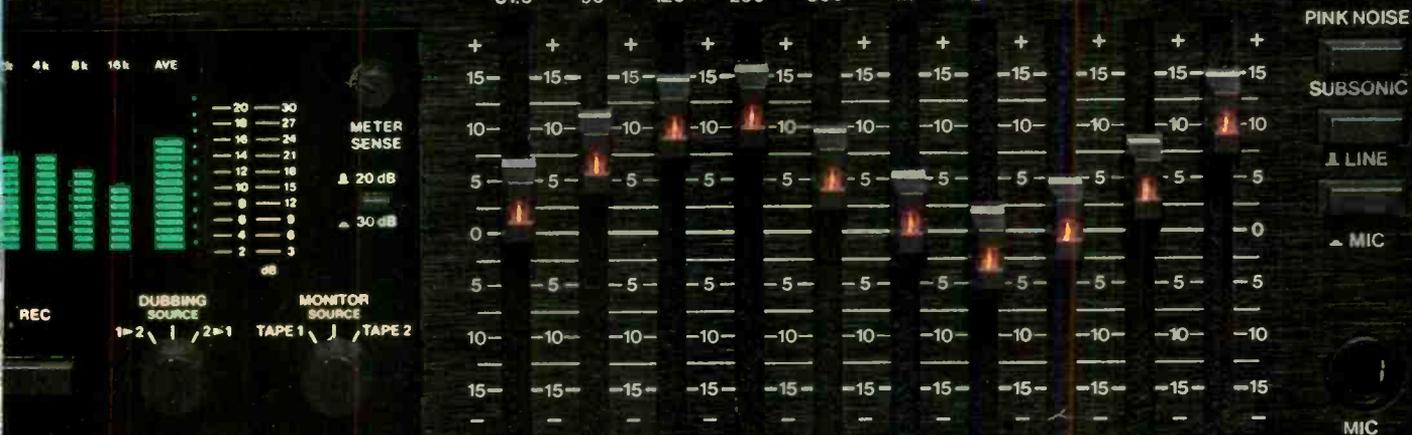
As you listen to your records, FM or any 'Aux', any time you push the tape monitor switch on your receiver you'll hear your music jump to life.

The output from your receiver is always fed directly to your tape deck(s) for recording, and with the touch of a button, you can choose to send equalized or non-equalized signal to your deck(s).

When you want to listen to a tape deck, just select which tape deck you want, turn the switch on the equalizer,

# \$149 CLOSE-OUT

## EQUALIZER / SPECTRUM ANALYZER



EQ-3000

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

Look at this. You can dub tapes from deck 1 to deck 2, or from deck 2 to deck 1 with or without equalization.

### THE SUBSONIC FILTER

Much of the power drawn from your amplifier is used to drive your woofers. When you drive the amplifier too hard, it clips and you end up with distortion.

A subsonic filter removes a lot of non-musical material you can't hear that exists below 20hz. So, it relieves your amplifier of a lot of work. It doesn't actually create more watts (Please, no letters from my 'technical' friends) for your amplifier.

But, it's like turning off the air conditioning in your car. It saves you using about 7hp of what you have. And therefore, you'll have more watts for clean powerful sounding music.

### THE SPECTRUM ANALYZER

Now you can scientifically analyze your stereo listening room and test your equipment by using BSR's Real Time Frequency Spectrum Analyzer.

Plus, you'll see your music not as a single level on a VU meter, but as a kaleidoscopic parade of 10 individual 20 element VU meters.

Each is tuned to a specific octave of the sound spectrum. An eleventh 20 element meter averages all levels.

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 220 individual florescent elements.

### THE MOUTH AND EARS

It talks. The Analyzer speaks with a voice of pure calibrated Pink Noise. Pink Noise is the standard composite 'sound' of all frequencies used for testing in labs around the world. All frequencies from 20hz to 20,000hz are generated at the exact same level at the exact same time.

It listens too. If you are testing a cassette or a component in your system, use the 'Line Button'. If you're testing your whole system with speakers, use the matched calibrated electret condenser

microphone (included). Either way, you'll have a quick, easy and accurate way to evaluate the total sound of your system.

### HOW TO TEST

#### SPEAKERS, EQUIPMENT AND TAPE

Testing your speakers in your listening room is the really crucial test. Simply place the calibrated microphone where you normally sit to listen to your stereo.



At the end of an 18 foot cord is the ear of the system. Just clip the mike wherever you sit and test your room.

Turn on the Pink Noise. You can switch to Left Channel, Right Channel or both. There's a meter range button, a sensitivity control, and even a switch that lets you freeze the meter.

Just sit down at the equalizer. Start with one channel. You'll see all 10 octave bands on the meter. Just slide the corresponding controls to increase or decrease any area that needs help.

You have now set up your system to its maximum capability. But as you'll see, location is very important. Move the microphone 5 feet to the left or right.

Then turn on the Pink Noise and check the Spectrum Analyzer. Now you can see why the specifications that come with your system are only a starting point.

Here's a way to test your tape deck and tape. First record Pink Noise for 3 minutes at -20VU. Then play it back and note the readings on the meters.

Now, record the Pink Noise again at 0VU or +3. Wait till you see how much the high end falls off. Now you'll see why all specifications are listed at -20VU.

With the Equalizer/Analyzer you can enjoy the finest stereo sound from your system and be a test lab too.

### WHY SO CHEAP

BSR now only sells equalizers under their ADC name. Well, as Detroit comes out with new cars each year, ADC comes out with new equalizers. We got them to supply us with just 30,000 of last year's

ADC model before they shut it down.

They had already paid for all the tooling, all the research and design, so we were able to buy these for less than half the normal price, for cold hard cash.

### THE FINAL FACTS

There are 20 slide controls, each with a bright LED to clearly show its position. Each control will add or subtract up to 15db. (That's a 30db range!)

There are separate sound detonation slide controls for each channel at 31.5hz, 63hz, 125hz, 250hz, 500hz, 1,000hz, 2,000hz, 4,000hz, 8,000hz, and 16,000hz.

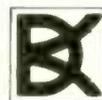
BSR backs this top of the line Graphic Equalizer/Spectrum Analyzer with a 2 year standard limited warranty. It is 17 1/2" wide, 3 1/2" tall and 8 3/4" deep.

### MAKE YOUR MUSIC EXPLODE RISK FREE

It's startling. Music so vibrant with life you'll swear it's 3 dimensional. Sculpture your music any way you want it. If you're not 100% satisfied for any reason, simply return it to DAK within 30 days in its original box for a courteous refund.

To order your BSR EQ3000 Smart Sound Detonator 10 Band Graphic Equalizer with Real Time Spectrum Analyzer and Calibrated Mike, with Subsonic Filter and Two Way Tape Dubbing risk free with your credit card, call toll free, or send your check, not for the \$379 retail value. Don't even send the \$227.97 dealer cost. Send just \$149 plus \$8 for postage and handling. Order No. 4100. CA res add sales tax.

The sound of your stereo will explode with life as you detonate each frequency band with new musical life. And, you can see and measure exactly what you've done.



**DAK**  
INDUSTRIES INCORPORATED

### TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week  
**CALL TOLL-FREE. 1-800-325-0800**  
8200 Remmet Ave., Canoga Park, CA 91304

# Cable Controller Plus

Get all the cable channels on any TV or video recorder with this all new wireless infrared remote control cable tuning system. And at just \$88, we're sure to break the cable market wide open.

If you've got cable, we've got it all. Now you can tune in up to 60 cable channels from your easy chair.

The Universal Cable Controller receives all VHF Low Band channels 2-13 and VHF Midband 14(A)-22(I).

Plus it tunes the Super Band VHF channels 23(J)-36(W) and Hyper Band channels from 37-60. You'll get a lot of stations for our breakthrough price.

## MOVIE CHANNELS

If there are movie channels on your cable and they're not scrambled, the Controller is all you need. If they're scrambled, you'll need the cable company's box.

**Note: Check with your cable company before viewing anything at all, to see if they require you to pay a fee.**

## SPORTS PLUS

There are lots of 'Super Channels' broadcast on cable. On the all sports channel you'll watch 'World Class Sports' whenever you wish. All Movie Channels give you entertainment at all hours.

And 'Super Stations' from New York and Atlanta give you major city TV for cities other than your own. Plus, there's Cable News Network for a world wide perspective on the news and much more. Why not see what's on your cable?

## ONLY FOR CABLE

If you don't have cable, the Cable Controller isn't for you. It only finds you extra channels when you are connected to a cable. And, it doesn't tune in UHF.

But, if you're on cable, your cable company is rebroadcasting UHF over unused VHF channels. So with the Cable Controller tuner, you'll get it all.

## TOTAL RANDOM ACCESS TUNING

The wireless infrared remote hand controller does it all. It switches both the TV and the Controller on and off and selects your channels. And, look at this. You can select your favorite channels (up to 6) and store them in a special section.

Then just touch the special 'RCL' Recall Button and you'll be able to sequence through only your favorite channels. This is especially convenient if you like to flip through movie channels during commercials on regular TV.

For the other channels, you'll enjoy total random access tuning. You can go directly from channel 2 to 28. Or you can step tune one channel at a time.

Once you've set your own TV to channel 3, you can just forget it. Any fine tuning is handled from the wireless infrared remote handset. And you'll have crystal controlled frequency phase lock loop synthesizer tuning for the finest picture.

You'll see the number of the station that you have selected displayed on the command base. And, you can tune channels either from the remote or the base.

Color tints, volume, brightness and contrast are all controlled by whatever method you now use.

## INSTALLATION

Nothing to it. All cable systems use 75 ohm round cable. Simply unscrew the end from your TV and screw it into the Controller base input.



Then screw in an identical cable (included) between the Cable Controller and your TV. Finally, plug your TV's AC plug into the Controller and the Controller's AC plug into the wall.

## WHAT IT IS

The Cable Controller is actually a very sophisticated, all electronic VHF TV tuner/receiver. It's really like a TV set without a picture tube.

Since it's all electronic, you won't be getting snow from dirty tuning contacts and loss of fine tuning as the set ages.

The Controller tunes all the possible stations that your cable can broadcast, something that would be very expensive to build into standard TVs, because not all TVs are going to be used on cable.

dreds of dollars extra. You can feed both your TV and video recorder. Or, you can separate them so that you can easily watch one thing and record another.

## WHAT IT ISN'T

It isn't one of the infamous 'black boxes' you might have read about that illegally decode various 'Pay TV' channels. On cable, most of the programming isn't scrambled, it's just found outside the tuning range of the average TV.

So, if there is a Pay TV channel that is scrambled, or is only unscrambled on one TV in your house, the Controller is not made and should not be used to tune it in without paying.

Actually 'Cable Ready' TVs and video recorders do basically the same thing as the Cable Controller, but cable tuning is usually an added on feature that often doesn't cover as many channels.

The Cable Controller is made and backed by a standard limited warranty from Universal Security Instruments Inc.

## TRY THE WORLD OF CABLE RISK FREE

Relax up to 20 feet away. Change channels, adjust the fine tuning or turn your set on or off. Explore the vast number of cable channels available to you.

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

To order your Universal 60 Channel Cable Controller with Wireless Infrared Remote Control, risk free with your credit card, call toll free or send your check for DAK's market breaking price of just \$88 plus \$5 for postage and handling. Order Number 4147. CA res add tax.

There's a whole new world of entertainment waiting for you just off your normal TV tuning range. With the Cable Controller, you can sit back in your favorite easy chair and tune in the world.



## GREAT FOR VIDEO RECORDERS

Now you can record off cable. With the Cable Controller hooked to your video recorder you can open the world of cable to your video recorder too.

Cable ready video recorders that don't even tune in 60 channels can cost hun-



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For credit card orders call 24 hours a day 7 days a week  
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8200 Remmet Ave., Canoga Park, CA 91304



# Crooning Titan

*You'll experience melodious but thunderous sound at home or on the road from this bi-amplified audiophile portable with subwoofer, stereo enhancer and 5 band equalizer.*

It's rich. It's deep. And it's powerful. This portable has the sound and features you'd expect from home stereo.

In fact, when you are at home or at the office, it makes a great second stereo system, with its rich expansive bass and vibrantly alive highs.

You'll have superb sounding FM stereo, AM and cassettes. And just wait till you experience the powerful bass supplied by the separately amplified subwoofer.

And that's not all. When you switch in the 'Stereo Wide' electronic enhancement, the 22" width of this portable seems to increase to 3 or 4 feet.

## COLOSSAL SOUND

Forget boom box sound. Now you can have bi-amplified, equalized and enhanced sound wherever you are.

Most portables have 'Tone' controls or at best, bass and treble controls. Now you can turn up the bass at 100hz or the high end at 10,000hz without making a singer sound muddy or raspy.



The 5 band EQ lets you sculpture the sound just the way you like it at 100hz, 330hz, 1,000hz, 3,300hz, and 10,000hz.

The highs will be dramatically reproduced by a pair of clean piezo tweeters.

The mid-range and mid-bass is smooth and flat. It's produced by the outer mid-range/low-end speakers. But, wait till you hear the low bass.

Just switch in the separate electronically crossed-over amplifier and twin 'super woofers' to add earthshaking depth

and fullness to your music.

By separately amplifying (bi-amplifying) the low bass, and not letting it clip (overload) the left and right channel amplifiers, you can maximize the acoustical detail of your mid-range and high end sound while you bring your bass to life.

Because this electronic crossover allows some frequencies as high as 400hz to reach the separate amplifier and woofers, it may be pushing credibility to call these true subwoofers. But, you'll be amazed at the power, punch and tightness of the bass from this portable.



## EVEN BIGGER THAN IT LOOKS

The speakers across the front provide a continuous 22" wall of sound. The woofers in the center don't effect stereo separation because very low frequencies are totally non-directional.

But, 22" isn't a lot of separation to really key into reality. So, there's a 'Stereo Wide Circuit'. When you switch in this circuit, it affects only the highs and provides the illusion of up to 3 or 4 feet of separation between the channels.

So, you'll have vibrant highs, massively powerful bass, a clean mid-range and great separation for just \$99.90. Wow!

## ALL THE MUSIC

Powerful AM and FM tuners with a large slide rule dial let you pull in even distant stations. At home or away, you're going to have great reception.

The cassette deck allows you to record and play metal or normal tapes. It is direct-coupled to make great recordings from the built-in tuners or from its built-in mike. You can also plug in your own

external mikes. It also has one touch record, auto-stop and a tape counter.



You can operate this portable on AC (cord attached), by standard D batteries (not included), or by 12V DC from your car (cord not included). It's made by Unitech and backed by their limited warranty.

## A CROONING TITAN RISK FREE

This silver-tongued music maker will amaze you with both its purity and its power. It's perfect for the bedroom, den, office or out in the yard.

While it's the ideal portable, it sounds so good at home you'll hate to take it on the road. If you're not 100% satisfied, simply return it in its original box within 30 days for a courteous refund.

To order Unitech's Crooning Titan Portable with 5 Band Equalizer, Bi-Amplified Subwoofer, and 'Stereo Enhancing Circuit' risk free with your credit card, call toll free, or send your check for DAK's earthshaking price of just \$99.90 plus \$7 P&H. Order No. 4316. CA res add tax.

Why be tied down to one room to listen to your favorite cassettes or radio stations? Now you can have really great sound anywhere in your home, your office or in the great outdoors.



## TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week  
CALL TOLL-FREE. . . 1-800-325-0800  
8200 Remmet Ave., Canoga Park, CA 91304



# Automatic Audiophile Plus

Here's Sharp's top of the line, Linear Tracking, totally automated turntable. It plays both sides, repeats and seeks out your songs. Plus, it plays them in any order you desire. And, it's at our close-out price, plus just \$10.

By Drew Kaplan

It was a disaster. Last year DAK closed out Sharp's Linear Tracking Vertical turntable under their Optonica name for just \$173.50 each. We had just 1200, but we received orders for thousands.

Sharp's new Linear Tracking turntable has all the capabilities of the original. Plus, it can play up to 14 selected cuts from both sides of your records automatically in any order you desire. Wow, how great for making recordings!

My wife had me make a cassette for her car with two songs which she really liked, repeated over and over again.

I've always recorded cassettes with just the songs I want. But now I can easily record them in the order I want.

DAK has made a special massive cash purchase that enables us to offer this all new turntable for just \$10 more than our close-out price for the previous unit.

## GREAT SOUND PLUS

Before we explore the 20-20,000hz audiophile sound produced by its twin linear tracking tone arms complete with moving magnet cartridges, let's look at what the micro computer technology of this turntable can do for your music.

But, don't forget that linear tracking arms mean precise lateral balance and accurate tracking, from the outside of the record all the way to the center groove for dramatically clean distortion free sound. **PLAY BOTH SIDES AUTOMATICALLY**

Now you can play Side A, Side B, both sides or up to 14 selected cuts over and over again. Now you can have an evening of nonstop music from a single record.

And as I said above, think about the wonderful cassettes you'll record with just the songs you want, in just the order you choose.

I really appreciate this feature because there's almost always a song or two on a record that I don't like. When I'm listening to cassettes in my car, I always end up fast forwarding through the unwanted songs and missing the songs I like.

With this turntable I record just what I want without having to hover over the record (I don't have much free time) while I record my cassette. But with all the fancy programming, let's not forget the sound.

This Linear Tracking Turntable has

two tone arms and two moving magnet cartridges. So, there's a separate linear perfectly balanced arm and a separate cartridge for each side of your record.

The main drive is a superb FG electronically controlled DC motor for stability. There are two additional motors. One for the tone arms of this automatic turntable, and another that automatically glides the turntable drawer in and out when you touch the loading button.



## TOTAL CONTROL

Push the play button and choose side A or B, and an arm moves out to the record. An infrared computer tracking sensor locates the first groove, and the stylus will be gently lowered to your record.

**There's more.** In addition to the automatic track selection, Sharp's top of the line Linear Tracking Turntable has APSS.

APSS is a computerized track selection system that lets you move one track at a time forward or backward at the touch of a button. It uses an infrared sensing system to let you locate specific songs on both sides of your records.

You can move forward to skip songs you don't want to hear. Or, you can move back to play songs again. You can even replay the song you are listening to with the touch of a button.

If you don't like the current song, push Forward APSS and you'll skip forward as many songs as you like.

Now you're in full control. And you (or less careful individuals in your family who don't cherish your records as you do) will never scratch a record, because the on-board computer controls all the actual arm movements.

APSS gives you the same control manually that you'd get if you preprogrammed the tracks you desire.

What if you don't know the name of the song you want? The Automatic Audiophile has intro-scan which will automatically play the first 12 seconds of each song on the record, one after the other, until you locate the song you want or have reviewed both sides of the record.

## MUCH MORE

Push one button and the turntable will switch from side A to B, or from B to A. Push the Load Button, and the arm will lift from the record, return to its home position and the turntable will glide out.

You can play both 33 $\frac{1}{3}$  LPs and 45s. And, you can play 7", 10" and 12" records. In addition to all the automated features, there's a cue/pause control as well.

The turntable is striking. The LED display shows both the tracks that are programmed to play as well as which track and which side is currently being played.

It's about the size of a cassette deck and fits perfectly into any component location. It is 13" wide, 13 $\frac{3}{4}$ " deep and 4 $\frac{1}{8}$ " tall. It's backed by Sharp's standard one year limited warranty.

## TRY AUTOMATIC AUDIOPHILE PLUS RISK FREE

Wait till you hear the sound. Wait till you try its computer. Wait till you have uninterrupted music. And wait till you see this turntable in your system.

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

To order your top of the line Sharp Linear Tracking, Computer Controlled, Both Sides Playing, Programmable Turntable risk free with your credit card, call toll free or send your check for just \$10 more than our close-out price. Send just **\$183.50 (\$7 P&H)** Order Number 4309.

Your records will love the linear tracking arms, your ears will love the pure sound, you'll love the convenient computer controls and your eyes will love the Hi-Tec appearance.



**DAK**

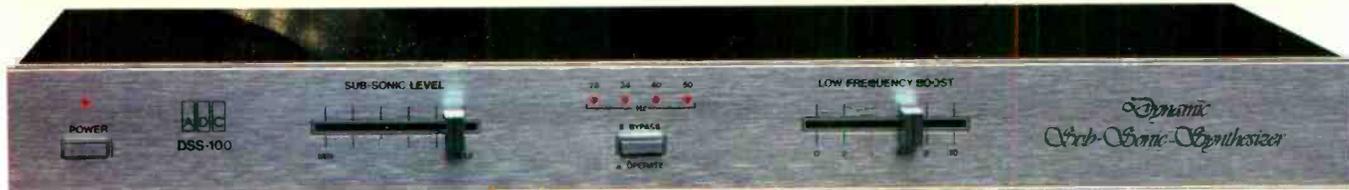
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8200 Remmet Ave., Canoga Park, CA 91304



# Sub-Sonic Synthesizer

*It's not for everyone, but if you're thrilled by the dramatically alive bass at a live concert, and if your stereo system has what it takes, now you can synthesize the bass that can't be recorded on records and tapes.*

By Drew Kaplan

It's not there. You can't boost it with an equalizer. And, you certainly can't improve it with a regular bass control.

The subharmonic bass frequencies that add startling realism and excitement to a live concert, and the feeling of fullness and warmth at low levels aren't usually captured in the recording process.

But, before we even discuss how this synthesizer actually creates frequencies between 27.5hz and 50hz that don't exist in your music, from frequencies in the 50hz to 110hz range that do exist in your music, let's look at your equipment.

## NOT FOR EVERYONE

First, let's be practical. If you don't already have an equalizer in your system, this Sub-Sonic Synthesizer isn't for you.

An equalizer is the single most important sound enhancement device you can add to any system to literally make it explode with life. And, that's where I'd improve my system's sound first.

While an equalizer boosts frequencies, the synthesizer creates new frequencies to bring exciting life to your music.

Most records and prerecorded tapes are rolled off at 50hz because the record grooves can't handle lower signal, and tapes are easily saturated by low bass.

Very low bass consumes a lot of power. So, this synthesizer will certainly overload your amplifier and cause clipping if you don't have at least 35 watts of power per channel (50 watts is better).

You'll appreciate the sound improvement if your speaker systems have 10" woofers, but you should hear it with 12", or 15" woofers, or even a subwoofer.

Finally, your speaker's power handling capacity must at least equal your amplifier's output. If you get the idea that you're going to be adding a lot of exciting bass power, you're right.

But don't worry, at 28hz, 34hz, 40hz and 50hz, the bass will be powerful but not boomy, awesome but precise, and thundering but totally realistic.

You see, every frequency has harmonics, and all you are doing is re-inserting the original harmonics. Even with CDs, you can add powerful subharmonics that improve their phenomenal sound.

In fact, part of why they sound so good is that they come closer to naturally reproducing these synthesized frequencies than any previous recording medium.

## WHAT YOU CAN EXPECT

ADC says of this synthesizer which they sell to night clubs where records are played, "By re-creating the natural subharmonics that were taken out during the recording process, music takes on a new life, a new power. It has to be felt to be believed."

And felt is the operative word. ADC warns that it isn't for apartment dwellers



because these low frequencies move like an earthquake through neighbor's walls.

At very low levels, you'll enjoy an enriched fullness that will make your music caress and lull you. It almost seems to wrap itself around you.

At normal listening levels, your music will have an electric charge that you will feel as much as hear. The floor will shake, and your body, not just your ears, will be part of the listening experience.

At high levels, turn down the synthesizer. Most likely neither your amplifier, speakers nor walls can handle the load. What's really exciting about the synthesizer is that you don't have to crank up your stereo to enjoy the benefits.

## EASY INSTALLATION

Just insert it after your tape deck in the tape loop or between your preamp and amp. (Plug your cassette deck into the synthesizer and the synthesizer into your receiver.) You really can't capture its massive subsonic bass on tape.

So, for jazz, pop or classical, with your FM, AM, cassette deck, CD and turntable, you'll have a vibrant infusion of dramatic bass.

## HOW IT WORKS

The synthesizer doesn't affect any existing frequencies, so your signal will be as clean as it is now. It samples all bass frequencies between 55 and 110hz.

It synthesizes corresponding frequencies exactly one octave lower (frequencies between 27.5 and 55hz) and mixes them back in. You control the added frequencies for up to a 9db boost. LEDs show the 28hz, 34hz, 40hz and 50hz areas of synthesized concentration.

There's also a Low Frequency Boost that operates from about 50 to 100hz, to 'fill the gap' left between the powerful synthesized sub-bass and the actual bass.

You'll be amazed at just how high in

'hz' most of what you now think low bass really is. For example, a cello's primary sound (I used mine for the picture above) only goes down to about 70hz.

But oh, when you play the instrument do you feel and hear the lower harmonics! It just may be my orchestral background that has made me such a lover of equalizers, subwoofers and now the subharmonic synthesizer.

You get used to a richness of sound. And, when you don't hear it, you don't feel your music is fulfilling and complete. ADC's Sub-Sonic Synthesizer fulfills my need for deep rich, vibrant bass and I think you'll enjoy it as much as I do. It's 17 1/4" X 1 3/4" X 7 1/2". And it's backed by ADC's limited warranty.

## THUNDER IN YOUR LIVING ROOM RISK FREE

Yes, it adds thunder. And yes, it adds dramatic impact. But what I like best is the fullness and depth of sound I get.

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

To order your ADC Sub-Sonic Synthesizer risk free with your credit card, call toll free, or send your check for DAK's truckload price (we bought 5000 to get this price) of just \$149 plus \$6 for P&H. Order No. 4302. CA res add tax.

If you're a musician, as I laughingly think I am (I'm not very good), you're already familiar with octaves. Just wait till you hear what adding a new octave to your stereo will do for your sound.



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**\$129 PRICE EXPLOSION**



### **\$5 Bonus Word Processing**

**Apple IIE & IIC, IBM PC, And Commodore 64**

Forget complicated programming. If you can hunt and peck on a typewriter you can turn out flawless reports and letters with your computer in minutes.

And if you want to fix a mistake, or if you want to improve a sentence, it's just \$5 and a push of a button away with DAK's new Bonus Word Processing Programs available with Purchase of this printer.

# The Complete Computer

**Let your computer print letters or reports for you on plain paper at 50 characters per second. You can use this dot matrix printer with virtually any home or office computer. It's incredibly easy to use. And, it's built tough. Plus, it even prints graphics. ~~Price Slashed to \$129.~~**

By Drew Kaplan

Energize your computer. From writing letters to listing programs, your computer can be phenomenally more useful when you use this printer.

It uses plain paper and it's super reliable. It prints both upper and lower case characters. And, if you aren't using a printer with your computer, read on.

#### **LISTING/INDEXES/LETTERS AND MORE**

Experience the thrill of actually writing your letters and reports on your computer. Now you'll be able to use all of your computer's word processing and correcting capabilities to really explore your creative talents.

I can't overemphasize the convenience of never having to retype a letter or a report because you find a misspelled word or a sentence you'd like to change. Or, think of how easy it will be to sort out a problem in a program when it's on paper.

And, DAK's new \$5 Bonus Word Processing Programs are so 'user friendly' that you can learn to use them in just about 10 minutes.

You can change a line, move a line or save a file. It's all just a push of a button away. This printer and any word processing program can release the real power of your computer.

Programming is fascinating, games are fun. But, a risk free 30 day in-home trial of this computer printer should

really show you just how much your computer can really do for you.

#### **PERMANENT RECORD**

If you have a modem, you're in for a treat. You can access encyclopedias, stock market reports, and much more.

With a printer, you can get a 'hard copy' of all the incoming information. You can get everything from SAT test simulations and IQ tests to loan amortization schedules and Airline flights.

And, you won't have to load a bunch of disks to find a program when you print out a menu for each of your disks.

#### **AFRAID OF PROGRAMMING?**

You don't need to know the first thing about programming to use this printer. Now, using a computer word processor is as easy as typing on a typewriter.

#### **LOOK AT ALL IT DOES**

An ad in several computer magazines listed a \$149 thermal printer (that needs expensive thermal paper) as the lowest priced printer in the U.S.

Imagine a 50 character per second dot matrix printer that prints a full 80 column (80 characters) wide line. Plus, it has a built-in standard Centronics Parallel Interface.

This printer handles plain old cheap standard fanfold pin feed computer paper from 4.5" to 9.5" wide, with its built-in adjustable tractor pin feed drive.

It's so powerful you can even use two-part forms for a carbon copy. Plus, there's

an impact control for print darkness.

It understands and prints 116 upper and lower case characters, numerals and symbols. And that's not all.

You can even print Double Width characters. And, look at this. This printer has full graphic capabilities with 480 dot horizontal resolution and 63 dot per inch vertical resolution. So, you can print out your pictures, pie charts or graphs.

Just like a typewriter, it prints 10 characters to the inch across the page and six lines to the inch down the page.

When hooked to your computer, you'll never have to retype anything again. Just make the correction and let the computer retype your work for you.

The printer is made by C.ITOH/Leading Edge in Japan. It's built to really take heavy use. And it's backed by Leading Edge's standard limited warranty.

It takes standard long life inked ribbon cassettes that are readily available nation-wide. This is a printer that will give you many years of continuous reliable service and enjoyment.

#### **AND NOW THE BAD NEWS**

If you're the president of a large corporation, sending important business letters, you may want a \$1000 daisy wheel printer. But for most uses, dot matrix printers are incredibly faster, and there isn't any way to print out a graph or picture on a daisy wheel printer.

But, there are two things you need to

know about this printer. First, it has about the dumbest name I've ever seen. It's built tough and rugged. So, they named it The Gorilla Banana Printer.

Second, like many dot matrix printers, the letters g, j, p, q, and y are level with the other letters. Each letter is completely and perfectly formed, but each sits level with the rest of the alphabet.

Upper case letters and symbols are unaffected. So, if you don't want letters that look like they were printed by a computer, this printer isn't for you.

But for most letters, term papers, reports, or programming it's perfect.

#### COMPATIBLE COMPUTERS

Any Computer with a standard Centronics parallel port, such as: Apple, Franklin, IBM PC, TRS80, Osborn, Atari, Commodore VIC 20, Commodore 64, Kaypro, and virtually any other personal computer. Plus, most briefcase portables.

#### FEAR OF INTERFACES?

Your computer is smart. But, it doesn't know how to 'talk' to other devices. That's why you need an interface.

An interface isn't just a cable. It's actually an intelligent translator that lets your computer talk to other equipment.

Usually, the computer manufacturers don't include the various interfaces when you buy your computer because they don't know if you'll ever add peripherals, such as disk drives, printers or modems.

So, rather than sell you something you don't need, you don't buy an interface until you add onto your computer.

There are two types of printer interfaces. The first allows you to do text word processing. For 99% of computer use, this is all that is needed. It translates all the possible letters and punctuation known as ASCII.

A second type of interface also allows you to dump pictures or graphics from your screen or memory. This is more complicated because each individual dot must be told where to go. This interface, or 'driver program' as it is called, is available in two forms: built into an interface, or as a program on a disk which you use with any standard interface.

Either way, you'll have the printer operating in just a few minutes. And if you already have a printer, the same Centronics parallel interface and cable (about 85% of all printers are compatible) should work with this printer.

#### WHY SO CHEAP

A new model will emerge soon with a different name. Leading Edge had just 28,000 of these remarkable printers which have been selling at discount for as little as \$199, left in stock.

DAK bought them all for cold hard cash. And now we're offering them to you for less than the original price we were quoted as wholesale.

The printer is approximately 16½" wide, 9" deep and 7" tall. It's backed by Leading Edge's standard limited warranty.

#### ADD PRINTING POWER TO YOUR COMPUTER RISK FREE

Now you can really make your computer work for you. Now you can print out your programs, your reports, your notes and your letters.

If you're not 100% satisfied, simply return the printer, and any accessories and bonuses in their original boxes to DAK within 30 days for a refund.

To order your 50 Character Per Second Dot Matrix, Plain Paper Printer with a built-in Centronics Parallel Interface, risk free with your credit card, call toll free, or send your check for the breakthrough ~~close-out price of just \$129 plus \$8 for postage and handling to DAK.~~ Order No. 4101. CA res add 6% sales tax.

Note: If you need a serial printer for a computer, such as the TRS80 Color Computer or Apple IIC, order the identical printer with a built-in Serial Interface for the same price. Use Order No. 4102.



**PRICE SLASHED**  
DAK sold over 15,000 for \$129  
**NOW JUST \$89.90**

Use Order Nos. 4101 or 4102 plus (\$8 P&H) Don't let the low price fool you. This is a rugged, reliable printer that you'll use for years. If you have a computer without a printer, it's likely to end up in the closet.



With this printer you can alter your graphics as you desire. You can print normal or reversed (both shown above, greatly reduced to fit in this catalog) and you can even print double size.

The Printer comes packaged with a long life ribbon. Extra ribbons are available at computer stores. DAK has them for \$4 each (\$1 P&H) Order No. 4103.

Standard Centronics Interfaces for your computer are available at any computer store. This Printer has its receiving interface built in. You simply need one, complete with its cable, to plug into your computer 'to send' information. Below are our favorites for 5 of the most popular computers.

#### FREE FREE FREE FREE

No big deal, but we're adding 10 sheets of standard 8½" X 11" continuous form paper to your order. It's worth less than 10 cents, it's available everywhere, and it's yours to keep but it will let you try out your new printer the moment it arrives.

#### SUPER BONUS \$5 WORD PROCESSING

We have powerful bonus word processing programs for \$5 with editing, including changing a line, moving a line and saving a file.

While you can choose just about any word processing program to energize this computer printer, DAK has developed incredibly easy to use programs for several popular computers.

If you own an IBM PC, an Apple IIE, an Apple II or II Plus with an 80 column card, the new Apple IIC or a Commodore 64, \$5 will bring phenomenal power to your computer. Just use the Order Numbers below.

If you own any other type of computer, standard word processing programs are

available at any local computer store.

For your Apple II, II Plus or IIE. We have Practical Peripherals' text interface for just \$49 (\$2 P&H) Order No. 9877. We have their graphics capable interface for just \$79 (\$2 P&H) Order No. 4104. If you already have a Centronics Parallel Interface, we have a graphics driver program on disk for just \$7 (\$1 P&H) Order No. 4105. Just add \$5 (\$1 P&H) Order No. 4217 for the Bonus Word Processing Program on disk.

For your Apple IIC, you have two choices. It has a serial output, so all you need is a cable for just \$18 (\$2 P&H) Order No. 4224 for text word processing. (Order the Serial Printer No. 4102.) If you wish to produce graphics as well as text, we have a special interface that converts the IIC to Centronics Parallel. Use it with its included graphics driver disk and you can produce text or graphics for just \$69 (\$3 P&H) Order No. 4225. (Order the Parallel Printer No. 4101.) Our Bonus Word Processing Program is a perfect companion to either printer for just \$5 (\$1 P&H) Order No. 4217.

For your IBM PC, you don't need an interface. It's usually already built in. But, you do need a cable. We have a cable, ready to connect this printer to your computer, for just \$19 (\$2 P&H) Order No. 9879. We have a graphics driver program on disk for just \$7 (\$1 P&H) Order No. 4106. Just add \$5 (\$1 P&H) Order No. 4218 for the Bonus Word Processing Program on disk.

For your Atari 800, 800XL, 400, 600XL, we have a text interface for just \$69 (\$2 P&H) Order No. 9881. We have a graphics driver program on disk for just \$7 (\$1 P&H) Order No. 4107.

For your Commodore 64 or VIC 20, we have a text interface for just \$39 (\$2 P&H) Order No. 9883. We have a Graphics Interface for just \$54 (\$2 P&H) Order No. 4108. Just add \$5 (\$1 P&H) for the Bonus Word Processing Program for the 64 only. Order No. 4122 for Disk, or No. 4123 for Cassette.

For most TRS80 Computers, you don't need an interface, just a cable. For the Black and White Computers, we have a Parallel Cable for just \$18 (\$2 P&H) Order No. 9885. For the Color Computers we have a Serial Cable (you need the Serial Printer as well) for just \$18 (\$2 P&H) Order No. 4109.

For briefcase-type portables, the Centronics Interface is usually built-in. Just stop by any computer store. All Centronics Printers use the same cable at the printer end, but you'll need a cable that fits your particular computer's plug.

Get hard copy print-outs of your programs or your graphics. Turn your computer into a powerful word processor. Forget retyping ever again. For just \$129 you can make your computer complete.

Apple, Atari, IBM PC, Franklin, Commodore VIC 20 & 64, TRS80, Osborn, and Kaypro, are registered trademarks of Apple Computer, Atari Inc., International Business Machine Corp., Franklin Computer, Commodore Electronics Ltd., Radio Shack/Tandy, Osborn Corp. and Kaypro respectively.

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# Gary's Revenge

**We lost a battle. So now, just \$299 will bring you a front loading, Cable Ready, VHS video recorder with wireless infrared remote control and 14 day 4 event programmable recording.**

By Drew Kaplan

We were embarrassed. We were upset. And, although we may have lost a battle, now we're going to win the war.

Last September we introduced a video recorder for Emerson that we thought would scoop the market. Well, by December, our scoop was being scooped.

And when DAK gets scooped, we don't just apologize, we pay. If you buy anything from us and find it advertised for less within 30 days, just send us the newspaper or magazine ad and we will issue you a merchandise credit.

So, by December we were really licking our wounds and plotting our revenge. Enter Gary, Emerson's Western Regional Sales Manager. Gary brought us the original recorder, for a very good reason.

Many of DAK's sales are in the Midwest and East, so we can sell tens of thousands of recorders without bothering the rest of his Western Region.

And, that's good for Gary because it makes his sales look real good at the expense of the Midwest and Eastern Regional Managers.

So, this time Gary has brought us a recorder we think can't be beat. With its 105 channel cable ready capacity, its wireless eleven function infrared remote and DAK's \$299 price, we challenge anyone to compete.

But, before we examine just what this 4th generation, Japanese crafted video recorder can do for you, let me share 3 real life reasons why you really should own any video recorder.

## THE HARRIET FACTOR

Harriet is my wife's old team teaching partner. She had never had a video recorder. So, we gave her one. Several weeks later she called, absolutely elated.

She was recording The Phil Donahue show every day and watching it when she got home from school. She had also recorded several movies on cable that she kept missing while she was at work.

My parents are another story. They've

had a recorder for years (being my parents has its advantages). My parents have two loves, concerts (my mother is a concert pianist), and UCLA Basketball.

They go to concerts several nights a week and tape the UCLA games while they're out. Then if you can believe this, they make popcorn and stay up to watch the game till 1:30AM. Anyway, they just love their recorder.

Finally we have my wife's parents. And this is really important. We gave them a recorder and they didn't know how to hook it up. It never occurred to me that there was anything to hooking up a video recorder.

Just unhook the antenna from your TV and connect it to the recorder. Then connect the cable (included) between the recorder and your TV, and record.

Anyway, my father-in-law gets up at about 5AM, so they go to bed very early. Once they hooked up their recorder they discovered a whole world of late night TV. Now they watch Dynasty during dinner. And, look at this. They had never stayed up to see the Johnny Carson show.

Wow, a video recorder can let you watch what you want when you want without being restricted by your work, social life or sleep.

If you're like me, you probably won't tape and save. There aren't many movies that I want to see more than once or twice. But, wait till you see how convenient it is to plan your viewing hours to fit your own schedule.

## LOOK AT ALL YOU GET

From the moment you put a video cassette into the front loading motorized slot and see it automatically drawn into the recorder, you'll appreciate the quality.

**ELECTRONIC TUNING.** This recorder's synthesized tuner can tune in VHF channels 2-13 and UHF 14-83. Plus, you'll also be able to tune in 23 Mid Band and High Band Cable Channels.

You can choose any 12 channels from any band in any order you like for instant

one touch tuning at the recorder, or step through them from the infrared remote. **4 EVENT/14 DAY PROGRAM CAPABILITY.** You can select any 4 programs over a two week period to record.

So, if you're going on vacation, you can keep up with weekly series while you're gone, even on different channels.

The timer is extremely easy to use. You'll record shows you miss when you're out, shows that you want your children to see at a more appropriate time and important events that you'll want to keep.

Plus, you can watch one show on your TV while you record another.



## WIRELESS INFRARED REMOTE.

From system power to changing channels, you're in full control. If a remote seems to simply smack of posh luxury, look at what it can do for you.

You can touch the still frame button and freeze the action. Now you can really tell if the umpire was correct or not.

You can play the same movement over and over again until you are absolutely sure of what you've seen, while you relax

Next page please. . .

... Gary's Revenge Continued in your favorite viewing chair.

If you want to find a certain part of the tape, use the high speed forward or reverse scan to 'visually' fast forward or rewind.

**AND MORE.** There's a digital clock/timer and even a tape counter. LED's show all the functions. And, there's even a picture sharpness control.

There are both high and low speeds for up to 8 full hours of recording. And finally, when a tape reaches the end, it will automatically rewind.

It's made by Emerson. And, it's backed by their standard limited warranty.

#### WHY THIS RECORDER

Other than its super features, great picture and DAK's revenge pricing, there are 3 reasons to choose this recorder.

1) With a cable ready recorder you can watch one cable show and record another. 2) By using the tuner in this recorder, you'll turn any TV into a remote control Cable Ready TV. 3) You may not have cable yet, but when it comes to your area you won't need a new recorder.

#### ENJOY VIDEO FREEDOM RISK FREE

Wait till you experience the freedom of watching any program when you want. Wait till you see how easy it is.

If you're not 100% satisfied with the

incredible picture quality or the automated functions, simply return it in its original box with 30 days for a refund.

To order your Emerson 105 Channel Cable Ready VHS Video Cassette Recorder with Wireless Infrared Remote Control risk free with your credit card, call toll free or send your check for DAK's breakthrough price of just \$299 (\$9.50 P&H) Order No. 4215. CA res add tax.

Now you can watch last night's mid-night show at dinner, or tonight's dinner show at midnight. And, thanks to Gary's Revenge, you can do it for just \$299.

**PLEASE USE ADDRESS AND PHONE AT BOTTOM OF PAGE**



## Unleashed TV/Video Sound

Now you can do for your ears and brain what color TV has done for your eyes, with Universal's new amplified and electronically synthesized stereo system for your TV and video recorder.

It's amazing. TV sound is really great. It is actually broadcast on the FM band.

In fact, every one of the great sounding FM stations from FM 88 to 108Mhz that you enjoy listening to on your stereo system, is tightly sandwiched between channels 6 and 7 on your TV.

So, why do TVs sound so crummy? Well, if you compare a \$1000 stereo system to even the best \$800 TV, you'll realize that when you bought your TV, all that was probably discussed was the picture quality, sharpness, and color purity.

The truth is that in most TV sets, all the money goes into creating the best picture quality, and the sound is left to a cheap amplifier and a 3-5" Low Fi speaker.

#### POWER FOR THE VIEWER

Think about the bigger than life realism that enwraps you at a movie theater. It's called 'Sensory Emotional Involvement'.

The experience is a combination of the big picture and massive sound that together subconsciously cause your brain to register reality. Of course, you know it's not real (I hope), but subconsciously you have to keep reminding your brain.

It's the combination of sight and sound in tandem that act on your brain. And, it's the reason that even with a great TV picture, a single 3-5" speaker may sound loud, but it won't thunder. It may be soft, but it won't whisper.

And most important, with all the sound coming from just one point, your brain doesn't get any reality cues.

Now, without changing your TV, you can dramatically enhance the realism and sound quality by creating moving sonic cues which your brain will equate as movement in the picture.

Then you can add great fidelity with a pair of two-way specially shielded die-cast aluminum speaker systems with real woofers and tweeters.

And finally, provide enough amplified power to make a car chase come alive or an organ thunder. So, movement, fidelity, power and picture, equal reality.

#### SIMULATED STEREO PLUS

In a world where our brains are attuned to the sonic impact of stereo music, nothing turns off the feeling of reality more quickly than a single sonic source.

You get two different signal processing choices. Just running your TV signal to two speakers and amplifying it will increase the fidelity dramatically, but it

won't make the sound come alive.

The signal has to be altered. And, with Universal's new Amplified System for your TV or Video Recorder, you can select either of two realism enhancers.

When you switch to 'Simulated Stereo', you will be dividing and sending sonic data from about 500hz to 3,000hz to the sides of your room. These critical frequency areas largely determine where your brain perceives sound is located.

When you switch to 'Stereo', you will be altering the 'phase sensitive' elements of the entire musical spectrum.

This will tend to give you a wider, fuller sound for music. So, if your eye sees movement as a scene unfolds, and your ear senses movement or width of sound, your brain equates realism.

**The Speakers.** Twin two-way speaker systems with a wide frequency response produce simply vibrant sound. You'll hear sounds that you never knew existed.

You'll hear footsteps creak and doors open as your sound takes on realism. And, string basses, violins, and trumpets will emerge from the murk.

**The Amplifier.** Connect the two-way speakers to the amp (cables included). Then connect a cable (included) from the amplifier to either your TV's earphone jack (plug included) or your video recorder's output jack and get ready for a shock. Universal's Amp has built-in ANR auto-

matic noise reduction circuitry which cuts out hum and noise caused by TVs without sacrificing the high end. So, you'll have sonic placement, rich full sound and virtually no annoying noise.

It's made by USI, a leader in electronics since 1969. It's backed by their standard limited warranty.

#### UNLEASH YOUR TV'S SOUND RISK FREE

In your living room, bedroom or kitchen, now you can have really realistic, emotionally charged sound for your TV. If you're not 100% satisfied, simply return it to DAK in its original box within 30 days for a courteous refund.

To order Universal's Amplified Synthesized Stereo System complete with Two-Way Speaker Systems risk free with your credit card, call toll free, or send your check for DAK's breakthrough price of just \$79.95 plus \$6 for P&H. Order No. 4241. CA res add tax.

Now you can add rich sound and realism to your TV for just \$79.95 Wow!



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# Three Ring Circus Plus

*There's the roar of the crowd. There's action in all 3 rings. And, there's never a dull moment. Now you'll never have a dull moment in your kitchen, den, bedroom or dorm room with 3 electronic rings of entertainment.*

By Drew Kaplan

It's exciting. There are the clowns, the color and the splendor. My kids sit transfixed every time the circus comes to town. It's hard to know what to watch with so much going on.

Well now, you will have to choose between three rings of electronic entertainment. And what a choice for a dorm room, a bedroom at home or your kitchen.

In ring 2 is a stereo cassette deck. In ring 3 is an AM/FM stereo tuner. And in ring 1 is a 13" ultra bright color TV.

Since this is a Three Ring Circus *Plus*, you'll find a digital alarm clock in ring 4. In ring 5 is an 'Aux' input that lets you add your own turntable or cassette deck.

In ring 6 are two full range super dynamic speakers (to each side of the TV) for great stereo sound from the cassette and FM, plus dual speaker sound from the TV. There are even external speaker outputs if you wish to add your own speakers.

At home, at college, at a vacation home or at the office, it's a lot of entertainment for a simply blockbuster price.

## PEOPLE LIKE IT

Before we explore Emerson's special limited 6 year picture tube, 2 year parts and one year labor warranties, and before we evaluate the quality of the music, one thing is already clear.

People like it. When I opened it at the office, people wanted it. When I brought it home, my 7 year old son took one look at it and went on a full scale campaign to have it live in his bedroom.

He said, "Wouldn't I be a perfect test? I have a bedroom. I like TV. And I have a cassette collection. Please daddy?" (He won, but he's not allowed to take it apart.)

It's clear that this entertainment center is a perfect gift, even for yourself. It's unique. It's useful. It's sure to be appreciated. And, wait till you see the picture.

## CONTINUOUS ENTERTAINMENT

A special matrix tube produces a really vibrant sharp color TV picture. This all electronic TV allows you to set 12 preset stations. It comes preset to receive VHF 2-13, but you can change any of the unused stations in your area to receive UHF. (It's not cable ready, but look.)

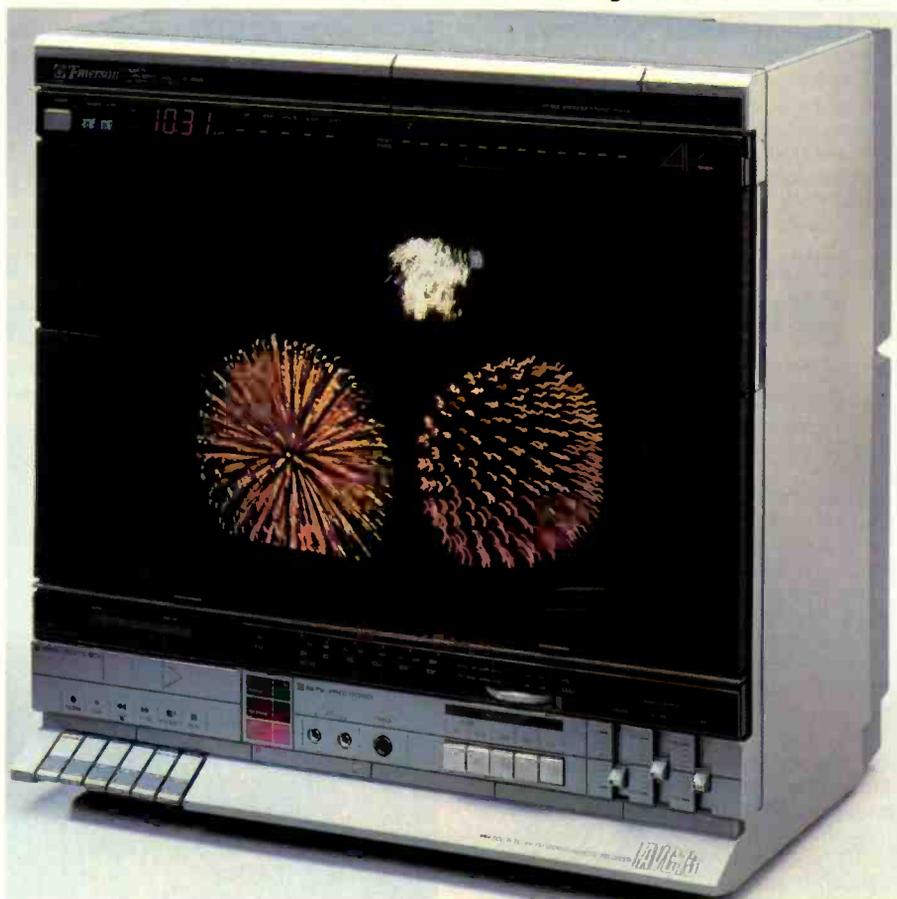
The super sensitive electronic tuning elements in this TV allowed me to tune in my mid-band cable channels from 14 to 23. You see, with high grade electronic tuning for the 12 channels that you preset, it's impossible for Emerson to stop the tuning range at channel 13.

So, although it's not in the specs, if you have cable, try it yourself and see how many cable channels you get. And don't forget, before receiving any cable channels, check with your cable company to see if they require a fee.

If stereo TV is coming to your area, you'll be ready. There's an MTS jack on the back of this TV which will allow you to add an external stereo adaptor.

And, don't forget Emerson's unique warranty. Wow, up to 6 years of protection. You're going to be able to enjoy all the entertainment for a very long time.

## RING 2



It's time for beautiful music. Just pop in a cassette and you'll have great sound from the built-in cassette deck. The full range speakers, while they certainly aren't awesome power monsters, produce a much better sound than you'd expect.

You'll enjoy full rich bass and clean highs. And, you'll be really amazed at the quality of the electronics of this system if you add your own speakers. And don't forget, you'll hear TV sound, AM/FM Stereo sound as well as the cassette through the internal or external speakers.

The cassette deck is direct coupled to make great sounding recordings from the AM or FM stereo tuners. Plus, it records the TV sound. By using the built-in digital alarm, you can set the recorder to record any program while you are out.

For example, you can set the recorder to record a presidential news conference on AM at 1PM while you're at work. Or, record the audio portion of 60 Minutes from TV if you're out Sunday night. I often record 60 Minutes and then listen to the tape in the car. It's phenomenally convenient to have a timed recorder.

## RING 3

Just wait till you tune in your favorite FM stereo stations. You'll have great sounding music from the sensitive tuner. Start at 88 on the FM dial and count the stations that you receive clearly. Then, do the same thing with the tuner in your stereo system. You just may be shocked at the comparison.

And don't forget that it's clock radio,

complete with high/low dimming, a sleep switch which lets you go to sleep to TV, FM or AM, and be awakened by the same in the morning.

And, don't worry about being awakened. There is a provision for you to put in a standard 9V battery to protect your time setting in case of power failure.

It's only 18½" wide. But wait till you hear the sound and see the picture.

## A THREE RING CIRCUS RISK FREE

Circuses come and go. But this 3-ring electronic entertainment center with its long term Emerson protection will keep you entertained for years.

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

To order your Emerson Three Ring Circus Plus, with 13" Vibrant Color TV, Stereo Cassette Deck and AM/FM Stereo risk free with your credit card, call toll free or send your check for, and look at this, just \$269.90 plus \$14.50 for P&H. Order No. 4331. CA res add tax.

As a gift or as an addition to your home or office, it's first class entertainment all the way.



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8200 Remmet Ave., Canoga Park, CA 91304

# The Great \$69 High Speed Dubbing Catch

Get your tape collecting into high gear with ONE of these high speed portable cassette duplicators and AC/DC Stereo Music Systems. The Choice is yours for \$69, but don't forget there's a catch.

You have friends. Your friends have friends. Why not pool your resources and dramatically increase your cassette collection with the latest in high speed, high quality tape duplicators?

At a friend's house, at a party, or even at work, you can now increase your music collection effortlessly. Plus, you can play two cassettes in tandem for uninterrupted musical enjoyment, or enjoy great sounds from Am or FM stereo.

You can copy cassettes while operating from standard AC house current (AC cord included), or from batteries (not included). **SURE YOU CAN TAKE IT WITH YOU**

Switch it on and you'll instantly hear the great sound quality that these systems produce. But, wait till you hear the quality of the original cassette recordings and copies that you'll make.

Just to test the quality of the copies, take your favorite tape, copy it, and then compare the difference. You'll be amazed at the crisp high quality of the new copy.

A note about Dolby®. If you have a tape recorded with either Dolby B or C, you can copy it on these decks and the copy will still be properly encoded. If you simply play a Dolby tape, it will sound brighter and more vibrant than normal.

In fact, because the highs are boosted, people record cassettes in Dolby to play through their high-end starved car stereos to make them sound vibrant.

## BUT IT'S THE MUSIC

Sure you'll make copies, and sure you'll add to your collection. But most of the time, you'll simply want to hear beautiful music. And look what you'll get.

First, you'll play beautiful music for a long time. When you select 'Continuous Play', either machine will allow you to listen to the cassette in Deck A, and then automatically switch to the cassette in Deck B for uninterrupted music.

You can select your choice of the sensitive AM or FM stereo, tuners which really pull in even distant stations.

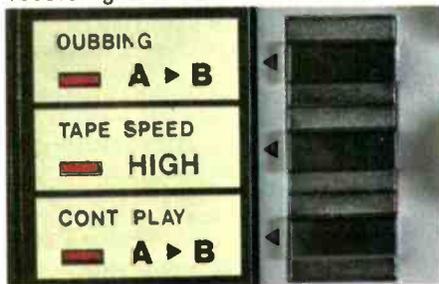
I couldn't decide which machine I liked best, so I'm leaving it up to you. All features described so far are on both machines. But, don't forget the catch.

## TIME TO MAKE A CHOICE

The Emerson adds a switchable Loudness Circuit to add extra bass when you're out in the great outdoors. It has one built-in mike. And it has great sounding full range speakers. It also has an 'AUX IN' for a ceramic phono. And, it has a



mike mixing control that lets you plug in your own mike and add your voice to the recording. It is 19 1/4" X 10" X 6".



The Unitech has a 5 band equalizer so that you can really sculpture your sound. And it has detachable speaker systems consisting of 6 speakers, 4 woofers and 2 piezo tweeters. It has 2 built-in mikes. It is 22" X 5 1/4" X 5 1/4".



Each machine is backed by its respective manufacturer's limited warranty.

## A SIMPLY PERFECT CATCH

What could go better with a high speed dubbing machine than 10 DAK MLX Gold Label 90 minute cassettes? And, selling you these duplicators is a clever ploy to sell you more cassettes in the future.

We make a cassette with great sound and no problems. We want you to try DAK's Gold Label MLX ultra high energy, normal bias cassettes. Not at \$4.50 or

even at \$3.50 each, but factory direct for just \$2.49 for a 90 minute cassette.

We challenge you to compare the frequency response, dynamic range and signal to noise ratio of our Gold Label MLX to Maxell UDXL or TDK SA. DAK's have a frequency response to 19,500hz and come with a hard plastic box, an index insert card and a limited 1 year warranty.

## \$69 HIGH SPEED DUBBING RISK FREE

To get your choice of the high speed dubbing music centers, just try 10 DAK MLX high energy cassettes. If you aren't 100% satisfied with the cassettes or the machine, simply return only 9 of the 10 cassettes and the machine in its original box within 30 days for a refund.

To order your 10 Gold Label DAK MLX 90 minute cassettes and get the High Speed Dubbing Music Center of your choice risk free with your credit card, call toll free or send your check for just \$24.90 for the 10 tapes, \$69 for the Machine and \$7 for P&H. CA res add tax.

Use Order No. 4324 for Emerson's Machine and 10 tapes, or Order No. 4325 for Unitech's Machine and 10 tapes. Now you can increase your tape library and enjoy great sounding music wherever you are, and buy lots of DAK cassettes.



## TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week  
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# The \$129 Quick Reverse Catch

Here's a deck with 9/10ths of a second quick reverse, APSS, intro-scanning, repeat playback and Dolby B & C. It's yours for just \$129. But, there's a catch.

By Drew Kaplan

It's just plain simple. I like my music uninterrupted. I like to be able to change my cassettes when I like, not when the cassette ends.

And when I'm taping off FM, this quick reverse deck allows me to record both sides of the cassette automatically. And that's important.

You see, I really don't like to listen to FM. Out of all the music they play, I only like a small percentage. And, I find commercials intrusive. (I hope you don't feel the same way about my ads.)

Anyway, I pick one of the stations that I like, and just start my recorder. Often I leave home and forget about the tape.

I often build up 10 or 12 cassettes of FM music. Then I start listening to them. And, whenever I hear a song that I like, I start a 2nd recorder and copy the song. I've been able to effortlessly build an enormous collection of all types of music that I really enjoy.

## EASY DOES IT

And you don't have to guess what I use to play it back. An auto reverse deck lets me enjoy an hour, a morning, or a full day of uninterrupted music.

So, an auto reverse recorder is great for making recordings off FM, or from any other source. And for me at least, it's the best way to relax and enjoy my favorite music.

## AND OH WHAT SOUND

Here's a deck with a frequency response to 15,000hz with normal tape and 17,000hz with metal. And, its signal to noise ratio reaches 77db with Dolby C.

It is 100% state of the art. All its function controls are full logic, not just soft touch. And, it has dual capstans. Plus, with its two color LED Peak Level Metering and linear volume controls, great recording is a breeze. But, great sound is just the beginning.

Stop here for a note. As you might expect, as president of DAK, I own 11 tape decks. You see, I have decks that do a lot of different things in several places.

(By the way, I owned 9 decks before I ever started DAK, so I guess I'm a certifiable HiFi nut.) I have dual decks, dbx decks, auto reverse decks, open reel decks, and a studio deck.

And, while I'd obviously like to sell you this deck, I really believe that if I 'talk you into' putting an auto reverse deck in your system, you'll think kindly about me and DAK in the future. And, this is quite

simply, 'one hell of a deck'.

## TOTALLY AUTOMATED

The computer assisted logic lets you enjoy your music like never before.

**Quick Reverse**-During record or play, this deck will automatically reverse in just 9/10ths of a second for virtually uninterrupted music from both sides.

**Another note from Drew:** Although the reverse is very quick, it's only fair to point out that there will be a few seconds of silence at the reverse. Because. . .

There are a few seconds of leader at each end of every cassette. It's no big deal, but in reality, you'll have more than 9/10ths of a second of silence.)

**APSS**-Let's say you're listening to a song you'd like hear again. Just touch Reverse APSS and this deck will locate the beginning of the song and restart it.

I use this feature on my FM tapes. After all, I don't know I'm going to want to copy a song until I've heard it. Anyway, if you don't like the song you're listening to, just push Forward APSS. The deck will then locate the beginning of the next song on the tape for you.

**Intro-Scan**-Like an expensive car radio, this deck will play just the first 12 seconds of each song on the tape automatically, so that you can find just the track you want to enjoy.

**Multi-Repeat**-You can repeat one full side or the entire cassette, over and over again for continuous music. This is the feature that gives us a day, or an evening of uninterrupted music.

**Blank Tape Pass**-You know how you always end up recording about three quarters of the second side of a cassette?

Well, this deck is so smart that when it reaches an unrecorded section, it fast forwards to the end, auto reverses and starts over again.

So for a ridiculous example, if you record one song on a cassette, this recorder will play it, fast forward to the end, check the other side, find nothing and fast forward back to the beginning. Then it will play your song again and continue the sequence. Wow!

It is 17" X 4 3/4" X 8 3/4". It's the top of the line system from Sharp. And, it's backed by their limited warranty.

## AUTO REVERSE CATCH

It's no secret that the cassette industry is awash with cheap imports. And, it's no secret that if you're happy with a product you tend to keep buying it.

Well, we're looking for audiophiles who really use and appreciate top quality

audio cassettes.

If you buy top name TDK and Maxell cassettes, you probably pay up to \$3.50 or \$4.50 for a 90 minute cassette.

We want you to try DAK's Gold Label MLX ultra high energy, normal bias cassettes with a frequency response up to 19,500hz. Don't pay \$4.50, or even \$3.50. Buy them factory direct from DAK at just \$2.49 for a 90 minute cassette.

We challenge you to compare the frequency response, dynamic range and signal to noise ratio of our Gold Label MLX cassettes to Maxell UDXL or TDK SA.

If they win, we'll not only give you back your money, we'll give you a free gift for your trouble. DAK's come with a deluxe hard plastic box, an index insert card, and a limited 1 year warranty.

DAK manufactures a cassette with no problems and great sound. With our frequency response of up to 19,500hz, we'll challenge any tape on the market.

## AUTO REVERSE AND MLX RISK FREE

Try recording. Feel the solid quality of this totally automated deck's controls. Then, sit back and enjoy superb sound and total musical automation.

And, why not use some of the MLX cassettes to record off FM. If you're at all like me, you'll be doing a lot of great recording with this deck. (And, using a lot of my cassettes, I hope.)

To get Sharp's auto reverse deck for \$129, just try 10 DAK MLX high energy cassettes. If you aren't 100% satisfied with the cassettes or the deck, simply return only 9 of the 10 cassettes and the deck in its original box within 30 days for a courteous refund. The 10th cassette is a gift for your time.

To Order your 10 Gold Label DAK MLX 90 minute cassettes and get the Auto Reverse Deck for \$129 risk free with your credit card, call toll free, or send your check for \$24.90 for the 10 cassettes, \$129 for Sharp's Auto Reverse Deck, and \$6 for postage and handling. Order No. 4328. CA res add sales tax.

Auto Reverse, Dolby B and C, and total automation added to DAK's MLX cassettes make for a great musical future.



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# Unshackle Your Receiver

**Infuse your own receiver with 440 watts, 220 watts per channel, of earthshaking, mind boggling sound power. Thrill in the realism of truly massive audiophile power. Wait till you hear the true sonic drama of a CD.**

Make the earth move. Shake your home to its very foundations. Your stereo system will explode with life.

Just insert this 440 watt (220 X 2) audiophile amplifier between your receiver and your speakers by using the special 'black box' interface (included).

The sonic difference between this amplifier's sound and a typical 30 to 50 watt receiver, is as dramatic as the difference between AM and FM Stereo.

And wait till you hear a CD. Here's an amplifier with all the headroom, dynamic range and power you could want, to unleash the full earthshaking dramatic impact that a CD can bring to your stereo.

## USE YOUR OWN RECEIVER

There's a 3 dimensional aspect to the sound you'll hear that will leave you breathless. Music that sounded fine before, will be muddy by comparison.

You'll hear the dynamic range of your music literally explode as the chains of small amplifier capacity are cast aside.

And, you'll be using your own receiver (forget its specs) or preamp, so you can easily compare the awesome difference.

## GREAT IDEA

Bring your own system to life with 220 watts per channel, at 8 ohms, from 20hz to 20,000hz, with no more than 0.025% total harmonic distortion.

It has an actual frequency response that stretches from 5hz to 100,000hz and a signal to noise ratio of 100db.

Just as with any other power amp, it can be hooked directly to any preamp. But, Audiometric has made a special interface exclusively for DAK, that also allows it to be used with your own receiver.

Here's how it works. You attach the interface's 'black box' to your receiver's speaker terminals with the included standard speaker wire.

It loads your amp's outputs with an 800 ohm load, not the usual 8 ohm load. This means that your amplifier works virtually 1/100th as hard, so in effect, your

receiver's amplifier becomes a preamp.

And for all practical purposes, distortion headroom and frequency response won't be limited by your receiver's amp.

The output from the interface feeds through standard patch cords into the amplifier. You'll use your receiver or preamp's controls exactly as you do now.

## FULL COMPLEMENTARY BALANCED BRIDGE

This system of amplification includes speaker behavior within the scope of amplifier performance. A Balanced Bridge amp forces the speaker systems to exactly reproduce the musical signals.

Technically speaking, the Balanced Bridge system is like a combination of 4 amps. It's almost as if there were two amps for each channel.

The positive side of each speaker system is driven by one amp and the negative or ground side is driven by the other. So, the speaker itself actually becomes the interactive part of the amplifier.

This system literally assures perfect symmetry of the positive and negative sides of each cycle, and absolutely locks the speaker into compliance.

## THE BOTTOM LINE

This Full Complementary Bridged Amplifier will deliver authentic musical truth. It has a super fast slew rate, transient intermodulation distortion (TIM) is not discernible, and because the transistors never shut off, you can just about forget crossover or notch distortion.

The difference you'll hear with this amp won't be subtle. The music just seems to expand. At low levels there's a richness of sound that's breathtaking.

At high levels, you won't experience compression or clipping distortion that smaller amps suffer as they try to produce full orchestral passages.

Most people think that more power (more watts) just makes for louder sound. That's not even half true. High power makes for clean, pure, unrestrained trans-

parent sound at any listening level.

## AUDIOMETRIC

Audiometric is an upscale division of one of America's leading audio manufacturers. The last time we ran a component from this company, they had so many dealer complaints about our low discount pricing, that they really don't want us messing things up again.

So, while many other 200+ watt audiophile amps sell for up to \$1000, from DAK and only under the Audiometric name, you'll have incredibly pure powerful sound for just \$299.

It is 19" wide, 12 3/4" deep and 3 1/2" high. And, it's backed by The Manufacturer's 2 year limited warranty.

## TRY THUNDERING REALISM RISK FREE

Try this power amplifier in your own system. If you already have CD, revel in a CD's true capacity for dramatic impact. If you don't instantly hear incredibly better musical sound from any source through your own speakers, return it in its original box within 30 days for a refund.

To order your 440 watt Audiometric 441 Digital Ready Power Amplifier with 220 watts per channel, complete with the special interface 'black box', call toll free or send your check for just \$299 plus \$12 for postage and handling. Order Number 9765. CA res ad sales tax.

No matter whose receiver or preamp/amp you now have, or whether or not you have a CD, the purity and thundering power of this amp will revolutionize your stereo system's sound.



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# Family Tutor

**Give your entire family a private electronic tutor with expertise in 40 different educational and entertainment fields. For DAK's incredible \$169 close-out price, you'll get a 64K computer, a data recorder and 2 joysticks. It was a \$311 retail value. Plus, you'll get a \$295 retail value, 40 volume learning library.**

By Drew Kaplan

It's you and your children against the computer. They'll think they're just playing computer games as their minds are stimulated and filled with a wide ranging array of knowledge.

But, it's no game. In addition to the 40 volumes of software, this 64K computer will open the whole world of computer literacy to your family.

While I'm dying to tell you all about the 40 volumes of software, first I've just got to tell you a little about the computer. Of course, you don't need to know a thing about programming to use the software.

It's 16" wide with a full size 87 key, full-stroke, professional keyboard. It has a numeric keypad for rapid entry of numeric data. And it has 32,000 bytes of Read Only Memory (ROM) to store 'Basic'.

It has 64,000 bytes of Random Access Memory (RAM) for you to use in entering your programs. And, its central processing is done by a Z80 processor.

Plus, look at this. It has 16,000 additional bytes of RAM that it uses for phenomenal color graphics. And, you'll have full graphic manipulation.

You can easily create Graphics and even Sprites, (moveable objects on the screen) and program their movements or control them with the included joysticks.

So, instead of just playing video games, you'll create rockets that move and shoot at your command. And, you'll have 16 programmable colors and you can pro-

gram up to 32 sprites at one time.

Plus, you can use the computer's built-in graphic symbols, as shown below.



You'll have 3 sound channels and 8 full octaves to really let your creativity soar. You'll produce music and sound effects that will knock your socks off.

Note: Everything we've discussed is part of the computer. We haven't even put the first of the 40 software programs in. It's all explained in an easy to understand 192 page tutorial user's manual.

## HARD TO BELIEVE

In less than 2 hours, you can be programming simple shapes and filling them in with different colors. In a few more hours, your shapes will be moving. And a few hours later, GOTO, PRINT, and FOR-NEXT Commands will be easy.

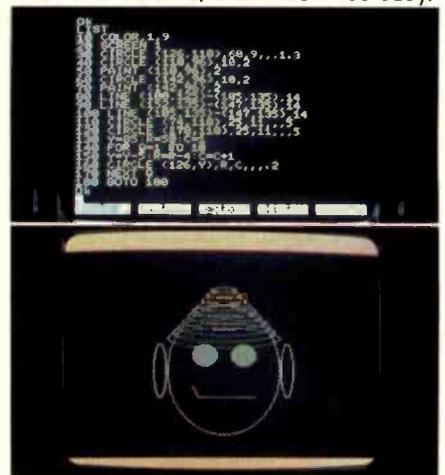
It happens so fast because of the programming keys built into this computer and the unique tutorial instruction manual that takes you on a step by step journey through 'computerese'.

Stop right here. After you've set up the computer, if you think I've exaggerated how easy it is to learn programming, return it! We'll pay postage both ways!

## IT'S SO EASY

Here's a sample program from the

manual and its result. It may look like a silly face, but wow will you have learned a lot. Lines 40 and 50 are the left eye. After a few hours, it all becomes easy.



## OPTIONAL WORD PROCESSING

The only option, other than an \$8 cable you probably don't need, is a Centronics Parallel Interface, a Cable and a Computer Word Processing program.

It's just \$59 complete. Wow! Use our Gorilla printer or your own, and you can type letters, reports, or list programs.

## EASY TO SAVE

Any program or report that you create, you can save on ordinary audio cassettes with the data cassette recorder.



# Remote Shock Wave

*Unleash 200 watts, 100 watts per channel, of incredibly pure musical power with the touch of a remote button. CPU logic control lets you have total remote control of the entire system, from the linear tracking turntable to the auto reverse cassette deck with Dolby C. And, it's all yours for \$649! Wow!*

Take control. You're in the cockpit. You've got enormous power at your command. Just a slight touch of the controls will literally cause your system to explode into a kaleidoscopic panorama of musical perfection.

And, as this massive explosion of sonic splendor unfolds right in your own living room, you'll have over 110 individual controls to shape and select your musical pleasures.

In fact, to demonstrate the depth of DAK's \$649 blockbuster price, each control works out, costing you less than \$5.90. So, it's up to you if you think Dolby C is worth \$5.90. Or, how about a continuous auto reverse button?

There's repeat play on the linear tracking turntable and a hydraulic cueing control. You may not need all 8 preset stations on the FM digital synthesized tuner, but since the same buttons also give you 8 presets on AM, they each really cost half the \$5.90.

You'll also be paying for the buttons on the remote. But think of the convenience you'll enjoy when you can stop, start, record and pause your tape deck from across the room.

Plus, you'll have remote index scan, which lets you hear just the first 10 seconds of each song on a tape. Even Record Mute is controlled from the remote.

Virtually every function can be performed from the remote. You can start, stop or cue a record. You can access all 16 preset tuner memories, and of course you'll control volume, mute and switching between the components.

Just think. You'll sit back in your favorite easy chair and stop and start the tape deck as you copy records or record from FM. Wow, you'll be able to edit out commercials as they occur.

But don't let the 'gimmicks' of remote control entice you. This system with 110 RMS watts per channel, from 20hz to 20,000hz with 0.05% THD, would be a steal if you had to wind it up to make it work.

## IT'S THE SOUND

From the 3-way 12" speaker systems to the beautiful rack cabinet, this system is top of the line. It's not just a conglomeration of gimmicks and a ton of power. Each component can, and is about to, stand on its own merits.

When you hear the awesome power combined with the fine detail that these fine individual components produce, you will understand why Magnavox's suggested retail price of \$999 was such a good value.



## DIGITAL SYNTHESIZED TUNER

If you tape, or if you're really into FM, this incredibly stable AM and FM stereo tuner is for you.

The frequency response is from 30hz to 15,000hz, which isn't a lot better than



other fine tuners until you look at truth in packaging. Magnavox's is not plus or minus 3 to 5 db like many others. Magnavox's is +0.5db -1.5db. And, the tuner's response doesn't stop at 15,000hz.

The signal to noise is an incredible 78db and THD is only 0.08%. The stereo separation at 1000hz is 55db.

The Magnavox FM tuner is actually two tuners in one. You see, FM stations are often very close together on the dial.

Most manufacturers must make their selectivity at the IF stage quite narrow. The problem with narrow IF stages is that distortion is increased.

Magnavox uses two separate IF tuner bands. Wide for when there is no adjacent station interference, and narrow where stations are close together. So, you get the best sound from all stations.

There are 8 FM presets and 8 AM presets that you can access with one touch ease. And, there's built-in backup so that you don't lose the memory during power failures.

You can step tune up and down the dial, or you can scan through your preset stations. And, there's program record.

With the use of an optional timer (like our BSR X10 system), you can preset the

tuner and the tape deck to come on and record up to 6 totally separate stations at 6 totally separate times.

So, you won't miss late night broadcasts of your favorite music. And, you won't miss broadcasts during the day

while you're at work.

LEDs show all the functions, from signal strength to memory operation. A large fluorescent frequency display lets you see the station you are on, even from across the room, which is really important when you're using the remote.

## AUTO REVERSE CASSETTE

This is a full logic auto reverse cassette deck. It does everything. It has search which selects just the song you want.

If you want to hear the third song on the tape, just push the search button 3 times. If you aren't sure where the song you want to hear is, just push index scan.

The deck will automatically play 10 seconds of the first song on the tape and then fast forward to the 2nd. It will play 10 seconds and then go on until you reach the song you want.

Of course, you can have the deck play only the one song, only one side, or continuously play both sides of the cassette over and over again, forever. There's a reverse button that lets you reverse the direction of the deck at any time.

When you want to record, you'll have record mute which automatically records 4 seconds of silence on your tape for professional intros and exits.

You'll have Dolby B to play your older tapes and Dolby C to record really hiss-free tapes from now on. The deck records in one direction and plays in both. All of its movement controls, including record, pause and record mute, are duplicated on the remote.

There are selection buttons for normal, CrO<sup>2</sup>, and metal tape. And, the peak reading LED meters and linear record level controls, let you accurately set levels



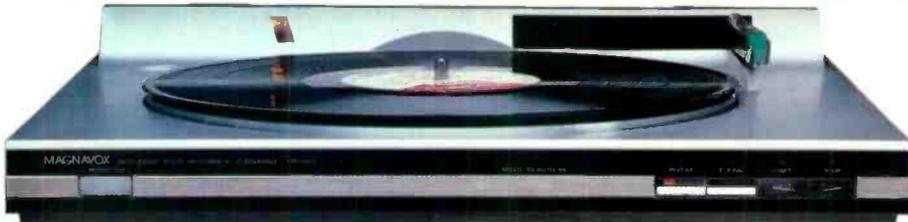
for really great sounding recordings.

You'll enjoy a wide frequency response from 40 to 15,000hz and with Dolby C, really quiet recordings.

#### LINEAR TRACKING TURNTABLE

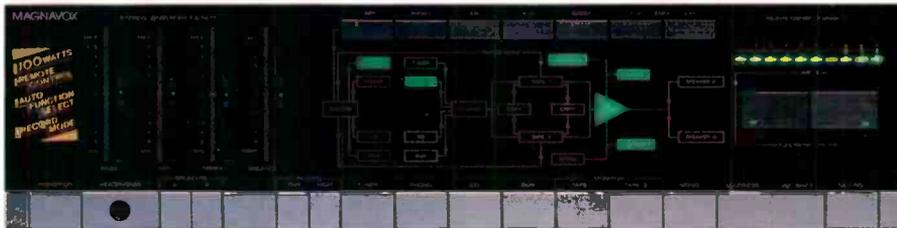
This fully automatic turntable will reproduce music beautifully. From its die-cast aluminum turntable platter to its linear tracking tone arm for error free tracking, the sound and action is superb.

It features automatic lead-in, automatic shut off, automatic repeat and automatic muting. It automatically selects speed and record size. You can manually search for a track from the turntable itself, or perform any of the above functions from the remote control.



It has a top quality moving magnet P-mount cartridge, hydraulic cueing to protect your records, and a servo controlled belt drive motor for superb stability.

You'll particularly enjoy recording from this automatic turntable because of its stability, wide frequency response and easy remote control operation.



#### INTEGRATED AMPLIFIER

It's the brains and brawn of the system. From its 100 RMS watts per channel output, to its 10hz to 40,000hz ± 1 db frequency response, to its 93db signal to noise ratio, it's strictly audiophile.

And what control you'll have. The Loudness contour button which you'll use for low level listening, boosts the signal at 100hz by 8db and at 10,000hz by 4db.

There are both high and low filters, and not only are there linear bass and treble controls, there's a presence control to really bring your sound alive.

There are totally separate input and output controls for all controlled inputs, so that you may listen to a record while you tape from FM. And, if you add another cassette deck, you'll be able to use the two way switchable tape dubbing.

On the back panel is an audiophile feature you will appreciate if you're into bi-amping or adding sound processing devices. There are both 'preamp out' and 'main amp in' RCA jacks, something that's usually found on esoteric gear.

There are buttons which will allow

you to connect two speaker systems (one is included of course), and here's a feature you'll really appreciate.

This integrated amp has volume memory. When you turn it on, it will resume the last volume level that you set. Plus, there's a mute button to allow you to have instant silence for phone calls and other obnoxious interruptions.

#### 12" 3-WAY PERFECTION

These 3-way speaker systems have a wide smooth frequency response from 36hz to 20,000hz. The crossover points are at 1500hz and 6,000hz.

The 12" woofer really produces superb, clean tight bass which is augmented by an acoustically designed bass port. So,

the sound will be both rich and full.

The mid-range is reproduced by a 5" driver, that in conjunction with the presence control on the amplifier, produces pure yet dramatic lifelike sound.

A 3" super tweeter give you a vibrant clean high end. The speakers are rated for 100 watts and are a perfect match for

this top of the line system.

#### MARVELOUS REMOTE CONTROL

It does it all. Not just volume. Not just preset stations. Look at all it does.

On the tuner, you can select AM or FM. You can tune AM and FM stations with up or down step tuning. Or, you can select any of the 16 presets.

On the Amp, you can control the volume, mute and switch in the Loudness Contour button. You can select Tuner, Phone, Tape or 2 additional Aux inputs.

On the auto reverse tape deck, you'll change directions and control all the movement commands. You'll Stop, Start, Fast Forward, Rewind, Pause, Record and use Record Mute.

And, you'll have full use of both the Index Scan and Search functions described with the deck.

With the turntable you can Play, Cut, Cue/Pause or cause the turntable to enter its repeat mode. You can even move from track to track on the record.

And finally, you can turn the entire system on or off. This infrared remote centralizes all functions of the system

for really easy system control, near the system or across the room.

#### WRAP IT ALL UP

Individually or as a system, these components are top quality. When you put them in the beautiful simulated walnut-grain rack with tempered glass door and glass top, it will be an eye catching addition to any room.

The rack is 18½" wide, 39¾" tall and 16" deep. The matching 12" 3-way speakers are 15" wide, 26¼" high and 13" deep. The system is made by Magnavox, a trusted name for years. It's backed by their standard limited warranty.

#### REMOTE SHOCK WAVE

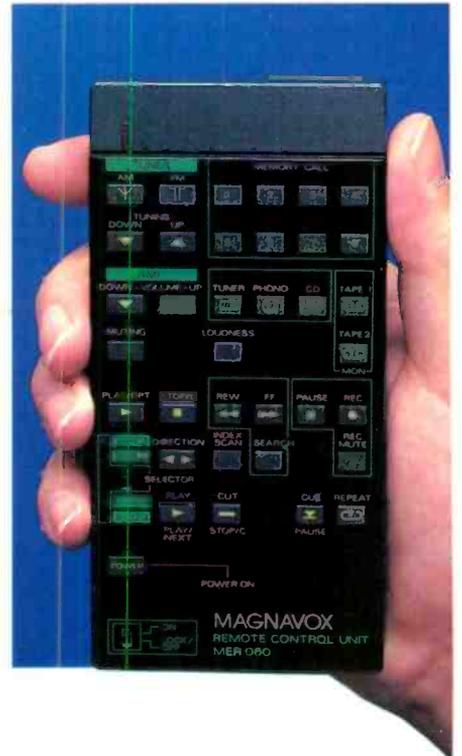
#### RISK FREE

Wait till you hear the sound. Wait till you get your hands on the solid, superbly crafted controls. And wait till you try the remote. It's a thrilling experience.

If you're not 100% satisfied, simply return the system in its original boxes to DAK within 30 days for a refund.

To order your Magnavox 100 watt per channel Stereo System with Linear Tracking Turntable, Auto Reverse Cassette Deck, Synthesized AM/FM Stereo Tuner, 12" 3-Way speaker systems and beautiful Rack risk free with your credit card, call toll free or send DAK's blockbuster price of just \$649 (\$55 P&H) Order No. 4270. CA res add sales tax. We must ship by truck to a street address only, no P.O. Boxes please.

The sound that this system will produce in your home will be thrilling. And, speaking of being thrilled, wait till you feel the controls and watch this system explode into action when you touch a button on its remote control.

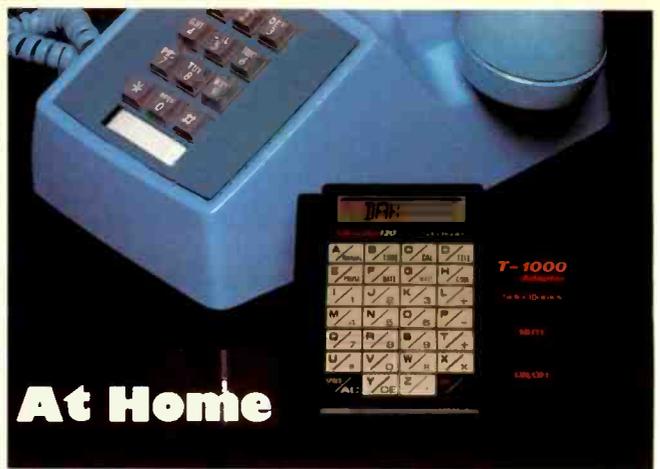


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**It Dials**



**At Home**

# Name Dropper Stopper

**Now, all you need is the name of the person you want to call, and their number will be dialed automatically in True Tone with on-hook dialing at home, or when you're out, through the mouthpiece of any phone.**

By Drew Kaplan

It's a dialer. It fits in your shirt pocket. Just hold it up to any phone and it will automatically dial any of 120 of your important phone numbers in True Tone.

But look at this. When you are at home or at the office, just set it on its included base. It becomes a sophisticated desk top dialer that lets you monitor your call's progress through its built-in speaker, before you pick up your phone.

## NAME RECOGNITION

If you're like me, you hate remembering phone numbers. And frankly, I hate dialing and redialing them even more. The problem with previous dialers was that instead of remembering someone's phone number, you had to remember the dialer code you had assigned them.

For example, DAK was No. 27 in my dialer. Well, no more! Now there's nothing to remember but the person's name.

## AND, OH HOW EASY IT IS

You can store up to 120 names and numbers in this 2½" X 3¾" dialer.

If you want to call 'Home', just press 'H'. 'Home', followed by the number will pop up on the dialer's oversized LCD display. If you have other names stored under 'H', there's no problem.

You can either simply push 'H' and scroll through the names beginning with 'H' until you reach the one you want, or type 'HO' which in this example will exclude names that don't begin with 'HO'.

Of course, you can type in Home, or any full name up to 7 letters. So, don't try to remember Mike's number, just his name. Don't try to remember your phone credit card number, just 'credit'.



Once you've selected a name, just press 'Dial' and off to work it goes. It's incredibly easy with this new dialer.

And don't worry about the dialer forgetting, because it comes with 3 year

batteries in place that can be changed without losing the memory.

Adding and deleting numbers is a breeze. Just enter any name up to 7 letters long and then any number up to 14 digits. The dialer will automatically alphabetize your entry. Read on to see how easy it is to add Sprint and MCI codes.



## DO YOU TRAVEL?

I wouldn't wish what happened to us in Los Angeles to my worst enemy. They split the city's area code in half. Now my home is in 818 and half my business and friends are in the 213 area code.

What's really bad is that I work at home, I work at DAK and I travel around the city. Plus, I also go to Chicago about every 6 weeks to print catalogs.

Well, this dialer was planned for people who travel. Once you put in a name, you are always prepared.

Here's how I put in DAK's number: DAK, 1-818-C-888-8220. Whenever I'm in town, I just let the dialer dial DAK. But if I'm in the 213 area code or in Chicago, I press 'CODE' before I dial and the area code is added with no muss, no fuss.

Using MCI and Sprint is easy. Their numbers are kept in any of 18 special coupled locations. So, you can have up to 18 different local access numbers and codes 'prefix' any of the 120 names in your dialer. Wow, can you travel!

## THE BEST PART

Just imagine. The same dialer that fits in your shirt pocket drops into a stand and becomes a wired-in desk dialer.

You won't have to have one phone book or dialer at home, one for your briefcase and one for your office.

Now, this one dialer with its included base does it all. The base comes com-

plete with a standard modular phone cord that plugs into the wall, and there's a jack on its back to plug in your phone. Plus, extra bases are available.

You can use the dialer to dial manually if you don't have a tone phone (most lines are tone). You can program in pauses and wait signals for special services.

There's automatic redial. And, there's a security code system that lets you protect your secret numbers. You'll also find a full featured calculator, a clock and a calendar built into this remarkable device. It's made by Selectronics, one of the pioneers in dialers. It's backed by their limited warranty.



Here's a phone's eye view of the dialer. It speaks True Tone to the Phone Company through your phone's mouthpiece when you're out. You can use it to dial manually. Or, you can automatically dial 120 of your most important phone numbers by simply selecting the name of the person you wish to call.

## TRY NUMBER FREE DIALING RISK FREE

Try it at a phone booth. Try it at someone else's office. Then come home and drop it into its base. It's the only dialer you'll ever need.

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

To order your Selectronics Tone Dialer that dials from Names rather than numbers, with a Home Use Base complete with speaker for monitoring call progress, risk free with your credit card, call toll free, or send your check for just \$79.95 plus \$3 P&H. Order No. 4220. Extra Bases are just \$19.95 plus \$1.50 P&H. Order No. 4221. CA res add tax.

Forget phone drudgery. Just one dialer does it all. Now your dialer, not just your phone book, goes where you go.

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## For Your Stereo System Too?

*Here's a portable music machine with dual cassettes, dual auto reverse with full logic, and AM/FM stereo. Plus, it's a stereo component that is as at home plugged into your stereo system as it is on the road.*

It goes where you go, even into your stereo system. At the beach or in the yard, Sharp's all new portable music machine and stereo component will keep you entertained.

It has two auto reverse decks. You can copy both sides of a cassette with the touch of a single button. And, you can copy the cassette at normal or high speed with simply great fidelity.

There have been dual cassette decks. There have been auto reverse decks. But, a dual auto reverse deck of this quality is a tremendous breakthrough.

Imagine a portable music machine that has 2 cassette decks with a frequency response from 40hz to 16,000hz with metal tape. And, just wait till you see its console plugged into your main stereo system.

### WHY YOUR STEREO?

An auto reverse deck in your system is a real mood maker. It lets you have uninterrupted music. So, you can get up and change cassettes when you want, not when the cassette ends.

This dual auto reverse deck offers even more. It will sequentially play side A and then side B of deck 1, then side A and then side B of deck 2.

And then, it automatically begins the whole process again. Your music can continue uninterrupted, forever.

At the office, in the great outdoors, or anywhere in your car or home, you can use the detachable 2-way speaker systems to provide really great sound.

You'll especially enjoy the quality of the sound after you sculpture it with the built-in 5-band equalizer. Wow, wait till you hear the rich, full, powerful bass and the crisp, clean highs.

But, you'll love the sound best of all when you get home and plug the central console into any 'Aux' Input in your main stereo system.

Then you'll have all the massive power of your own system being activated by this never ending auto reverse dual cassette deck.

### LOADED

It operates on AC (cord included) or D cell batteries (not included). There are

standard speaker terminals on the back to hook up the detachable speakers, or even to hook up your own speakers.

A sensitive AM and FM stereo tuner really pulls in even distant stations. And of course, you can record directly from the tuner. In fact, you can plug a mike into the unit to add your voice to any recording you are making.

There is no provision for stereo mike recording. But, you can do sound on sound by playing back a tape and singing along while you record a second tape. You can be a duet, a trio or even a chorus by continually adding your voice as you make successive cassettes.

If you don't like the song you are listening to, just push Forward APSS. The deck will then locate the beginning of the next song on the tape for you.

Both of these features are particularly useful for recording just certain selections from a tape. You can find what you want quickly and easily with APSS.

Just one touch of any of the electronic controls throws this totally logic controlled machine into action. You can switch the direction of a cassette at any time. And, each deck's full complement of controls is totally separate.

It is 25" long with its speakers (and they really sound great), and 14 3/4" long without the speakers attached. It's backed by Sharp's standard limited warranty.

### AUTO REVERSE AND 2 DECKS RISK FREE

Don't underestimate the sound quality of this incredible portable with its 5-band equalizer and 2-way speaker systems, because of DAK's emphasis on putting it in your stereo system.

It's just such a superb addition to your system, that its use as a portable, bedroom, kitchen or office stereo will have to be taken for granted. If you aren't 100% satisfied, simply return it in its original box within 30 days for a courteous refund.

To order your Sharp Double Auto Reverse Portable and Stereo System Component complete with DAK's special Stereo System Adaptor Cable risk free with your credit card, call toll free or send your check for DAK's Barn Burner price of just \$188 plus \$7 P&H. Order No. 4329. CA res add sales tax.

Why spoil the mood by getting up and changing cassettes. Now you can have great NONSTOP entertainment wherever you are, whenever you like. And, wait till you hear what sound you'll have.



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You can set the decks to play one way only, both sides of one cassette or both sides of both cassettes. There's a built-in automatic recording level circuit for perfect dubs every time.

DAK has provided a special cable that lets you take the headphone jack output and feed it directly into your 'Aux' Input without loss. You'll love the sound of this deck in your system.

APSS-Let's say you're listening to a song you'd like to hear again. Just touch Reverse APSS and this deck will locate the beginning of the song and restart it.



# Fast Track Attack

**Step back 5 years into the past. Step back to the heyday of the audio industry when massive power and super clean sound were the words of the day. Then step forward and add a spectrum analyzer and a 7 band graphic equalizer to sculpture your sound, and, check DAK's breakthrough price.**

By Drew Kaplan

The excitement is back. After 5 years of boring 20 and 30 watt per channel non-dramatic sounding receivers, Hitachi is igniting your music.

Of course, with the avalanche of CDs being sold, Hitachi doesn't have much choice. High power and super fast slew rates are needed just to keep up.

So, Hitachi has attacked distortion and dynamic restriction at its source with this new, top of the line, receiver.

You see, a record can't have the dynamic violence of a CD because all sound produced by a record is a reaction to friction.

With CDs it's optical, so your sound can go from 0db to 90db at the speed of light. And, while CDs can even make an old tube amplifier sound terrific, wait till you hear them through this new receiver.

In fact, wait till you hear any source material open up and become free and vibrant with life.

But, before we explore the nuts and bolts of Hitachi's 140 watt (70 watts per channel from 20hz to 20,000hz with no more than 0.03% THD) amplifier, let's look at the special extras.

## SCULPTURE YOUR SOUND

The most obvious addition to this receiver is the 7 band graphic equalizer.

With an equalizer, you can bring crashing cymbals to life or energize the sound of a string bass without destroying any of the musical content of the mid-range.

An equalizer can make any stereo sound incredibly better. And combined with the power of this receiver, your sound will be nothing short of awesome.

With the aid of this equalizer, you won't just hear a string bass, you'll feel it. It will become a living, breathing, resonant part of the music. There's so much life, you'll be amazed.

And, you'll thrill to the impact of a cymbal crash or the gentle nuance of brushes on a snare drum. With the clean power of this amp, and the ability to 'detonate' the high and low frequencies, you'll simply be thrilled by the music.

## SEE WHAT YOU'VE DONE

This receiver has built-in test equipment in the form of a 7 band spectrum analyzer. You'll be able to see the musical instruments move across the analyzer's field of fluorescent elements.

A piano can literally be a wave moving across the analyzer's face. It's really exciting to see the frequency components

of instruments that make up your music.

But there's a problem. You'll want to use the spectrum analyzer to acoustically check and balance your system within your room. And to do it, you'll need a microphone and a pink noise generator which Hitachi didn't include.

But don't despair. You can test your system if you own a microphone. Just plug it into your tape deck. Tune the FM tuner to inter-station (white) noise, and push record. Then play back the cassette.

You can accurately test your system and use your equalizer to compensate for couches, hard floors and speaker placement. Just readjust the equalizer, rerecord, and play it back until your response is flat.

## DUAL TAPE DECKS PLUS

There are two complete sets of input and output jacks for tape decks. So, you can make two tapes at once, or dub from deck 1 to deck 2.

And look at this. You can add the dramatic equalized impact to BOTH tape decks by switching in the equalizer

Now you can produce high quality equalized tapes for bass starved portables and high-end starved car cassette decks. This receiver will enhance your sound wherever you choose to listen.

## MORE CONTROLS

With this receiver you can operate 2 pairs of stereo speakers with power to spare. A subsonic filter kills frequencies below 16hz. So, you can really energize the bass down to 20hz without subsonic sounds overloading your woofers.

Both the electronic volume and balance controls are graphically depicted on the display as bars showing percentage of volume. You also see the volume in db's and the total output wattage.

While all these fancy lights and buttons may only seem like window dressing (to make your friends think you're rich), actually the opposite is true.

The electronic controls accurately and quietly control your sound. And, they won't be subject to mechanical aging that causes clicks, pops and static.

## QUARTZ-LOCK TUNING

It's Hitachi's new top of the line receiver, and as you'd expect, you're going to get great AM and FM stereo reception.

Tuning is controlled by an advanced quartz PLL (Phase Locked Loop) digital synthesizer tuning system. The system compensates for any change, assuring

you of a signal which is always crystal clear and stable.

Hitachi says, 'Distortion has been reduced to negligible levels, the signal-to-noise ratio is first-class and stereo separation is sharp.' And frankly, you can hear the sound they talk about.

Look at this super feature. The tuner has 20 totally random access presets. Preset 1 may be FM and Preset 2 may be AM and so on. So, there's no need to switch between tuners with your presets.

Synthesized tuners lock-in and are rock stable, which is really important if you tape a lot off FM as I do.

## BUT IT'S THE POWER

Whether you have a CD or not, more power doesn't mean louder. It means cleaner unobstructed sound that is transparent and literally on fire with life.

With 70 watts per channel, your soft listening will gain depth and fullness. And, your loud levels will not suffer clipping and dynamic restriction.

## CHECK THE SPECS

The frequency response of the amp stretches from 10hz to 40,000hz. It has a 90db signal to noise ratio. And you can alter the frequency response by  $\pm 10$ db at 63hz, 160hz, 400hz, 1,000hz, 2,500hz, 6,300hz and 16,000hz with the equalizer. It's 17 1/2" X 4 3/4" X 13 1/2". And, it's backed by Hitachi's standard limited warranty.

## TRY FAST TRACK ATTACK RISK FREE

If you want to get the most out of CDs or any other source, you need plenty of power and headroom, a fast attack time and a super clean amplifier.

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

To order Hitachi's Top Of The Line 70 Watt Per Channel Receiver with 7 Band Equalizer and Spectrum Analyzer risk free with your credit card, call toll free, or send your check for only \$279. Wow! Plus \$11 P&H. Order No. 4332.

Yes, it has fancy lights. Yes, it has fancy buttons. But, wait till you experience the power and purity of your musical sound.

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# Tape Deck Octopus & Son

Now you can electronically talk to, mix, match, choose and even measure your tape decks. Of course, if you're not a total HiFi nut, you can simply switch between your decks.

By Drew Kaplan

OK, all you recording nuts... Now you can record on, set levels for, and record between 4 tape decks at once, and more. And, you'll have a father or son choice.

## THE FATHER

It's true. If you are already a DAK customer, you own an average of 2.3 tape decks. (Outside of a statistics class, that's 2 or 3 decks each.)

Anyway, as president of DAK, you'd expect me to own more tape decks than average. Well, you'd be right. I own 11, not including portables. And, 4 of them are in my studio where I write these ads.

In order to make tapes, test tapes and make copies of tapes, I've done a lot of cable switching, but **NO MORE**.

I've been trying to get someone to make a tape deck selector that would let me and all you other tape nuts switch between recorders, dub tapes to several decks at once, or simply not have to recable any time we want to make a copy.

Plus, I need to set standard input and output levels for my decks. And, that doesn't even count figuring out how to get an equalizer to my decks so that I can have great sounding cassettes in my car and in my portables.

## ENTER HARRY

Harry is the president of Numark, the studio disco company. He makes mixers, equalizers and all sorts of similar professional equipment.

So, Harry made just for me, (of course knowing Harry he'll sell it to all the studios too) a black box that does everything I wanted and more.

## HERE'S WHAT IT DOES

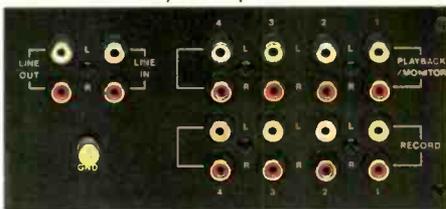
Look to the left in the picture above. Each of the orange buttons controls the output of one of 4 tape decks. If you push in a button, that deck will be 'on-line'.

Then a linear volume control above each button sets the line level. You can push 1, 2, 3 or all 4, and even mix them.

Now look under the meters. The first 4 numbered buttons control the signal going to the recorders. Push 1-4 depending on how many tapes you want to make. For example, if you push 2 on the playback monitor, and 1, 3 and 4 on the record input, you'll make 3 copies.

Push all 4 record buttons and the right hand 'line' button, and you can make 4

copies of whatever you have coming from your stereo system. And it simply connects into your tape monitor circuit.



And 1 'Enhancer' can feed all your decks when you use its tape monitor circuit.

## LET THE TRIALS BEGIN

The button marked 'FREQ' lets you select either a 400hz or an 8,000hz Test Tone to feed to the decks. The 400hz is perfect for setting balance and recording levels. It's also perfect for determining the relative output level between different brands of cassette tapes.

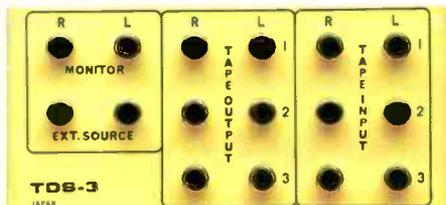
After you've tested 400hz, switch to 8,000hz. Now you can check the azimuth alignment of your cassette decks. And yes, you can test the high frequency responses of cassettes and your system.

8,000hz is higher than you may think. If you use a spectrum analyzer and microphone to test your system, you're already familiar with just how much this frequency area affects your perception of high end sound.

There's a level control for the test tone, and there are two ranges for the meters which show your choice of either program content or test tone.

Packed with the Octopus (Yes it has 8 legs if you figure 4 tape decks with 2 channels, L&R, each) are instructions and your various choices of how and where to add equalizers, tone generators, noise reduction units and other 'black boxes' that can dramatically improve your sound.

It's a neat device and it's backed by Numark's standard warranty.



SON OF OCTOPUS

OK, so what if you don't have 4 tape decks and 17 black boxes hooked into your system? Well, if you've got 2 or 3, and you'd like control of your system, or you're simply tired of switching cables, The Son Of Octopus is for you.

With this switching device, you can make up to 3 recordings at once from any source in your system, even using an 'Enhancement' device on all 3.

You can also dub tapes instantly. For example, you can play Deck 2, and make copies on Deck 1 and Deck 3. So, you can use any deck to play and any to record, just by flipping the switches.

But that's not all. You can mix two recordings into one. Just switch two decks into 'Dub' and one into record. It's backed by Vanco's limited warranty.

## TRY A TAPE DECK OCTOPUS RISK FREE

If you've got 2 or more tape decks plus equalizers, noise reduction equipment and other enhancers, a noise free, hum free Octopus should be in your future.

I'm a diver. And, Octopuses (pi) are really very friendly creatures. Just wait till one of these wraps its 8 (or 6) arms around your system and see just how easy your recording life can be. If you're not 100% satisfied, simply return it within 30 days in its original box for a refund.

To adopt your Numark Studio Master, Stereo Tape Deck, Tone Calibrator/Mixer (what a mouth full) Father Octopus risk free with your credit card, call toll free or send your check for just \$99 plus \$4 P&H. Order No. 4322.

For Vanco's Stereo Deck Switcher, call toll free or send your check for just \$29 plus (\$2 P&H) Order No. 4323.

And finally, If you need 6 foot patch cords (I never seem to have enough), they're \$0.79 (\$0.50 P&H) Order 9111.

Short of the 24 channel mixing boards used in the studios, these remarkable switcher/mixers will let you use all your equipment to its full potential.



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# Hey Martha Phone

**Banish yelling and wasted steps forever. Here's an installation-free speakerphone with a 3 channel wireless intercom that lets you communicate and even patch through calls to \$19 intercom station(s).**

By Drew Kaplan

Don't yell for your spouse. Don't call for your secretary. And definitely, don't get up to go find them.

Now, this new sophisticated hands free speakerphone with 10 memory dialing, Tone/Pulse switching and Call Patch-Through can do it all.

If you're like me, every time you pick up the phone at home, the call is for your wife or kids. And if they pick up the phone, it's invariably for you.

Well I'm through yelling. Whether I'm in the den, bedroom or kitchen, now I just put the call on hold, push the transmit button and say, "Honey, it's for you".

At the office we have an expensive telephone system complete with intercom. My secretary's extension is 130. Now, instead of lifting the receiver, putting it to my ear and dialing her number, I touch a button and we talk hands free.

But best of all, there's no installation. I plugged my new speakerphone into an AC outlet, and the same modular jack as my phone. Then I plugged my phone into this speakerphone and started talking.

The intercom has 3 separate channels, so I'm not the only one at DAK who's able to use this new system.

## NOT MY FIRST INTERCOM

When our sons were young, we put intercoms in their rooms so we could hear them at night. It really gave us peace of mind, especially when one was ill.

I also had an intercom in the garage so that my wife didn't have to run out to find me whenever I received a call or she had something to tell me.

By using this marvel of communications, she can patch a phone call through to me in the garage, even though there isn't a phone jack anywhere in sight.

**REVOLUTIONARY COMMUNICATION**  
It's the technological marriage of an FM wireless intercom and a sophisticated state-of-the-art speakerphone.

But it's much more of an achievement than simply putting two things together. The speakerphone and the intercom actually interact with one another. Read on to see just what this can do for you.



## THE SPEAKERPHONE

Imagine the freedom of talking, hands free. There's no barrel-like, hollow sound at all, and in my tests, nobody I've talked with has realized I've been on a speakerphone, which is a very impressive claim.

Once the phone is on, your voice activates the electronics. The phone uses



**PRICE SLASHED**  
Great for office or home, was \$69  
**NOW JUST \$49**

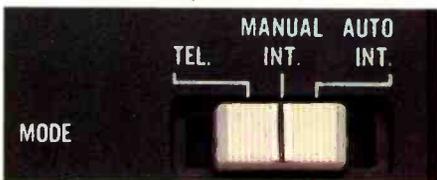
Use Order Number 4226 plus (\$3.50 P&H)

lighting-fast simplex, with the mike over-riding the speaker for superb sound.

The phone has 10 memory dialing including last number redial. It is Tone/Pulse switchable so you can use discount services. There is a 'Hold' button, but because of its interaction with the intercom, you must push it to release the line.

## THE WIRELESS INTERCOM

This wireless FM, hands free intercom will let you talk between just about any locations in your home or office.



There are 3 separate channels. So, in an office each executive may have a channel. And at home, you can monitor two separate rooms, and still have a free channel for general communications.

On the speakerphone/intercom you have your choice of two methods of talking. You can use 'Auto Intercom' which is voice operated and works hands free, just like the speakerphone.

Or, you can use 'Manual Intercom'. Just push the 'Talk Button' when you want to talk. There's 'Talk Lock' which keeps the intercom in transmit, for monitoring your children or any area.

**Look what you get for only \$19.** Whenever you don't have a telephone jack, like the garage, laundry room or basement, all you need is the 3 channel intercom.

So we have the companion intercom, without the speakerphone and voice operated function for just \$19 each.

You can originate or answer any intercom function just like the speakerphone/intercom. There's a 'Call Button', 'Talk' and 'Talk Lock' Buttons and Volume.

**Note:** \$19 units can talk together or with speakerphones. It makes no difference how many speakerphones or \$19 intercoms are in your system.

## WEDDING BELLS

Yelling will be a thing of the past. Just put your speakerphone into 'Auto Inter-

com' and switch on the telephone. You'll allow anyone in your home with an intercom to join in on the phone.

Just think, anywhere you have an AC plug, you can Patch-Through a telephone call. You can be added to a call even if you're in the garage or in the basement. So, not only do you banish yelling, you add telephone access to every intercom.

Only the speakerphone/intercoms can actually originate and answer calls, but every intercom can join in.

Both the speakerphone/intercom and the \$19 intercom can be either desk or wall mounted. They are both handsome looking additions to any room with their HiTec black and wood-grain styling.

They're made by Maxon, a leader in telecommunications, and backed by Maxon's standard limited warranty.

## TOTAL COMMUNICATION RISK FREE

Wait till you hear the clarity of both the speakerphone and intercom sound. Think of how easy it will be at your office or in your home to have a hands free intercom. And, forget yelling forever.

If you're not 100% satisfied, simply return them in their original boxes within 30 days for a courteous refund.

To order your Maxon Speakerphone/Intercom with 10 Number Memory, 3 Channel Intercom and Call Patch-Through risk free with your credit card, call toll free or send DAK's low introductory price of just ~~\$69.95~~ plus \$3.50 for P&H. Order No. 4226. CA res add tax.

The Intercom Only Unit is just \$19 plus \$2 for P&H. Order No. 4227.

**Note:** Any combination of at least two Speakerphone/intercoms and/or \$19 intercoms may be used.

You won't have to yell, "Hey Martha" any more. Now, phone calls and talking can be just the push of a button away.



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## FAMILY PRICE BOMBSHELL



# Daddy's Pride And Joy

*I had a meeting that I just couldn't miss. And, my son was giving his first speech. What's a father to do?*

By Drew Kaplan

"Where's the Unicorn?", was the title of my son's speech. And, I was going to miss it.

I had also missed the trip to Knotts Berry Farm where he had won the Unicorn. He was especially proud because neither his older brother nor any of the adults had been able to win anything.

### POSSIBLE DIVORCE?

Everyone in the family thought I should skip the meeting, and they were probably right. But I had an idea.

I called Emerson and asked to borrow one of their portable video machines with a camera that would 1) be light enough for my wife to easily carry, and 2) wouldn't require any training.

The next day we received the system you see above. I didn't plan to sell it (I told Emerson it was too expensive), but I really needed it for that day.

Well, not only did this system save my marriage, but we've had a heck of a lot of fun. Yes, I've seen the Unicorn Speech many times, as have all the grandparents. But that was just the beginning.

The very first night we unpacked the recorder, the kids turned into 'hams'. And by the way, the speech was probably much better because we used the video recorder over and over again to practice.

Inside and out, (yes it came right out of the box with everything, including an AC power supply and a rechargeable battery) we really put this thing to use.

### LOTS OF USES

My older son is taking tennis lessons. Making recordings of your swing out on the court is an ideal way to improve. He can really study his wrist and arm action.

It's also terrific out on the golf course for improving your golf swing. In fact, it's such a powerful method of game improvement that they sell video cassettes showing how to improve your game.

I can't personally attest to improving your tennis or golf games, because I'm too busy writing catalogs to take time off to play. And anyway, when I was growing up, playing ping pong seemed to be an extravagant sport to me.

Anyway, imagine capturing your chil-

dren's expressions as they open birthday presents. At Christmas we're going to have a ball. And, it's great at work too. I've sent 'tours of DAK' to suppliers, and we have a DAK training program.

### LIVING CHRISTMAS CARDS

With video cassettes costing less than \$4, why not send one to an old friend who lives across the country. Wow, what a great way to revive old friendships.

As many as 25% of all households are estimated to have VHS recorders by the end of this year, so there's a good chance your old friends already have recorders.

My wife is planning to send out about 6 copies of a tape about us to her old 'best' friends in Akron, Ohio and Denver, Colorado and Phoenix, Arizona.



Photographs may be cute, but there's nothing like 'live action'.

### REALLY EASY

Just slide in the rechargeable battery or AC power supply, plug in the camera, slip in a blank VHS video cassette, touch Record, and away you go.

Just touch the trigger on the camera. The tape will start moving. Touch the trigger again and the tape will stop.

There's a focus control and a 3X zoom lens. A green light shows you that you're recording and a red light shows you if there's not enough light.

But don't worry about light. You need only 35 lux, which is about normal room light. A 4 position switch lets you optimize the camera for standard incandescent light bulbs, fluorescent bulbs, full sun, or cloudy days. It's easy; it's quick, and you'll be amazed at the results.

A unidirectional electret condenser mike mounted on the camera picks up the sound with astonishing clarity.

You'll have loads of features, including speed search, still frame, audio dub-

bing, and automatic fine editing.

### AT HOME TOO

You'll get a TV tuner that turns this recorder into a standard home video recorder. You can record off the air VHF 2-13 and UHF 14-83.

The recorder has both VHF channel 3 and 4 output capability, so you can connect the recorder to any TV.

Because it also has 'video' inputs and outputs, you can connect this recorder directly to TV monitor or any other video recorder with normal 'audio' type RCA patch cords for really clean copies of cassettes. So, it's a portable dubbing machine as well.

Cables for 300 ohm and 75 ohm antenna connections as well as direct video connections are included. And there's a shoulder strap. It's all backed by a standard limited warranty.

### CAPTURE YOUR FAMILY ON TAPE RISK FREE

It's not like using expensive film that has to be processed. With six hours costing about \$4, you'll have a ball.

If you're not 100% satisfied, or even if you don't like to watch your family on TV, simply return the system in its original box within 30 days for a courteous refund.

To order your Emerson Video System (Emerson's camera is by Konica), risk free with your credit card, call toll free, or send your check for only \$689 plus \$11 P&H. Order No. 4313. Ca res add tax.

You've got to try this! Take the camera in the car and drive around your block or to your office with someone holding the camera out of the window. Wait till you see the results. It's like a roller coaster.

In fact, the next time I take my kids to Magic Mountain, I'm going to take the recorder and record the roller coaster ride. Since I usually have my eyes closed, it'll be fun to see what it really looks like.



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# Thunder Lizard Mistake Plus

Earlier this year we offered a 15" BSR speaker system with the wrong tweeter at a close-out price. Now, here's a super improved version of the same speaker for the exact same close-out price.

It was a mistake. Somebody goofed and put the wrong tweeter in 3500 of BSR's best 15" 3-way speaker systems.

## THUNDER LIZARDS

BSR's salesman referred to the speakers as Thunder Lizards because the 15" acoustic suspension bass driver is so powerfully dramatic that it can literally recreate the power of an earthquake or explosion in your living room.

Unfortunately, without the brilliant and powerful exponential horn tweeter, the bass simply overwhelmed the highs and so the name Thunder Lizard was born.

But, DAK came to the rescue. We not only bought all 3500 of the speakers, we bought the exponential horn tweeters that BSR had left out and let our customers install the correct tweeter themselves. The highs and lows this system created were nothing short of awesome.

## BUT, THERE'S A PROBLEM

We thought we'd have enough speakers for the rest of the year, but we sold over 3300 in just our Spring Catalogs. So, we went back to BSR and tried to buy more of the speakers. But, they only sold us the first batch at a close-out price because they had put in the wrong tweeters and didn't know what to do with them.

BSR said that luckily they didn't make mistakes very often and the only other 'problem' they had was an inventory of 6000 too many super tweak 8" midrange drivers with an exotic polypropylene cone they used for an expensive BSR tower system.

## LOOK NO FURTHER

Well, to make a long story short, we got BSR to replace the plain paper 5" midrange in the Thunder Lizard Mistake with the new exotic 8" polypropylene midrange driver. And, they put the correct tweeter in for us too.

So, for exactly the same close-out price, we have 6000 speaker systems that produce a kaleidoscopic panorama of sound that is nothing sort of incredible. You're in for an earthshaking, bone jarring musical experience.

The exponential horn tweeter gives you startling dramatic highs to 20Khz. You won't just hear cymbal crashes, you will experience them. The highs are simply brilliant. Plus, a brilliance control lets you decide just how powerful you want the highs to be.

The bass, all the way down to 20hz is reproduced with thundering accuracy by



the pride of the BSR line, a 15" acoustic suspension bass driver. The lows seem to have life of their own.

You'll hear string basses emerge that you never knew were in your recordings. Just a bass drum is an experience.

And finally, the midrange from 1000hz to 4000hz is flawlessly reproduced by the newest development in high-tech speakers. Instead of using paper, polypropylene is used.

Its characteristics give incredible purity to the entire midrange. It's much more accurate than a paper midrange.

And, it's a perfect match for the dramatic thundering bass and startling highs these speaker systems produce. There's a presence control that lets you adjust the midrange level to suit your taste.

## GREAT LOOKS AND GREAT SOUND

The beautifully crafted wood-grain appearance cabinet is 29" tall, 18" wide and 10½" deep. It comes with a beautiful removable real cloth speaker grill.

BSR backs this system with a 2 year limited warranty, and speaking of protection, the tweeter is fuse protected. The system can handle 180 watts peak, 90 watts continuous and requires 15 watts.

## NEVER AGAIN?

BSR says that this is it. When these 6000 speakers are gone, there'll be no more. They say they have no more mistakes and no more extra speakers.

Well, we're delighted they make mistakes. And, we know once you've heard these 15" three-way speaker systems you'll be delighted too.

**'THUNDER LIZARDS NO MORE'  
RISK FREE**

Soft listening will give you a fullness and realism of sound not possible with conventional 10" and 12" speaker systems.

And, wait till you (and your neighbors) hear the thundering realism of high volume listening with these incredibly pure audiophile speaker systems.

Normally, only the most sophisticated audiophile can afford the ultimate, a 15" 3-way system. But now, due to BSR's errors, anyone can experience the incredible realism of a truly great speaker.

If for any reason you're not 100% overwhelmed by these speaker systems, simply return them to DAK in their original boxes within 30 days for a refund.

To order your BSR top of the line 15" 3-way loudspeaker system with the exponential horn tweeter and the new 8" polypropylene midrange already installed by BSR risk free with your credit card, call toll free, or send a check not for the suggested retail price of \$199 for the system with the 5" midrange but for only \$119 each plus \$12.50 each for postage and handling. Order Number 9717. CA res add 6% sales tax.

Now, without even having to install your own tweeter, you'll experience dramatic earthshaking musical sound that's so startlingly alive, it'll send shivers through your body for years to come.



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# New Housing Breakthrough



It's new. And, it's old. DAK grew out of the industrial tape market. We manufactured tape for high speed duplicators who recorded music and voice tapes at 15 times normal speed.

We developed special cassette liners that would allow our cassettes to be ultra reliable even under the relentless demands of high speed professional duplication. In the liner pictured to the left, you can see the multiple creases that gently guide each layer of tape as it winds within the cassette.

Now, we've developed a housing that incorporates all we've learned about high speed, heavy-duty use. This housing will give you the kind of reliability from your car cassette player and your personal stereo that you'd only expect from your home cassette deck which, theoretically at least, handles your cassettes with loving care.

And, we have listened to your requests. There's more room to write on the label. We've added removable bias tabs for auto-bias decks. But most important, this super heavy-duty, dimensionally stable housing will give you maximum protection for your cherished tapes.

And at least for now, there will be absolutely no increase in price. All orders will be shipped with our super new music vault housing.

## Normal Bias

Thundering bass and crystal clean highs are now a reality with DAK's new top of the line Gold Label MLX normal bias 90 minute cassettes.

These professional quality cassettes feature very special, ultra uniform and narrow ferric iron particles. These particles allow the oxide density to be much greater than previous ferric cassettes.

The denser particle packing (more particles per inch of tape) translates into improved frequency response, better signal to noise ratio and more headroom and dynamic range. And, it all makes sense because there's more magnetic material to work with per inch of DAK Gold Label MLX tape.

MLX cassettes offer you a frequency response capability that is superior to most good quality cassette decks. If your deck can handle it, you can expect a frequency response up to 19,500hz.

And even if your cassette deck doesn't record to 19,500hz, the sound you get will be clean and pure. And, speaking of

## MLX

pure, the high density packing also gives you more headroom and dynamic range.

With your first recording, you'll notice superbly accurate recordings even at very high levels. The high density packing allows this tape to be recorded louder and driven harder than previous tapes.

And the tape will be quiet too. With the increased output, signal to noise ratio is improved so you'll get super clean quiet recordings.

The tape isn't the end of the story. DAK housings act like a vault to protect and guide your tapes. Each tape comes with labels, a deluxe index insert card and a beautiful all clear hard plastic box. DAK cassettes are backed by a full one year limited warranty.

You can pay \$4 to \$5 for cassettes like Maxell UDXL or TDK at your local Hi Fi store, or you can buy factory direct from DAK at tremendous savings.

To save you money, DAK only makes



90 minute cassettes and we offer them only in prepackaged units of 10. This saves us money and as you can see from our prices, saves you money too. So, why not order some today for our standard 30 day risk free trial. DAK Gold Label MLX 90 minute cassettes cost you just \$2.49 each or \$24.90 (\$1.50 P&H) for each group of 10. Order No. 9650.

If you're into dramatic good sound, you should be using DAK MLX 90 minute cassettes. They sound great!

## High Bias Super MLX<sup>2</sup>

Why Chrome? DAK has never offered a chrome tape. And there was a good reason. The original Chrome formulations lacked both sensitivity and detail at the low end.

But, no more. After a very long wait, DAK is adding an incredible 90 minute Chrome (CrO<sup>2</sup>) tape to our line. It's called Gold Label MLX<sup>2</sup> and the sound you'll get when you record on this tape will knock your socks off.

Why is it better? Well, the single greatest advantage of Chrome lies in the shape of its particles. Chrome is actually a synthetic mono-crystal that is grown under 30,000 pounds of pressure at a temperature of 900°.

These particles are very small, and very long and thin. What's really important is that they are all virtually identical in size. So, like our normal bias tapes they can be packed together very densely.

The recordings that you will get using DAK's new MLX<sup>2</sup> are nothing short of incredible. You'll have a frequency response that can top 21,000hz (assuming your deck can) and look at this. Without Dolby® this tape offers a signal to noise ratio of 62db. Think of what it will be with Dolby® B or C. Wow.

While the bass response is full rich and deep, this tape offers up to 6db more sensitive than previous tapes above 10,000hz. You'll capture the subtle harmonics of the most demanding recordings and play them back with the reality of a live performance.

Once you try and compare new DAK Gold Label MLX<sup>2</sup> to Maxell UDXL II or TDK SA, you'll probably never even consider paying the \$4 or \$5 you'd pay at your local Hi Fi store. We don't think there's even a contest any longer. But, when you make your test, be sure to use an original Direct to Disk or Digital recording. Or better yet, record live. The sound you hear is sure to amaze you.

DAK MLX<sup>2</sup> comes in DAK's deluxe vault like housing that will both protect and guide the tape for supreme reliability. It's backed by our one year limited warranty. And, it comes with labels, a deluxe index insert card and a beautiful all clear hard plastic box.

As with all DAK tapes, we save ourselves and you money by not wasting our time with lots of different lengths and packagings. We make only 90 min-



ute MLX<sup>2</sup> cassettes and we only package them in groups of 10. So, try our new Gold Label MLX<sup>2</sup> 90 minute cassettes under our normal 30 day risk free trial. They're just \$2.69 each. That's just \$26.90 (\$1.50 P&H) for each group of 10 you buy. Order Number 9651.

So which cassette do you use? Well, for normal records or FM, we recommend MLX, but for live recording, recording from digital or original pressing records, or for even the most demanding audiophile where only the best will do, use MLX<sup>2</sup>. The sound is nothing short of breathtaking.



# The \$10 Personal Stereo Problem

*Is it an accessory or a necessity? You be the judge. Individual woofers and tweeters, amplified for each channel, will let you enjoy dramatic sound from your personal stereo for only \$10. But, there's a catch.*

It's a fact. All the new personal cassette and stereo radio units that you wear have a serious drawback.

No, it's not the sound quality, and it's not mechanical. Most of the personal stereos offer incredible value for your sound dollar.

You'd be amazed at the frequency response, signal to noise ratio and reliability of these personal stereos.

## SO, WHAT'S THE PROBLEM?

When you lay out good money for your personal stereo, you should be able to use your new music system more often than when you are jogging, or working around the house.

The Pure Sound 2-way Amplified Speaker System from Unitech, the personal stereo experts, lets you enjoy dramatically clean massive stereo sound from your own personal stereo. It's all yours for just \$10. But, don't forget there's a catch.

## WOW

The system consists of two 2-way speaker systems. Each has a massive magnet woofer. Each also has a tweeter with a sealed back so that it doesn't act as a passive radiator for the woofer.

A self-contained amplifier drives the speaker systems and there's a really beautiful zippered designer tote case.

At home, you can separate the speakers up to 6' for great stereo. When you're on the move, just put your personal stereo in the center of the case. Your music for one, becomes music for all.

The system is incredibly easy to use. It has a plug which is just like the plug on your headphones. Just plug it into the headphone jack on your personal stereo.

You control the volume on your personal stereo and the Pure Sound Amp works like a basic or power amp in a big home stereo system. It gives you powerful great sounding stereo through its matched 2-way speaker systems.

The 3 watt amp is powered by 4 'C' cell batteries (not included), or you can plug in any 6V AC adaptor (not included). You'll have dramatic sound from your personal stereo anywhere you want it.

Now you can enjoy a stereo system in your bedroom, kitchen, den, garage or



car. Now your own personal stereo can do it all. It's backed by Unitech's standard limited warranty.

## THE CATCH

Frankly, we are losing our shirts on the 2-way amplified speaker systems, but we're looking for audiophiles who use audio cassettes.

If you buy top name TDK and Maxell cassettes, you probably pay \$3.50 to \$4.50 each for a 90 minute cassette.

We want you to try DAK's new Gold Label MLX ultra high energy, normal bias cassettes. Not at \$4.50 or even at \$3.50 each, but at a factory direct price of just \$2.49 for a 90 minute cassette.

We challenge you to compare the frequency response, dynamic range and



signal to noise ratio of our new Gold Label MLX to Maxell UDXL or TDK SA.

If they win, we'll not only give you back your money, we'll give you a free gift for your trouble. DAK's come with a deluxe hard plastic box, an index insert card and a limited 1 year warranty.

## WHY, YOU MAY BE ASKING?

You're very valuable to us in the form of future business. Over 460,000 customers have responded to bonuses like this. We find most of you keep buying once you've tried our cassettes and our prices; and that's a worthwhile gamble.

## NOT A BAD CATCH

DAK manufactures a cassette with no problems and great sound. We've been hot on the heels of the frequency responses of Maxell and TDK for years.

A year ago we were behind. But with our all new housing and new Gold Label MLX tape, with a frequency response to 19,500hz, we'll go head to head against any tape on the market.

## TRY NEW DAK MLX90 CASSETTES RISK FREE

To get the amplified 2-way speaker systems for \$10, try 10 MLX high energy cassettes. If you aren't 100% satisfied, return only 9 of the 10 cassettes and the amplified speaker systems in their original box within 30 days for a refund. The 10th cassette is a gift for your time.

To order your 10 Gold Label DAK MLX 90 minute cassettes and to get the Amplified Speaker Systems for only \$10 with your credit card, call toll free or send your check for only \$24.90 for the tapes, plus \$10 for the amplified speakers and \$4 for postage and handling for each group. Order No. 9802. CA res add tax.

Now your personal stereo can have dramatic sound without headphones. With DAK's new MLX cassettes all your recordings can sound really great.



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## HIGH BIAS SPECIAL

If you'd prefer DAK's new High Bias MLX<sup>2</sup> 90s with a response to 21,000hz, they're just \$2.69 each or \$26.90 for the tapes. \$10 for the Amplified Speakers and (\$4 P&H) Order No. 9851.

**\$49<sup>50</sup> BREAKTHROUGH!**



When you are at rest, so is your heart. A low resting heart rate usually means 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

**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 and a formal dress watch too.**

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're 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 37, several friends of my own age have recently had heart attacks. And frankly, I'm getting just a bit worried.

You see, I am 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 best of all, this heart computer is contained in a beautiful 24 hour alarm, 24 hour chronograph, LCD watch, that you will be as proud to wear 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 37, my maximum heart rate is (220-37) or 183.

So when I exercise I should get my

heart rate up to at least (183 X 60%) or 110 beats per minute, and no higher than (183 X 80%) or 146 beats per minute.

With the Heart Window 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 own doctor. Note: The Heart Window 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 and the less work you'll have to do to stay in the 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 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 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 'pick-up' actually picks up, and if, God forbid, you smoke, take your pulse before and after a cigarette. Wow!

## ALL ELECTRONIC

With Innovative's new Pulsemeter watch, you'll have supreme accuracy. It's like a direct electronic line to your heart.

You see, unlike other pulse meters that use a light shining through your finger, or a microphone to take your pulse, this instrument actually measures the electrical impulses that cause your heart to beat.

The back of the watch is one receptor, and the metal touch sensor on the front of the watch acts as the other sensor. Just touch the sensor, and you'll see your pulse on the large LCD Display.

**IS IT A DRESS OR SPORTS WATCH?**

Innovative Time thinks that everyone interested in their pulse must be a pro-



fessional athlete. So, they've built this watch with all the athletic extras.

It's not only water resistant, it's guaranteed to 60 feet (although you can't actually take your pulse underwater). It has a stopwatch, a lap timer, and dual finish mode. Its band is made of very tough polymers. So, it's a sports watch.

But wait, I don't like black watches for dress. So, I've gotten Innovative to add a deluxe matching stainless bracelet to the watch. It's rendered in stainless and black and is a perfect high fashion choice. So, it's a dress watch.

Plus, there's a 24 hour alarm and an hourly chirp. The stainless band is great for sports or dress. So, you'll get the watch with the black band on it and the high fashion band packed with it, compliments of Innovative Time's superb engineering and DAK's good taste.

The Heart Window is backed by Innovative Time's 1 year limited warranty and comes with a 1 year battery in place.

## TRY THE HEART WINDOW 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. Don't let DAK's low price confuse you. Take this pulse watch to your own doctor and have him test it.

Try the Heart Window risk free. Try exercising and then check your cardiac recovery rate. If you don't like what you see, you'd better keep the watch. But if you just don't like the pulse watch, simply return it within 30 days in its original box for a courteous refund.

To order your Heart Window, Pulse Sports/Fashion Watch, complete with 2 bands risk free with your credit card, call toll free or send your check for just \$49.50 plus \$3 for postage and handling to DAK. Order No. 9844. CA res add sales tax.

In the gym, at the track or at the office, you'll have a direct connection to the condition of your heart.



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# 20" Sensory Blast Plus

Immerse your senses in the vibrant color and phenomenal sharpness of this new 20" square screen, 139 channel, cable compatible TV/Monitor with its completely integrated Audio Video System. And, oh what sound!

It's the newest. It's the sharpest. And, it will even make your video recorder cable compatible. Plus, it's stereo adaptable and you can listen to it through its integrated audio system.

The newest improvement in picture tubes is called square corner, or flat screen as it's called by some companies.

You'll see a remarkable improvement in resolution, especially around the edges if you compare it to a conventional TV.

And, because this TV has full monitor capability, you can plug your video recorder's video and audio outputs directly into the monitor for superb pictures.

And, because there are video and audio outputs directly from the synthesized tuner, you can feed any of the 139 channels from this TV's tuner to the video and audio inputs of your video recorder.

This is really a videophile tuner and monitor built into one chassis. And, you'll instantly appreciate just how bright and vibrant the picture is, the moment you turn it on.

## YOU'RE PROTECTED

Before we look at the remote control and the great sounding stereo system, complete with a Dolby cassette deck, let's see how you're protected.

But, don't forget, you'll have on-screen time and channel, and just about every convenience feature you can imagine from this top of the line marriage of audio and video.

Emerson backs this system with their new 6-2-1 special limited warranty. You'll have a full 6 years of protection for the picture tube. You'll have a full 2 years

of protection on all other parts.

And, you'll have a full year of protection on labor. Wow, how can you go wrong! Emerson is putting its money where its mouth is with this warranty.

## SOMETHING FOR EVERYONE

Just flip a switch. If you don't have cable, you can receive all VHF and UHF stations. But if you have cable, or if it's coming to your area, we've got it all.

And having it all, means the latest 20" square corner, super bright tube, super brilliant picture, and all electronic direct access frequency synthesized color tuning. Plus, auto-color, auto-fine tuning, auto-scan and much more. But, let's examine 'cable compatible' first

Now you can tune in up to 139 channels from your easy chair. This new cable compatible TV tunes all standard VHF channels 2-13, VHF Mid-Band Channels 14-22, plus the VHF Super Band Channels 23 to 36. It then continues on and tunes in Hyper-Band 37 to 60.

Channel Number on TV	14	15	16	17	18	19	20	21	22	23					
Corresponding CATV Channel	A	B	C	D	E	F	G	H	I	J					
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
K	L	M	N	O	P	Q	R	S	T	U	V	W	AA	BB	CC
40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS
56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
TT	UU	VV	WW	XX	YY	ZZ	AAA	BBB	A5	A4	A3	A2	A1	5A	

## MOVIE CHANNELS

If there's a movie channel on your cable and it's not scrambled, this TV is all you need. If it's scrambled, you'll need the cable company's box.

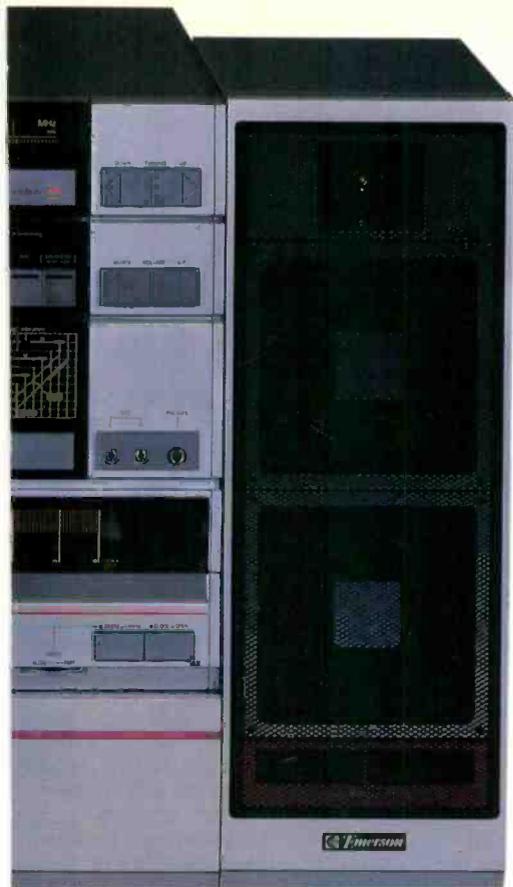
**Note: Check with your cable company before viewing anything at all, to see if they require you to pay a fee.**

**Note: Cable Compatible and Cable Ready mean the same thing. The industry is requesting the use of the word 'compatible' so as not to infer that you can get scrambled channels.**

## SPORTS PLUS

There are lots of 'Super Channels' broadcast on cable. Most of them are simply broadcast outside your normal TV's tuning range. But now, many of them can be yours. There are the All Sports and All Movie Channels. Plus, there's Cable News Network and much more.





#### INFRARED REMOTE CONTROL

Here's the best part. With most cable boxes you can't use your TV's remote control. But with a cable ready TV, you're in complete command, and you're in command from your favorite easy chair.

And, don't forget that you can simultaneously be sending signal to your video recorder. So, not only do you make your video recorder cable compatible, you can change channels remotely as well.

Just get your hands on the wireless infrared remote control and the world is yours. You'll have direct random access to all channels. So, for example, you can switch directly from channel 2 to channel 18 electronically.

You'll see the channel you've chosen displayed right on the TV screen along with the time. And, any time you push 'Recall' on the remote, you'll see the time and channel on the screen again.

After you've chosen the channel you want, you'll have total control of the



volume. Plus, if the phone rings or a commercial comes on, you can even mute the sound with a single button.

But if you're like me, whenever a commercial comes on, I like to push the scan button and 'check out' what's on the other channels. Of course, you can turn the TV on and off with the remote.

You can also fine tune the picture, review the last channel you were watching and set the TV to turn off automatically by pushing the 'Sleep' button on the remote.

#### BUT IT'S THE PICTURE

At the set, you'll have full random access electronic frequency synthesized tuning. Electronic tuning means there are no mechanical tuners to wear out or to cause snow. Frequency synthesized means that this set will 'lock in' and automatically fine tune.

AFT automatically fine tunes each channel you tune in, and prevents frequency drift. When you touch Auto-Scan, an automatic channel search is carried out for you. The TV will only stop at channels that are broadcasting in your area.

And, this is very important. Unlike most electronically tuned sets that only allow you to preset 12 channels, this TV allows you to tune in all 139 channels.

The TV has an earphone jack that shuts off the speaker and a line output jack that plugs into the music center. Now you'll hear TV sound as you've never heard it before.

In addition to the sleep system described with the remote, you can set the TV to come on or turn off at any time.

This state of the art cable compatible TV has many more features including quick start, auto degauss, and both 75ohm and UHF connections.

#### LET THERE BE MUSIC

And wait till you hear the sound. Aside from fabulous TV sound, you've got Emerson's best music center ever. Each section is carefully designed to bring superb, dramatically pure sound to your home.

The cassette deck features a smooth-acting, auto-feather touch mechanism that will gently cherish your best tapes. You can record and play both normal and CrO<sup>2</sup> cassettes. And for whisper quiet

recordings, there's Dolby B.

The AM and FM stereo tuners are really special. Tuning is totally automatic.

Just touch the up or down tuning buttons and the tuner will seek out the next station automatically. Or, switch to manual and check out each station if you wish.

You can select fast or slow scan, mono or stereo, and there are FM stereo and signal strength indicators.

The turntable is the latest front load type with a fully motorized door. Just push 'open' and the door will glide open. Put on your record and push the button again. The door will glide shut.

The turntable features a low mass arm, plays both LPs and 45s, and has a front panel fine speed adjustment control.

The integrated amplifier has a 5 band graphic equalizer, electronic volume control buttons, and loudness contour.

Two ported bass reflex modular tower speaker systems produce great sound. Each features two driven woofers (no passive radiators) for massive sound, and a soft dome super tweeter. You'll love the sound from the stereo, and you'll be amazed at the sound from the TV. The audio portion is covered by Emerson's standard limited warranty.

It's a solid 4 foot feast of sight and sound. The system is perfectly matched in striking silver and black.

The TV is 19 1/4" wide, 19" high, and 19" deep. The music center is 15 1/2" wide, 14 1/2" high, plus the 5" cassette drawer and 16" deep. Each speaker is 19 1/2" high, 6 3/4" wide and 8 3/4" deep.

#### TRY 20" SENSORY BLAST PLUS RISK FREE

Tune in VHF, UHF or cable on the TV. Carefully inspect the picture for clarity, brilliance and vividness of color. The picture quality is simply breathtaking.

Listen to the TV through the music center. Then listen to your favorite cassettes, records and radio stations.

This is an ideal main system for your home. And, at DAK's price, what a luxurious system for your bedroom. Wow!

Note: Although this is an Audio Video System, the TV and Stereo System may be separated to suit your needs.

Try it all in your own home. If you're not 100% satisfied, return it in its original boxes within 30 days for a refund.

To order your Emerson Wireless Infrared Remote Control Cable Compatible 20" Square Screen TV/ Monitor and Integrated Super Music System, send DAK's truckload price of just \$599 plus \$75 for postage and handling. Order No 4317.

Vibrant color TV, infrared wireless remote control, Dolby cassette and automatic Tuners will delight both your senses of sight and sound.

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£200 Remmet Ave., Canoga Park, CA 91304





## PUPPY LOVE AT 50% OFF



Here's a 'floor's eye view' of the subwoofer. The woofer is positioned just 3" off the floor. You'll feel and hear bass so alive, you'll think it is.

# Subwoofer

## Man's best friend meets the audiophile's best friend.

A puppy may be man's best friend. Woof, Woof. . . But, now I've got a new friend you can add-on to your stereo system that doesn't need to be taken on walks, washed or fed. But, it makes a great cocktail table for you when you're being fed, and oh what a woof it has.

### GREAT SOUND FOR EVERYONE

It's called a Subwoofer. And, normally it is the beloved pet of only the most ardent audiophiles.

It is not generally understood that it can be used with virtually any speaker systems in any stereo. And, in addition to substantially increasing and perfecting the bass response, it also has a significant impact on the midrange clarity too.

Before I tell you exactly how marvelous your stereo will sound when you connect this Subwoofer to it, there are two things you should know.

First, you'll be getting your new friend at a large discount. Over 50% off retail. And Second, you won't have to worry about paying vet bills.

Your new friend comes complete with a paid up health insurance policy in the form of a 5 year limited warranty from its father, Cerwin-Vega.

And, after 25 years, Cerwin-Vega certainly qualifies as the father of deep rich bass. Their disco systems have just about shaken California right into the ocean.

But, don't be misled. Cerwin-Vega bass is clean and tight; never sloppy or overpowering. It adds a feeling of depth and fullness to your music that you simply can't get with conventional two or 3-way speaker systems.

### HERE'S WHAT IT DOES

Basically, the problem with most speaker systems is that the bass overpowers the system. In a 3-way system, a woofer may be crossed over at about 800hz. And, in a 2-way system as high as 2-3000hz.

So, the speaker must handle movements of up to an inch at frequencies below about 80hz, while at the same time attempting to reproduce the very fine vibration type movements of the midrange frequencies.

It is this difference in movements that causes both the bass to be weak or non-precise, and the midrange to become muddy. Even the best 3-way systems fall prey to these problems.

### PROBLEM SOLVED

It has a specially engineered crossover network that sends frequencies above



120hz to your regular speakers and reproduces just the mammoth movement frequencies from 120hz down to 29hz with a special floor firing dual wound super woofer. (If you have downstairs neighbors, this Subwoofer isn't for you.)

The woofer is a very special hybrid. It has a mammoth two inch voice coil which is about double the average size of a woofer in a two or 3-way system.

This large voice coil allows the speaker to make the very large movements required to reproduce the very low frequencies.

But, it would do a lousy job of reproducing midrange or high frequencies which is why, cost aside, manufacturers don't put big coils in normal woofers.

To make the massive movements, this woofer has a very large speaker magnet that weighs an incredible 112 ounces. This super magnet also makes the subwoofer system extremely efficient. (The

sensitivity is 92db at 1 watt at 1 meter).

Finally, even the cabinet is special. It produces extremely high bass efficiency which is derived from the Helmholtz resonator design. In fact, this is the newest of Cerwin-Vega's Subwoofers, the SW12B and it has an increased output of 2db at 30hz over the original SW12.

So, whether you have two or three-way speaker systems, with 8", 10" or 12" woofers, you will find the sound and sonic differences staggering.

### EASY HOOKUP

It's easy to connect. You simply run both the right and left channels from your amplifier to the input terminals of the woofer. It works with any system from 15 to 125 watts per channel.

The signal is passed through its special massive crossover network to two totally separate voice coils on the woofer. Then you connect the speaker wires from your two stereo speaker systems to the output terminals on the Subwoofer and only the 120hz signals and above reach your speakers.

Placement of your regular speakers is just as critical as usual for stereo imaging, but the Subwoofer can be placed anywhere because low frequency material is totally nondirectional.

The Subwoofer makes a perfect end table or cocktail table. Its rich woodtone appearance matches any decor and it is 25½" long, 13¼" high and 16¼" wide.

### TRY AUDIOPHILE'S BEST FRIEND RISK FREE

The fullness, richness and depth is awe inspiring. Connect this Subwoofer to your system and you'll feel and hear your music like you never have before.

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

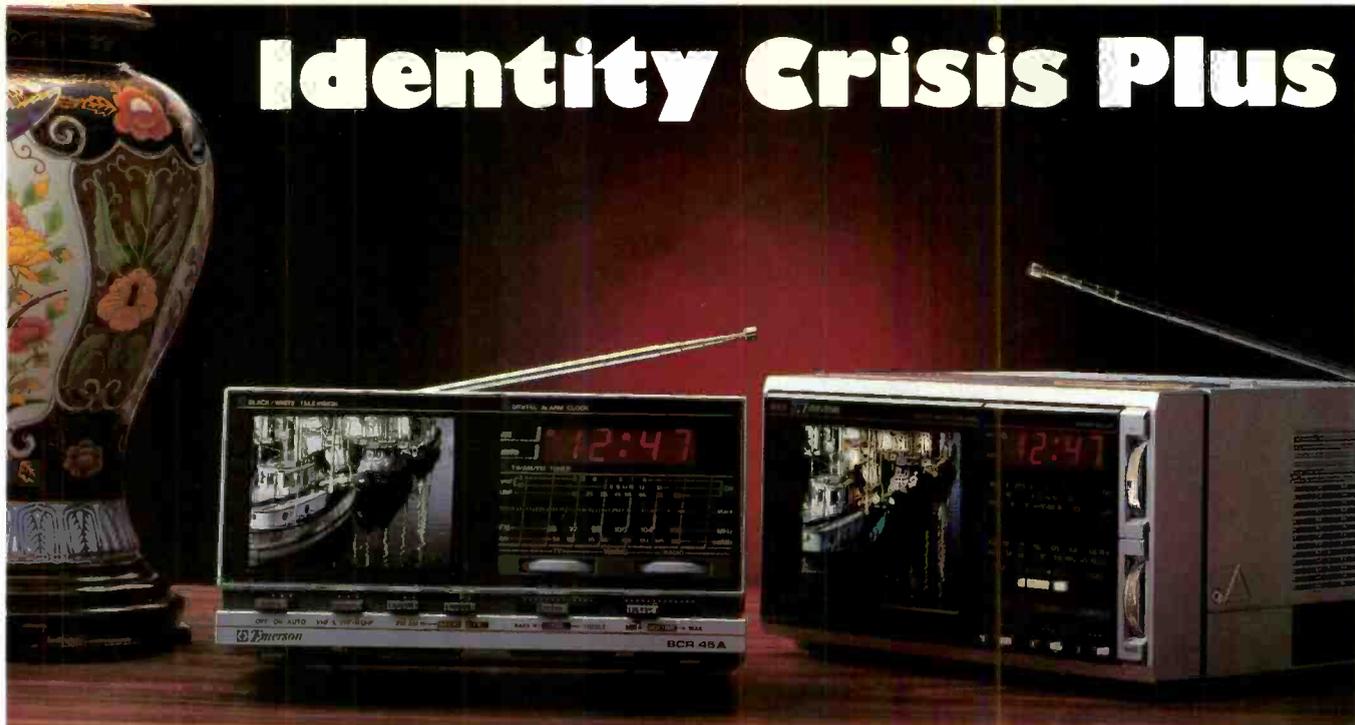
To order the new improved Cerwin-Vega SW12B Subwoofer risk free with your credit card, call toll free, or send your check, not for the \$332 retail price of the earlier SW12, but for just \$164.50 plus \$14 for postage and handling. Order No. 9714. CA res add 6% tax.

You can't replace the love and softness of a warm puppy. But, wait till you experience the richness and depth this Subwoofer will add to your bass and the clarity you'll hear in your midrange. It lets a smaller system sound massive and lets a large system achieve its potential.

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# Identity Crisis Plus



**Here are the world's most unique clock radios. But, they're also the ideal Executive Link for your office, or even for your car. Either way, they're your link to the outside world.**

You're at your desk. Soft, beautiful FM music is gently caressing you. You feel your tensions melt, your mind clears, and you're ready to take on the world.

Plus, wouldn't you like to see the Space Shuttle Lift off, the 9th inning of the World Series, and the news as it happens?

**OR**

You're lying in bed. Your mate's asleep. You're watching the late late movie. An earphone gives you total privacy, and if you fall asleep, you know that your TV will turn itself off within the hour.

In the morning, you can wake to TV, FM, AM or alarm. If you wake at night, you'll see the time on the extra large LED display with high/low brightness.

And, you won't have to worry about losing the time if there's a power failure once you install the standard 9V battery (not included) for protection.

**OR**

You're in your car or camper (not driving). You've plugged this entertainment center into your cigarette lighter, using the optional cable. And, you're watching the last quarter of the Super Bowl.

Now, no matter where you are, you can have great sounding AM and FM radio, or VHF and UHF TV.

**FITS ANYWHERE**

These beautiful micro-entertainers measure a mere 9½" wide for the black and white and 10¾" for the color. Their space-age silver and black styling add a stunning look to any room at home (superb for the kitchen) or at the office.

While they are certainly the ideal bedside companions, think of the late nights you've spent at the office. Don't you deserve to have a companion that's a direct link to the outside world for both news and entertainment on your desk, credenza, or even a bookshelf?

**HAS EVERYTHING**

First the alarm. You'll enjoy every standard feature. There are fast and slow time and alarm setting buttons. A sleep switch that lets you have up to an hour of

AM, FM or TV before it shuts down for the night.

A snooze bar lets you have 9 minutes of extra sleep in the morning before the TV, radio, or alarm attacks you again.

And look at this. 59 minutes after the alarm turns on the radio or the TV, it will automatically shut itself off. In 24 hours, the cycle will repeat itself, so there's no need to reset this clock radio TV.

**GREAT SOUND SAYS IT ALL**

You'll enjoy the full rich sound you'd expect from an Emerson clock radio when you switch to either AM or FM.

The FM tuner really pulls in the stations. And the full range speaker has a very pleasing and full, rich sound.

Of course, with the touch of a button, you can also tune in your favorite AM stations. You can keep up with the latest news, sports or music on AM.

In the dark, linear volume controls are a real luxury. So whether you're listening to the built-in speaker or the included earphone, you'll be in full control.

**BUT IT'S THE TV'S**

Imagine a 4½" black and white TV that's incredibly sharp and clear. Or consider a 5½" TV with color so vibrant and realistic, you'll feel yourself being drawn right into the action.

While they certainly aren't for a crowd, they're perfect for viewing on your desk, kitchen table or sink, or your night stand.

Here's a TV you can take out on the patio in summer or to the garage in winter. Yet, it looks great on your desk at work without compromising your hard working image. I find that it's really nice (and productive) to catch the 6:00 news as I finish my paperwork.

A rod antenna really pulls in the stations, or you can connect your own antenna. An adjustable flip up stand (as pictured) lets you set the angle for desk viewing (up) or bed viewing (down).

You'll have full control of brightness and contrast as you'd expect. But it's particularly important with these TVs,

because you may be in a very bright office or a very dark bedroom.

Just choose any station 2-13 VHF or 14-83 UHF and enjoy your TV. They're made by Emerson and backed by their standard limited warranty.

**TRY AN IDENTITY CRISIS RISK FREE**

People like them. They see the one I have on my desk and immediately want one. If you're most interested in news, why not save money and get the black and white. If you're going to enjoy movies and sports you're sure to be thrilled by the vibrant color TV.

I seem to use the radio more during the day and the TV more at night. It sure is nice to have a TV handy when world events happen. So, try several wherever you like. 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 beautiful Emerson AM/FM Clock Radio with either a 4½" Black and White TV or a 5½" Color TV risk free with your credit card, call toll free or send your check for just \$99 plus \$7 for postage and handling. Order No. 9846 for the Black and White TV. Or send just \$199 plus \$7 P&H Order No. 4308 for the 5½" color model.

You can order a 12V adaptor cable that plugs into your car's cigarette lighter for just \$7.50 (\$1 P&H) Order No. 9847. CA residents add sales tax.

They are small enough to sit on your desk, but big enough to bring you the world. Now you can have entertainment, news and sports at your fingertips, at the office where you work or at home where you rest.



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# Patio Blasters

*Now you can have dramatic stereo sound outside. These weatherized two-way speaker systems are at home in rain, sleet or snow. So, forget the weather. Take the full dramatic sound of your own stereo system outside.*

It's a problem. You've got a great sounding stereo system inside. But, if you take your speakers outside, they're sure to be ruined by rain, sleet or snow.

Well, no more. Now Art Audio has designed a super new 2-way speaker system that's at home just about anywhere, except maybe at the bottom of your pool.

## GREAT SOUND

The system enclosures are made of diecast aluminum. And, they are the latest air tight type. 18 screws, each actually screwed into threaded holes, make this vault-like enclosure secure against the elements, (including being stepped on by a large elephant).

Inside, there's an actual wire wound crossover network that feeds the lows to the woofer and the highs to the tweeter.

And speaking of the speakers, there is a woofer that you simply won't believe.

It only measures 4", but it has a magnet structure easily equal to an 8" speaker, and frankly, it sounds like one.

The acoustic suspension woofer is made of polypropylene which won't be affected by the elements. And, polypropylene is used in fine speaker systems for super accurate reproduction.

The tweeter is made of mylar for super accurate sound and a total disregard for the ravages of the elements.

## INSTALLATION

These speakers come with easy-mount brackets. Just screw in the three wood screws to your house (included). And, attach the speakers to the brackets with the thumb screws (included).



It's best to mount the speakers under an overhang or under the eaves of your home. But, short of 'dunking' them in water, they are fully weatherized. Even the grills are protective metal.

## TRY PATIO BLASTERS RISK FREE

Wait till you hear the sound. You'll be amazed at the depth of the bass and the clarity of the highs in your own patio.

If you're not 100% satisfied, simply

return them to DAK within 30 days in their original boxes for a refund.

To order your Patio Blasters risk free with your credit card, call toll free, or send your check for just \$49 (\$4 P&H) for each speaker. (You'll need two for stereo). Order Number 9820.

Take your favorite music outside with great fidelity no matter what the time of year or what the weather is like.

# Numb Ear Miracle

*Now you can say good-bye to numb ears and tired shoulders. Here's a telephone headset, with fully adjustable volume, that will set your hands free. And, it instantly plugs into your home or office phone.*

It's terrific. If you spend hours on the phone like I do, you're probably all too familiar with the 'numb ear syndrome'.

Well, here's a headset that simply plugs into your phone's own plug, without installation. It can be plugged in and unplugged in seconds, and since it doesn't fit 'in' your ear, you can just slip it on and off at will.

In the past, only people who sat at their desks all day would bother with headsets. But, with the all new amplified headset from ACS, you'll use it even for short calls.

The microphone is positioned near your mouth for flawless reproduction that sounds just like a regular phone. There's a 7 foot cord that gives you plenty of room to roam.

If you look at the handset of your phone, either at home or at the office, you'll see a small modular plug. It's about 25% smaller than the modular plugs that go in the wall.



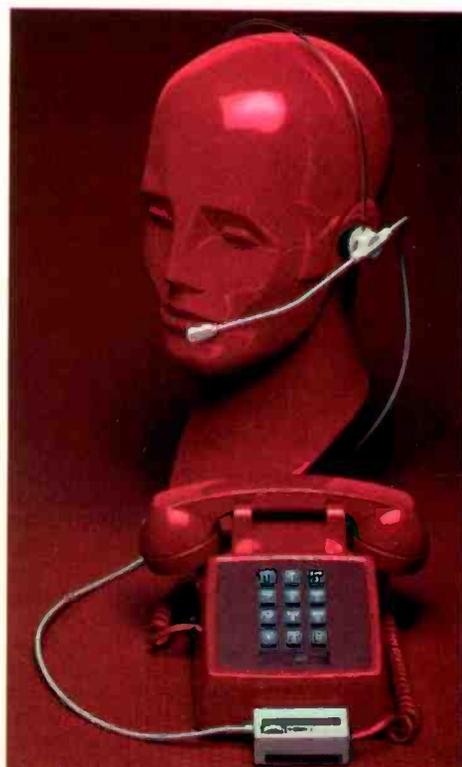
Just unplug it from the handset, plug it into the ACS amplifier and start talking. It's backed by a standard limited warranty.

## FORGET NUMB EARS RISK FREE

It's incredibly comfortable. It will end numb ears forever and it will free your hands. If you're not 100% satisfied, return it within 30 days in its original box for a refund.

To order your Numb Ear Miracle Hands Free Telephone Headset risk free with your credit card, call toll free, or send your check now for the \$99 you'll see others selling for, but for just \$49 (\$3 P&H) Order No. 9771.

I like having my hands free, but most of all, I like the way my ear feels, or doesn't feel, at the end of the day.



It's so easy to use that you'll take it from home to work - - you'll never have to use a regular telephone headset again. Now you can let your ears be comfortable and your hands be free with the all new telephone headset from ACS, the company that supplies the headsets used by the astronauts on the Space Shuttle.

## HERE'S HOW IT WORKS

The system consists of an amplifier (in the little box) with a full range volume control. So, you can set the volume to any comfortable level, even if there is noise around you or if you don't hear too well.

The headset only covers one ear so you don't lose touch with the world around you. It's the latest type with a comfortable foam cushion that rests on the outside of your ear, for hours of fatigue free conversation.



PWR	VOL	MIC	PTT
VOX	HI	HI	
PTT	M	M	
OFF	LO	LO	

- For Hunting
- For Construction Sites
- For Baseball
- For Hiking
- For Skiing
- For Boating
- For Antenna Work
- For Bike Riding
- For Snowmobiling
- For Hot Air Ballooning
- For Surveillance
- For Search & Rescue



# Think Speak Plus

*On the job, on the field or on the road. Now you can talk and listen 'hands free' at a new breakthrough price. Plus, there are now special units for motorcycle helmets with an intercom and FM radio reception.*

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 up to 1/2 mile, will let you keep in touch.

## NOT A WALKIE TALKIE

This is no toy. The Think Speak is totally automated. When you speak, a special voice activated circuit (VOX) automatically engages the transmitter so that you are broadcasting. When you stop speaking, it will automatically return to 'stand-by' to await a reply.

It is virtually noise free because it uses a quartz crystal locked dual conversion superheterodyne communication circuit that operates on 49mhz with FM.

So, your communication won't sound like a CB or an AM radio. You'll speak and hear with the full power and clarity you'd expect from an FM radio station.

## HERE'S WHAT IT IS

You wear the Think Speak just like a personal stereo. There's an adjustable headphone that you wear on either your right or left ear. The other ear is clear to hear the outside world for safety.

In the helmet versions, the headband comes off and the earphone attaches inside. The mike and antenna attach to the outside with quick release velcro.

A flexible boom microphone lets you speak normally while you transmit. The entire shaft of the boom mike is adjustable and will retain any position you set.

The voice activation circuit has a 3 level sensitivity switch. If you're riding a motorcycle or breathing hard while you jog, you can set the sensitivity to low so that you won't transmit in error.

If you are hunting or fishing and you can't talk much over a whisper, you can

set the sensitivity to high. Plus, the headphone has a 3 level volume control too.

In addition to the VOX voice operated circuit, you'll have 'PTT' which means Push to Talk. When you want to talk, you just push the PTT button.

This is a really great feature when you want to whisper very quietly below the threshold of even the high sensitivity setting of the Voice Operated Circuit.

You may be into surveillance or photographing wildlife. When you can only whisper, you'll especially appreciate the super quiet FM reception of this system.

The motorcycle version adds a plug-in 2nd headset for your rider (included), and an intercom/internal switch which lets you talk to and listen to your rider. You'll still be in contact with the outside world and will receive communications.

## SOME SPECIFICS

You can expect long battery life from a standard 9V battery (not included). The antenna is conveniently clipped to the headband for normal use. For full range use, the antenna pops up.

The system operates on the 49 mhz band using FM, so 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 licence is required. And, the FM hum and noise is almost good enough for a high fidelity system at 40db min. The case clips to your belt, and is 4-9/16" X 2 1/4" X 15/16" for the standard unit and 4 1/8" X 3" X 1 1/8" for the motorcycle unit.

## PERSONAL OR GROUP

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 sailing at sea. And, if you go hiking in the mountains, it's a must.

The two new versions designed for

motorcycle, dune buggy, ultralight aircraft and snowmobiling where you wear a helmet and may have a passenger, expand the Think Speak's range of use.

All three systems are electrically identical. So, if you're a pitcher, you can talk to your catcher or the coach. If you're on a loading dock, you can talk to the man in the truck or on the forklift.

It's made and backed by Maxon Electronics, the two-way specialists.

## TRY THINK SPEAK RISK FREE

Walk around the block. Take a bike ride and really test the range of this communications breakthrough. If you aren't 100% satisfied, return it in its original box within 30 days for a refund.

To order your Think Speak risk free with your credit card, call toll free or send only ~~\$49.95~~ (\$3 P&H) for each standard unit. Order No. 9810.

If you'd like a unit that you can either wear or attach to your helmet with velcro, complete with a second plug-in headset and an internal intercom, send just \$59 (\$3 P&H) Order No. 9811. And if you'd like the helmet unit with a built-in FM tuner too, it's just \$79 (\$3 P&H) Order No. 9812. CA res add Sales Tax.

All three units are totally interchangeable, sound identical and will both transmit to and receive from each other. A minimum of two Think Speaks are required for communication.

When you think out loud, people will listen. Try a Think Speak risk free today.

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8200 Remmet Ave., Canoga Park, CA 91304

**You'll hear one of 22 changing tunes each time your doorbell is pushed. Or pick just one, it's up to you. Plus, you can compose your own.**

Two years ago for my mother's birthday, I bought and built an electronic door bell kit. I programmed it to play Beethoven's 9th Symphony. Ever since, it's been a great conversation piece for everyone who visits my parents.

Now you can have a 22 tune doorbell that does much more than the one I built, costs less and doesn't require assembly. Plus, it comes with a 100 tune song book, or you can compose your own songs on its 1½ octave keyboard.

#### HERE'S WHAT YOU'LL HEAR

You can mix and match. Just push the selection switches to choose a theme like La Cucuracha if you're serving a Mexican dinner, Birthday Greetings, or Auld Lang Syne if it's New Years. The choice is all yours.

Or, the Computer will rotate to one of 17 of its programmed songs each time your doorbell is pushed. There are 4 Christmas songs that rotate in another sequence when you desire, and there's a special song if you have a doorbell for your back door.

Below is a list of the 22 preprogrammed songs, or choose from the 100 tune song book.

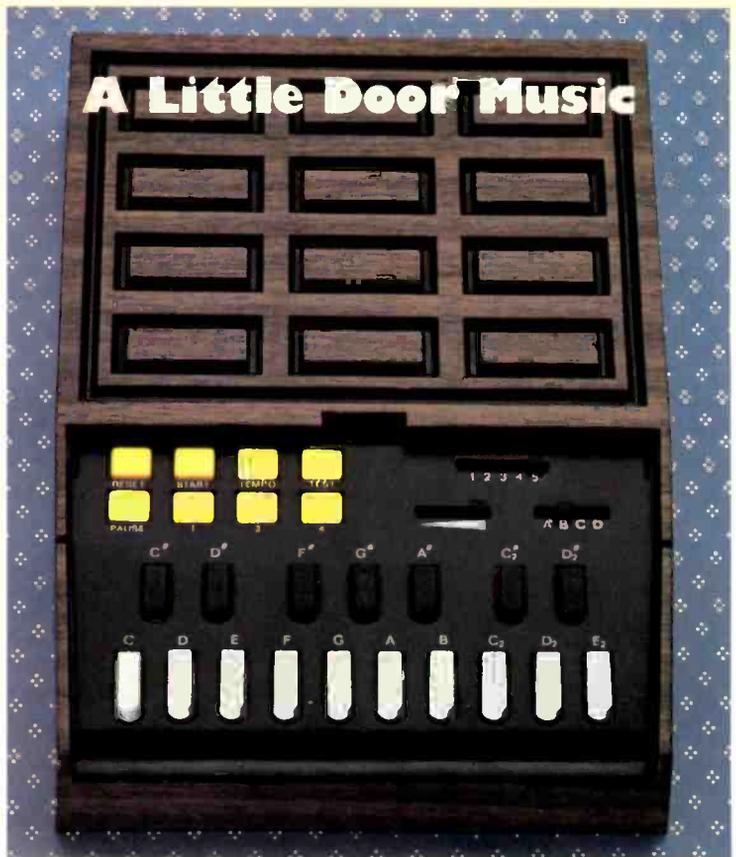
Mozart Sonata, La Cucuracha, Beethoven's Ode to Joy, William Tell Overture, Oh What A Beautiful Morning, Notre Dame Fight Song, Co. Bogie March, Jack n Jill, Birthday Greetings, Westminster Chimes, Yellow Rose Of Texas, Dixie, Alleluia, Charge, The Marsailles, Blue Danube, Auld Lang Syne, Beethoven's Fifth, Noel, Oh Come All Ye Faithful, Hark the Herald, Jingle Bells.

#### INSTALLATION IS A BREEZE

There's nothing special about installing the Door Tune Computer. It's just like replacing your old doorbell. You simply connect the same wires that are connected to your present doorbell, and there's even a provision for front and back doors. You'll also need to insert a diode, included. It's 2 minutes work with a screwdriver.

You'll have control of both volume and tempo. Plus, you can even add an additional speaker (not included) for the backyard or basement. But, best of all you can compose your own songs on the 1½ octave keyboard. It's easy and it sounds great. It's backed by a limited warranty.

**TRY THE DOOR TUNE COMPOSER RISK FREE**



## A Little Door Music

Program a song. You'll even have whole notes, half notes and quarter notes. Let the Composer sequence through its songs. You're sure to get a warm feeling each time someone rings your doorbell.

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

To order your Composer Programmable Door Tune Computer risk free with your credit card, call toll free, or send your check for only \$49 (\$3.50 P&H) Order No. 9827.

# Weather Reactor?

**Everyone's always talking about it, but nobody ever does anything about it.**

Unfortunately, the all new Computemp 3 won't help you do anything about the weather. But, as long as you're going to talk about it anyway, you might as well have lots to talk about.

As you look at the Computemp, you'll see a never ending sequence of the time of day, the inside temperature and the outside temperature.

If you push its buttons, you can see the high temperature of the day and the time it occurred. Push another button, and you'll see the low temperature and the time it occurred.

And speaking of high and low temperatures, there's a temperature alarm which you can set to alert you to dangerous extremes.

You can set the alarm to sound if it gets too cold for your plants or too warm for your wine. The temperature alarm can be set for any temperature from -65°F all the way to 180°F.

Below, you see displays that show, 1)



the time of day, 2) the inside temperature, 3) the outside temperature, 4) the low temperature for the day, and 5) the high temperature for the day (if you're lucky enough to live in Palm Springs).

The Computemp comes with both indoor and outdoor sensors. Just run the included sensor wires, plug it in, and become an instant weather expert. It's backed by a standard limited warranty.

#### TRY THE WEATHER REACTOR RISK FREE

Now you'll know how to dress in the morning without opening a window or

turning on the news. Try the Computemp 3 risk free. If you're not 100% satisfied, simply return it in its original box within 30 days for a refund.

To order your Computemp 3 Indoor and Outdoor Temperature Computer risk free with your credit card, call toll free or send your check for just \$69 (\$3 P&H) Order Number 9772.

Seeing the flashing temperature in your home may not make you warmer, but it's amazing how everyone stops shoving the heat up and down when they see the Computemp in action.



# Video Switchboard

Now you can electronically direct your incoming and outgoing video signals where you want them without changing cables, at an incredible breakthrough price. Plus, you can amplify incoming signals.

It's intimidating. You don't just go out and buy a TV, pull up its rabbit ears, and start watching anymore.

Now you've got to hook into cable, connect a video cassette recorder, a computer, a game or a satellite, and maybe even use a 'decoder' box. And, you might want to connect all this to several TVs.

Well, these all new, totally electronic, low noise switchers will let you watch or record any signal on any or all of your equipment at the touch of a button. Plus, you can amplify incoming cable and antenna signals by 10db if you wish.

## SOMETHING FOR EVERYONE

You may have 1 TV or 10. You may have 1 video recorder or 2 or 3. These new electronic switchers will let you route your signals wherever you wish.

Electronic switchers are AC powered, solid state electronic devices that aren't subject to noise and age. They're rated for over 1,000,000 operations. Wow!

## WHAT'S IN IT FOR YOU?

You're sure to be amazed at how easy it is for you to take control of your video when you look at the examples below.

And, don't worry about cutting cables and attaching connectors. DAK has made it all easy. You, just screw our cables, switchers and adaptors together.

We are offering two switchers. One has 6 separate inputs and 3 outputs (don't be alarmed, you can really use them all), and the other has 4 inputs and 2 outputs. Any input may be switched to any output. And, LEDs display each action.



## THE EXAMPLES

Let's say you have cable, an antenna, two TVs and a video recorder. Just connect the cable to one of the switcher's inputs, your antenna to another, and the output of your video recorder to a third.

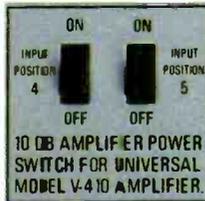
Then connect the 2 TVs and the video recorder's recording input to the outputs of the switcher. Now you can watch cable, antenna or a video cassette recording on either or both TVs, and record cable or antenna on your recorder.

Let's add a decoder box for your cable system. When you select a channel with the cable box, normally you can't watch or record any other channels.

Just connect one of our 2 way splitter (separators) just before the 'decoder'. Now you can run an extra cable from the splitter to a 4th input on the switcher and watch and record any other channels.

If your TVs or recorders aren't Cable Ready, they will get VHF 2-13. If they are Cable Ready they will pick up any of the non-scrambled cable channels.

Let's look at a different example. If you have a TV in your bedroom, now you can run one cable (20 foot cables are just \$7.99 and you can connect two together) and get anything connected to the switch-



er sent to your bedroom, den or kitchen.

So you can watch decoded or normal cable, your own video cassettes, or your antenna. And, if you have a Cable Ready video cassette recorder, you can use its tuner to tune in cable channels on any TV. There are easy to follow block diagrams in the switcher's instructions.

By the way, you may wonder why I mention having an antenna when you have cable. There are three reasons.

First, you don't need cable to want a switcher. Second, if cable goes out, your antenna will still be working. And third, in many areas there are still some local stations that don't make it onto cable.

## THE AMPLIFIERS

The switchers are unique in that they have a built-in power supply to operate two 10db signal amplifiers. Just screw the optional \$9 low noise amplifiers into the cable and antenna inputs on the switcher to really suck in distant signals.

It's all made by USI, and backed by their standard limited warranty.

## TAKE CONTROL OF YOUR VIDEO RISK FREE

Direct your video signal where you want it. Why buy a recorder for the bedroom when you can use the den recorder. Why connect and disconnect wires when you want to play games.

If you're not 100% satisfied, simply return it in its original box(s) for a refund.

To order Universal's 6 input and 3 output low noise 1,000,000 operation Electronic Switcher risk free with your credit card, call toll free or send your check for DAK's breakthrough price of just \$69

plus \$3 P&H. Order No. 4245. For the switcher with 4 inputs and 2 outputs, send just \$49 plus \$3 P&H. Order No. 4246. Each Special 10db Amplifier is just \$9 (\$1 P&H). Order No. 4263.

Here's everything you'll need to make even the most complicated system easy. Cables have standard coax male ends that screw into adaptors and switchers which have female ends to mate with cables.

3' cables are just \$3.99 (\$1 P&H) Order No. 4247. 6' cables are just \$4.99 (\$1 P&H) Order No. 4248. 20' cables are just \$7.99 (\$1.50 P&H) Order No. 4249.

Want to connect two cables? (Two 20' cables make a 40'.) An adaptor is just \$3.99. (\$0.50 P&H) Order No. 4260. If you have screw terminals on any of your TVs rather than the round coax connector, just order this adaptor which takes a cable at one end and screws onto your set's VHF screws on the other. It's just \$4.99 (\$0.50 P&H) Order No. 4262.

2-way splitters let you send the same signal to two devices, like to a 'decoder' and to a switcher, or you can split a switcher's signal and send it to two TVs for just \$4.99. (\$1 P&H) Order No. 4261.

These easy to use, breakthrough switchers will allow your system to grow and stay easy to use in future years.



**DAK**

INDUSTRIES INCORPORATED

TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week  
CALL TOLL-FREE. . . 1-800-325-0800  
8200 Remmet Ave., Canoga Park, CA 91304



# The \$129 Electronic Conspiracy

*It's a plot. Using this deck will make you a pawn in a conspiracy. It's yours for just \$129, but there's a catch.*

First there was music. And our enjoyment made the record companies rich. Then, with the invention of the cassette, we tape companies made money too as millions of cassettes found their way into home stereo systems.

Then the plot continued. Instead of just letting you enjoy free music from your radio when you were in your car, the 'commercial free' car cassette deck was introduced.

You were able to listen to your favorite music cassettes whenever you wanted to hear them, without bothersome radio commercials, in your car and at home.

But considering the adverse environmental conditions in your car, we tape companies 'rightfully' advised you to make a second copy of your favorite music to protect your cassettes.

And guess what? We were able to sell twice as many cassettes.

About this time, people learned that they could copy their friends' cassettes and very quickly build up a really terrific cassette collection of their own. And of course, everyone used more cassettes.

Finally, the personal cassette stereo entered the market. And, do you even need to guess?

Now you can listen to your favorite cassettes anywhere, anytime. But because of the tough conditions for your cassettes, you'll need a third copy of each cassette.

So, no matter what your taste in music, you'll need two or three copies of each tape you have.

## FIENDISH PLOT

Wait till you realize just how devious the plot becomes as you use the cassette deck above. And, although anyone can see it's a dual deck, it's what you don't see that will really burn up the cassettes.

Here's a deck with a frequency response from 30-15,000hz with normal tape and 30-17,000hz with metal tape.

Its function controls are soft-touch for easy on the finger control with enhanced reliability. It has 2 color LED level meters, auto level control for dubbing, and linear volume controls for mikes and line inputs.

## THE PLOT THICKENS

You'll enjoy listening to your music and making copies like never before

with this all new deck.

**High-Speed Dubbing**-When you push the blue dubbing button between the two decks, deck 1 will begin playing and deck 2 will begin recording automatically.

But, there's more. If you push the blue button to the right, you'll make great sounding copies at double speed. So, you can cut your dubbing time in half.

**APSS**-Let's say you're listening to a song you'd like to hear again. Just touch reverse APSS and the deck will locate the beginning of the song and start it over.

If you'd like to skip the rest of the song or continue skipping songs, just press forward APSS.

Since APSS locates the beginning of each song on the tape, this feature will facilitate your choice of which songs to copy and in what order you want them.

**Relay-Play**-Just put a cassette in either deck and push Play. Then put a cassette in the other deck, push Continuous Play and Play. When your first cassette finishes, your second cassette will begin.

**Sound On Sound**-If you sing, this is the deck for you. Here's what you do. You can play a music tape on deck 1, plug in a mike and sing along while you record everything on deck 2.

Or, if you're really into professional applications, look at this. Plug in a mike and record your own voice on deck 2.

Then play the tape back on deck 1 and copy the tape onto deck 2. While the tape is being copied, you can add yourself singing harmony. In this way, you can be a duet, a trio or even a chorus.

## MUCH MORE

The heads in this deck are hard permalloy. And the erase head is ferrite.

Independent electronically controlled DC motors provide flawless tape movement. And, a controllable Record Mute lets you make silent tape starts, stops and breaks while you are recording.

About the only thing this deck doesn't have is Dolby C. But, with its 66db signal to noise ratio with Dolby B, and its super wide, clean frequency response, it simply sounds great.

This incredible deck is made by Sharp. It is 17" wide, 4 $\frac{3}{8}$ " tall and 8 $\frac{1}{2}$ " deep. It's backed by Sharp's limited warranty.

## THE CONSPIRACY'S CATCH

What could go better with a high speed dual deck than 10 DAK MLX Gold Label 90 minute cassettes? If you buy top name TDK and Maxell cassettes, we want you to try DAK's MLX ultra high energy, normal bias cassettes with a frequency response up to 19,500hz.

Why pay \$4.50 or even \$3.50? Buy our 90 minute cassettes at a factory direct price of just \$2.49 each. DAK makes a cassette with great sound and no problems.

We challenge you to compare the frequency response, dynamic range and signal to noise ratio of our Gold Label MLX to Maxell UDXL or TDK SA. If they win, we'll not only give you back your money, we'll give you a free gift.

So, we're putting our money where our mouth is when you test our cassettes. DAK's come with a deluxe hard plastic box, an index insert card, and a limited 1 year warranty.

## DUAL CONSPIRACY DECK CATCH RISK FREE

Try recording. Feel the solid quality of the controls. Make flawless copies, originals, and sound on sound recordings.

To get Sharp's dual cassette deck for \$129, just try 10 DAK MLX high energy cassettes. If you aren't 100% satisfied with the cassettes or the deck, simply return only 9 of the 10 cassettes and the deck in its original box within 30 days for a courteous refund. The 10th cassette is a gift for your time.

To order your 10 Gold Label DAK MLX 90 minute cassettes and get the Dual Deck for \$129 risk free with your credit card, call toll free, or send your check for \$24.90 for the 10 cassettes, \$129 for Sharp's dual deck and \$6 for postage and handling. Order No. 4327.

We may not get rich selling you this deck, but as long as you love music in your home, car, or when you're on the move, our conspiracy will go on and on.



**DAK**  
INDUSTRIES INCORPORATED

TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week  
CALL TOLL-FREE. . . 1-800-325-0800  
8200 Remmet Ave., Canoga Park, CA 91304

# Sound Cannons

*You'll have sound to spare when you hook up these BSR 3-way speaker systems.*

It's big sound at a small price. Close your eyes. Imagine the full resonant bass of a pipe organ and the startling sound of a cymbal crash.

Now open your eyes and check out the incredible \$49 price (\$98 per pair) we've got on these BSR 3-way speakers.

## BEAUTY AND BRAWN

You're not getting Low Fi. These speakers handle up to 90 watts peak, 45 continuous RMS watts of power. And, they handle it very well indeed.

A 10 inch acoustic suspension woofer with a massive magnet, belts out the bass.

You'll get clean mid-range from a 4 inch precision ferro-fluid driver that is actually mounted in its own 'cabinet'.

The back of both the mid-range and tweeter are sealed so they won't act as passive radiators for the powerful bass that is resonating throughout the cabinet.

The cabinet is 22 $\frac{3}{4}$ " by 12 $\frac{3}{4}$ " by 9 $\frac{1}{4}$ ". It has a beautiful wood-grain appearance and a lovely decorative removable grill.

The tweeter is a 3" super high frequency ferro-fluid driver complete with sealed back. It really delivers sharp clear highs. Plus, its brightness is controlled by a rear mounted volume control.

## YOUR EAR

Each speaker and crossover network is carefully matched and the crossover points are at 1,000hz and 4,000hz.

BSR's suggested list price is \$99 per speaker. (\$99 X 2 = \$198). We're sure that your ears would be pleased at \$198, and at \$98 for a pair, they'll be amazed. A fuse protects the tweeter, and BSR's 2 year limited warranty protects you.

## TRY THE SOUND CANNONS RISK FREE

Hook them up. Play a dramatic record or tape. You'll feel a warm resonant bass, a clean mid-range and a sharp clean



**PRICE SLASHED**

List price was \$99.

DAK sold them for \$49

**NOW JUST \$39**

Use Order No. 9442 plus (\$9 P&H)

high-end that you control.

It's your ears that decide. So if you aren't 100% satisfied, simply return the Sound Cannons to DAK in their original boxes (they're packed separately) within 30 days for a courteous refund.

To order your Sound Cannons risk

free with your credit card, call toll free or send your check, not for BSR's \$99 suggested retail price, but for only \$49 each. (\$9 each P&H) Order No. 9442.

Speakers can make or break the sound quality of a stereo system. Here's a lot of speaker for very little money.

# Mini-Sound Cannons

*Most people would call these 'main speakers'. At DAK we just call them neat extra speakers.*

It's true. Most DAK customers are really into their sound. So, we think that these neat, relatively small 18 $\frac{3}{4}$ " by 10 $\frac{1}{2}$ " by 9" speaker systems from BSR are great for your bedroom or den.

In all candor, they really have a neat sound. An 8" woofer in combination with a tuned port, produces much more and cleaner bass than you'd expect. The crossover is at 4,000hz and a super 3" tweeter produces a clean high end.

With a very pleasing frequency response from 40hz to 18,000 hz, you get an awful lot of clean sound from these speakers.

The speakers feature a removable grill and really beautiful wood-grain appearance cabinets. They can handle 30 watts RMS.

The tweeter is fuse protected, and speaking of protection, you're protected by BSR's 2 year limited warranty.

## TRY MINI-SOUND CANNONS RISK FREE

These speakers will not knock the paint off your walls or cause earthquakes of the magnitude that would cause California to fall into the ocean.

But, they really produce an unexpectedly clear and full sound. You won't be disappointed. So, try a pair in your own home. If you aren't 100% satisfied, simply return them in their original box (they come packed in pairs) within 30 days for a refund.

To order your Mini-Sound Cannons risk free with your credit card, call toll free or send your check, not for BSR's \$119 suggested retail price per pair, but for only \$59 for the PAIR (\$9.50 per pair P&H) Order Number 9454.

These speakers are lovely, but unobtrusive and have a much bigger sound than size.



**PRICE**

**SLASHED**

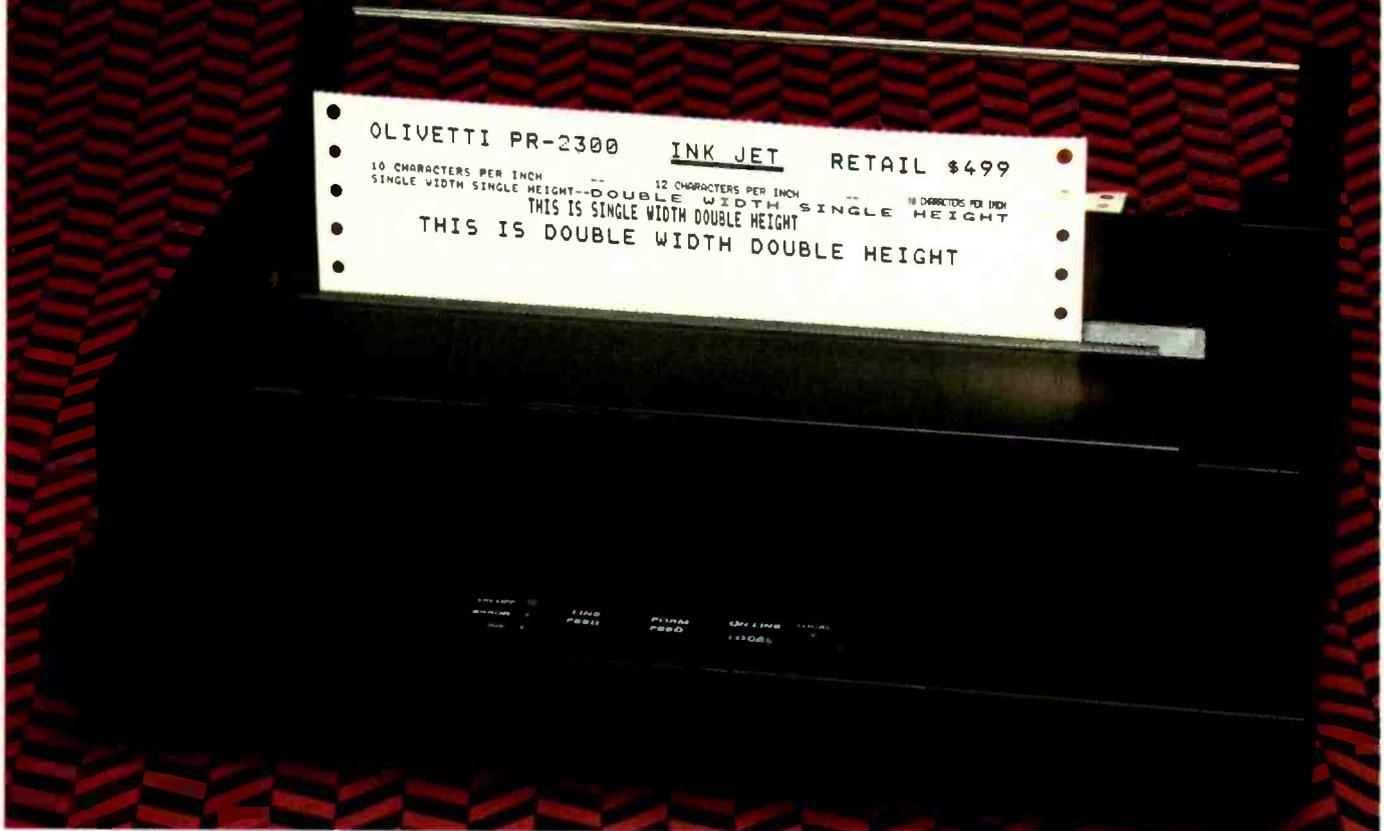
DAK sold a PAIR for \$59

**NOW JUST \$49**

Order No. 9454 plus (\$9.50 P&H)

**\$199 SUPER CLOSE-OUT**

# Computer Activator



**Here's Olivetti's \$499 state-of-the-art, dry ink jet, plain paper printer. It prints up to 110 characters per second. You can use it with virtually any home or office personal computer. Price slashed to \$199.**

By Drew Kaplan

Energize your computer. I've energized my Apple, but you can add super graphics and text capabilities to just about any personal computer you own.

Now you can literally turn your computer into an electronic paint brush with this revolutionary new Ink Jet, graphics capable, plain paper printer.

**And look at this!** In addition to great looking 'correspondence-quality' upper and lower case text, simple 'ESC' commands allow you to mix normal size text with double height and/or double width characters. You can even underline words three different ways.

You'll have all 96 standard American ASCII characters for your text. Plus, you can print in any of the 8 foreign languages whose characters are resident in this industrial office quality printer.

I've been using a daisy wheel printer with my Apple, but this Ink Jet printer is 3 times faster, whisper-quiet, and it allows me to produce phenomenal graphics.

You'll experience the thrill of actually writing your letters and reports on your computer. Now you'll be able to use all of your computer's word processing and correcting capabilities.

I can't overemphasize the convenience of never having to retype a letter or a long report because you find a misspelled word or a sentence you'd like to change. Wow, think of the time you'll save.

This printer connects to your computer through its standard Centronics parallel interface. So, whether you have

an Apple or an Atari (as I do), an IBM PC, a VIC 20 or anything in between, this is the one printer for you now and in the future.

## THE PRINTER YOU'LL KEEP

This printer's sophisticated features and industrial dependability would normally make it too expensive for home use.

It was designed for heavy industrial work such as printing thousands of address labels. And, its super-fine graphics are perfect for scientific work.

The printer lets you use all types of paper. It comes with adjustable pin-feed tractor drive for fan-fold computer paper. It also has friction feed for single sheet paper (like your letterhead). And it has roll supports for continuous roll fed paper.

So, while you may upgrade your computer in the future, once you've tried Olivetti's whisper-quiet Ink Jet printer, you'll simply plug this printer into any new computer you buy.

And, if you already have a slow daisy wheel printer like I did, a thermal or even a dot matrix printer, when you compare the speed, graphics capability and dependability of this printer, you may just plug in both printers.

Plus, if you carry a briefcase-type portable computer, at DAK's \$199 super close-out price, you can now have printers both at home and at the office.

## FINEST GRAPHICS

Wait till you see the graphics capabilities of this printer. Ink Jet printing allows for solids and detail simply not possible with conventional dot matrix printers.

You can copy words or pictures from

disks or memory. Or, you can dump what's on the screen onto paper. Think of what you can do with a Koala Pad.

**And, look what this printer will do.**

You can double the size of your graphics by using the Zoom command. You can turn the image with a rotation command. And you can even reverse (negative image) your graphic image.

You can do any or all of the above commands and more, as many times as you wish from the same screen dump.

With an incredible 110 point per inch horizontal resolution and 216 point per inch vertical resolution, Olivetti's Ink Jet technology leaves virtually any conventional dot matrix printer in the dust.

## INK JET PRINTING EXPLAINED

Forget everything you've heard about dot matrix printing. Ink Jet printing is light years ahead.

This Olivetti printer at only \$499 is the world's first low cost (under \$3000) non-impact printer that uses plain paper.

There's no heavy print head containing steel pins that are mechanically driven out against a ribbon that in turn strikes your paper and the rubber platen roller.

Since there's no ribbon to fade and wear out or platen to become hard or irregular, you won't experience the variations and inconsistencies associated with conventional dot matrix printing.

The Olivetti Ink Jet printer head consists simply of a low mass microprocessor controlled disposable glass ampule containing dry ink.

There is an electrical contact at the



# Car Subwoofer

*It's a love/hate relationship. I swore I'd never carry ANYTHING to do with car stereos again. But, an incredible new product has changed my mind. Wow!*

First some history. DAK was born while I was in college. I started by installing 8 track car stereos.

And, if you've cut as many door panels and dashboards as I have, you'll understand why I hate car stereo products.

After that, manufacturing audio cassettes, which is what DAK grew into, was a real joy. Anyway, the mere thought of installing a car stereo system really turned me off.

## ENTER HY

A friend of mine named Hy, asked me to introduce his new Bass Woofer with a 25 watt booster with variable cut off frequencies. I, of course, said no. And, I really meant it.

Anyway he sent me one of these Subwoofers and kept calling me to see if I liked it. Finally, to get him off my back, I hooked just the speaker up to the stereo in my office. I didn't even hook up the booster. All I did was connect it in parallel with one of my speakers.

Wow, the full rich bass that this thing generated was unbelievable. I mean this little thing just belted out clean full bass like a 12" speaker. Of course I wasn't using its booster and I wasn't even cutting out the highs. But, I was hooked. And that's the whole true story of why this incredible Car Subwoofer is in my catalog. But there's more

## INSTALLATION AND MORE

The hardest part to believe about this subwoofer is that the actual speaker is only 3" in diameter. It seems to fire all the sound backward into its specially designed cabinet and then the deep bass comes out of its unique pipe duct.

Its control console has cutoffs at 80hz, 120hz, 150hz and 180hz. There's a volume control and what you're actually getting is a biamped 25 watt system for your car.

Here's the best part. To install the Subwoofer you don't have to cut wires. Just find the left and right channel wires of your car's stereo and connect the Subwoofer's wires to them. You can do this anywhere along the wire. Then supply power to the amp and run the wire from the amp to the Subwoofer. The amp can go under your seat or under the dash, and the Subwoofer can go under your seat or on the rear deck, because bass is nondirectional.

The sound is nothing short of incredible. You'll hear a bottom end to your music that simply didn't exist before. And what I like most about the bottom end is the full rich deep bodied feeling it gives to my music. Of course the Mid-range and Highs aren't effected at all.

It's backed by a limited warranty from TEI Electronics Inc, a company known for its home equalizers. The Woofer is 7 $\frac{1}{2}$ " X 3 $\frac{3}{4}$ " X 5 $\frac{1}{4}$ ". The Amplifier is only 6 $\frac{1}{2}$ " X 7 $\frac{1}{8}$ " X 5 $\frac{1}{2}$ ". You get



easy hook up instructions and precut wire too.

## TRY THE CAR SUBWOOFER RISK FREE

It's not just different sound. It's better. It's fuller. It's richer. And, it will make a day and night difference in your car stereo listening. I swore I'd never sell anything for car stereos. But, the sound of this system is just too good.

Try the same test that I did, first with your home stereo, then in your car. If you're not 100% satisfied, simply return it within 30 days in its original box for a courteous refund.

To order your TEI Subwoofer with 25 watt amplifier controller risk free with your credit card, call toll free or send your check for just \$79 (\$4 P&H) Order Number 9670.

Set the bass in your car free. Massive earthshaking sound will fill your car. And, with virtually no installation hassle you can be listening to full rich music within an hour.

## Sonically Correct



It's logical. You have two ears which let you sonically place (locate) sounds in your environment.

Now from Recoton, comes a new stereo electret condenser microphone which,

like your ears, can give you totally realistic stereo sound and recordings.

It has two totally separate, oblique mikes which act just like your ears to give pure sonic placement to sounds in the recordings that you make.

You'll record sound quality never before possible outside of a recording studio with its battery driven (AA battery not included) electret condenser mikes.

Electret microphones differ from conventional mikes, in that they use battery driven amplifiers so that they can use more sensitive sensing membranes to capture sound vibrations.

Very little mass must be moved, so these mikes are incredibly sensitive. Their transient response is super. And, they have a wide smooth frequency response.

The mike comes with a 10 foot mike

cord that terminates in two quarter inch phono plugs as shown. It's backed by Recoton's standard limited warranty.

## TRY SONICALLY CORRECT MIKES RISK FREE

Make some recordings. You'll find real separation that doesn't sound manufactured. The sonic placement is as close as you can find to the 'stereo' that your ears hear at a live concert.

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

To order your Recoton Stereo Electret Condenser Mike, risk free with your credit card, call toll free, or send your check for just \$49 (\$3 P&H). Order No. 9463.

Stop fumbling with mikes. Record stereo sound the old-fashioned way. Use a mike that's a copy of your ears.

**PRICE SLASHED**  
 List price was \$249, DAK sold it for \$129  
**NOW JUST \$99**  
 Use Order Number 4133 plus (\$6 P&H)



# Mommy It's Me

*Most wild animals can pick their own young out of a crowd. Well, now there's a phone that not only can pick its master out of a crowd, but can happily serve you and do tricks for you. And, your new Pet Phone's normal \$249 adoption proceeding's price has been slashed to just \$129.*

Get Mom. Get house. Get office. Just speak to your new pet and your wish will be transformed into action.

Your new pet phone is very smart. It actually recognizes the words you say. And, while you can't train it to roll over, you can train it to dial any of 16 numbers with just the words you speak.

Plus, it can do a whole lot more. It can automatically redial busy numbers and recognize the difference between a busy signal and someone answering the phone.

You'll have hands free phone convenience. Because, your pet is a pure bred, with a full duplex speakerphone pedigree.

And, if you don't want to talk to your pet, just rub its tummy. You can dial any of the 16 numbers you have programmed with the touch of a single button.

## IT UNDERSTANDS YOUR WORDS

Imagine saying "office", and having your number dialed for you. Say "Bob", and Bob's number will be dialed. It's new. It's exciting. And, its responses really make it seem alive.

Sure, we're all used to pushing buttons and having things happen. But here's a 'pet' that really understands what you say and can actually discriminate between the words you speak.

It's all made possible by a new patented integrated circuit that converts analog (your voice) into digital pulses.

The computer brain analyzes your digitized voice. Then it lights an LED next to one of the 16 names you've listed to confirm your command. And, finally, it dials a number up to 30 digits long.

It all happens in the wink of an eye. Say 'Time', and you'll get the time. Say 'Golf', and you'll get your club.

If you live in a pulse area and you'd like to use MCI or Sprint, just program your local access number in pulse. Then switch to tone to enter your codes and the number.

Your pet phone will always remember

to dial the number exactly the way you've programmed it. And, it won't forget.

There's power failure protection when you install a standard 9V battery (not included) for both the phone memory, the clock time and the alarm time.

Yes, there's a built-in full function digital alarm clock with an extremely large, easy to read, LED display.

## HOW TO TRAIN YOUR PET

Your new pet just loves to perform. Just push a few buttons and your pet will ask you to talk to it for a few moments to familiarize itself with its new master.

After it knows you, you can teach it new numbers or change old numbers in just a few seconds. You choose the name to go with each number. And, you can change its memory at any time.

Just plug it into a phone jack and an AC plug. And, you'll have activated the world's first voice recognition phone.

## AND WHAT A TELEPHONE

The 'Last Number Redial' has two real twists. If you call airlines or friends who are constantly on the phone, your days of frustration are over for good.

First, when you reach a busy number, you simply touch 'Redial' and hang up. Your pet phone will immediately redial the number 15 times for you. Then, it shuts down and waits for 10 minutes.

In 10 minutes, it tries the number 15 times again. This goes on for an hour.

Twist two is really special. When you finally break through the busy number, your pet phone will start beeping to tell you to pick it up. All you have to do is remember who you were calling.

You'll have a great sounding, full featured duplex speakerphone for hands free telephone conversations. Plus, the speakerphone is great for on-hook dialing.

Just touch the 'Speakerphone Button' and a memory button and you won't ever have to lift the receiver. If no one answers,

just turn off the speakerphone.

Your pet is multilingual. It can speak in true tone or true pluse. Just 'rub' the appropriate switch. And, if you've had enough, this is one pet that won't bark when you 'rub' it's ringer off switch.

## WHY SO CHEAP

Audec is an R & D company working on voice recognition systems. One day, they may be responsible for introducing the first voice recognition typewriter.

Well, the only way to really test their chip was to get it out to consumers and let the public, not the lab technicians, test it. Well, they've succeeded.

They tell me that they have over 95% accuracy with the voice recognition chip. So this phone, which was really a consumer test, is finished. And, it's time to move on. DAK is offering just the 5700 remaining phones at a dramatic savings.

But, start looking for other products that will respond to the words you say. Your pet phone is backed by a standard manufacturer's limited warranty.

## TRY A PET PHONE

### RISK FREE

Talk to it. Let it dial for you. Experience the thrill of true voice recognition. This phone represents the threshold of a new era. And, it works NOW!

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

To order your Audec VRT-1100 Pet Phone with Voice Recognition, Automatic Dialer, SpeakerPhone and Clock, risk free with your credit card, call toll free or send your check, not for \$249, but for just \$129 plus \$6 for postage and handling to DAK. Order No. 4133

Your friends will be in awe as you direct its actions. You'll love the convenience. And, you'll have perhaps the most technologically advanced phone money can buy, at a close-out price.

# Bedside Companion II

Now you can enjoy stereo cassettes, FM stereo and AM in your bedroom, kitchen or office.

It's a common problem. You've got a stereo cassette collection you want to listen to, but you can't always be in the same room as your main stereo system.

Now you can have it all. You can have great sounding stereo cassettes and FM stereo with full stereo separation from twin matched full range speaker systems.

It's simply ideal for offices, studies, work areas, and yes, it will make the most elaborate 'clock radio' for your bedroom that you have ever imagined.

## LOOK AT ALL YOU GET

The cassette recorder plays stereo cassettes or records from the AM and FM stereo tuners. You can even plug in your own mikes (not included).

And look at this. You can set the timer to have this recorder record from AM or FM so you won't miss important news conferences and special events.

Of course, you can awake to AM, FM, alarm or cassette, and you can also go to



sleep with your choice of entertainment.

You're in full control of the clock radio portion of this unit with Time and Alarm setting by hours and minutes rather than just fast and slow.

There's high/low dimming for the clock

display, a sleep button and a touch snooze sensor. You'll have a welcome addition to any room with the feature-laden clock radio and the rich sounding stereo.

And, the shades of walnut-grain and HiTec black add a distinctive look too. It's made and backed by a limited warranty from Yorx, the electronics experts.

## TRY THE COMPANION II RISK FREE

Wait till you hear the sound. Wait till you feel the controls. If you aren't 100% satisfied, simply return it to DAK within 30 days in its original box for a refund.

To order your Yorx AM, FM Stereo, Cassette Clock Radio Music Center risk free with your credit card, call toll free or send your check for DAK's super price of just \$79.95 (\$6 P&H) Order No. 4264.

Why be tied down to one room to listen to your stereo? Enjoy beautiful music anywhere in your home or office.



# Click And Pop Assassin

A click or pop on a record is just annoying. If you copy it onto a tape you'll be aggravated for years.



All records have them. Even when they're new. Those annoying clicks and pops are caused by scratches, dirt, static electricity and normal record wear.

Now from SAE, comes a way to remove or at least drastically reduce clicks and pops with no loss of musical quality.

Clicks and pops (called impulse noise) are different from music in that they have a rapid attack and decay time. In addition, they have a tendency to be out-of-phase, while the music is in-phase.

A logic circuit in the Click and Pop Assassin, monitors the musical program searching for the unique combination of conditions that indicate impulse noise.

When the computer brain of this system finds clicks or pops, it shuts down the music for a microsecond while a Music Restoration Circuit surrounds the impulse noise and replaces it with an extrapolation of the music around it.

The result is a significant reduction of impulse noise, with no sacrifice of the music. In short, you won't hear the clicks and pops. And, you won't hear the Click and Pop Assassin doing its job either.

This unit has a neat switch called an 'invert' switch, which lets you listen to what it's taking out. It also has a sensitivity control. So, you can hear the music, the clicks or you can hear it all.

## TRY IMPULSE NOISE REDUCTION RISK FREE

Try it in your system. It makes a phenomenal difference you'll especially appreciate when you're recording. It hooks into the tape loop in front of your deck.

You can use it when you're just listening to records too. If you're not 100% satisfied, simply return it within 30 days in its original box for a courteous refund.

To order your SAE Impulse Noise Reduction System risk free with your credit card, call toll free or send your check for only \$149 plus \$4 for post & handling. Or. No. 9748. CA res add 6% sales tax.

It really works. It doesn't remove things like tape hiss and the like, but it does seem to remove 80 to 90% of all the clicks and pops on my records.

## PRICE SLASHED

List price was \$199

DAK sold it for \$149

**NOW JUST \$129**

Use Order No. 9748 plus (\$4 P&H)

**\$89 CLOSE-OUT**



# Sound Detonator Plus

**Make your stereo system's sound explode with life. Improve the sound quality by 30 to 50%. Plus, you'll add tape dubbing too with this limited BSR \$89 close-out.**

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 at your command.

You'll make your music so vibrant that it will virtually knock your socks off when you use this professional quality 10 band stereo Sound Detonator Plus Equalizer.

It has a frequency response from 5hz to 100,000hz  $\pm$  1 db. BSR, the ADC equalizer people, make this super equalizer and back it with a 2 year limited warranty. Our \$89 close-out price is just a fraction of its true \$249 retail value.

## CAN YOUR STEREO SOUND BETTER?

Incredibly better. Equalizers are different from regular bass and treble controls. And, 10 band EQs are the best.

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 31hz, 62hz and/or 125hz, and 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 don't disturb the mid-range frequencies and make your favorite singer sound like he has a sore throat.

The high frequencies really determine the clarity and brilliance of your music.

You can boost the mid-range and highs at 1,000hz, 2,000hz, 4,000hz, 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 8000hz.

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

## GREAT FOR 2 TAPE DECKS

You can push a button and transfer all the equalization power to the inputs of two tape decks. So, if you have a cassette deck in your car or a personal stereo that you wear, now you can pre-equalize your cassettes as you record them.

Now you can get all the dramatically enhanced sound wherever you are. This

is an especially great feature for bass starved portables and high-end starved car stereos to make them come alive.



And, look at this. There are two tape inputs and outputs, so you can dub from tape deck A to B, or make two tapes at once with or without equalization.

## 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.

Just plug the equalizer into the tape 'in' and 'out' jacks on your receiver. We even supply the cables.

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 your tape decks for recording, and with the touch of a button, you can choose to send equalized or non-equalized signal to your recorders.

When you want to listen to a tape deck, just press a tape monitor button on the equalizer and your tape deck will work exactly as it did before. Except, that now you can choose to listen with or without equalization and you can dub.

You won't be listening to any distortion or hum. The Sound Detonator Plus has a 95db signal to noise ratio and total harmonic distortion of just 0.018%

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.

## WHY A CLOSE-OUT?

Last year DAK closed out over 18,000 of BSR's 7 band equalizers because BSR had decided to only sell equalizers under their ADC name and they still had some left with the BSR name on them.

Well, as Detroit comes out with new cars each year, ADC comes out with new equalizers. We got them to supply us

with just 15,000 of last year's model before they shut down for the new one.

They had already paid for all the tooling, all the research and design, so we were able to buy these for less than half the normal price, for cold hard cash.

So, you can go to any HiFi store and buy this year's design in an ADC equalizer made by the parent company BSR, or you can get this \$249 value BSR equalizer while our limited supply lasts, for \$89.

## THE FINAL FACTS

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

There are separate sound detonation slide controls for each channel at 31hz, 62hz, 125hz, 250hz, 500hz, 1,000hz, 2,000hz, 4,000hz, 8,000hz, and 16,000hz.

LED VU meters with  $\pm$  0.5db accuracy show levels for each channel. It is 17" wide, 6 1/2" deep and 4 1/2" tall.

## PUT LIFE INTO YOUR MUSIC RISK FREE

Prepare for a shock the first time you switch in this equalizer. Instruments you never heard in your music will emerge and bring a lifelike sound that will envelop you and revolutionize your stereo system.

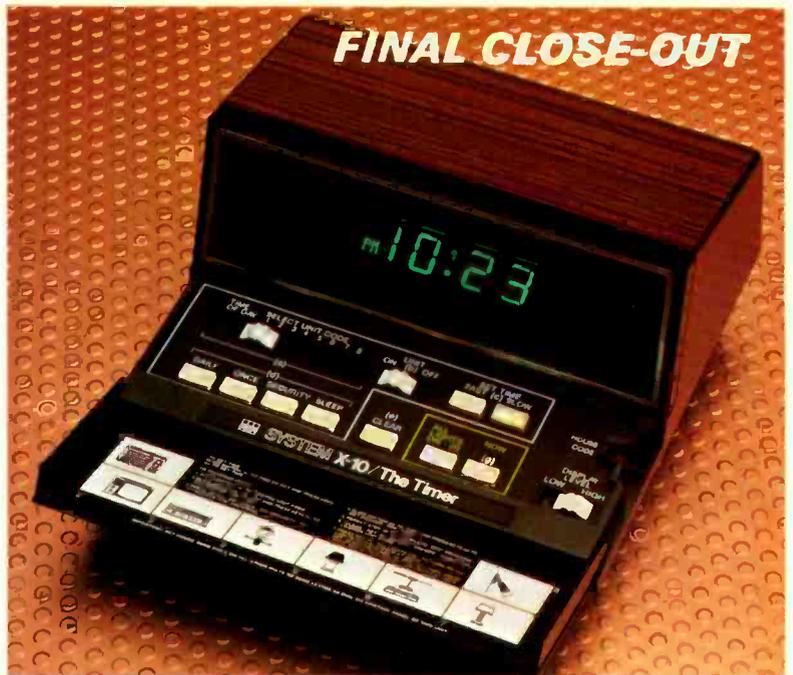
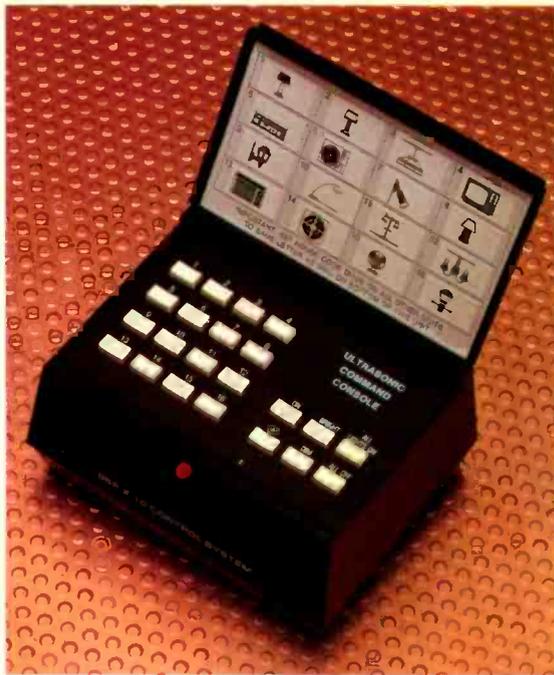
If your system doesn't spring to life, simply return the equalizer within 30 days in its original box for a refund.

To order your Sound Detonator Plus Tape Dubbing BSR 110X10 Band Stereo Frequency Equalizer risk free with your credit card, call toll free or send your check not for ADC's \$249 value, but for ~~only \$89~~ plus \$7 for postage and handling. Order No. 9724. CA res add 6% tax.

Wake up the sound in your stereo. Your sound will explode with life as you detonate each frequency band with new musical life. And now you'll be in control of two tape decks as an added plus.

## FINAL CLOSE-OUT NOW JUST \$59

Order No. 9724 Plus (\$7 P&H)  
It's simply the most demonstrable addition you can make to your system. Wcw, wait till you hear the sound.



# Remote Control Seduction

**Burglars will think you've got a family of 10 at home when you're out. And, you'll feel like you've got a butler, 2 maids and a security guard when you're home.**

It's late at night. You're in bed. The lights are romantically low. The stereo that is playing in the background, as well as your lights, will be automatically turned off after you're asleep.

As you peacefully drift off, you'll be secure in the knowledge that to a burglar on the prowl, your family still appears to be moving about.

## CHEAP THRILLS

Romantic lighting, burglar deterrents and energy saving controls, are just the beginning of this remarkable, installation free, remote control system from BSR, the mammoth electronics giant.

Now you can remotely turn on, off and dim your lights, thwart burglars, start your dinner while you're away, and even turn the lights on or off in an unattached garage or barn for as much as 65% off the suggested retail price. Wow!

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

It actually uses your existing house or office wiring. And if you can plug in a lamp, you have all the expertise you'll need to plug-in this system.

## \$13.90 STARTS IT ALL

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 lights on or off for instant security.

It's a \$49 retail value, but it's yours, only from DAK, for just \$13.90. You can keep the Console on your nightstand, by your easy chair, or in the kitchen.

You can even move it from room to room, because its total installation con-

sists of simply plugging it in. Or at DAK's super low price, you can put Command Consoles in as many rooms as you wish.

There's even a remote for your remote. This top of the line Command Console has a built-in ultrasonic receiver so that you can add (they weren't sold as a set) an optional \$24.99 retail value wireless remote handset for just \$12.

Every control on the console is exactly duplicated on the handset. So you can roam up to 30 feet from your easy chair or your bed and still be in full control. And, if you buy several consoles, the handset will work with all of them.

## HERE'S HOW IT WORKS

As you push each button on the command console, a powerful but silent, encoded signal is sent down its AC cord 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 system's controller modules.

on the console.

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

A sophisticated, Integrated Circuit in each module, senses all signals and responds only when the button on the console that corresponds to the number shown on the module's dial is activated.

**Important note:** You 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 (that's three 100 watt bulbs or 5 60 watt bulbs). 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 install instead of your present wall switches.

So all you have to do is dial in a number, plug in the module and plug in the controlled device. Now, you'll have instant remote control in your own home.

## SOME NEAT IDEAS

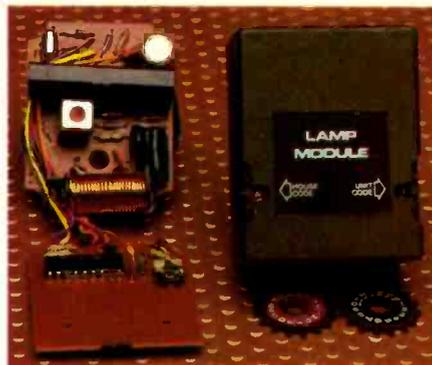
You can set several modules to the same number so that the front and rear lights can come on together. Or, you can set all the lamps in a room to come on together. You can even dim them all.

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% control of your lights.

## THE TIMER

Now let's add remote control that doesn't even require you to be at home.

This sophisticated electronic brain can perform 32 tasks. BSR's price list shows a suggested retail price of \$74.99



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



for the timer, but it's yours for \$32.50.

It installs just like the Command Console. Plug it in and you're in operation. Just 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 what you've programmed occur every day, 7 days a week, 365 days a year.

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

This button will cause anything you've programmed to occur at random times, differing each day by as much as 30 minutes from the set time.

And, there's a 'Sleep' button. A single touch of this button will let you turn any controlled module on for an hour.

The Timer will allow you to program 8 modules of the 16 possible numbers. Each module can be turned both on and off twice a day to suit your needs.

And, The Timer can be used as a Command Console by selecting a module and pushing the 'Now' button for instant non-timed operation. There's also an 'All Lights On' security button.

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.

#### TELEPHONE CONTROL TOO

You can even call your home on the telephone and control anything you like. BSR's price list shows its suggested retail price to be \$149. But, you can control your home by telephone for just \$49.

The Telephone System is incredibly easy to use. Just plug it into both your AC line and any modular phone jack in your home or office.

Then just call your regular phone number, give it your 3 digit code that you set yourself, and start controlling.

You can call home and turn on your lights before you leave work or before you leave a midnight party.

Anything you can control from the regular Command Console, you can turn

on or off by phone. If you have a summer or winter home, call it before you 'head out' so it will be ready when you arrive.

If you live in a brush fire area as I do, you can call and turn on your automatic roof sprinklers. If you have a mountain cabin, you can turn on your pipe heaters if there's an early snow.

The Telephone Responder lets you control 8 of your modules. You can turn them on or off. Plus there's an 'All Off' feature as well. The base can also operate as an on/off command console.

Although this whole system is obviously made for the very rich, you'll live like a king without paying a king's ransom.

#### AND NOW THE SEDUCTION

Close your eyes and imagine the soft music, dimmed lights, the cocoon of safety. It's a wonderful 'picture of seduction', right out of the movies.

**CHEAP, BUT WITH FULL WARRANTY**  
DAK has made an incredible all cash buy on a limited quantity of these BSR X10 components for two reasons.

First, BSR made too many units with the Leviton (the light switch manufacturer) brand name on their name plate, so BSR didn't know what to do with them. And second, BSR was supposed to have a joint venture with a computer company for an interface for this system.

Every component you buy is backed by BSR's iron-clad full one year limited warranty for your protection.

#### TRY A REMOTE WONDER RISK FREE

Now you can experience the wonder of remote control. It's simply a thrill to use. And at DAK's price, it's a cheap thrill.

As you get into bed tonight, think about what you'd do if you heard a noise outside, downstairs or at the other end of the house. Now, just touch a button and your home will be bathed in light.

Think about how nice dimmed lights would be in your bedroom, den or living room. BSR can make it all possible.

Try any part or all of it. If you're not 100% satisfied for any reason, simply return it to DAK within 30 days in its original box for a courteous refund.

**Order any combination of Command**

**Consoles and modules that you want. The choice is yours. There are no limitations except that sales are limited to stock on hand.**

1) **The Control Console**- Lets you control up to 16 different modules. On/off/dim/all on/all off. Just ~~\$13.90~~ plus \$2 P&H. Order No. 9775.

2) **The Ultrasonic Remote**- Lets you roam up to 30 feet from any Control Console, and duplicates all functions. Just ~~\$12~~ plus \$2 P&H. Order No. 9776.

3) **32 Event Clock Timer**- Lets you control 8 modules with up to 2 on and 2 off commands to each. Also acts as a command base plus sleep and security extras. Just ~~\$32.50~~ plus \$2 P&H. Or. No. 9777.

4) **Telephone Responder**- Now you can just call your home, enter your code and control any 8 of your controlled devices. It's also a base. It's yours for just ~~\$49~~ plus \$3 P&H. Order No. 9778.

5) **Lamp Module**- Controls/Dims lamps up to 300 watts plugged into walls. Just \$13.90 plus \$1 P&H. Order No. 9779.

6) **Wall Switch Module**- Controls/Dims lights now controlled by wall switches. 500 watt capacity. This is the only module that requires installation. Just \$14.75 plus \$1 P&H. Order No. 9780.

7) **Appliance Module**- Control stereos, TVs, or anything with motors. 15 amps, 500 watts, 1/3hp rating. Just \$13.90 plus \$1 P&H. Order No. 9781.

## FINAL CLOSE-OUT

1) **Control Console**- \$9.90, Order No. 9775 (\$2 P&H).

2) **Ultrasonic Remote**- \$8.90, Order No. 9776 (\$2 P&H).

3) **32 Event Clock Timer**- \$26.90, Order No. 9777 (\$2 P&H).

4) **Telephone Responder**- \$39.90, Order No. 9778 (\$3 P&H).

It's safety, security and fun with BSR's X10 system. I bought one at full retail before DAK sold them. I can turn on lights throughout our home from my nightstand with this incredible system. All the modules are available.

# Sharp Commando

*It may look like a compact stereo. But, with its microcomputer controlled linear tracking turntable that plays both sides of the record and its soft-touch cassette deck with Dolby, it sounds and acts like an automated component stereo system. And, wait till you see DAK's price.*

You'll hardly notice it on a shelf. But, just one touch of its controls will make this totally automated, dramatic sounding stereo system leap into action.

And action is an understatement. Before we discuss its vibrant sound, the soft-touch cassette deck with Dolby, and of course, the AM and FM stereo tuners, let's look at the automated turntable.

## PLAY BOTH SIDES AUTOMATICALLY

Now you can play Side A, Side B, or both sides over and over again. Now you can have an evening of uninterrupted music from a single record.

And, if you tape, you'll be able to copy both sides of a record onto a cassette, unattended. But, that's just the easy part.

From the moment the linear tracking tone arm, complete with a magnetic cartridge, glides into action, you'll be making great sounding cassettes with the selections in the order you choose.

You can move the arm from track to track by using the 'FWD' and 'REV' buttons. And, you can do it on BOTH sides of the record. Just push one of the buttons until the arm is in the location you desire. Then touch 'Cue' and the arm will lower onto the record.

From the second that the diamond touches the groove, you'll be listening to great sounds. You can play or repeat one side, play or repeat both sides, or move just to the selection you want.

## LINEAR TRACKING ACCURACY

The linear tracking arm means that you'll have precise lateral balance and accurate tracking, from the outside of the record all the way to the innermost groove.

So, you'll enjoy dramatically clean, distortion free sound without tracking error. And, the same arm actually plays both sides of the record.

It moves in a 'U' pattern around the end of the record to play side B. The turntable platter is driven by a precision controlled DC motor for superb stability.

There's a totally separate DC motor that drives the linear arm. Linear arms can track vertically, horizontally and up-side down with no degradation of sound.

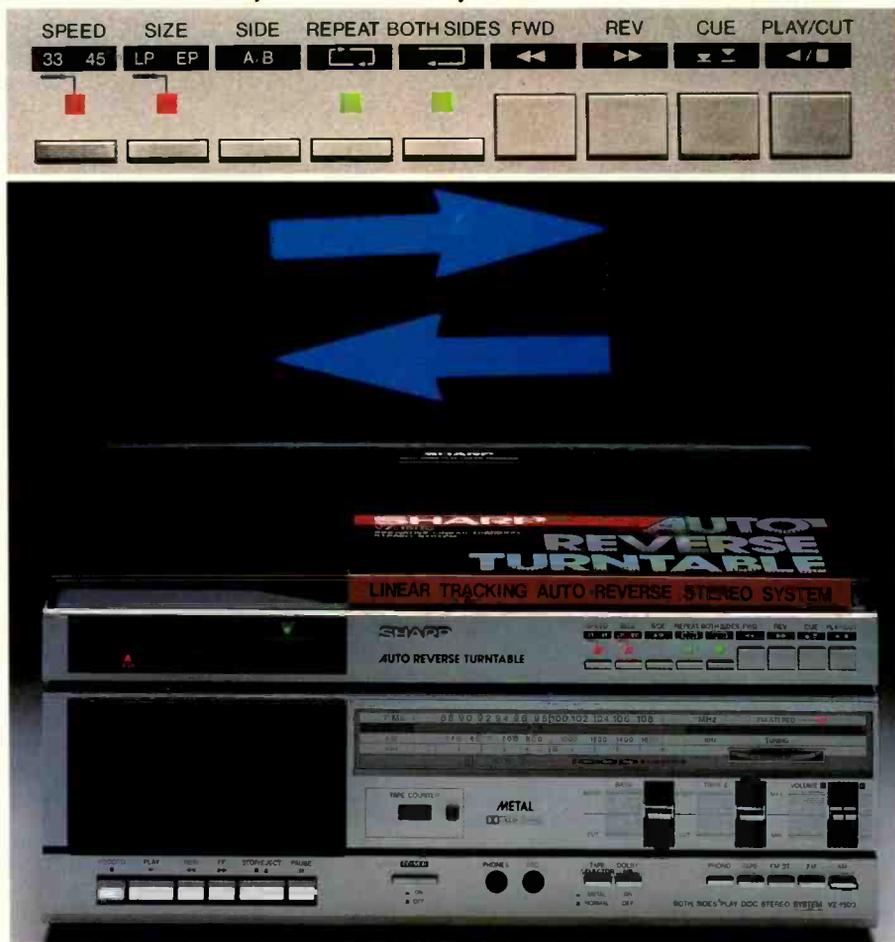
Push the play button and choose side A or B, and the arm will move out to the record. You can move forward to skip songs or move back to play songs again. If you don't like the current song, push 'FWD' and you'll skip forward as you like.

Now you're in full control and you'll never scratch a record because the on-board computer controls all the actual arm movements. So prepare yourself for total automation and for really great sounds from your records.



## DON'T FORGET THE SYSTEM

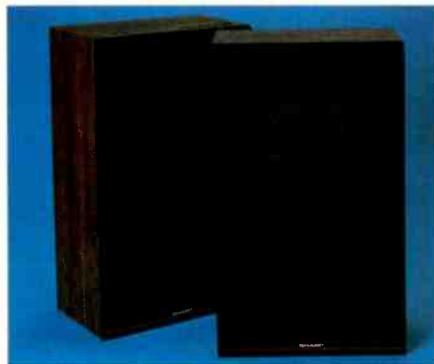
You'll have sensitive FM stereo and AM tuners to provide entertainment from the outside world. Of course, you'll have a signal strength meter for tuning, a large slide rule dial and a stereo indicator.



And, while most of the space here has been devoted to the revolutionary turntable, let's not forget the cassette deck. It's really a component quality, soft-touch deck. It has a hard permalloy head for high quality recording.

A feature you won't generally find in 'compact stereos' is Dolby. Sharp has Dolby B for 10db of noise reduction.

You'll really appreciate the Dolby when you consider the clean highs you'll be able to hear from the system's two-way 8" bass-reflex speaker systems. Unlike most compact stereo's one-way speakers, these really sound good.



## IT DOES IT ALL

The amplifier delivers a not unimpressive 10 watts per channel minimum

RMS into 8 ohms from 80hz to 20,000hz, at its rated distortion. While it certainly isn't a massive amount of power, it's more than enough to deliver clean rich sound from this system.

In all, you'll get something that looks like a compact, acts like a computer, and sounds like a component stereo system. The system is backed by Sharp's standard limited warranty.

## THE SHARP COMMANDO RISK FREE

It's a lot of stereo for a small price. Wait till you hear the sound. Wait till you see the linear tracking arm move across and around the record.

And wait till you make some recordings. It's sure to make a dramatic sonic impression in any room of your home.

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

To order your Sharp Stereo System with a Linear Tracking, Both Sides Playing Turntable, a Soft-Touch Dolby Cassette Deck, AM and FM Stereo, risk free with your credit card, call toll free, or send your check for DAK's 'very compact' price of just \$188 (\$18 P&H) Order No. 4312.

It won't shoot you. It won't blow up any bridges. But the Sharp Commando's dramatic sound isn't betrayed by its appearance as a compact stereo.

**\$39 PRICE BREAKTHROUGH**

# Pollution Shield

*Here's the story about a new weapon that can place a protective pollution resistant shield around you.*

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. And, we think you'll agree that AirEase™ is the best.

AirEase™ is just about the only air cleaning system which can remove and collect tobacco smoke, dust, pollen and even bacteria from the air.

AirEase™ constantly cleans all of the air throughout the shielded area. In contrast, fan driven filter type machines can only clean the air that they actually draw through themselves.

Consider all the types of pollution from automobile exhaust. Then add oil smoke, carbon, insecticide dust, and virtually anything you can think of that you don't like in your air. Then you'll be thinking of the pollution shield.

#### **THERE'S MORE**

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 just after a thunderstorm, you know the invigorating feeling that comes over you.

AirEase™ does for a 12 by 20 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.

#### **THE BASIC DIFFERENCE**

AirEase™ is different. There are lots of negative air ionizers. And don't sell them short. Most of them do work. But, they aren't complete.

AirEase™ not only emits negative ions, but its base is really a positive collector.

Once the negative ions go out and attach themselves to a particle of pollution, instead of just falling to the floor they are collected on the collector base.

A removable washable filter trap comes with AirEase™. It holds the collected pollutants. You just rinse the filter when it gets dirty. And wait till you see just what AirEase™ removes from the air before it gets into your lungs.

So AirEase™, because of its new dual element technology is a step ahead of the pack, and you'll be breathing cleaner fresher air, only seconds after you plug it in. AirEase™ is made by ISI, the same company that made the \$98 Orbit air ionizer we sold last year. The really amazing fact is that this new \$39 air ionizer has the exact same power and electronics as did the \$98 Orbit. Both AirEase™ and Orbit are backed by the same standard limited warranty by ISI.

#### **TRY AIREASE™**

#### **RISK FREE**

Plug in AirEase™. Make the smoke test I described earlier. Let it attack the pollution (especially other people's cigarette smoke) in your home or office.

If you don't think you're breathing cleaner fresher air, simply return AirEase™ to DAK within 30 days in its original box for a courteous refund.

To order your new AirEase™ dual element negative ion generator clean air system with your credit card, call the DAK toll free hotline, or send your check not for the \$98 cost of the old Orbit, but for just \$39 (\$3.50 P&H) Or. No. 9839.

I can't guarantee that this device will help you sleep, solve crime, or improve your sex life. But, it will give you cleaner air to breathe, and that's priceless.



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#### **TOLL-FREE ORDER LINE**

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**CALL TOLL-FREE. . . 1-800-325-0800**  
8200 Remmet Ave., Canoga Park, CA 91304



It's a war. It's you against pollution. And, your home is the battlefield. With smoke, smog, and car exhaust just literally oozing into your home, it's time to fight back.

You can't count on the government. And, you can't count on the car makers for help. It's time to arm yourself, and here's the weapon and the ammunition.

#### **ARMED FORCES**

The weapon is the new dual action AirEase™ Air Ionizer. It has an edge over all the rest. Not only does it generate (shoot) negative ions, but it then also collects the debris (enemies) with a second element in its base.

The ammunition is the billions of negative ions that emit from this lethal weapon and quite literally form a defensive shield to stop smoke, smog and other pollution from getting in.

The attack force of negative ions (negatively charged atoms) attach themselves in a magnet-like fashion to pollutants in the air which in turn cause the pollutants to be attracted to the nearest positive surface.

At the outside of the shielded area, they tend to fall to the floor. Closer in they are actually reattracted to the special base collector of AirEase™. And, I'll tell you more about that later.

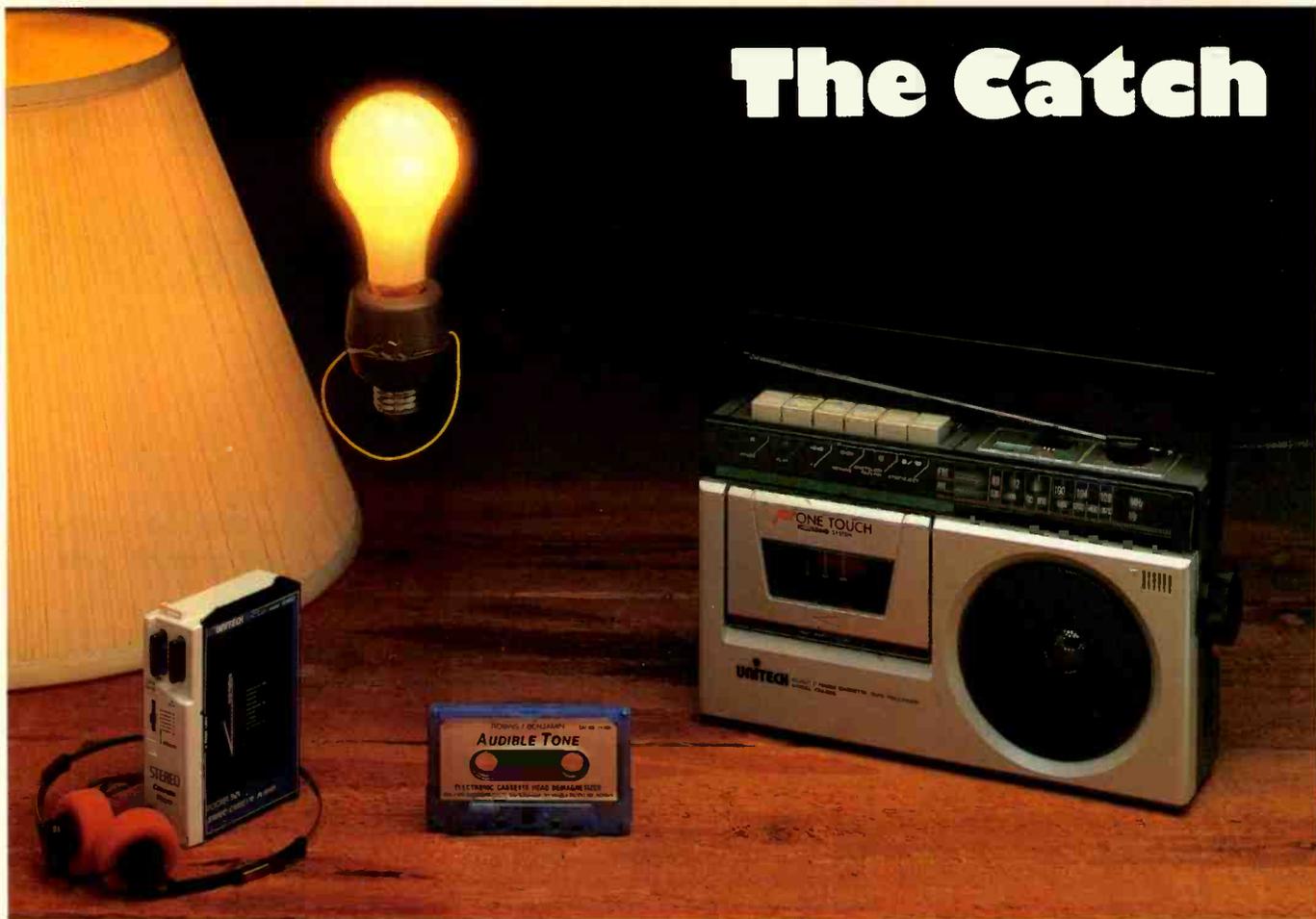
#### **RED ALERT**

Does it work? You can bet your life on it. Here's a test you can make yourself.

Place a standard clear kitchen bowl over the ionizer. Puff some cigarette smoke into the bowl. Then plug in AirEase™. Before you can say "AirEase™ Kill", the smoke will be totally gone. It's an easy test, and it's sure to make you a believer. It sure convinced us at DAK.

#### **CIGARETTE BUTTS & BOULDERS**

# The Catch



***It's up to you. You can have a pocket sized personal stereo for \$6. Or, you can dim a lamp by simply touching it for \$4. You can have a great sounding AC/DC radio cassette recorder for \$17. Or, protect your tape's high frequencies with a head demagnetizer for \$3. But whatever your choice, don't forget there's a catch.***

It's a trap. And, the bait is pictured above. First you'll be enticed by the bait, and then, well why don't we look at the bait first. But don't forget, there's a catch.

## **THE \$6**

### **POCKET SIZED PERSONAL STEREO**

Put away your expensive and big personal stereos. Now you can listen to the great sound of your cassettes wherever you are. And, you'll be amazed at the dramatic sound you'll hear.

Hardly larger than a cassette, this 3¼" by 4½" truly pocket sized, rugged personal stereo, goes where you go.

No, it's not the finest personal stereo you'll ever hear. But, the sound is guaranteed to knock your socks off.

### **WHAT A SURPRISE**

It's made by Unitech, and they say that its new anti-rolling action will help keep it smooth and stable even when you're not. And, they're not too far off.

The best way to test the stability of a portable is to shake it while you listen to music. And, you're just going to have to shake this deck yourself before you believe how really stable it is.

So, whether you jog, mow the lawn or walk your dog, you're going to have stable, clean music wherever you are.

And speaking of great music, the feather-weight headphones really reproduce full, dramatically brilliant sound.

### **ALL THE SHORTCOMINGS**

So, what could be wrong with this super personal cassette stereo? Well, there's nothing really wrong, but there are a few things missing.

Unitech supplies this unit with a powerful clip to attach to your belt or waist band. And, there's a handy strap. But, there's no fancy leatherette case.

There's a full range linear volume control, but there's no balance control. And, there's only one headphone jack.

The deck plays normal and CrO<sup>2</sup> tapes, but there's no metal switch. And finally, there are push buttons for Play, Fast Forward and Stop. But, there's no Rewind.

But on the bright side, other than the great sound, this unit operates on only 2 standard AA batteries (not included). 2 battery operation demonstrates that its electronics are state of the art. Cheaper decks need 3 or 4 batteries. It's backed by Unitech's standard limited warranty.

It's yours for just \$6, but don't forget about the catch.

## **THE \$4**

### **ATTACK LAMP**

It's alive. Touch your lamp and it will turn on. Touch it again and the light gets brighter. Touch it again and it's on maximum. One final touch and your lamp shuts itself off.

Now you can turn any lamp into a living attack lamp. Just screw the Touchtronic brain, pictured above, into any 1, 2 or 3-way lamp.

And, you can forget expensive 3-way bulbs. The first time you touch your living attack lamp, you'll get 10% brightness, which is perfect as a night light.

The second touch will bring it up to 50% power. And the third touch will give you full power on bulbs as large as 200

watts. One final touch puts it to sleep.

### **HERE'S HOW IT WORKS**

This has simply got to be the greatest conversation piece. Of course it's an energy saver. Of course it's a great convenience in the dark. And finding little turning knobs is a pain even in daylight.

Anyway, the Touchtronic screw-in converter causes the metal parts of your lamp to become receptive to your touch.

The yellow wire with the clip at the end, simply clips to the 'harp' (that's the thing that holds up the shade) of your lamp.

Then, you can touch the top, or any other metal part of your lamp, and it will leap into action. So, you'll have both a dimmer and a touch sensitive living lamp.

It's exciting, it's fun, it's an energy saver and nobody else on your block will have one. And, it's backed by a standard limited warranty from Westek.

It's UL listed and it's yours for just \$4. But, don't forget there's a catch.

## **THE \$17**

### **AC/DC RADIO RECORDER**

OK, it's not an exciting product. But, if you're like me, Drew Kaplan, you might just find this really useful.

I've had a radio cassette recorder like this (the brand name shall remain nameless) for about 6 years. Every morning while I shower and shave, I use it to listen to the morning news.

When I head out to the yard for a few minutes to fix a sprinkler, the garage to work on something, or our attic to run some more wires, it usually isn't an expensive portable stereo that goes with me.

Now I'm using this radio cassette recorder. And, it's really neat because I can just throw it wherever I happen to be. It's super rugged. It sounds great. And, I don't have to worry about it.

I can keep up with the news. I can enjoy music on FM. Or, as I do most of the time, just listen to one of my cassettes. It's not stereo, but its large full-range speaker gives me a very pleasing sound.

It has one-touch recording which is really useful. I often like to record the little tidbit type 'News Notes' on the morning news. Someday I'd really like to meet the guy who does them. He seems to look at life the same way that I do.

Anyway, in addition to one-touch record, you'll have Pause, Play, Fast Forward, and Rewind. You'll get great AM and FM reception, and you can operate this recorder from its included AC cord or 4 C batteries (not included).

Of course, it has slide rule tuning, an earphone jack, and it automatically shuts off at the end of a cassette. And, it's about my only link with the outside world during emergencies and power failures.

It's made by Unitech, and it's backed by their standard limited warranty.

You'll have AM, FM, and cassettes to listen to. And, you can record from AM, FM or the built-in condenser microphone. It's yours for just \$17. But don't forget, there's a catch.

### THE \$3 CASSETTE TAPE SAVER

It's a scare tactic. The thought of your irreplaceable cassettes losing their high frequencies is definitely scary.

In the days of open reel tapes, we used to demagnetize the tape heads after every 8 to 10 hours of use. But, cassettes don't have as high a frequency response, and the record current isn't as high. So unfortunately, demagnetizing is a forgotten necessity.

But magnetized heads in your home, car or personal stereo cassette decks, can and will erase the very high frequencies on your cassettes. And once they're gone, you can't get them back.

If you've ever noticed that a cassette just doesn't seem to have the punch that it once had, or that the highs seem to be slightly distorted, demagnetization is quite probably the problem.

Don't let anyone tell you that the sound on a cassette wears out. You can play a cassette thousands of times. And as long as it isn't physically damaged, the sound should be as good the last play as it was the first.

Just slip Robin's demagnetizer into any cassette deck and push play. There are no moving parts to hurt or wear your deck. You'll hear a tone that signals that the demagnetization has begun.

When the tone ends, the job is done and the transistors and a special degaussing coil in the demagnetizer will have done their job. Do you need it?

Well, if you value your tapes as I do mine, the answer is yes. Will it make a night and day difference in your sound right now? The answer is no.

The cassette head demagnetizer is powered by two long-life replaceable calculator type batteries. It's yours for just \$3. But don't forget, there's a catch.

### SO MUCH FOR THE BAIT

Ok, the trap is set. There's bait for the music lover. There's bait for the gadget

conscious. And, the rest is up to you.

### THE CATCH

Frankly, we are losing our shirts on all these exciting products, but we're looking for audiophiles who really use and appreciate top quality audio cassettes.

If you buy top name TDK and Maxell cassettes, you probably pay up to \$3.50 or \$4.50 for a 90 minute cassette.

We want you to try DAK's Gold label MLX ultra high energy, normal bias cassettes with a frequency response up to 19,500hz. Not at \$4.50 or even at \$3.50 each, but at a factory direct price of just \$2.49 for a 90 minute cassette.

We also manufacture high bias MLX<sup>2</sup> Gold Label cassettes. They are just \$2.69 each. They have a frequency response up to 21,000hz. And both cassettes have plenty of headroom for really dramatic recordings.

We challenge you to compare the frequency response, dynamic range and signal to noise ratio of our Gold Label MLX cassettes to Maxell UDXL or TDK SA.

If they win, we'll not only give you back your money, we'll give you a free gift for your trouble. DAK's come with a deluxe hard plastic box, an index insert card, and a limited 1 year warranty.

### WHY, YOU MAY BE ASKING?

You're very valuable to us in the form of future business. Over 840,000 customers have responded to bonuses like these. We find most of you keep buying once you've tried our cassettes and our prices; and that's a worthwhile gamble.



### NOT A BAD CATCH

DAK manufactures a cassette with no problems and great sound. With our frequency response of up to 19,500hz for normal bias and 21,000hz for high bias, we'll go head to head with any cassette on the market.

### BUT, THAT'S NOT ALL

Hi Frequency protection! In the past, we made mostly industrial cassettes for high speed duplication. We've developed a special jam resistant cassette. It uses a spring tension liner within the cassette that guides the tape as it winds.

These liners are coated with a proprietary anti-friction chemical. Because, as tape moves within the cassette, friction causes the build-up of static electricity. Static electricity is drastically reduced

and so is its tendency to erase very high frequencies. It's a very important consideration for often played tapes.

### TRY DAK MLX & MLX<sup>2</sup> CASSETTES RISK FREE

To get any or all of the bait items, just try 10 MLX or MLX<sup>2</sup> high energy 90 minute cassettes for each piece of bait you want. If you aren't 100% satisfied, simply return only 9 of the 10 cassettes and the 'bait' in its original box within 30 days for a courteous refund. The 10th cassette is a gift for your time.

To order the cassettes and 'bait' you desire, just select the 'bait', MLX or MLX<sup>2</sup> 90 minute cassettes, and don't forget P&H. Call toll free, or send your check for this risk free trial. Use the Order Numbers below. CA res add tax.

Order the Unitech Pocket Sized Personal Stereo for just \$6 plus \$24.90 for the 10 MLX 90 Cassettes (\$4 P&H). Order No. 4287. Or, send \$26.90 for 10 MLX<sup>2</sup> High Bias 90 minute cassettes. (\$4 P&H) Order No. 4288.

Order the Touchtronic Attack Lamp Activator for just \$4 plus \$24.90 for the 10 MLX 90 Cassettes (\$4 P&H). Order No. 4289. Or, send \$26.90 for 10 MLX<sup>2</sup> High Bias 90 minute cassettes. (\$4 P&H) Order No. 4290.

Order the Unitech AM/FM Cassette Portable for just \$17 plus \$24.90 for the 10 MLX 90 Cassettes (\$5 P&H). Order No. 4291. Or, send \$26.90 for 10 MLX<sup>2</sup> High Bias 90 minute cassettes. (\$5 P&H) Order No. 4292.

Order the Robins Electronic Head Demagnetizer for just \$3 plus \$24.90 for the 10 MLX 90 Cassettes (\$4 P&H). Order No. 4293. Or, send \$26.90 for 10 MLX<sup>2</sup> High Bias 90 minute cassettes. (\$4 P&H). Order No. 4294.

You can order as many groups of 10 cassettes with 'bait' as you desire. Once you try DAK cassettes, we're betting you'll be back.

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# 46 - 49 Hike

*It's the fourth quarter. It's fourth down. There's no score. And, cordless phones have 99 yards to go.*

Is it a bum rap? Cordless phones, the darlings of the industry, have really been taking a beating for their sound.

And frankly, they can't **always** match the sound quality of a corded phone. As you walk around the block, things like hills, metal buildings and other types of interference, can add static to your conversation and reduce the overall range.

When you're under your car, out by your pool, or even in heavily insulated parts of your home, metal fences, metal in your walls or even metal encased electrical wiring, can reduce the sound quality.

If you live in a 'rich' area where lots of people have cordless phones, you've probably encountered interference from neighbor's phones, which may have the same frequency as yours.

Up until the new 46/49 phones came out, there were only 5 frequencies assigned for all cordless phones. It wasn't a problem in the beginning, but recently has been a pain in - -.

Of course, if you're down the block watching the kids and you need a doctor, a fireman or the police, cordless phones have been great. They've been a superb personal security device.

After all, with a phone you're really never alone. But speaking of never being alone, there have been stories about people eavesdropping on cordless phone conversations by using their own cordless phones. So, not being alone may take on a totally different meaning.

## PROBLEMS NOT SOLVED

Now, you probably expect me to say that Unitech's all new 46/49, Tone/Pulse switchable cordless phone, with two **totally separate switchable channels**, with dual tone guard security, will solve all your sound and range problems.

**Well, it won't.** Sure, it has a range up to 700'. And sure, it has great sound. And sure, it has dual guard tones to protect your line. It even has an AM/FM radio and an alarm clock to entertain you.

But think for just a moment about talking on the phone while you're out in the garden, walking around the block, or cleaning in the attic or hallway.

In some of those locations your reception may or may not be perfect. But, you'll be where no corded phone has been before. And how can a phone with a cord let you talk while you walk around the block or visit a neighbor without missing a call.

You'll never be alone when you're watching the kids, and you'll be free from running for the phone when you're working in the garden or in the garage.

And if you want 'perfect sound', sit down next to the base and compare the sound with your corded phone.

You'll find that the sound, most of the time, is simply superb. Sure, you may run into some static. Sure, it won't transmit through a mountain (or even a small hill). But as you walk around your home, you'll have great sound and real phone freedom.

And with the new channels, the dual guard tone security and your ability to switch from one new channel to another, you should really be able to enjoy phone freedom without overcrowding.



## I'M SOLD

If I could only have one phone in my home it would be cordless. It's not the final answer, but the freedom is really terrific. Sure, if I'm sitting next to a corded phone, I'll probably change. But, I don't have to get up from whatever I'm doing and run to answer the phone.

## WHY THIS PHONE?

The new FM 46/49mhz frequencies that this phone uses are much less susceptible to noise than the old phones.

But, don't misunderstand me. I think many of the old phones sounded great. These just sound better. And the biggest complaint about cordless phones that emerged was the overcrowding.

Well, with the new frequencies and the ability to switch from one channel to the other, you should be in great shape.



This phone is Tone/Pulse switchable so you can use discount long distance services. It has automatic redial, mute and the base can page the handset.

The new 46/49 phones don't use your house wiring. They just use the rod antennas on the base and on the handset for low noise communication. And, they simply plug into any standard modular phone jack and AC plug.

The handset is automatically recharged whenever you put it in the base. And speaking of the base, it's no ordinary base. It's a great sounding, sharp looking AM/FM clock radio.

You'll catch up with news on AM and be serenaded by music on FM, and there's

a full complement of clock radio controls, including sleep, snooze and a choice of music or alarm for morning wake-ups.

This communications center is perfect for your desk or your kitchen counter. There's a flip-up stand that angles the LED display so it's perfect for your nightstand. Or, you can mount it on the wall.

Wherever you place it, you'll have a great sounding AM and FM clock radio. And, you'll have the improved sound of the new 46/49mhz cordless phone.

It's made by Unitech. And, it's backed by their standard limited warranty.

## PUNT OR PASS, YOU DECIDE RISK FREE

Exhilarate in the freedom of talking wherever you are without having to run for the phone. Determine for yourself whether the sound is 'corded' quality in a cordless. If you aren't 100% satisfied, simply return it to DAK within 30 days in its original box for a courteous refund.

To order your Unitech 46/49 New Frequency Cordless Phone with Tone Code Security, Two Separate Channels, Tone/Pulse Switch, and an AM/FM Clock Radio risk free with your credit card, call toll free, or send your check for DAK's Punt or Pass price of just \$99.95 (\$4 P&H) Order No. 4286.

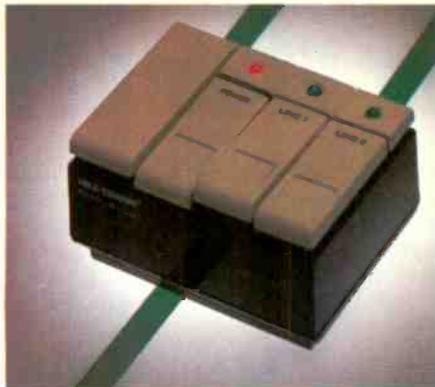
Down the street, out in the yard, or around your home, you'll have total phone freedom with the newest in cordless technology. But don't forget, there are times when a little static may accompany your freedom.



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## Two-Line Director

It's frustrating. If you have two lines and you want to use an answering machine or a cordless phone, it's been a problem.

Now just plug Direct-A-Call into one 2-line jack, or two 1-line jacks. Then, plug its AC cord into the wall and your single line answering machine or cordless phone into this 2-line Director.

Incoming calls from either line will be directed to your answering machine or cordless phone automatically for just \$49 (\$2.50 P&H). Order No. 4272.

## Phone Magicians

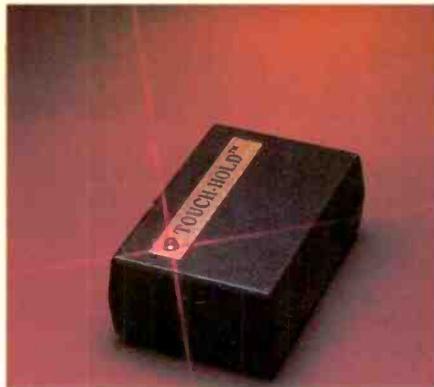


## Cordless Security

There's a long distance call to England. Old friends are catching up on the latest gossip. But, they're talking on your line.

If your cordless phone isn't security coded, it's possible for someone else's cordless phone to capture your line.

Now, Secur-A-Call encodes your cordless phone with a 2 digit code so nobody can call out without the code. Plug your phone into Secur-A-Call and Secur-A-Call into any modular jack (9V battery required) for just \$19 (\$2 P&H). Order No. 4273.



## Touch Hold

It's simple. If you have Tone phones, this device lets you put anyone on hold. Just touch the \* button on any Tone phone in your home and you'll put the the person your talking with on hold.

Then hang up the phone. You can pick up the same phone or any other phone on the same line and resume your conversation. It simply plugs into any modular jack. You'll never forget that a phone is off the hook when you change rooms for just \$19 (\$2 P&H). Order No. 4274.



# Instant Living Room

**Enjoy the entertainment of your living room in your bedroom, kitchen, office or even your car. Enjoy a 5 1/2" vibrant color TV plus an AM/FM radio wherever you are. And, forget Emerson's \$349 retail price. It's yours for just \$199.**

The proverb is wrong. Now you can take it with you. Now you can have a vivid 5 1/2" color TV plus AM and FM at work, at home or on the road.

Just think, with this super color TV system on your desk, you'll be able to see news events as they unfold during the day. And, you won't miss your favorite shows when you work late at the office.

With this TV, you can watch 'the big game' while you're outside on your patio. Or, keep up with the play by play while you work in your garage.

And, you can watch the late late show without bothering your mate when you put this new color TV on your nightstand and plug in the included earphone.

### ANY WAY YOU WANT IT

Just plug in its AC plug (included) and you're ready to go. You can use its built-in antenna, or hook it to your roof antenna or even your cable, for great TV viewing anywhere in your home or office.

When you're on the road, just plug it

into your cigarette lighter receptacle with its mobil power cord (included). You can enjoy terrific color TV when you are camping or just parked in your car or camper.

If you're out in the yard, at the beach, or even at the top of a mountain, you can watch TV by using standard D cell batteries (not included). So, you'll enjoy the color picture you usually leave in your living room, wherever you are.

### GO WHERE YOU WANT TO GO

Whether you're at the beach, the park, or in your bedroom, you'll have a superb 5 1/2" oversized color TV. At your office, or in your car (not driving), you'll never miss a show or an event again.

This super new system is just 9 3/4" X 12" X 5 1/2". It tunes in VHF 2-13, UHF 14-83, AM and FM. It's backed by Emerson's standard limited warranty.

### TAKE IT WITH YOU RISK FREE

Imagine the freedom. You can tune in the world wherever you are whenever you want. From 'Soaps' to 'The Space

Shuttle', you'll see and hear it all.

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 Emerson 5 1/2" Super Color TV 3-way Entertainment system with 3-way power, risk free with your credit card, call toll free. Don't send Emerson's \$345 suggested retail price, send just \$199 (\$7 P&H) Order No. 4179. CA res add sales tax.

Experience the thrill of vibrant color TV at work, on the road or in your kitchen or bedroom. Now you can be where you want to be, not just in your living room, with your personal window on the world.



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# Blunder Causes Birth

*Last year we bought some 3-way speaker systems from BSR that sounded dull and dead because BSR had installed the wrong tweeters. Well, our customers changed the tweeters and ended up with fabulous sounding speakers. In fact, the improvement was so awesome, that the idea for an entirely new product was born.*

We were amazed. BSR presented us with a sample pair of their best 3-way speaker systems in which they had mistakenly mounted a soft dome tweeter, instead of an exponential horn tweeter.

BSR also provided us with a sample pair of the correct speakers. Well, the difference was staggering.

Actually the pair with the soft dome tweeter really didn't sound terrible, until you compared it with the correct pair. The highs just seemed to open up and the music became exciting and alive.

The rest is history. We bought the speakers from BSR, then we bought the correct tweeters and we let our customers switch the tweeters themselves.

So, our customers who were willing to spend a few minutes with a screwdriver, got fabulous sounding speakers really cheap. And BSR and DAK got an idea for a great addition to your stereo.

## **SUPER TWEETERS FOR EVERYONE**

Chances are that nobody made a mistake when your speakers were made. So, why would you need BSR's new wide-dispersion super tweeter array?

First, let's look at what tweeters do. Obviously, they produce the high frequency components of your music. They are also responsible for the sonic placement that makes your music have depth. But look at this. Did you know that depending on your crossover, tweeters produce all the sound from as low as 2-4,000hz? Well, with tweeters producing so much of what we consider mid-range, it's no wonder that crisp clear dramatic sound is so hard to find.

The tweeters are so loaded down with reproducing the mid-range that the super fine vibrations that constitute the delicate upper frequencies really suffer.

And, while you're likely to hear the soft sound of brushes on a snare drum, or the clap of cymbals with any tweeters, the top harmonics that recreate openness and reality, may not be reproduced.

And, it's these 'harmonics' that separate a live performance from a dull recording. The sound from your current speakers may not even sound dull to you.

But, wait till you hear what a super fast attack time can do to bring a cymbal crash to life. Imagine the transient response that unchains the reality of your sound.

And, wait till you enjoy the wide dispersion that lets you move freely around your room without sacrificing your high end or the sonic placement of your music.

## **WIDE DISPERSION**

Bass is totally non-directional. You can put a subwoofer anywhere in your room and the sound won't change.

The mid-range is moderately directional, in that you can tell where it's coming from, but you really don't lose the sound if you move off to the side.

High frequencies, on the other hand, are highly directional. If you sit directly in front of your speakers, you'll find that your speakers are infinitely brighter and



With BSR's new Super Tweeter Array sitting on top of any speaker, as shown, you can expect thrillingly realistic sound.

more alive than if you move to the side.

BSR has solved the directionality of high frequencies by using an array of three of these super tweeters. Each tweeter is aimed at a 45 degree angle.

You'll probably hear a 10 to 20% increase in the dramatic impact when you sit directly in front of your speakers.

This is simply caused by the super clean powerful exponential horn tweeters. But with BSR's tweeter array, you can move to the sides without experiencing a loss of high frequency response and sonic placement.

You won't hear a lot of treble. You'll hear drama and impact in your music.

These super tweeters are specifically designed to match your current speakers. They'll add detail without harshness.

They'll add excitement without tinny-ness. And, they'll give you lifelike sounding music that you won't just hear, you will experience.

## **EASY HOOKUP**

Just place a BSR Super Tweeter on each of your speakers. You simply connect a speaker cable between the tweeter and your speaker. It's just that simple. There are no extra wires to run.

Then sit back and listen to the music. If you're like me, after about 5 minutes you'll say, "The sound is really good, but I'm really not sure what the tweeters are doing". Then have someone disconnect the tweeters and you'll know.

Suddenly the music will sound dull and flat. You'll have lost the 'edge', the life to your music.

These tweeters operate from 8,000hz to 20,000hz. And, you won't have any tinny sound in your midrange because they employ a third-order Butterworth crossover network that gives you an 18db per octave cutoff below 8,000hz.

There's a brilliance control so that you

can select the exact amount of high end you like. And, they don't interfere with your current speaker systems.

They just do a better job of reproducing the high end. And, they are impedance matched to all 8 ohm speaker systems.

The BSR Super Tweeters are 12½" wide, 6" deep and 5¼" tall. Their wood-grain and black hi-tec look, with the tweeters exposed, is a handsome addition to any speaker. They are backed by BSR's limited two year warranty.

## **ENERGIZE YOUR STEREO SYSTEM RISK FREE**

Connect a Super Tweeter to each of your speaker systems. Walk around the room or just sit and listen. Then disconnect the tweeter. You're sure to find that you've just disconnected the thrill of a live performance along with the tweeter.

If you're not 100% thrilled, simply return the tweeter(s) in their original boxes within 30 days for a refund.

To order a BSR Super Tweeter Array, complete with 3 Exponential Horn Tweeters, a Built-In Third-Order Butterworth Crossover and Brilliance Control, risk free with your credit card, call toll free or send your check for DAK's incredible introductory price of just \$44.50 each. (\$5 each P&H). Order No. 4163. Note: two are required for stereo.

You'll hear the clearest highs you've ever experienced. Your sound will come alive. And, you'll really feel the excitement in your music with BSR's all new Super Tweeter Array.



**DAK**

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**TOLL-FREE ORDER LINE**

For credit card orders call 24 hours a day 7 days a week  
**CALL TOLL-FREE. . . 1-800-325-0800**  
8200 Remmet Ave., Canoga Park, CA 91304

# Two-Line Brainstorm

*Whether you're brainstorming with two associates on a conference call or brainstorming with your whole family using the hands free speakerphone, when you use this phone's quick touch memory dialing, your brain will be free for thinking, not remembering numbers.*

It's smart. It's tough. And it's fast. It feels like a Phone Company Phone. It acts like a sophisticated computer. And, it sounds like a piece of HiFi equipment.

Across the street or across the country, with standard phone lines or discount services, this phone will let you make great use of your two phone lines.

And best of all, there are no monthly rental charges. And, it simply plugs into your existing modular phone jack(s).

So, if you have two separate phones or an expensive two-line Phone Company Phone, just unplug the modular plugs from your existing phone(s), plug in The Brainstorm and start talking.

## TWO LINES, ONE BRAIN

Two brains may be better than one, but one brain on two lines is even better. Imagine touching the quick touch buttons at the top of this phone and dialing in either tone or pulse on either line.

Just press the Line 1 or Line 2 button and your choice of lines is selected. LEDs display which line you are using, which line is ringing and if the speakerphone is activated.

And there's 'Hold', so you can put someone on Hold, hang up this phone and continue your conversation from any other phone in your home or office.

And, when you put this phone on Hold, it's red 'In Use' LED changes to green. Look what you can do. While you are talking on one line, you might want to add a third person to your conversation.

You can put whichever line you are using on 'Hold', and use the other line to call out or answer a call. Then just push both Line 1 and Line 2 buttons to join both calls.

It's easy. And, group conversations can be productive for work. Plus, they are loads of fun with friends and family.

## MENTAL WIZ

Just touch the 'memo' button and the button next to the name you want to dial. You don't have to remember what memory location you assigned to Aunt Esther. Just touch the button next to her name.

You can store 20 phone numbers that can be automatically dialed on either line. Each number may be 16 digits long. If you make credit card calls or Sprint or MCI calls, just keep a memory location for your codes.

Discount services are great, but who needs to remember complicated numbers. And if you make a mistake dialing, it's very frustrating to have to begin again.

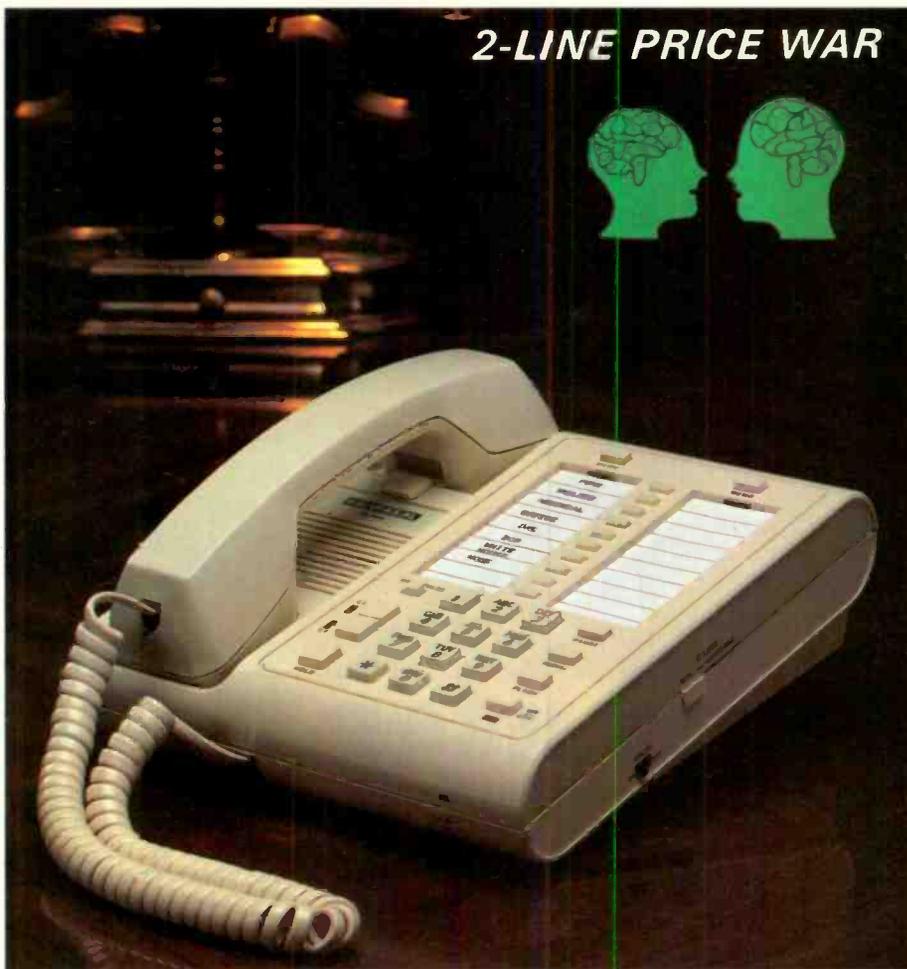
And if you live in a pulse area, you can dial your access number in pulse and then switch to tone for your codes.

And speaking of frustration, once you install a 9V battery (not included), you won't have to worry about this phone forgetting your numbers.

In addition to the 20 direct dial memory locations, you'll also have Last Number Redial, Pause for getting through switchboards or waiting for computers, and Flash for Phone Company Services.

## AT THE BOTTOM OF A WELL?

Imagine walking around the room or sitting at your desk with your hands totally



## 2-LINE PRICE WAR

free while you talk on the phone.

And, with this speakerphone, anyone else in the room can join in too. You'll be heard loud and clear whether you are nearby or across the room.

It uses a new lightning fast auto-simplex (half-duplex) design. You won't get the hollow sound that makes you sound like you're talking from the bottom of a well. And, you won't get feedback because the mike overrides the speaker.

You won't even notice it. All you and the person to whom you are talking will hear, is clear, echo free conversation.

## NUTS AND BOLTS

The real claim to fame of this phone is its marriage of Phone Company fit and feel with super convenience features.

And, just look at the extra features you'll have. There are separate sounding ringers, one for each line. Line 1 has a conventional mechanical bell ringer. And, Line 2 has an electronic ring. Plus, there is a ringer off switch.

## EASY INSTALLATION

Some homes and offices have 2 separate jacks and 2 separate phones. Some have a single jack leading to an expensive but dumb Phone Company Phone.

Both types of cables and jacks are included with this phone. In fact, there's even a short cable, because this phone can be wall mounted.

It's made by Universal Security Instru-

ments, a company noted for their expertise in phones and their reliability in burglar alarms. It's backed by a unique 2 year limited warranty. Wow, let the Phone Company match that.

## GET YOUR OWN BRAINSTORM RISK FREE

Wait till you hear the sound. Wait till you feel the handset against your ear or cradled on your shoulder. Talk on the speakerphone. Then make a conference call and really put your two lines to work.

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

To order your Universal 2-Line Speakerphone with 20 Quick Touch Memories, Hold and much more risk free with your credit card, call toll free or send your check for DAK's Brainstorm price of just \$59 plus \$4.50 for P&H. Order No. 4333.

Dial a number on either line by just touching two buttons. Dial without ever lifting the receiver. Talk while you move around the room. And, wait till you try your first conference.



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CompuServe Page HOM-1  
**HOME SERVICES**  
 1 News/Weather/Sports  
 2 Reference Library  
 3 Communications  
 4 Home Shopping/Banking  
 5 Discussion Forums  
 6 Games  
 7 Education  
 8 Home Management  
 9 Travel  
 10 Entertainment  
 Last menu page. Key digit  
 or M for previous menu.

CompuServe Page CIS-1  
**CompuServe Information Service**  
 1 Home Services  
 2 Business & Financial  
 3 Personal Computing  
 4 Services for Professionals  
 5 The Electronic Mail (tm)  
 6 User Information  
 7 Index  
 8 Games Survey  
 Enter your selection number,  
 or H for more information.

CompuServe Page FIN-1  
**BUSINESS AND FINANCIAL SERVICES**  
 1 News and Financial Analysis  
 2 Investments & Quotations  
 3 Communications  
 4 Brokerage and Banking  
 5 Reference Library  
 6 Discussion Forums  
 7 Travel Services  
 8 Personal Finance/Insurance  
 9 Financial Services  
 Documentation  
 Last menu page. Key digit  
 or M for previous menu.



# Computer Yellow Pages

**Computer to computer communication is here. Apples can talk to Commodores. Commodores can talk to IBM PCs. And you can effortlessly access the world of Data Banks and Electronic Bulletin Boards. You can test your IQ, check your stocks or access an encyclopedia with the all new Modem Phone.**

By Drew Kaplan

It was nearly 1 AM. I was about to head off to bed. I had accessed Grolier's Encyclopedia and sent a memo to my office.

I had a print-out of 73 of San Francisco's top restaurants, complete with phone numbers, menus and addresses to take with me for a weekend trip. And, I'd already studied the history of a few stocks I've been watching.

But look at this. Before I signed off, I called up Entertainment for a few minutes of games to help me unwind. As I was deciding between Trivia Unlimited, MegaWars, or Hangman, I spotted something called, "Do you know me?"

CompuServe Page GAM-1  
**Games and Entertainment**  
 1 Board Games  
 2 Educational/Trivia Games  
 3 Sports Games  
 4 Games of Chance  
 5 Adventure Games  
 6 War Games/Simulations  
 7 Space Games  
 8 Parlor Games  
 9 Fortune Telling Games  
 10 Game SIGs and Information  
 11 Games Survey  
 Last menu page. Key digit  
 or M for previous menu.

This is the menu you'll get when you select line 6 from Home Services at the top of this page. Each item on this menu will send you to its own menu. Look at all the menu choices you'll get on the Business and Financial Services main menu.

It looked like a 20 question type game about people. And, since I'd just read the 'Personal Profile of the Day' about Greg Louganis, the Olympic diver, I was ready.

Well, was I in for a surprise. It turned out to be a compatibility test between

you and your mate. Or, you and your kids.

Well, my wife is really terrific. Here it was 1 AM, she'd been trying to get me to leave my computer and call it a night for an hour, but she said OK. So, off we went.

The test was sort of like the old 'Newlywed Game', only more sophisticated. The computer takes your names and then asks one of you to leave the room while it asks a long series of really searching questions of the other. Then it asks you to trade places and it re-asks the questions.

Then, it compares answers. Well, we haven't called in the divorce lawyers, but wow, some of our answers. . .

### ALL THE INFORMATION

Imagine being able to find out about anything you want to know, without ever leaving home. Think of your hobbies, think of your occupation, think of your interests. Now information about anything is just a push of a button away.

There are data bases about medicine, law, education, computer programming, aviation, investing, exchanging and hundreds more. The Modem Phone will allow the world of information to rush into your home or office.

And, look at this. You can transfer information from your computer to a friend or business associate. It's called electronic mail. Just call them on the Modem Phone. (They need a modem too, but any brand will do.) You can send them files, letters, orders, or, you name it. It's incredible for business and great for personal use.

### A TECHNICAL MOMENT

The Modem is your computer's gateway to a seemingly endless wealth of information and entertainment.

The more totally new things I find, the more my biorhythms charted for a month, looked up information about public companies, and played Concentration.

I've looked in on Apple, Atari, IBM and Commodore User groups to see what's new. (I have one of each). I've played Lunar Lander (I crashed), and checked the loan amortization rates on my home.

Every day you'll find a list of what events occurred on that day in history. You'll choose from classic quotes or an almost endless list of one-line political jokes. The list just goes on and on.

YOU AREN'T LOOKING AT THE OLIVETTI M10 SCREEN. YOU ARE LOOKING AT MY APPLE IIE RECEIVING INFORMATION OVER THE PHONE LINE FROM MY M10 WHILE I'M OUT IN THE FIELD.

When I'm out with my portable, I can send anything I write directly to my Apple. Also, information can be sent to me.

By now, you must be wondering how hard all this information is to get, and how much it's all going to cost.

It's all incredibly easy. And of course, computer to computer communication is free, unless it's a toll call.

The main problem has been that there just aren't enough people around to tell you how to do it. With the Phone Modem, you'll get the numbers and addresses you'll need, and with our Optional (\$24) CompuServe Kit, which includes 5 free hours of use, you'll be able to sign

on the moment your package arrives.

Later you'll read about both the free and pay data bases and bulletin boards. But, first let's look at the phone.

### IT'S A PHONE TOO

The Modem Phone is a unique state of the art device. When you're not using the modem, you'll use it as your regular phone. It has a conventional phone company style handset, a built-in speakerphone and 10 number memory, including last number redial.

It is Tone/Pulse switchable, desk or wall mountable, and has all the features you'd expect, including flash and mute. But, nestled within the phone's circuits is a powerful 300 baud full duplex Modem.

Here's what happens when you call another computer or a data base. You'll hear a tone instead of a person answering the phone. Just switch the blue switch at the top of the phone from 'Phone' to 'Modem' and you'll be on line.



The Modem Phone simply plugs into any modular phone jack in your home or office and an AC outlet. It even has battery back up (batteries not included) to protect the memory and operate the modem in case of a power failure.

### BUT WHAT ABOUT THE INFORMATION?

The information is everywhere. There are over 400 Electronic Bulletin Boards listed in just one book. I'm using one in Los Angeles called 'Buy Phone'. It's like an educated 'yellow pages'. I tell it where I live. It asks me what I want to buy.

I've asked for cars, hamburgers, TVs, stereos, phones and a dozen other things. 'Buy Phone' will arrange all the stores it finds with the product I want, by the distance each store is from my home.

I just turn on my printer. (You don't need a printer, but they sure are nice to have.) And when I leave the house to go shopping, I've got a list of as many as 30 stores, complete with phone numbers, addresses and business hours, to take along.

My next effort was a 'Social Bulletin Board'. I didn't know quite what I was into until the question about 'sexual preference' popped up. Well, being married, I signed off. But, there are lots of dating bulletin boards. And, if you'd like a date with someone into computers, wow!

The above boards are free, and are just 2 of the estimated 1500+ Electronic Bulletin Boards in operation. One of the things you'll find on many bulletin boards are the numbers of other bulletin boards in your area.

### THE TOP BANANAS

I'm using two top professional data base services. The Source and CompuServe. They are both loaded with wide ranging, special interest information about everything from history to stocks to airline schedules.

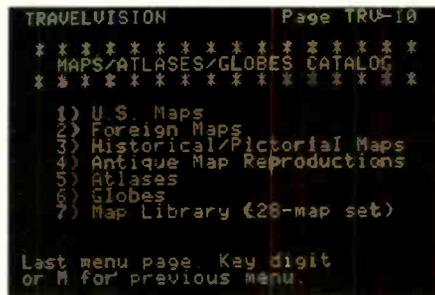
Enclosed with your Modem Phone will be a discount application to the Source, complete with an 800 number for instant signup. It's a great service.

CompuServe is my favorite. But since I'm selling it direct, you'll have to judge it

for yourself. The \$24 kit includes a full manual, your secret ID number, password to sign on and 5 free hours of on-line time. Wow!

Both The Source and CompuServe offer local telephone numbers in many cities for you to call.

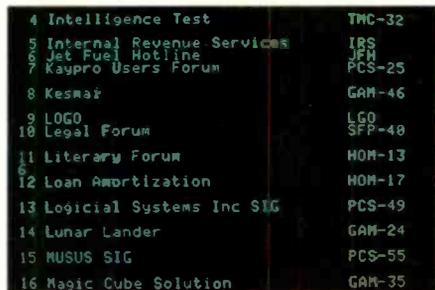
CompuServe has everything, from 1300 recipes and menus, to Auto Net/Auto Base which tells you how the new cars match up and much more.



Usually you'll see what you want on the screen. But, here's an example of the diversity of the information you can order.

And look at this. CompuServe now has CB simulation which lets you talk to others, just like CB, except that you'll be talking to other computer hobbyists.

From Stocks and Business news to Translations, CompuServe can answer your questions. I printed out an on-line index that contained 285 entries, from Aviation Rules and Regulations to the Belmont Golf Association to the Department of State to Educational Research.



Here's just one screen from the master index. Just type 'GO' and any of the names to directly access a program.

There's a host of games and tests, including a full IQ test and the compatibility test I mentioned above.

Now that you know all about data bases, isn't it time you turn your computer into a window on the world of information? The Modem Phone is made by Unitech. It's backed by their standard limited warranty.

### JOIN THE INFORMATION REVOLUTION RISK FREE

Calculate your net worth. Check a user's group to see what's new for your computer. Send or receive work to or from home. I use the DAK computer from home all the time.

Look through Computer Programming. Go shopping in the Electronic Mall. Or, see what the weather's like in Dallas.

Try The Modem Phone in your own home or office with your own computer, risk free. If you aren't 100% satisfied, simply return the modem in its original box within 30 days for a refund.

To order your Unitech 300 Baud Modem Phone, complete with 10 Number Memory Dialing, SpeakerPhone and Pulse/Tone Switching, information on Data Bases, including a discount on The Source risk free with your credit card, call toll

free, or send your check for DAK's break-through hook-in price of ~~just \$69 plus \$5~~ for postage and handling. Order No. 4110. CA res add tax.

You'll need just three things to turn your computer into a communications marvel. 1) You'll need our special cable. 2) You'll need a serial interface card if your computer doesn't have one built-in, but read on. 3) You'll need a modem program. It can be ours or anyone's.

You'll really love DAK's Modem Program. It lets you send and receive files (letters, memos, orders, reports, etc.) and upload (save incoming information to your memory) and download (send complete files from disks). Here's what you'll need for some popular computers.

**For your Apple II and IIE.** (Or Franklin) We have Practical Peripherals' Serial Interface with our cable for just \$79 (\$2 P&H) Order No. 4112. And we have a Modem Program on disk for just \$10 (\$1 P&H) Order No. 4113.

**For your Apple IIC.** You don't need an interface, because it's built-in. Our cable is just \$12 (\$1 P&H) Order No. 4284. The Modem Program on disk is just \$10 (\$1 P&H) Order No. 4113.

**For your IBM PC.** (Or Clone) We have Practical Peripherals' Serial Interface with our cable for just \$79 (\$2 P&H) Order No. 4115. And we have a Modem Program on disk for just \$10 (\$1 P&H) Order No. 4116.

**For your Commodore.** (Both Vic 20 and 64) Your special connecting cable is just \$12 (\$1 P&H) Order No. 4117. You don't need an interface. The Modem program is available for just \$10 (\$1 P&H). Use Order No. 4118 for disk, or Order No. 4119 for cassette.

**For TRS80.** Your special connecting cable is just \$12 (\$1 P&H) Order No. 4120. For the Color Computer you don't need an interface. For the Black and White Computer Interface, you'll have to see Radio Shack. You'll also need a standard Modem Program as well.

### SPECIAL SUPER BONUS

We've made a large cash purchase of CompuServe Starter Kits. You get a full manual and a detailed description of the service. Plus, look at this. You'll get 5 free hours of on-line information. It's a \$39 value. It's yours for just \$24 (\$2 P&H) Order No. 4121.

Everything you need, including phone number, secret password and instructions, is included. You'll be on line immediately. Note: The CompuServe Kit is covered by our standard 30 day risk free trial. But, if you return it we must bill you for the time you used.

It is said that knowledge is king. With the information you can acquire through the all new Modem Phone, you'll have the informational power of 10 kings. And you'll have a full range of entertainment thrown in as an extra bonus.

Apple II, IIE, IIC, Atari, IBM PC, Franklin, Commodore VIC 20 & 64, and TRS80, are registered trademarks of Apple Computer, Atari Inc., International Business Machine Corp., Franklin Computer, Commodore Electronics Ltd., and Radio Shack/Tandy, respectively.

## FINAL CLOSE-OUT NOW JUST \$49.90

Order No. 4110 Plus (\$5 P&H)

There's a lot more than CompuServe to do with your modem. You can reach hundreds of free bulletin boards that are exciting, informative and fun. All the accessories are available.

# A Rose By Any Other Name

*It's the sweetest phone that this writer has ever used. From its elegant good looks to its elegant sounding speakerphone, it's a class act. And, it remembers and dials up to 200 numbers by THE NAME of the person you want to call. Plus you can use it on 1 or 2 lines.*

By Drew Kaplan

It's not red. And it has no aroma. But not only is it not just a rose amongst the thorns, Mura's all new name dialing 2-line conferencing speakerphone is the rose amongst roses.

As president of DAK, I've tested hundreds of phones. Some are very good and you will find them in DAK's catalog. But, I've never used a better sounding, more useful phone, at home or at the office, than the phone pictured above. 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 'M' button dials Mura (this phone's manufacturer). And, the 'I' button dials my insurance broker. It's really great at home.

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. So, if I want to dial Howard instead of home, I push 'H', 'O', 'W'.



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.

You can store your Sprint and MCI codes with the person's name, in a separate location that the phone automatically accesses as it dials, or totally separately so that you can automatically access the service and then dial a number manually.



And speaking of manual dialing, you don't even have to push the speakerphone button to dial. When you touch the first number, the phone automatically seizes the line, turns on its speaker, and you have on-hook dialing.

So, you never have to lift the receiver or activate the speakerphone 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 sound quality rivals an in-person conversation, not a phone call. How's that for a description



of a phone you can try on a 30 day risk free trial?

## 2-LINE MASTERPIECE

This is a two-line phone, but even if you only have one line, I'd plug it in and forget about its two-line capabilities.

You can select Line 1 or Line 2. And, you can push Conference to combine both lines for convenient business conferences or friendly group calls with friends. There are LEDs that show which line is 'In Use', 'On Hold', or which line is 'Ringing'. And, there are different rings for each line.

Installation is a breeze. It simply plugs into one standard modular 2 line jack or two modular 1 line jacks. Nothing could be simpler.

## PAGES OF HELPFUL FEATURES

The list of features would have to be microfilmed to fit on this page. There's a large LCD display that shows you the name you want to call and the number.

An automatic timer tells you exactly how long you've been talking. And, a clock appears on the display whenever you hang up.

Every conceivable feature from Mute to Tone/Pulse switching, to Pause, to Flash, to battery backup (2 C batteries not included), to three direct Emergency Access Memory Keys and a lot more is included.

There's even Automatic Redial which will redial a busy number for you every 30 seconds.

## YUPPIE POWER

I'm anything but a yuppie, even though I just turned 39, but when you look at the sleek, swept back, silver-blue HiTec appearance, and when you examine its complete computer keyboard, you'll understand why it would warm a yuppie's heart. My heart is warmed by what it

does, but I must admit it is impressive.

It's made by Mura and here's one reason why the phone sounds so great. Mura is a division of TIE/communications, Inc., which just happens to be one of the largest inter-connect (big business phone systems) companies in the world. In fact, they're listed on the Stock Exchange.

The phone is about 9" wide, and it's backed by Mura's limited warranty.

## PUT A ROSE 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.

If you are not 100% convinced, as I am, that this is the best sounding, most convenient phone you have ever used, simply return it in its original box within 30 days for a courteous refund.

To order your Mura 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 DAK's introductory price of just \$129 plus \$4 for postage and handling. Order No. 4335. CA res add tax.

Note: Order today for September delivery. We will ship on a first come first served basis. Your credit card won't be charged until shipment is made.

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.



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## TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week  
CALL TOLL-FREE. . . 1-800-325-0800  
8200 Remmet Ave., Canoga Park, CA 91304

# VoicePrint Plus Answerer



**Now, just the sound of your voice is all you'll need to remotely retrieve phone messages with the all new VoicePrint Plus Answering Machine. And, at DAK's \$79 price, the answering machine market will never be the same.**

Forget beepers. Your own voice is your remote beeper with this incredible new breakthrough in sophisticated telephone answering computers.

And, the VoicePrint breakthrough is just the beginning. You can forget both the regular 20 second fixed announcement and 30 second fixed incoming message recording length that's standard with most answering machines.

Plus, you can forget listening to your own announcement between your incoming messages. But, best of all you can forget forgotten beepers forever.

## FIRST THE SIMPLE THINGS

The new VoicePrint's computer brain lets you record any announcement up to 40 seconds in length. So, with VoicePrint, you don't have to worry about your message being too short or too long.

comes in, you can monitor the caller's message (it's called call screening) and then decide if you wish to pick up.

This machine does everything. If you're on the phone and you want to record both sides of the conversation, just touch the 2-way record button and you'll have a permanent record of the conversation.

## IT SAVES YOU MONEY

When you call in to get your messages, VoicePrint's toll saver takes over. The machine tells you by not answering on the second ring that you have no messages. So, you can hang up before the connection is made.

When you're home, you can set the machine to answer on the 2nd, 4th or 6th ring to give you plenty of time to get to the phone if you desire.

If there are messages when you call

For an extra \$20, you'll have a model with a Tone/Pulse phone that gives you the convenience of on hook dialing.

On hook dialing lets you dial a number without picking up the receiver. Through the speaker in the answering machine you'll hear whether you get a busy signal, a ring or if someone answers. Then, just pick up the phone and talk.

## EASY INSTALLATION

Just plug in the modular phone jack and the included AC adaptor. Then, just record your message(s) using the built-in condenser mike. The VoicePrint Plus is made by Unitech. It's backed by their standard limited warranty.

## TRY THE VOICEPRINT PLUS RISK FREE

It's new. And, it will set you free. Wait till you see how easy it is to use. And, wait till you and your callers hear just how good it sounds.

Try this heavy duty industrial quality answering computer in your own home or office. If you aren't 100% satisfied, simply return it within 30 days in its original box for courteous refund.

To order your Unitech VoicePrint Remote Control Microprocessor Controlled Answering Computer, risk free with your credit card, call toll free or send your check for DAK's market breaking price of just \$79 plus \$6 for postage and handling. Order No. 4148.

If you'd like the VoicePrint Plus with a Tone/Pulse On Hook Dialing Phone, it's just \$99 plus \$7 for postage and handling. Order No. 4149. And finally, if you don't want to talk to your machine, we have a special remote beeper that works with either machine for just \$12 (\$1 P&H) Order No. 4160. CA res add 6% tax.

At home, at the office or on the road, you'll be in full control with the latest in user-friendly telephone technology.



Taking messages is automatic too. Many cheap answering machines must record a preset 30 second incoming message. The more expensive units let callers talk as long as they want.

The VoicePrint combines the best of both. The computer will stop recording as soon as the caller stops talking.

But, calls are limited by the computer to no more than 1 minute. And, if someone hangs up without leaving a message, the machine ignores the call.

## LOADED

Everything is automated. Just touch one of the full logic controlled touch pads and the computer answers with a confirming beep and jumps into action.

To play back messages at home, just touch the Message Report Button. Of course, you can elect to save them or let the machine record over them.

A message light tells you at a glance if you've received any messages while you were out. If you're home when a call

in, just give the computer your personalized VoicePrint and you'll get all your messages. Plus, we've got an optional beeper for you to use if you don't want to use the 'Voice Function'.

Here's a nice extra. If your machine has taken a lot of messages and filled up its tape, a second message that you've recorded will come on and inform callers that no more messages can be taken.

## NEW ELECTRONIC TECHNOLOGY

You can forget costly endless loop cassettes and long empty spaces. This machine is so intelligent it knows exactly where each message is on the tape.

This machine is fascinating to watch in action. First, it plays your outgoing message. Then, it sounds a tone as it zips to the end of the last message it took.

It then beeps and starts taking the new message. Finally, it rewinds back to your outgoing announcement to start the cycle again. It's one smart computer.

## OPTIONAL SMART TELEPHONE

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We will issue you an immediate merchandise credit for the difference in merchandise price. So, you'll have both a satisfaction guarantee plus price protection for 30 days from the time you get any DAK product purchased from this section. Of course you are also protected by the individual manufacturer's warranties on all the products we offer.

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Dear Stereo Review Reader,

If you could just buy one thing from DAK's section, I'm sure you'd love BSR's Smart Sound Detonator, or maybe Emerson's Sound Blaze, or Teac's Stealth Bomber update. . . Well, I'm glad my job lets me have all these products. It's a tough job but someone has to do it... Drew

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## Dual Donzel Plus

**High Speed dubbing of tapes is the simplest thing this dual cassette deck with Dolby B and C can do.**

The robots are coming. In the future they'll think, they'll react, and they'll need very little human attention.

After you've experienced the magic of Hitachi's new Dual Donzel Plus Cassette Deck, you'll realize just how close we really are to being donzels to our robots.

### MESMERIZED

Frankly, once you've programmed this deck, it really doesn't need you. But if you're anything like me, you'll sit glued to your seat as the performance begins.

Imagine that you want to copy a tape. But wait, that's too simple. Let's say that you want to copy just songs 2, 6, 8 and 9. Well, that's still too simple.

Let's say that song 8 is your favorite and you want it first on your copy tape. Then you would like songs 6, 2, 9 and then you want to record 8 again.

By now the picture should be clear. This deck will play any songs in any order you want. In fact, it will play 15 repeated or different selections automatically.

**But, that's not all.** While the songs are being played back, the record deck is automatically recording each song.

Then it adds 4 seconds of silence, and stops while the play deck fast forwards or rewinds to reach the next selection. Then they both start up again together.

You'll watch transfixed. The decks start, stop, rewind, and play over and over again. And, when you aren't copying tapes, you can have two cassettes play sequentially, first one, then the other, up to 8 times each.

You'll have uninterrupted music for hours without having to get up and change cassettes. Plus, if you're listening to a

song you'd like to hear again, DPSS lets the deck find the beginning of the song for you automatically.

Or, you can jump forward automatically to the next song if you prefer. Of course, you can program any song or songs to play over and over again.

### BUT, WHAT ABOUT THE DECKS

Mechanically they're fully logic controlled. 4 motors drive these decks for super stability. The two capstan motors are DC servo-controlled for super low flutter and wow. Separate motors drive the take up and unwind reels.

Hard SL permalloy record and play heads and a 3 gap ferrite erase head give long life, a great frequency response and metal compatibility. And, both decks automatically sense Normal CrO<sub>2</sub> or Metal tape.

A wide frequency response from 20hz to 18,000hz will ensure perfect copies or original recordings. You can say goodbye to hiss with both Dolby B and C.

The signal to noise without Dolby is an impressive 58db. Switch in Dolby B, and it drops to 66db. Switch in Dolby C and you'll hear (or rather not hear) a hiss free 72db signal to noise ratio.

### SOUND ON SOUND PLUS

If you sing, this is the deck for you. Here's what you do. You can play a music tape on deck 1, plug in a microphone and sing along while you record everything on deck 2.

You can record your own voice on a cassette. Then, play it back while you sing along. You can be a duet, then a trio, a quartet, and finally, a chorus.

**ALL THIS AND HIGH SPEED TOO**

Just push the high speed button and all the automated features of this deck switch into high gear. You can copy your tapes at high speed in any order you wish.

The fidelity is super. You'll save time. You'll have cassettes recorded with songs the way you want them. This deck is an impressive addition in sound quality, performance and good looks, to the most sophisticated stereo system.

It is 17" wide, 4" tall and 10½" deep. Hitachi backs it with a limited warranty.

### TRY THE DUAL DONZEL PLUS RISK FREE

Make some original recordings or copy some cassettes. You'll hear sound so pure you'll think that you're hearing the original. The great frequency response and the quietness of Dolby C are breathtaking.

Then put the computer controlled deck through its paces. I find watching the decks stop, start, rewind, fast forward and play by themselves just incredible.

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

To order your Dual Donzel Hitachi D-W800 High Speed Dubbing, Computer Programmable Dual Cassette Deck risk free with your credit card, call toll free, or send your check for just \$249 Wow! (\$7 P&H). Order No. 4310.

If you've already looked in your dictionary and haven't figured out the meaning of the word 'donzel', it's an obsolete word that means, 'a young squire to a knight'. So, whether you're young or not, you'll certainly be the squire to the Sir Lancelot of cassette decks.

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## Hiss Assassin Price Slashed

DAK Sold Thousands Without Bonus dbx LPs At \$99  
**NOW \$59.90**

dbx has a problem. Their NX40 tape noise reduction system can give your cassette deck a signal to noise ratio of up to 85db. And even more important, an astounding dynamic range of up to 90db.

Using dbx is just about the only way to capture the brilliance of CD disks on cassette. And there-in lies the problem. dbx also made audiophile records that were very close to the specs of the CDs. But frankly, CDs are sweeping the market.

Enter DAK. If you look at the tape noise reduction system to the right, you'll notice that it **ALSO** has a dbx disc (LP) decoder button. And, since dbx isn't going to make any more LPs, they don't want to sell this tape unit with the disc button.

So, DAK bought 8000 of these incredible noise reduction units and we bought enough dbx encoded LPs to give you 2 bonus LPs with each noise reduction unit. Wow, the NX40 for \$59.90 including 2 dbx LP albums of assorted music. (The dbx albums sold for about \$12 each.)



These albums will give you a preview of the sound you can expect from a CD before you buy one for your system. And the LPs will give you a use for the otherwise useless disc button. But, wait till you hear the cassettes you will make on your own recorder when you record with dbx. The NX40 and 2 assorted dbx encoded LPs, are yours for just \$59.90 (\$4 P&H) Order No. 4285. Wow!

### HERE'S HOW OUR AD APPEARED

Don't make your music loud, make it thunder. Don't make it just soft, make it whisper. dbx brings the excitement and emotional impact of a live performance to your stereo system.

dbx is a two-part system. Not only does it "for all audible intents and purposes eliminate tape hiss", it also increases the overall dynamic-range capacity of your cassette deck, letting you record both louder and softer sounds.

Dynamic range is the difference in volume between the softest and the loudest passages in your music, and it's the



key ingredient in the drama and impact of live music.

### FANCY NAMES

It's called Linear Decibel Companding. And basically, it compresses the dynamic range as the music signal is transferred onto tape or disc by a 2 to 1 ratio. And, it does the same thing in reverse when a tape is played back.

So, you'll get full unrestrained unrestricted sound, because your tape isn't being pushed to its limits. Only half the normal signal strength is recorded.

And with dbx discs, where the record groove could only handle up to 65db of dynamic-range for audiophile records, and 50-55db for standard records, now both tape and records can achieve up to 90db of dynamic range for an absolutely thrilling sound.

So, for recording your own audiophile quality cassettes or playing back dbx discs or cassettes, your system can now produce incredibly dramatic sound.

### BUT, IT'S A HISS REDUCER

The dbx system gives you over 30db noise-reduction over the whole 30-15,000hz audible frequency spectrum, not just at the mid to high end like the competition. The difference in the hiss you won't hear is dramatic. And, it's easy to test. Just compare a cassette you record with 'their' system to the same tape recorded with dbx.

It's no wonder that dbx tape noise-reduction systems are used in about 80% of the professional recording studios

around the world. It really works.

### SO, HERE IT IS

The new dbx NX-40 will assassinate tape hiss as you record and play tapes. It will let you achieve live performance quality, and dynamic realism.

And, best of all, you don't have to buy a new cassette deck to use it. It simply plugs into your system between your receiver and your tape deck (after an equalizer, if you have one).



And, it will start giving you incredibly dramatic sound against a background of complete silence. It comes complete with patch cords and a standard limited warranty from dbx.

### TRY THE HISS ASSASSIN RISK FREE

Yes, it's a hiss assassin. And yes, you'll have more dynamic range. So, bring dramatic, hiss free sound to your stereo risk free. If you aren't 100% satisfied, simply return it in its original box within 30 days for a courteous refund.

To order your dbx Noise Reduction System risk free with your credit card, call toll free or send your check for only ~~699 (\$4 P&H)~~ Order No. 9747.

Now your own tape deck can give you hiss free, dramatically dynamic sound.

# C · E · S

## SHOW STOPPERS



JOOK LEUNG

*Less than 5 inches square and only 1/4 inches thick, the programmable Technics SL-XP7 portable CD player lists for \$300 (plus \$49 for battery-pack/carrying case).*

*Among the surprises at the Summer Consumer Electronics Show were the low prices of some Compact Disc players.*

*by Gordon Sell and William Burton*

ONE of the privileges of being an audio journalist is that you are generally among the first to see and hear the latest technological wonders produced by the hi-fi manufacturers. Twice a year—in Chicago each summer and Las Vegas in the winter—there are massive presentations of new products at trade shows called CES (for Consumer Electronics Show). These are put on for dealers and store owners, but the audio press attends, and there are always a few products that make even the most jaded hi-fi writer say, “Gee, I would love to try one of those in my system.” Shown here are products that STEREO REVIEW’s editors wanted to get their hands onto when they saw them exhibited at the Summer CES last June.

Among the surprises at the show were the low prices of some CD players. When the first ones were shown by Sony, Magnavox, Technics, and others only two and a half years ago,

people wondered whether anyone could manufacture such a complex machine at a price the general public could afford. At CES this summer a company called Symphonic (which sells compacts and low-priced rack systems) showed a player with a suggested retail price of only \$180. Many of the better-known companies had players as low as \$299.

Hi-fi stereo sound is being offered on more and more VCR’s and at lower prices. But most of the video discussion centered on 8mm tape, stereo 8mm VCR’s introduced by Sony, Pioneer, and Kodak, and the effect the 8mm format will have on VHS and Beta VCR’s.

The things that really make the audio industry tick are the hundreds of speakers, CD players, cassette decks, receivers, turntables, hi-fi VCR’s, and other products that will be in dealers’ showrooms this fall. Among those products you are sure to find something that will make you say, “Gee, I would love to try one of those in my system.”



One of the cleverest products at CES was Recoton's V622 universal stereo-TV decoder, developed by Larry Schotz. A remote probe picks up the stray r.f. signals that leak out of almost every TV set, and the unit extracts the audio signal, decoding the stereo information if it is present. Price: \$149.

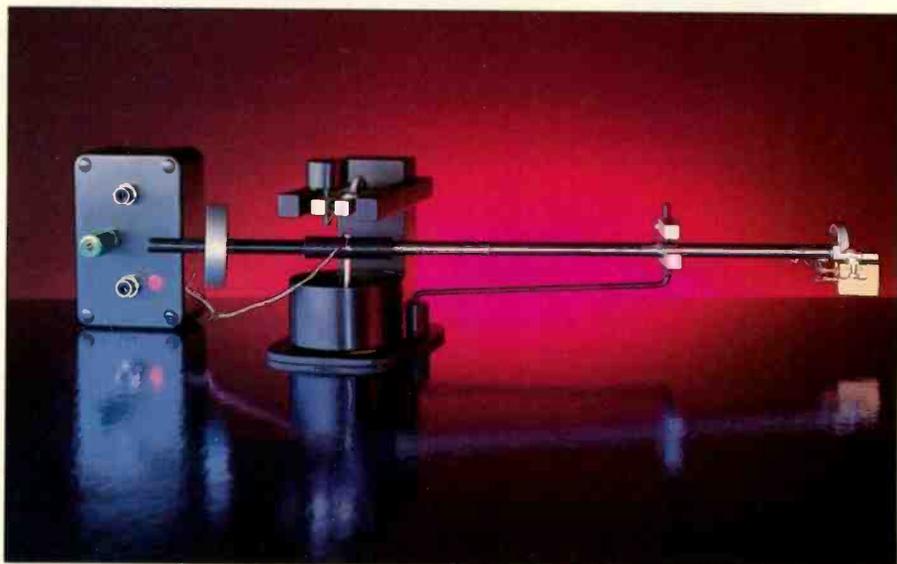


Perhaps the ultimate tone arm for purist audiophiles is the mechanical Souther Linear Arm, whose low-friction linear-tracking carriage system uses three precision ball bearings riding on solid quartz rods. The newest version of the SLA is the Tribeam Gold, with gold-plated metal parts and a new adjustment mechanism for the vertical tracking angle. Price: \$3,200, or \$3,000 without gold plating.



JOOK LEUNG

Representing a totally different design approach is William Firebaugh's fascinating Well-Tempered Arm. At its pivot point, the arm tube is connected by a short rod to a small disc suspended in a tub of viscous silicon fluid. The whole assembly is suspended from above by short monofilament lines attached to the disc; the lines are skewed slightly to apply antiskating force that changes as the tracking radius changes. In a demonstration at the show, the arm did everything a tone arm should do while being easy to use and kind to cartridge cantilevers. Price: \$500.



JOOK LEUNG

Larger manufacturers also see a healthy market for turntables. Dual, now distributed by Ortofon, introduced the CS5000, a semiautomatic, three-speed, belt-drive model. It features a three-point floating-subchassis suspension and an Optimum Pivot ULM (ultra-low-mass) tone arm. Price: \$300.



JOOK LEUNG

C E S

The Counterpoint SA-12 hybrid power amplifier, 85 watts per channel, uses vacuum tubes for its input stages and MOSFET's for its output stages. The tubes insure a clean signal up to the output stage, the maker claims, and the low-cost MOSFET's avoid the need for an output transformer with its associated phase shifts. Price: \$995.



Car CD players are being taken much more seriously these days. Alpine's Model 5900 features motorized disc loading, scanning, track/time display, and volume, balance, and tone controls. Price: \$600.



McIntosh's first CD player, the MCD 7000, uses a single-beam laser, a modified digital-to-analog converter, four-times oversampling, and analog filters. It can program up to twenty tracks and has remote control. Price: \$1,399.



One of the more interesting audio/video receivers was Onkyo's TX-RV47, with 55 watts per channel, five audio inputs, and four video inputs. It includes a stereo-synthesis circuit for mono sources, a decoder for matrix surround sound (usable only in systems with four speakers), and a full-function wireless remote control. Other features include a stereo image expander, a dynamic bass expander, and eight presets each for AM and FM. Price: \$499.95.



Video discussion centered on 8mm tape, the stereo 8mm VCR's introduced by Sony, Pioneer, and Kodak, and the effect the 8mm format will have on VHS and Beta VCR's.

**D**ouble cassette decks are becoming more popular, and manufacturers are responding with new models. One of the more elaborate is Pioneer's programmable CT-S99WR. It has two quick-reverse mechanisms, Dolby B, Dolby C, dbx noise reduction, high-speed dubbing, and sequential recording or playback for up to 3 hours. Price: \$459.95.



**T**he dbx DX3 CD player has three unique signal-processing circuits: a dynamic-range compressor; Digital Audio Impact Recovery to improve transients; and an ambience control that adjusts stereo imaging. Price: \$599.



**T**he NAD 2200 power amplifier, called the Power Tracker, is rated at 100 watts per channel with a 6-dB dynamic headroom. Its high-voltage, high-current design uses a new Soft Clipping circuit for less distortion if the amp ever does reach its limits. For more power, it can be bridged for 400 watts in mono with 5 dB dynamic headroom. Price: \$448.



**I**n KEF's three-way GT-200 car speaker system, flexible hoses duct the bass frequencies into the car's interior from coupled-cavity subwoofers in the trunk. Frequency response is given as 50 to 150 Hz  $\pm$  1 dB for the subwoofer, 150 to 20,000 Hz  $\pm$  3 dB for the mid-range and tweeter. Maximum output is rated as 110 dB sound-pressure level on program peaks, sensitivity as 90 dB SPL with an input of 1 watt measured at 1 meter. The 4-ohm speakers may be used with amplifiers producing between 5 and 100 watts per channel. Price: \$575 per pair.



JOCK LEUNG

Sony, Pioneer, and Kodak introduced 8mm VCR's with stereo digital audio using a 31.5-kHz sampling rate, 8-bit quantization, and a companding noise-reduction system. Without video signals, six digital audio tracks can be recorded on a tape, allowing a continuous music recording six times the normal playback length of the tape. The Sony EV-S700 shown has half-speed capability, allowing 24 hours of audio or 4 hours of video on a 120-minute cassette. Price: \$1,500.



Among the new products that will be in dealers' showrooms this fall, you are sure to find something you'll want to try in your own system.

Among the crop of new and often innovative speaker systems, probably the most impressive was the Polk SDA Signature Reference System, which shook the walls of the Americana Congress Hotel. Its "Phase-Coherent Line-Source True Stereo SDA technology" is designed to produce lifelike three-dimensional imaging. The system includes four 1-inch silver-coil soft-dome tweeters, eight 6½-inch trilaminate-polymer midranges, and a 15-inch planar passive radiator. Price: \$2,590.

General Electric's Control Central programmable remote can take the place of four other remote controls by learning their infrared codes and duplicating them. It's a fine solution to electronic coffee-table clutter. Price: \$149.95.



# L LOUDNESS COMPENSATION

*An amplifier's loudness control is designed to compensate for the way your ears respond when you turn down the volume*

*by Larry Klein*



DONALD KEEFE

Hearing is a far more complicated process than is generally appreciated. It depends on an extremely complex and interrelated group of acoustical, mechanical, chemical, and electrical mechanisms. And even properly working ears can behave in unexpected ways. For example, there is no one-to-one correspondence between the objective, measurable sonic qualities of *frequency* and *intensity* and the subjective human perceptions of *pitch* and *loudness*. This inherent discrepancy between the acoustically objective and the audibly subjective is responsible for the invention—and perpetuation—of the *loudness-compensation control*.

A feature found in most amplifiers, the loudness control (or switch) is usually explained in the instruction manuals something like this: "As the volume of the program is reduced, the human ear loses sensitivity to low frequencies and, to a lesser degree, high frequencies. The loudness control automatically boosts the bass—and to a lesser degree the treble—as the listening level is reduced in order to restore the natural frequency balance. Loudness-compensation control curves are based on the studies done in the early Thirties by two Bell Laboratories acousticians, Harvey Fletcher and W. A. Munson."

### The Ear's Distortions

The ear's reaction to loudness is actually a great deal more complex than you'd think from reading an instruction manual, however. Because the ear is an asymmetrical, nonlinear transducer, it tends to create (and hear) frequencies that are *not* present in the original material. When a speaker system suffers from that fault, it produces *harmonic distortion* (HD), which is considered a bad thing, but when the ear does it, it is termed *aural harmonics* and is considered part of the normal hearing process.

The same nonlinearities in the ear (and amplifiers and speakers) that cause harmonic distortion also generate intermodulation distortion (IM), which consists of spurious tones based on the sums and differ-

ences of the frequencies being handled. The IM equivalents occurring within the ear are called *combination tones*. Like aural harmonics, such internally generated combination tones are a normal part of the hearing process. The relevant point here is that the amount of harmonic and intermodulation distortion generated in and by a set of ears (or speakers) is largely dependent on the strength of the input signal—in other words, how loudly the music is being played.

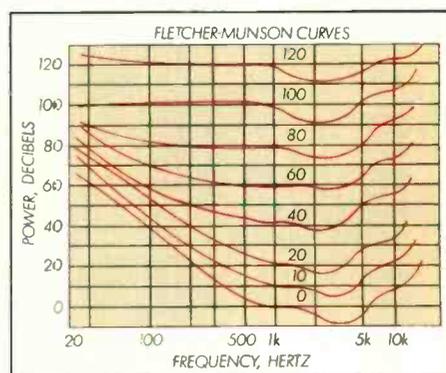
### Pitch Switch

To complicate the matter further, a low-frequency sound appears to decrease in pitch when its intensity is raised, while a high-frequency sound seems to *increase* in pitch. Psychoacousticians know enough about this effect to chart it on what's called the *mel scale*.

All these internally generated distortions and pitch variations would seem to make it very difficult, if not impossible, to arrive at a loudness-compensation curve that could restore the frequency balance of the original musical performance, that could make recorded music played back at lower than live levels sound natural, or "real." The original Fletcher-Munson curves, in fact, were derived using single pure tones rather than music. Later research has shown that a different set of equal-loudness curves result when reference tones other than 1,000 Hz are fed to the subjects, that perceived loudness depends on the duration of the tone, and so forth. Finally, when you consider that audio components are almost never designed so as to apply even the volume-dependent Fletcher-Munson compensation properly, loudness-compensation controls begin to seem a genuine exercise in futility.

But, you say, reproduced music sounds thin and loses body when it's played softly. You are right—it does. When I said that loudness controls don't really restore the original frequency balance, I didn't mean to imply that a judicious amount of bass boost applied at the right frequencies, preferably using an equalizer, won't make music sound *better*. But "better" has to be good enough, because there's no easy way you can fool your ears into believing that music played below its natural level sounds real. □

The Fletcher-Munson curves show how the ear responds to tones of different frequencies as the sound level changes. Each curve indicates the actual sound-pressure level needed to give the ear the illusion of flat frequency response.



Loudness controls fool the ear into hearing something as louder than it is, much as perspective makes the right-most fiddler look the tallest. He isn't.

# SYSTEMS

A sophisticated and convenient component system—fit for a record-company president

by William Burton and Gordon Sell



**F**RAMED like fine art and mounted in the wall, a comprehensive collection of audio components is carefully integrated into the office alcove of the living room/library in Michael Nemo's home in Hollywood Hills, California. Nemo is the founder, president, and chief engineer of Towerhill Records, a small classical label, and he uses the system for transfer work and making live demos as well as for listening to all kinds of recordings.

The components in the main rack of the system (pictured at left) indicate Nemo's professional involvement with music. Starting at the top of the rack, there is a Sony 880-2 half-track stereo open-reel recorder, modified for rack mounting with Ampex reel clamps and rerouted equalization controls. Next is a dbx 150 professional (Type I, not the consumer Type II) two-channel noise-reduction unit. Levels are monitored on the Technics SH-9020 peak/average meter below it.

The cassette deck is a Technics RSB-100, which includes Dolby B and Dolby C as well as dbx (Type II) noise reduction. A Technics SH-8065 one-third-octave graphic equalizer can be switched into either the program or record loop. For FM broadcasts, there is a Carver TX-11 tuner. Under the tuner is an SAE 5000 impulse-noise suppressor with a customized front panel.

The preamplifier/control unit is custom made and can switch ten inputs into twelve outputs. The inputs include a Technics SL-P8 Compact Disc player for the CD's stored on the top three shelves of the bookcase next to the rack. Nemo uses a Sansui QSD-1 to synthesize QS-format quadraphonic sound and to decode quad sources. The bottom of the rack holds a sixty-four-position Niles patch bay for plugging everything into everything else.

The rear panels of the components (photo at right) are accessed from the adjoining projection room, which houses additional au-

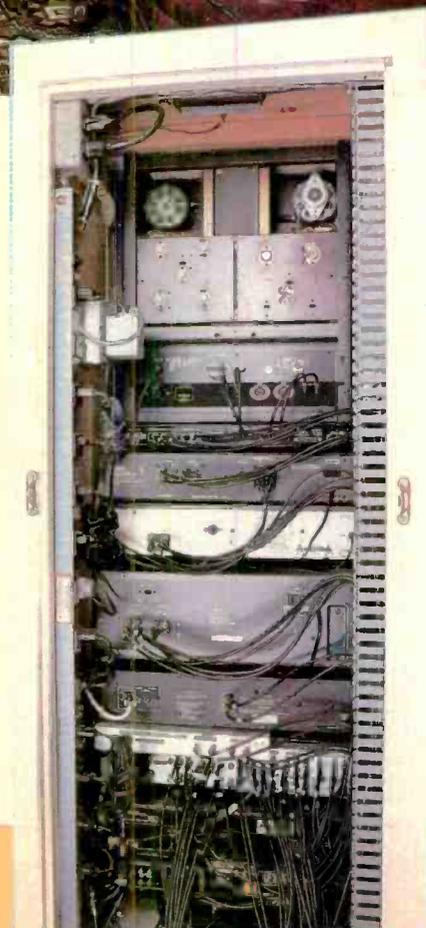


dio equipment, LP's, and tapes. The 16mm Cinema-scope projector is concealed behind an opening in the wall that is ordinarily covered by the tapestry shown in the photo above (around the corner from the main rack). It projects onto a 12-foot-wide disappearing screen across the room.

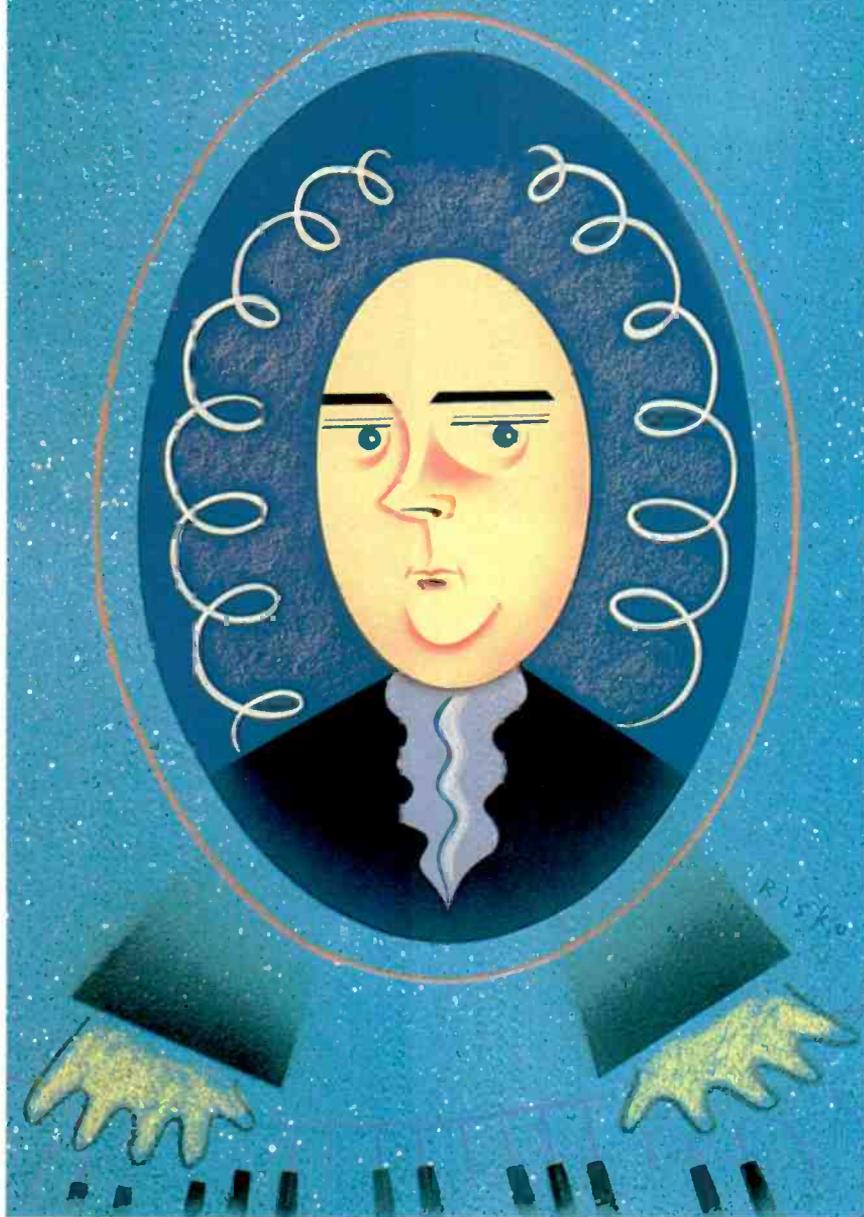
A second rack in the projection room holds the system's power amplifiers—a BGW 750B for the front speakers, a BGW 250E for the rear ones—and another Technics SH-8065 equalizer in the monitor loop for room equalization. Addi-

tional components are a Technics RS-M85 cassette deck (for dubbing purposes), a Technics SL-110A turntable with a 16-inch Grace tone arm and a Shure V-15 Type IIIHE cartridge, a Marantz 150 tuner/oscilloscope (used for its AM tuner and for stereo/quad phase monitoring), and an Ampex ATR-102 half-inch/quarter-inch two-track open-reel recorder.

Nemo's front speakers are JBL 4320's, placed opposite the desk across the living room. Behind the desk are JBL L-120's for the rear channels. □



# BASIC HANDEL



**T**HIS year's observances of the three-hundredth anniversary of the births of Johann Sebastian Bach and George Frideric Handel include the release of many new recordings. Various musicians are striving to record the complete works of Bach, but many of the new Handel albums are simply rerecordings of his most popular works, while a vast amount of his truly great music has never been recorded at all.

Looking at the Schwann catalog gives the impression that Handel was basically an instrumental composer, which of course is not the case. It's just that so little of his vocal music has been recorded. Of some forty operas by Handel, barely more than half a dozen are currently listed, and only about half of his thirty-some oratorios are available. Comparing these figures with Bach's, you will discover that Handel is getting short shift on records even in this anniversary year.

Comparing the lives of these two composers and the conditions under which they worked is more to the point. Bach never traveled outside Germany, and he was supported by the church or by royal courts. Whatever he wrote, whether it was liked or disliked, was paid for by his various patrons. Bach was never dependent on the whims of a paying *public*. Handel, on the other hand, traveled a great deal. From his native Halle, in what is now East Germany, he went to Hamburg, toured Italy, stayed briefly at Hanover, and then settled in England.

Once he left Halle, Handel became essentially an opera composer and *was* dependent on pleasing a paying public. If the public liked his operas, ticket sales provided him with an income. If not, no funds were forthcoming. One of Handel's chief assets was his ability to size up the taste of his public. His stay in Italy reached a triumphant climax with the opera *Agrippina*. When he visited London, he wrote briefly in the English style, hoping to net Queen Anne's patronage, but he quickly realized the growing taste for Italian opera and gave London

# A record buyer's guide to the music of George Frideric Handel

## by Stoddard Lincoln

what it wanted. When that market was glutted, he turned to oratorio.

But no matter what he wrote, it was the paying public's reaction to each individual work that furnished Handel with his income. He seemed to thrive under these circumstances, and perhaps one of the reasons he fled Hanover so precipitously was that he found royal patronage stifling compared with the excitement of box-office receipts.

More significant than the different ways Bach and Handel supported themselves was the type of performer for whom they wrote. While Bach wrote for local church and court musicians, Handel created for international opera and theater musicians. Bach knew exactly what he wanted his performers to do and wrote it out precisely, leaving very little room for ornamentation and improvisation. Handel, on the other hand, expected his performers to fill in the details. He supplied the large gestures and left it to his internationally famous performers to flesh the music out in performance. The presentation of Handel's work, therefore, more than Bach's, depends on personal style and theatrical projection. A Bach sonata, concerto, or aria is effective even if the performer simply plays or sings the notes accurately and in time. Performed the same way, however, a Handel sonata, concerto, or aria will seem pale. The music demands (and Handel wanted) embellishments and forceful projection.

Thus, Handel's music requires a publicly oriented virtuoso. Unfortunately, such virtuosos frequently do not understand the nature of eighteenth-century ornamentation and improvisation and fall back on some distasteful anachronisms. On the other hand, performers who do understand eighteenth-century performance practice and play on original instruments are more apt to be scholars than virtuosos. In their hands, Handel's music often lacks drama and excitement.

What is needed for Handel is a rare combination of virtuoso and musical scholar. Fortunately, such

artists do exist, and judging from the record catalog, they seem to be mostly English. But if combination scholar-virtuosos are not available, I personally will take the virtuoso over the scholar and musical excitement over historical accuracy.

### *Oratorios and Odes*

Although Handel's first love was opera, the record buyer approaching this composer for the first time should begin with the oratorios, if only because they are in English and therefore easier to deal with. Despite the large forces involved, they are easier to put across because the solo writing was mostly conceived for English singers and does not require the florid Italian virtuoso style that is part and parcel of the operatic language. If all else fails, the choral writing alone usually saves the day.

The most popular and, of course, the most recorded of Handel's oratorios is *Messiah*, but there are a number of ways in which it can be performed. For a splendid modern performance, you can't do better than Colin Davis's recording on Philips (SC71AX300) with the London Symphony Chorus and Orchestra and with Heather Harper, Helen Watts, John Wakefield, and John Shirley-Quirk as the soloists.

If you want an authentic version of *Messiah*—that is, one that uses original instruments and authentic performance practice—try Ton Koopman's reading (Erato 75130) with the Amsterdam Baroque Orchestra and a small choir, "The Sixteen." Its simplicity and straightforwardness make it very moving.

Some of the finest authentic oratorio performances are those conducted by John Eliot Gardiner with the English Baroque Soloists and the Monteverdi Choir. Both *Semele* (Erato 714453), an examination of ambition, and *Hercules* (Archiv 2742 004), a searing study of jealousy, are powerful works that make a lasting impression.

On the lighter side are an excellent performance of *Acis and Galatea* by the Deller Consort (Harmo-

nia Mundi 2116/7) and a charming one of the allegorical *The Triumph of Time and Truth* (Hyperion A-66071/2) conducted by Denys Barlow with the London Handel Choir and Orchestra.

Turning to the sumptuous religious dramas of the Old Testament, you'll discover an especially fine reading of *Solomon* (Vanguard 71204/6) by Johannes Somary with the English Chamber Orchestra and Chorus. Somary's recordings of *Theodora* (Vanguard C-10050/2) and *Jephtha* (Vanguard C-10077/9) are also worth looking into.

Nikolaus Harnoncourt and the Vienna Concentus Musicus have recorded two fine oratorios, *Alexander's Feast* (Teldec 48223) and *Belshazzar* (Teldec 4635326). Unfortunately, the exaggerated use of "decay" by the authentic stringed instruments and the imitation of it by the chorus mar the performances.

The beautiful *Ode for St. Cecilia's Day* is available in an equally beautiful performance by Philip Ledger with the English Chamber Orchestra and the King's College Choir (Vanguard 25010). Anyone interested in hearing Handel's youthful, pre-English oratorio style might try Christopher Hogwood's performance of *La Resurrezione* (Oiseau-Lyre D256D 3) with the Academy of Ancient Music.

### *Anthems and Choral Music*

Handel's most splendid anthems are the four written for the coronation of George II: *Zadok the priest, The king shall rejoice, My heart is inditing, and Let thy hand be strengthened*. An authentic performance by the Choir of Westminster Abbey, Simon Preston conducting, and Trevor Pinnock's English Concert (Archiv 2534 005) brings out their ceremonial grandeur. Equally splendid are the *Dettingen Te Deum* and the *Dettingen Anthem* (Archiv 410 647-1) by the Westminster Abbey Orchestra and Chorus under Preston.

More subdued are the six earlier *Chandos Anthems*. Alfred Mann's modest performances of four of

# BASIC HANDEL

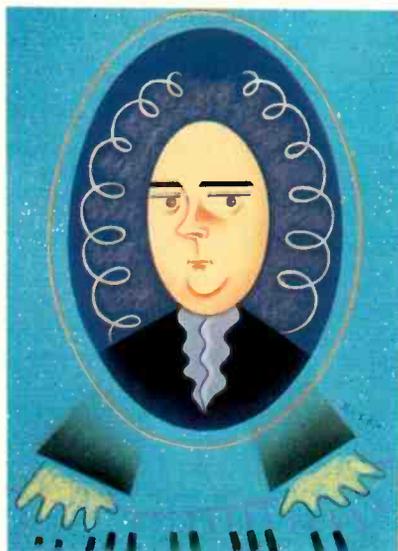
them, with the Rutgers University Collegium Musicum (Vanguard S-227, Nos. 4 and 6, and S-229, Nos. 1 and 5), bring out their intimate quality. Going back even further to the Italian days, you might try the collection of Latin Psalms performed effectively by the Deller Consort (Harmonia Mundi 1054).

## Opera

Opera has always required the most spectacular international singers available; this was as true in Handel's time as it is now. And any revival of a Handel opera, authentically performed or not, still requires the world's finest singers. Ironically, the most spectacular singers of the eighteenth century were the castrati (men castrated before puberty to preserve their high voices), and no amount of historical revival is likely to bring *them* back. Nonetheless, their roles can be sung by contraltos to good effect, or they can be transposed down for baritones. Counter-tenors are sometimes effective, but they rarely have the required vocal power.

In order to sample Handel's virtuoso operatic style, you should begin with several aria collections: first Marilyn Horne's album (Erato 75047) and then Janet Baker's (Philips 9502 097), which also includes some cantatas. Next, look for selections from a single opera. A recording of excerpts from *Rinaldo* (Turnabout 34795) conducted by Stephen Simon includes contributions from Beverly Wolff, Rita Shane, Arleen Augér, and Raymond Michalski, who put on a spectacular show.

As for the complete operas, the New York City Opera's version of *Julius Caesar* (RCA LSC-6182), conducted by Julius Rudel with Beverly Sills, Beverly Wolff, Maureen Forrester, and Norman Treigle, despite some historical inaccuracies, conveys all the vocal excitement and drama you could want from a Handel opera. Another well-cast recording is the *Ariodante* (Philips 6769 015) conducted by Raymond Leppard with Janet Baker, Edith Mathis, Norma Bur-



rowes, James Bowman, David Rendall, and Samuel Ramey.

If by now you have developed a taste for Handelian opera, you should move on to authentic performances on early instruments with singers who are bravely attempting to revive what they consider to be Baroque vocal techniques. The group most devoted to recording the operas of Handel is the grandiosely named *La Grande Écurie et la Chambre du Roy* of Jean-Claude Malgoire. Their work is uneven, and the sound of the old instruments can be excruciating, as can some of the singing. Their best and most recent release is *Tamerlano* (CBS M3 38793), which is saved by René Jacobs as Andronico. They have also recorded *Rinaldo* (CBS M3 34592) and a somewhat painful *Serse* (CBS M3 36941).

More successful is *La Petite Bande's Partenope* (Pro Arte 4000) conducted by Sigismund Kuijken. This conductor gets a good sound from his early instrumentalists, and the cast sings with spirit.

## Orchestral Music

Handel's orchestral music falls into two categories: indoor and outdoor. The outdoor music makes use of brass and woodwinds, with or without strings, and consists of three suites collectively known as

the *Water Music*, an overture and four dances known as the *Music for the Royal Fireworks*, and the concertos "*a due cori*," which are works for double orchestra, one of strings and one of winds. The indoor music consists of two sets of concerti grossi, the organ concertos, and a handful of concertos for oboe and various other instruments. Another group consists of collections of opera overtures and ballet music.

For the outdoor music, I think you should get recordings on original instruments simply because no modern instruments can duplicate the wonderful sound of the natural horns coupled with oboes along with the blast of the old trumpets—but that is a matter of taste. The *Water Music* played by the English Concert with Trevor Pinnock conducting (Archiv 410 525-1) is tops on early instruments. Gerard Schwarz and the Los Angeles Chamber Orchestra (Delos DMS 3010) offer a spirited performance that combines the best of authentic performance practice with modern instruments. And for a grandiose, nineteenth-century-style reading, nothing can beat Riccardo Muti and the Berlin Philharmonic (Angel DS-37857).

The *Music for the Royal Fireworks* (coupled with two of the concertos *a due cori*) is given a fine rendition on early instruments by John Eliot Gardiner and the English Baroque Soloists (Philips 411 122-1), and Charles Mackerras conducts the London Symphony Orchestra in splendid performances of the same pieces on modern instruments (Angel S-37404).

Handel's most beautiful and most serious orchestral music consists of the six airy concerti grossi of Op. 3 and the twelve remarkable concerti grossi of Op. 6. The latter are truly sublime works, and the level of inspiration in the writing places them among the greatest concerti grossi of their time. Both sets have been beautifully recorded by Trevor Pinnock and the English Concert (Op. 3 on Archiv 413 727-1, Op. 6 on Archiv 2742 002). Both sets are also given strong readings on mod-

# A BAROQUE BIRTHDAY GIFT

A free Bach and Handel record for Stereo Review readers

ern instruments by Iona Brown and the Academy of St. Martin-in-the-Fields (Philips 6725 036).

When Handel gave up the brilliance of Italian opera for the more modest vocal style of the oratorios, he sought to sustain some of an evening's brilliance with organ concertos that he often performed himself between the acts. As published, these became the two sets of organ concertos of Op. 4 and Op. 7. Both sets are stylishly performed by Herbert Tachezi with Nikolaus Harnoncourt and the Vienna Concentus Musicus (Teldec 3635282) and by Simon Preston with Pinnock and the English Concert (Op. 4 on Archiv 413 465-1, Op. 7 on Archiv 413 468-1).

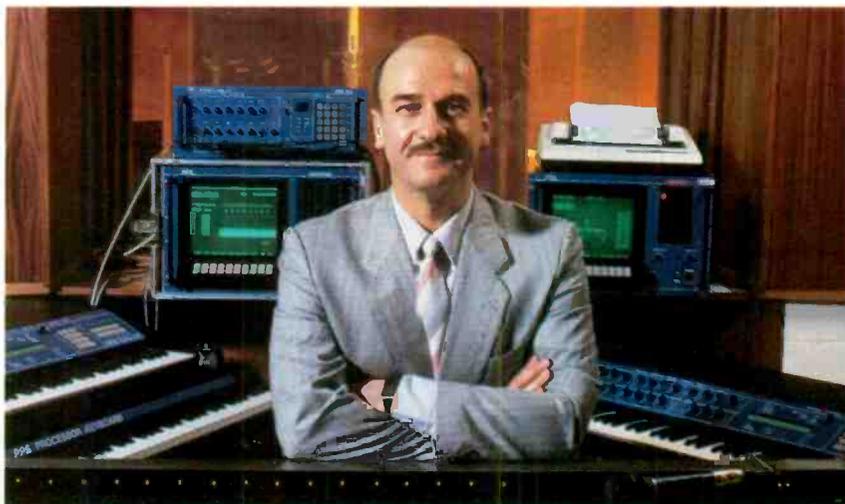
Some of Handel's finest orchestral music is found in his operas. For a representative set of opera overtures, try the group recorded by Raymond Leppard and the English Chamber Orchestra (Philips 9502 079). Although Handel rarely wrote ballets for his operas, when he did they were full of Gallic charm and dramatic thrust. John Eliot Gardiner's album of ballet excerpts (Erato NUM 75169) is an absolute must.

## Chamber Music

The catalog of Handel's chamber music is fairly chaotic. Of some forty existing chamber works, many of which are acknowledged masterpieces, very few have been recorded. While several groups playing early instruments have been successful in the orchestral music, the use of early instruments (except for the recorder) in the solo and trio sonatas is for the most part unsatisfactory.

The solo sonatas (sonatas for a single instrument and continuo) are mostly contained in Op. 1. Nine of them, along with a Fantasia for Violin and Continuo, are best heard in the performances by Iona Brown and the Academy of St. Martin-in-the-Fields Chamber Ensemble (Philips 6769 022). A fine collection of four recorder sonatas (Angel DS-37983) is beautifully ornamented

(Continued on page 195)



Graziano Mandozzi: Baroque music on the synthesizer

A FREE copy of the new Deutsche Grammophon recording of "Bach/Handel 300" by synthesizer artist Graziano Mandozzi will be sent to you for only \$2 for packing and mailing.

A brand-new digital recording, "Bach/Handel 300" is a full-price, 12-inch, long-playing, Deutsche Grammophon record to be released in September with a suggested list price of \$10.98. It is one of the many albums DG is bringing out during this Big Baroque Year to celebrate the three-hundredth anniversary of the births of Johann Sebastian Bach and George Frideric Handel.

To add a festive note to this magazine's observance of the Baroque birthdays, Deutsche Grammophon has kindly donated 2,000 copies of "Bach/Handel 300" to be distributed free to STEREO REVIEW readers. The offer is limited to readers of this magazine, and only one copy can be sent to each person who mails in a request.

Graziano Mandozzi is an Italian/Swiss composer, conductor, and director of a TV station. He has combined his musical and technological training to produce in this album a sonic birthday tribute to Bach and Handel that is dazzling in its musicality, wit, and technical virtuosity.

"Bach/Handel 300" consists of

eighteen pieces by Bach and Handel, which Mandozzi performs on his synthesizer, a PPG Wave Computer System. Included among the Handel pieces are the "Hallelujah" Chorus from Messiah, "The Arrival of the Queen of Sheba" from Solomon, and The Harmonious Blacksmith. The Bach selections include the allegro from Brandenburg Concerto No. 2, the aria "Jauchzet Gott in allen Landen," and the chorale "Jesu, Joy of Man's Desiring."

Mandozzi points out in the liner notes that with the synthesizer there are no breathing or bowing problems. "Maybe as a result," he says, "it gets to sound a little inhuman. But, after all, that's what they used to say about the grand piano." He says the PPG sounds "more crystalline" than the synthesizers played by Wendy Carlos and Isao Tomita. He admires both of these artists and dedicates his album to them.

Our supply of "Bach/Handel 300" is limited. To avoid disappointment, do not delay. To receive your free copy, send a check or money order for \$2 (no cash, please) to: HANDEL RECORD, P.O. Box 603, Holmes, PA 19043. Requests for more than one copy will not be filled. Requests must be postmarked no later than October 1, 1985. Offer void after that date.

# MISSION ELECTRONICS

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*Stereo Review's critics choose the outstanding current releases*

## REVELATORY SHOSTAKOVICH INTERPRETATIONS

**D**MITRI SHOSTAKOVICH'S youthful First Piano Concerto, with trumpet obbligato, is ordinarily considered merely a lightweight entertainment despite its superb musical craftsmanship. A new Chandos recording conducted by the composer's son, Maxim, with his grandson, also named Dmitri, as soloist, compels modification of that judgment.

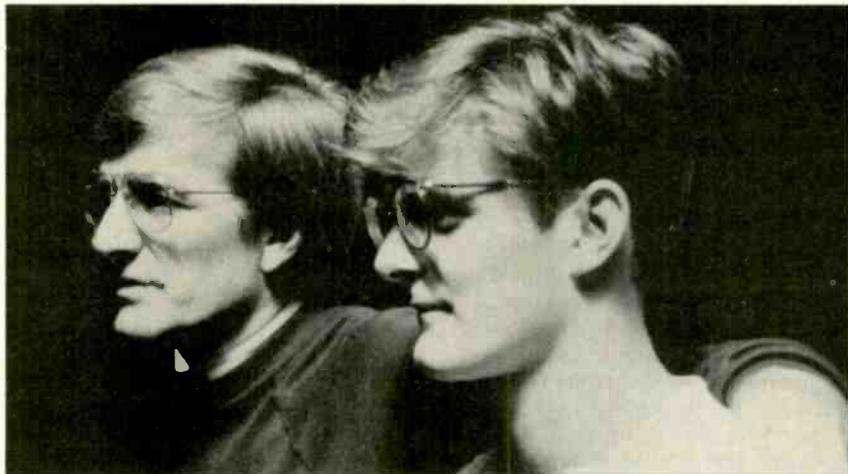
The slow movement here moves from an opening atmosphere of languor to an emotionally shattering climax. The piano performance throughout is of hair-raising brilliance and intensity. I well remember the excitement of a live performance of the work by the same father-and-son team broadcast from the Ravinia Festival last summer, and I was delighted to find the same excitement on their recording. The orchestra in this case is I Musici de Montréal, and the topnotch trumpet soloist is James Thompson. Overall, this recorded performance is both a remarkable, eye-opening interpretation and a unique document of musical continuity through three generations.

The concerto's disc companion is equally interesting, a Chamber

*Composer Shostakovich in 1937*



Symphony for string orchestra arranged from Shostakovich's Quartet No. 8 by Rudolf Barshai with the composer's approval. The music is something of an intimate counterpart to the epochal Eighth Symphony, which evoked the horrors of World War II for the Russian people. Here everything is on a more personal and autobiographical level. The composer's musical signature, D-S-C-H, haunts the piece, and reminiscences of earlier works are woven into the musical texture. We hear, for example, echoes of the First and Fifth Symphonies, the terrifying Jewish *danse macabre* from the Trio in E Minor, and Katerina's final aria from the opera *Lady Macbeth of Mtsensk*.



*Maxim Shostakovich (left), second generation, and Dmitri, third generation*

Whatever the music may lose in intimacy in the expansion from string quartet to string orchestra, it gains in kinetic power and tonal body. And it receives a galvanizing interpretation here by Yuli Turovsky, cellist of the well-known Borodin Trio and founder and conductor of I Musici de Montréal, which performs it to perfection. The recording venue, Montreal's Church of St. Pierre Apôtre, is absolutely ideal for the music, providing all the brilliance, clarity, and body anyone could want. This is a simply wonderful record from every point of view.

*David Hall*

**SHOSTAKOVICH:** *Piano Concerto No. 1, in C Minor, Op. 35*. Dmitri Shostakovich (piano); James Thompson (trumpet); I Musici de Montréal, Max-

im Shostakovich cond. *Chamber Symphony in C Minor, Op. 110a*. I Musici de Montréal, Yuli Turovsky cond. CHANDOS ● ABRD 1120 \$11.98, © ABTD 1120 \$11.98, © CD 8357 \$17.

## BOB DYLAN: THE OLD ANGER, THE OLD POWER

**B**OB DYLAN'S new "Empire Burlesque" is being touted, as usual, as his best album since "Blood on the Tracks," which is probably true but not particularly useful. The two al-

bums couldn't be more dissimilar. The earlier effort, a haunted Minnesota folk-rock version of *Remembrance of Things Past*, was about as personal a record as Dylan has ever made. This new one is primarily about the artist's adjustments to the realities of high-tech record making in the Eighties. Helped along by remix master Arthur Baker, the studio wizard who has more or less defined the sound of the contemporary urban landscape, Dylan the folk poet now enters the Machine Age, and it is a credit to the strength of his artistic vision that it remains intact. As pacts with the devil go, this one has considerable flair, inventiveness, and wit.

But that is not to say that "Empire Burlesque" is a dance record. Baker's overdubs are applied relatively



KEN REGAN/COLUMBIA RECORDS

Dylan: high-tech with flair

sparingly, and the basic musical style is still the traditional blues-rock with gospel overtones that Dylan has worked in for the last couple of years. With the help of a surprisingly wide-ranging group of back-up musicians (two Rolling Stones, a couple of Tom Petty's Heartbreakers, an all-star reggae rhythm section, and a few synthesizer wizards), what Dylan has come up with is a song cycle that finds him, as a friend of mine put it, "bitter and pissed off, which is how we want him."

What's he angry about? Love, sex, war, death—all the usual stuff, from the plight of the Vietnam vet in *Clean Cut Kid*, a mordantly funny barrel-house rocker, to the bust-up of a recent relationship in *Never Gonna Be the Same Again*. Of course, not all is *Sturm und Drang*. A couple of lovely ballads demonstrate a new-found, rather believable vulnerability. Overall, however, the music suggests a kind of barely checked rage that is marvelously bracing. And it's nice to have Dylan waxing apoplectic rather than apocalyptic for a change.

Some of the songs do go on a little longer than they need to, and there are some lines, resting cheek by jowl with his usual flashes of surrealistic brilliance, that suggest unconscious self-parodies. But most of "Empire Burlesque" suggests an artist work-

ing somewhere in the vicinity of his peak form. Moreover, Dylan's remaining folkie fans should be pleased to note that it closes with a solo turn, *Dark Eyes*—just Dylan and his guitar and his harmonica, like the old days—that in many ways is the most insinuating and evocative music on the record. The old power, charisma, what have you, is clearly undimmed by time. It goes to show that you should never count out a genius just because he's over forty. *Steve Simels*

**BOB DYLAN:** *Empire Burlesque*. Bob Dylan (vocals, guitar, piano, harmonica); Mike Campbell (guitar); Benmont Tench (keyboards); Robbie Shakespeare (bass); Sly Dunbar (drums); other musicians. *Tight Connection to My Heart*; *Seeing the Real You At Last*; *I'll Remember You*; *Clean Cut Kid*; *Never Gonna Be the Same Again*; *Trust Yourself*; *Emotionally Yours*; *When the Night Comes Falling from the Sky*; *Something's Burning*; *Baby*; *Dark Eyes*. COLUMBIA FC © 40110, FCT 40110, © CK 40110, no list price.

## A VIRTUOSIC PERFORMANCE OF MONTEVERDI'S L'ORFEO

THREE remarkable ensembles specializing in Renaissance and Baroque music combined forces for Angel's marvelous new recording of Monteverdi's opera *L'Orfeo*. The singers belong to the group Chiaroscuro, directed by Nigel Rogers, who also sings the title role. All its members—Emma Kirkby, Patrizia Kwella, Jennifer Smith, and Stephen Varcoe, to name only a few—cultivate the highest standards not only as soloists but also in the virtuosic ensemble singing characteristic of music from the late sixteenth and seventeenth centuries. Both in their individual roles and the many ensembles, Chiaroscuro's singers come close to perfection in every aspect of Monteverdi's demanding vocal writing.

London Baroque, directed by Charles Medlam, provides the rich

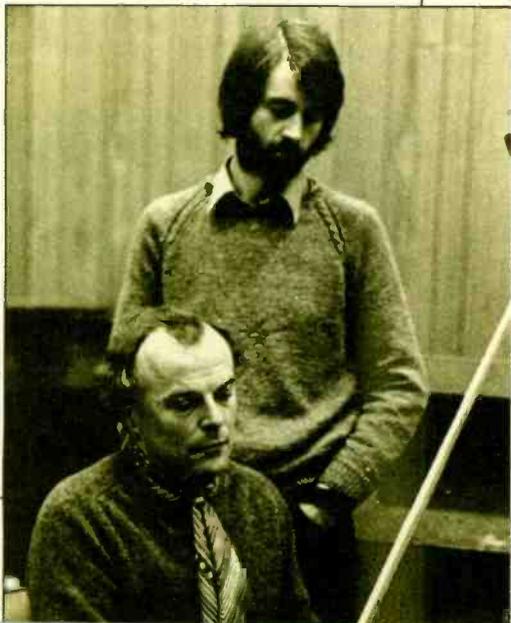
orchestral forces of strings and winds the score calls for as well as a colorful continuo of organ, harpsichord, chitarrones, and double harp. As with *Chiaroscuro*, the members of London Baroque shine not only as soloists in their obligatory playing but also in the ensemble sections. Finally, the London Cornett and Sackbut Ensemble, directed by Theresa Caudle, provides splendidly somber brass music for the scenes in Hades (a sackbut is a sort of medieval trombone).

Overall, though, the show really belongs to Nigel Rogers. Justly famed for his interpretations of early Italian vocal music, he brings both virtuosity and passion to the role of Orfeo. The tender joy of "*Rosa del ciel*," the tragic passion of "*Tu sei morta*," and the sheer brilliance of "*Possente spirito*" display the full range of this fine artist.

In the hands of such well-seasoned forces, *L'Orfeo* takes on the fluidity of spoken drama, and you can follow it in just that way (with the supplied libretto) as it ebbs and flows from nuptial joy through tragedy, struggle, and apotheosis. This recording is early music making at its finest. *Stoddard Lincoln*

**MONTEVERDI:** *L'Orfeo*. Nigel Rogers (tenor), Orfeo; Patrizia Kwella (soprano), Euridice; Emma Kirkby (soprano), La Musica; other members of Chiaroscuro, Nigel Rogers dir.; London Cornett and Sackbut Ensemble, Theresa Caudle cond.; London Baroque, Charles Medlam cond. ANGEL Ⓞ DSBX-3964 two discs \$24.98, © 4D2X-3964 two cassettes \$24.98.

Rogers, Medlam: rich Baroque



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## STING SOLO: UNCLUTTERED AND RELAXED

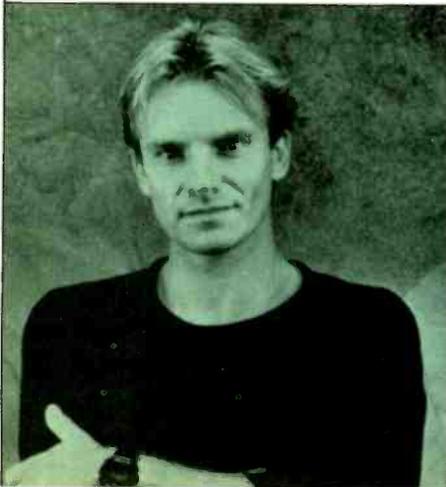
**T**HE quality that makes Sting such an easy target for many critics is also what makes him so interesting to his admirers: he is a consummate connoisseur. Sources that have aroused his curiosity and subsequently found their way into his music range from Jung to Yeats. Now, on his new A&M album, "The Dream of the Blue Turtles," Sting adds Prokofiev, Shakespeare, and novelist Ann Rice to the famous names he's dropped on his records, not to mention the geopolitical issues he takes up (hunger is not one of them).

"The Dream of the Blue Turtles" comes closer to the Police than anything Andy Summers or Stewart Copeland have done on their own, but it's *not* the Police. Now that Sting no longer has to invent an image for himself, this is the most relaxed music he has ever made.

He has set aside the furious, anglicized reggae rhythms that are the Police's signature and adopted a less driven, quasi-jazz style that is clean, uncluttered, and gracefully low-key without being wimpy.

The album contains no fewer than five truly moving, memorable songs that rank among Sting's best work. For openers, there's *If You Love Somebody Set Them Free*. It won't win any awards for grammar, but its rocking organ and tambourine rhythms, rolling back beat, and testifying sax accompaniment beauti-

*Sting: consummate connoisseur*



MICHAEL PUTLAND/RETNA

fully set up the call and response of Sting's raspy lead and the rich vocal harmony of the chorus. The dirge-like *Russians* is followed by *Children's Crusade*, a scathing, uniquely British reflection on the victims and villains of war. The link between these two songs is unmistakable; taken as a triptych together with *We Work the Black Seam*, which is about life in the coal mines, they become a devastating indictment of Western democracy.

The fifth standout song here, at the end of the album, is *Fortress Around Your Heart*, which wouldn't have sounded out of place on "Synchronicity." Several of the other tracks seem intended mainly to give the superlative group of jazz players he's assembled something to do besides vamping in the background. There's a swinging remake of *Shadows in the Rain*, the hard-bopping title track, an instrumental ignited by pianist Kenny Kirkland's outer-limits improvisation, and *Consider Me Gone*, with its walking bass and West Coast-cool vocal harmonies. The only real loser is *Moon over Bourbon Street*, a bad imitation of Tom Waits that drags and drags, maybe because Sting himself plays upright bass.

What if the success of this album hastens the end of the Police? The danger is that Sting will get too comfortable doing these Steely Dan-like sessions and decide he can do without the confrontation and conflict that have buffeted the band the last few years. If that happens, Sting may find it difficult to maintain the emotional edge that made the Police's five albums—and "The Dream of the Blue Turtles"—possible. Let's hope he continues to luxuriate in misery. *Mark Peel*

**STING: *The Dream of the Blue Turtles*.** Sting (vocals, guitar, double bass); Omar Hakim (drums); Darryl Jones (bass); Kenny Kirkland (keyboards); Branford Marsalis (saxophone, percussion); Danny Quatrochi (synclavier); vocal and instrumental accompaniment. *If You Love Somebody Set Them Free; Love Is the Seventh Wave; Russians; Children's Crusade; Shadows in the Rain; We Work the Black Seam; Consider Me Gone; The Dream of the Blue Turtles; Moon over Bourbon Street; Fortress Around Your Heart.* A&M SP-3750 \$8.98, © CS-3750 \$8.98, © CD-3750 no list price.

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- MENDELSSOHN: *Songs Without Words*.** Barenboim. DG 415 118-2. "Ideal" (December 1980).
- PUCCINI: *Madama Butterfly*.** Kincses; Patanè. HUNGAROTON HCD-12256/7 (two CD's). "Intimate and poignant" (October 1982).
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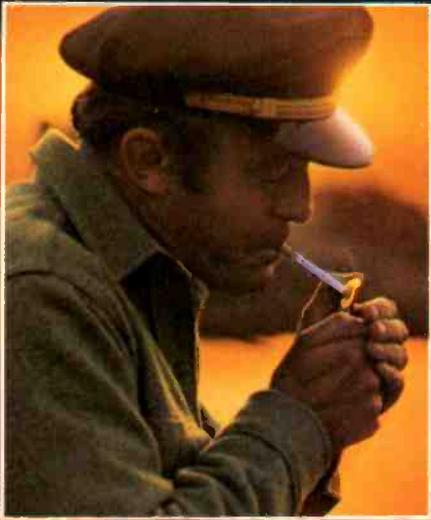
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**THE BOOMTOWN RATS:** *In the Long Grass*. Boomtown Rats (vocals and instrumentals). *A Hold of Me; Drag Me Down; Rain; Over Again; Another Sad Story; Tonight*; and four others. COLUMBIA FC 39335, © FCT 39335, no list price.

Performance: *Ferocious*  
 Recording: *Very good*

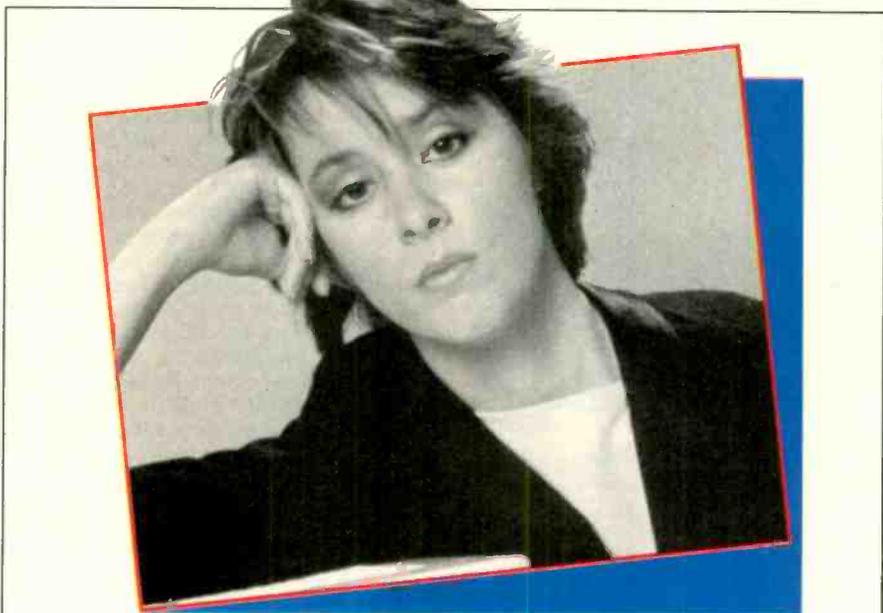
The enormous impact of Bob Geldof's famine-relief efforts through Band Aid and the popularity of *Do They Know It's Christmas?* could easily have consigned his band, the Boomtown Rats, to a footnote in his biography. The remarkable thing about "In the Long Grass" is that it is neither the political statement nor the stylistic updating one might have expected. The Rats not only haven't budged from their brand of punked-out New Wave—positively archaic now in the era of Boy George and Wham!—they're more ferocious than ever. This is an album of mature mayhem that stops just short of head-knocking and glass-shattering.

Geldof combines sharp-tongued wordplay with vaguely eerie, deep-chested vocals—very much like a cross between Elvis Costello and David Bowie. Simon Crowe hammers out a lethal beat while Peter Briquette lays down ska-syncoated bass rhythms. There are some clever tricks, like the use of the four-note signature from John Coltrane's *A Love Supreme* to kick off a strutting two-tone paean to trashy sex called *Tonight*. And though it's a bit sluggish at first, the album seems to get better with every cut. By the time the tone arm hits the final track, *Up or Down*, a roistering double-time concoction of calliope organ riffs, agitated synth, and attack-force horns, you need a cold shower and a tranquilizer. *M.P.*

**ERIC CLAPTON:** *Behind the Sun*. Eric Clapton (vocals, guitar); other musicians. *She's Waiting; See What Love Can Do; Same Old Blues; Knock on Wood; Something's Happening*; and six

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**SUZANNE VEGA**

**T**HE release of "Suzanne Vega" on A&M marks a spectacular debut. Vega, a younger, cooler Joni Mitchell for the Eighties, weighs in here with as haunting and powerful a (mostly) acoustic album as anybody has made in years. It's a dark, obsessive cycle of songs about relationships and feelings in a poetic style that might be called Zen Jesuit. This girl thinks—a lot—and she sees things, connections, that may surprise you. Her songs insinuate themselves, and sneak up on you, and stick little knives in your preconceptions.

Vega's music is not really folk music, although there are debts to folk (Lenny Kaye's production, incidentally, is a textbook example of how to make a songwriter's record that doesn't sound like a throwback to the late Sixties and early Seventies), and her voice is not really a folk voice. In fact, Vega suggests a more fragile-sounding Chrissie Hynde; like lots of the other recent rock singers, she's not afraid to half-talk a

lyric when it's appropriate. Mostly, though, she sounds like herself. I can't think of any other current songwriter who could have come up with the crystalline, erotic imagery of her *Small Blue Thing* or the astonishing romantic detachment of *Marlene on the Wall*. And while I wish Vega's song structures were a little more straightforward at times, she's nowhere near as jazzily ornate as Joni Mitchell.

The overall impact of this record is hard to deny: Vega's is the sound of a sensibility so knowing it's just a little spooky. This is a sensational piece of work. *Steve Simels*

**SUZANNE VEGA.** Suzanne Vega (vocals, guitar); Frank Christian (guitar); Paul Dugan (bass); Sue Evans (drums); other musicians. *Cracking; Freeze Tag; Marlene on the Wall; Small Blue Thing; Straight Lines; Undertow; Some Journey; The Queen and the Soldier; Knight Moves; Neighborhood Girls*. A&M SP6-5072 \$8.98, © CS6-5072 \$8.98.

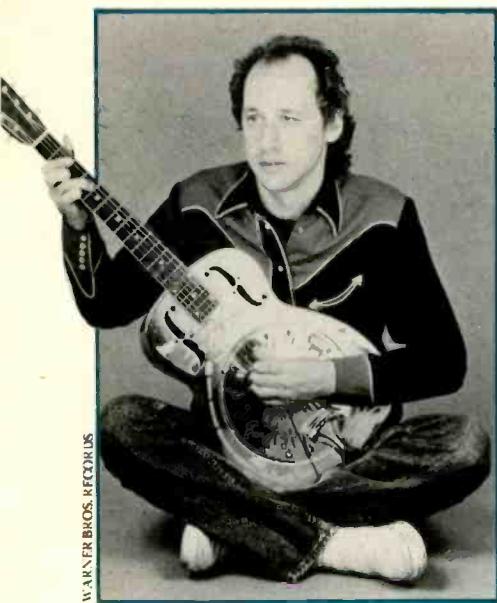
others. WARNER BROS. 25166-1 \$8.98, © 25166-4 \$8.98.

Performance: *Uninvolving*  
 Recording: *Lushness unto death*

Eric Clapton? Gee, didn't he used to play the blues or something? Well, the Eric Clapton of "Behind the Sun" sure doesn't sound like a bluesman. He sounds more like a cross between Toto and Air Supply. But, since the production chores were handled jointly by Phil Collins, Ted Templeman, and Lenny Waronker, that's probably deliberate. In this most listless-sounding album

Clapton has ever made—a seemingly endless, midtempo nod-out—the threadbare AOR material engages the star not one whit. Even the usually rousing *Knock on Wood* seems to bore him, and when he sings something called *Same Old Blues*, the title does not seem ironic. A lousy album, unworthy of the man who recorded *Layla*. *S.S.*

**DIRE STRAITS:** *Brothers in Arms*. Mark Knopfler (guitars, vocals); Alan Clark (keyboards); Guy Fletcher (keyboards, vocals); John Illsley (bass, vocals); Omar Hakim, Terry Williams



WARNER BROS. RECORDS

Mark Knopfler: stimulating

(drums). *So Far Away*; *Money for Nothing*; *Walk of Life*; *Your Latest Trick*; *Brothers in Arms*; and four others. WARNER BROS. 25264-1 \$8.98, © 25264-4 \$8.98, © 25264-2 no list price.

Performance: *Stimulating*  
Recording: *Very good*

"Brothers in Arms" caps a period of exploration and artistic growth for Mark Knopfler, although much of his work has occurred outside Dire Straits. First on "Love Over Gold" in 1982 and then on two movie soundtracks, *Local Hero* and *Cal*, Knopfler has experimented with more expansive song structures, orchestral use of synthesizers, and a growing lyricism and intimacy. "Brothers in Arms" consolidates many of these developments in Dire Straits' first full-length studio album in two and a half years.

Knopfler's guitar work—restrained, plastic, graceful—is the skin that stretches across this music, binding the skeleton of synth textures and hushed drums and bass by giving them outward form, color, and personality. "Brothers in Arms" borrows its unhurried pace and thoughtful arrangement of instrumental detail from Knopfler's soundtracks. The songs are a return to the early Dire Straits style—short, first-person narratives, but narratives that do not so much tell a story as paint a picture.

While it reaches levels of high emotional intensity, the album has some trouble getting started. *So Far Away*, built entirely around a languid dobro riff played with lots of reverb, adds little to what's already been done on the theme of separation. *Money for Nothing* is a rather cheap shot at MTV fans who think they could have been rock stars if they'd only learned to play guitar. Knopfler then shows us the other side of life as a musician, the subway busker who scratches out a living playing rock-and-roll oldies, in the spirited reel *Walk of Life*.

The focus sharpens with *Your Latest Trick*, a late-night blues reverie of sax, synth, and hungry vocal. The lullaby *Why Worry?* closes out side one with Knopfler's soft, twirling lead and a descending synth phrase by Alan Clark that falls as gently as a splash of rain on a leaf.

Side two moves from the personal to the political with three songs that take up different views of conflict inspired, my guess is, by events in Central America. *Ride Across the River* is the song of a foot soldier, *The Man's Too Big* the confession of an old, corrupt dictator facing execution. The title song is another, different parting message, from an old revolutionary to his followers—not a confession but a benediction.

Whether Mark Knopfler will continue to use Dire Straits as his primary vehicle is in some doubt, although members of the group, particularly keyboardist Alan Clark, contribute to his solo projects. "Brothers in Arms" doesn't give us a conclusive answer. It's not the step forward "Love Over Gold" and *Local Hero* were. But even when Knopfler stands pat, he provides stimulating, thought-provoking, and entertaining listening. *M.P.*

**BOB DYLAN: *Empire Burlesque* (see Best of the Month, page 151)**

**EURYTHMICS: 1984.** Ann Lennox (vocals, guitar); David Stewart (guitar, synthesizers, vocals). *I Did It Just the Same*; *Sexcrime*; *For the Love of Big Brother*; *Winston's Diary*; *Greetings from a Dead Man*; and four others. RCA ABL1-5349 \$8.98, © ABK1-5349 \$8.98.

Performance: *Effectively oppressive*  
Recording: *Excellent*

Even at its sunniest, the Eurythmics' music has always had a dark, sinister cast, so director Michael Radford's choice of the duo to do the score for his film of George Orwell's grim classic was a logical one. The Eurythmics' "1984" is as bleak and gray-toned as the movie the songs were written for. The mechanical rhythms and Ann Lennox's vacant, emotionless vocals are deliberately joyless, even funereal, regardless of the tempo. In deference to the movie's dramatic demands, there are few lyrics; instead, Lennox developed a kind of techno-scat singing, which was then clipped, attenuated, truncated, and otherwise electronically modified by David Stewart.

The problem, of course, is that because "1984" succeeds so well in conveying the gloomy landscape of Orwell's cautionary novel, there are virtually no "home applications" for this record, unless you've got youngsters whose minds you want programmed for Big Brother. Some thanks for a job well done—a record no one will buy. If the Eurythmics ever get talked into doing another soundtrack, it ought to be something more like *Beach Blanket Bingo* 1985. *M.P.*

**FLASH AND THE PAN: *Early Morning Wake Up Call*.** Flash and the Pan (vocals); instrumental accompaniment. *Early Morning Wake Up Call*; *Communication Breakdown*; *Barking at the Moon*; *Downtown Too Long*; and six others. EPIC BFE 39618, © BFT 39618, no list price.

Performance: *Quirky*  
Recording: *Good*

Flash and the Pan are Harry Vanda and George Young, two Australians whose first album appeared in this country in 1979. It featured refreshingly uncommercial pop songs and what at the time were some fairly advanced synthesizer effects. Now, of course, even Dolly Parton's albums can boast state-of-the-art technology, which robs "Early Morning Wake Up Call" of any claim to technical innovation.

Vanda and Young do remain eccentric, however. First, there are the vocals, which are filtered through some unspecified synthesizer until they sound, ironically, like an old shellac 78 squeezed through a megaphone. To add to the confusion, the vocals are delivered in a tone just above a whisper against a clattering, ribald instrumental accompaniment—but by raising the volume of the vocals and damping the instrumental tracks, Vanda and Young create a weird dynamic balance that couldn't happen in the real (that is, unamplified) world.

Once you've adjusted to the disorienting vocals, you've got to come to grips with the songs. Vanda and Young make no attempt to be hip, either in subject matter or style, and are positively unafraid of using a corny melody. The rhythms, while jumpy, are simple and uncluttered. Most of all, the songs are typically Australian—which is to say, they sound like the work of parodists who decided, "Mmm, these aren't so bad after all." Less engaging or interesting is the subject matter Flash and the Pan deal with here—the travails of the professional musician is a recurring theme. On balance, what we get is an album that's different, all right, but not especially noteworthy. *M.P.*

**DAN FOGELBERG: *High Country Snows*.** Dan Fogelberg (vocals, guitar); Doc Watson (guitar); Ricky Skaggs, Vince Gill, Tracy Nelson (vocals); other musicians. *Down the Road*; *Mountain Pass*; *Sutter's Mill*; *Shallow Rivers*; and six others. FULL MOON/EPIC FE 39616, © FET 39616, no list price.

Performance: *Rockies bluegrass*  
Recording: *First-rate*

According to the liner notes, Dan Fogelberg got the idea to record this album two years ago, when he attended the Telluride Bluegrass Festival in Colorado and met up with a lot of old friends. Recorded in Nashville with a virtual "who's who" of bluegrass players, it's a little off-putting at first, and long-time Fogelberg fans and bluegrass aficionados will find it rather mid-

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## CRIS WILLIAMSON



**T**HE only problem I had with Cris Williamson's stunning and remarkably powerful new album, "Prairie Fire," was getting it off the turntable long enough to write about it. A loosely woven concept album concerning themes indigenous to the great American West, it moves through a variety of styles—light rock, folk, ballad—and reflects influences as diverse as reggae, the Orient, the American Indian, jazz, and the blues, and with a hint of Broadway theatricality too. How Williamson manages to pull this off—and together—is nothing short of a miracle. But she was born in the Black Hills of South Dakota and grew up in Wyoming and Colorado, and apparently she has an innate sense of how her native environment (and how being a woman living in a man's rough-and-tumble terrain) colors her perception of and relationship to the rest of the world.

All of this would be fruitless, of course, were Williamson's larger gifts not in full bloom. On some of her previous albums, Williamson—one of the leading performers of "women's music"—slipped too easily into cliché writing, both lyrically and melodically. In comparison, "Prairie Fire" sounds like the work of another artist, one who writes with consistently poetic verve

dele-of-the-road. *But*—and this is a very important but—if you forget about preconceived notions and just enjoy what's here, you'll probably have a fine time.

Fogelberg has refrained from dragging out his usually embarrassingly overwrought lyrics, and while a couple of his original tunes don't exactly fit the format you'd expect, they're respectable, engaging hybrid efforts destined to show up on other people's albums in the future. Where he and his colleagues really shine, however, is on the classic

and agility. And as a bonus, the songs are dressed to perfection, with a spare keyboard, a framework of percussion and bass, an occasional slide guitar (played by rock-blues priestess Bonnie Raitt), and deft undertones from other instruments. The engineering by Tret Fure, who co-produced the album with Williamson, is above reproach.

Certainly "Prairie Fire" would not be as thrilling if Williamson's voice were not the magnificent instrument it is. Making unpredictable, breathtaking dips and turns, her urgent but sophisticated soprano is a ready guide on a joyous journey of the spirit, a journey that anyone who cares about personal identity, universal quest, or literate music will surely want to take. Don't miss this one.

Alanna Nash

**CRIS WILLIAMSON: *Prairie Fire*.** Cris Williamson (vocals, piano, synthesizer, guitars); vocal and instrumental accompaniment. *Prairie Fire; Man-Camp; Don't Lose Heart; Renegade; Grandmother's Land; Tsunami; Colorado Dustbowl Days; Wild Rose; Suitcase Full of Sorrow; Last Chance Saloon.* OLIVIA LF 941 \$8.98, © LC 941 \$8.98 (plus \$1 postage and handling from Olivia Records, 4400 Market St., Oakland, CA 94608).

material—Carter Stanley's *Think of What You've Done* and Flatt and Scruggs's *Down the Road*. And, of course, with a cast like this, the picking throughout is impeccable, and positively spiritual in a couple of places. *A.N.*

**THE KENDALLS: *Two Heart Harmony*.** The Kendalls (vocals); instrumental accompaniment. *Two Heart Harmony; Four Wheel Drive; Somewhere Between; My Baby Left Me; If You Break My Heart; I Never Looked Good in Blue;*

and four others. MERCURY 824 250-1 \$8.98, © 824 250-4 \$8.98.

Performance: *Eclectic*  
Recording: *Okay*

The press release accompanying the Kendalls' new LP brags that "from their debut album in 1977... to their latest... the Kendalls haven't really changed—they've just learned to do what they do even better." Well, yes. And no. The Kendalls *have* changed—they don't do the kind of stomach-churning schlock material they used to do. And they are moving toward a more contemporary sound, leaving their classic country harmony intact but going for a wider variety of songs and classier arrangements.

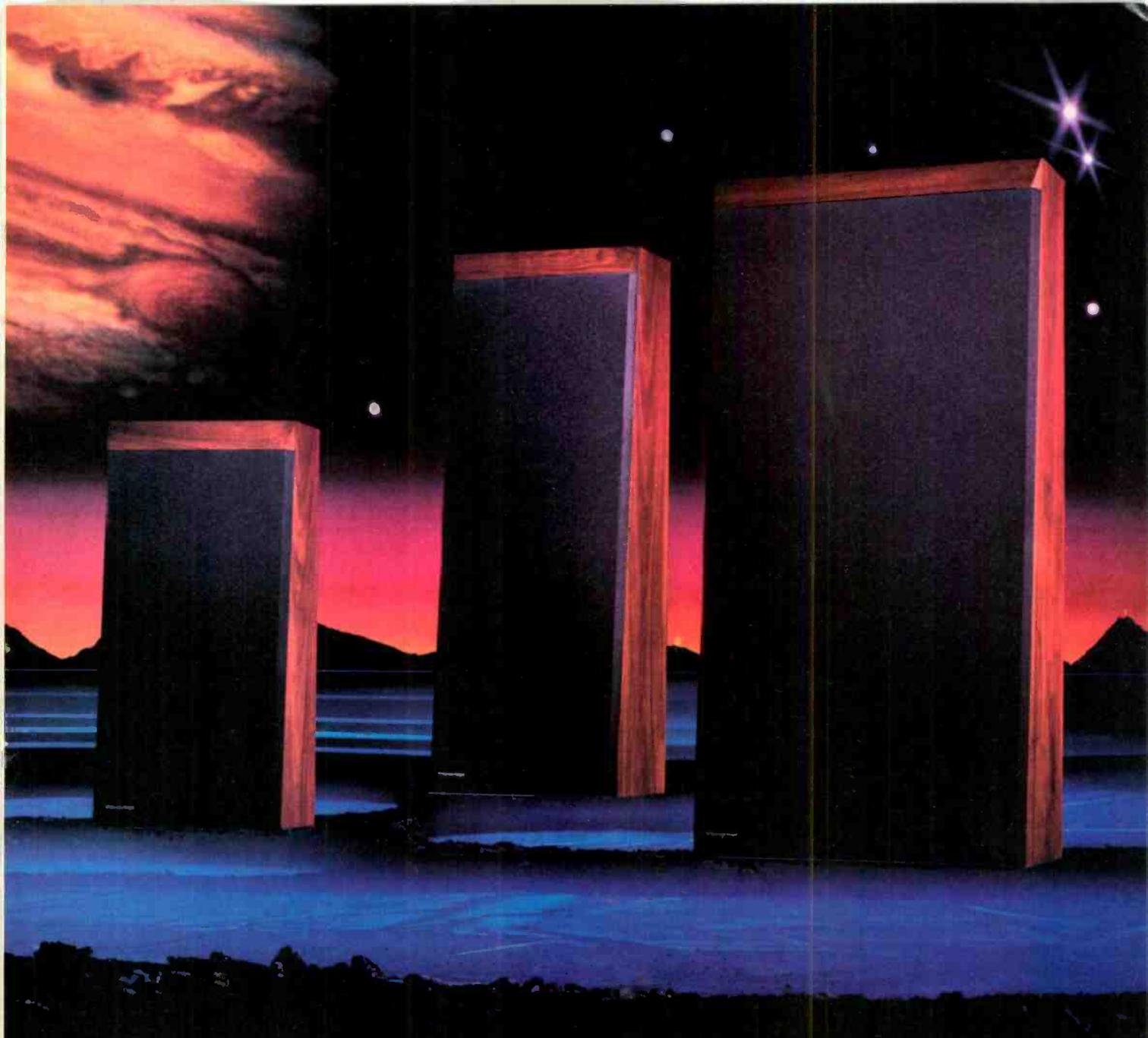
On "Two Heart Harmony," we hear a sax break on one tune, a full horn section on another, and more sophisticated, yet still uncluttered, backings throughout. The material ranges from Arthur Crudup's *My Baby Left Me* (in a performance and rockabilly arrangement that put Elvis's in the shade) to Merle Haggard's achingly mournful, traditional *Somewhere Between* to Jeanie Kendall's own *I'm Still His Life-Long Dream*, an early-Sixties-style, puppy-love rocker that Sue Thompson or Little Eva would have killed for. But to their credit (and that of producer Brien Fisher), the Kendalls still manage to remain stalwartly themselves on this outing—they just sound a lot less old-fashioned, and a lot less like hicks. *A.N.*

**DOYLE LAWSON & QUICKSILVER: *Once and For Always*.** Doyle Lawson & Quicksilver (vocals and instrumentals); Mike Aldridge (dobro, pedal steel). *The Blue Road; Once and For Always; Speak Softly, You're Talking to My Heart; Come Back to Me in My Dreams; When the Sun of My Life Goes Down;* and six others. SUGAR HILL SH-3744 \$7.98, © SHC-3744 \$7.98.

Performance: *Bluegrass heaven*  
Recording: *Good*

The new Doyle Lawson & Quicksilver LP starts out nicely enough, with a couple of pleasant bluegrass numbers and a gospel tune, but then when Randy Graham turns that magnificent tenor of his to a high-lonesome version of Gene Watson's mainstream country hit, *Speak Softly, You're Talking to My Heart*, it's almost too much ecstasy for a reviewer to bear.

As it turns out, that's just the first of many moments of bliss here. It's followed by some thrilling and complex vocal harmonies on the *a cappella* gospel song *When the Sun of My Life Goes Down*, some impressive, driving mandolin and banjo picking on Michael Martin Murphey's *Carolina in the Pines*, and too many individual instrumental breaks and vocal touches to mention. On the down side, I have always yearned for just a bit more immediacy on this group's albums, and I keep hoping that Terry Baucom will learn to nail those bass notes of his



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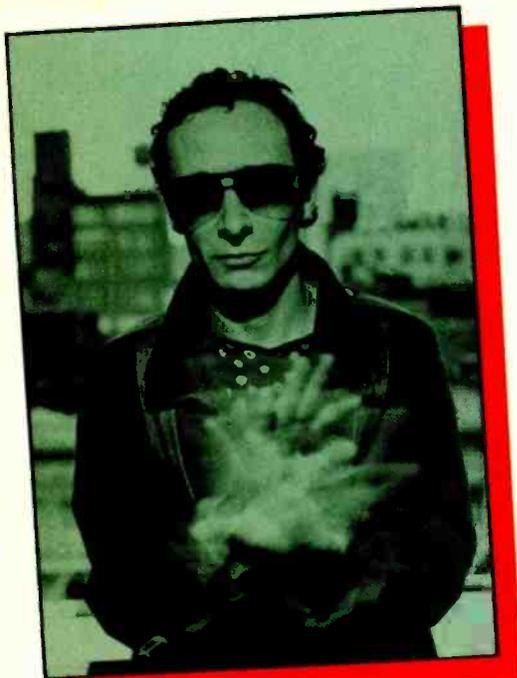
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Graham Parker: distracted

instead of singing around the edges. But as far as traditional bluegrass goes, this is a winner. *A.N.*

**KATHY MATTEA: *From My Heart.*** Kathy Mattea (vocals); vocal and instrumental accompaniment. *It's Your Reputation Talkin'; I Believe I Could Fall in Love (with Loving You);* and eight others. MERCURY 824 308-1 \$8.98, © 824 308-4 \$8.98.

Performance: *Star in the making*  
Recording: *Nice*

Kathy Mattea, a former tour guide at the Country Music Hall of Fame, is about to set Nashville on its proverbial ear. With a voice that is slightly husky, well controlled, and more than a little reminiscent of Anne Murray, Mattea approaches her country-pop material with a healthy confidence and an unusually vibrant energy.

On "From My Heart," her second album, she moves through both ballads and uptempo numbers with equal ease. Best of all, there's none of that overproduction or manufactured gloss most Nashville producers glop on in abundance. Except for Wendy Waldman's *Heart of the Country* and a couple of the bouncier tunes (*It's Your Reputation Talkin', Trail of Tears*), I'm not bowled over by the songs, but Mattea is a real find, and worth checking out. *A.N.*

**MEN AT WORK: *Two Hearts.*** Men at Work (vocals and instrumentals). *Man with Two Hearts; Giving Up; Everything I Need; Sail to You; Children on Parade;* and five others. COLUMBIA FC 40078, © FCT 40078, no list price.

Performance: *A for effort*  
Recording: *Good*

Men at Work and Columbia Records have painted themselves into a corner

with Colin Hay, the "voice" of Men at Work. Hay wrote and sang the group's two big hits, *Down Under* and *It's a Mistake*, and he's written and sung half the songs on this new album. The problem is, Hay's songs here are awful—singsong, nursery-rhyme melodies and nonsensical, non-sequitur lyrics that grow more wearisome and annoying with each hearing. The effect is to make Hay's vocals sound even goofier than they already do.

Greg Ham, the group's other vocalist and songwriter, has a better ear for what's happening in pop music right now, and he's written some decent material for "Two Hearts." *Giving Up*, for instance, with a great hook in the chorus, could be a single. But Ham's voice doesn't have the recognition factor Hay's does, and when it comes to selling records, recognition is what it's all about. To its credit, the band serves up some darting, cross-cutting guitar work and a strong, steady beat throughout the album. You can't fault them for not trying. But it's growing increasingly clear that the tremendous success of Men at Work's first album was a fluke. Being Australian isn't enough any more. *M.P.*

**GRAHAM PARKER AND THE SHOT: *Steady Nerves.*** Graham Parker and the Shot (vocals and instrumentals); other musicians. *Break Them Down; Mighty Rivers; Lunatic Fringe; Wake Up (Next to You); When You Do That to Me; The Weekend's Too Short;* and five others. ELEKTRA 60388-1 \$8.98, © 60388-4 \$8.98.

Performance: *Just okay*  
Recording: *Very good*

Graham Parker seems to blow hot and cold. His last album, "The Real Macaw," found him both angry and tuneful, but this new one, disappointingly, finds him simply peevish. It's not a complete waste of time. *Everyone's Hand Is on the Switch* is a genuinely effective song about attitudes toward capital punishment, and *Take Everything* may be the best pop song ever written about greed (for what that's worth). But despite the work of his new and estimable back-up band, it sounds as if Parker made it with his mind elsewhere. As they used to say in Brooklyn, wait till next year. *S.S.*

**TOM PETTY AND THE HEARTBREAKERS: *Southern Accents.*** Tom Petty and the Heartbreakers (vocals and instrumentals); other musicians. *Rebels; It Ain't Nothin' to Me; Don't Come Around Here No More; Southern Accents;* and five others. MCA MCA-5486 \$8.98, © MCAC-5486 \$8.98, © MCAD-5486 no list price.

Performance: *Near disaster*  
Recording: *Very good*

Apparently this was supposed to be some kind of concept album about Tom Petty's regional roots, but somewhere along the line—probably about the time

Petty hooked up with Dave Stewart of the Eurythmics as a collaborator—the concept seems to have gotten lost. The result is a nearly unlistenable mess, easily the worst record of Petty's career.

You want half-baked psychedelic revisionism? Try *Don't Come Around Here No More*. You want Redneck posturing without irony? Check out *Rebels*. You want fake sentimentality and bizarre overproduction? Try *The Best of Everything* (inexplicably, this one's from the Band's Robbie Robertson, who should know better). As a matter of fact, there's only one song here that passes muster on any level at all, and that one is totally out of character in terms of what Petty has done in the past. *Spike*, a witty story about a bunch of Good Old Boys taunting a young punk kid, suggests a cross between Randy Newman and J. J. Cale, but at least it doesn't drive you out of the room screaming. *S.S.*

**SANTANA: *Beyond Appearances.*** Carlos Santana (guitar, vocals); Greg Walker, Alex Ligertwood (vocals); David Sancious (guitar, keyboards); other musicians. *Breaking Out; Written in Sand; How Long; Brotherhood; Spirit;* and five others. COLUMBIA FC 39527, © FCT 39527, no list price.

Performance: *Hot*  
Recording: *Excellent*

Carlos Santana has never really been the voice of the barrio, but his bands have always delivered an exceptionally polished brand of Latin-rock fusion. "Beyond Appearances" is a characteristically professional effort, a collection of solid if unadventurous jazz-rock and Latin-flavored r-&-b. Santana has survived by keeping an ear bent to what's happening around him in popular music. Here he slides through a muddy guitar solo on *Breaking Out* that could be straight from the fingers of Stevie Ray Vaughan, and he follows it up, two songs later, with *How Long* and Alex Ligertwood's perfect imitation of Phil Collins.

For fans of Santana, "Beyond Appearances" also offers up healthy portions of blistering percussion, multiple-synthesizer textures and churning riffs, an emphasis on spirituality that's courageously out of step with the times, and, of course, lots of whining guitar. *M.P.*

**RICK SPRINGFIELD: *Tao.*** Rick Springfield (vocals, keyboards, guitar); other musicians. *Dance This World Away; Celebrate Youth; State of the Heart; Written in Rock; Walking on the Edge;* and five others. RCA AJL1-5370 \$8.98, © AJK1-5370 \$8.98, © PCD1-5370 no list price.

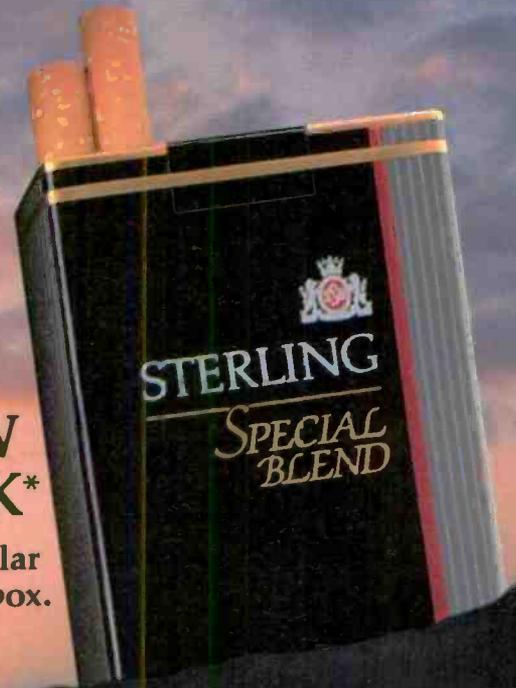
Performance: *Mannered*  
Recording: *Good*

Here's a guy who really needs to relax. Stung to the heart over lingering suspicions that he's a pretty face rather than a musician, Rick Springfield has of late taken to overdressing his often excellent

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songs with all the trendy electronic effects his not inconsiderable money can buy. The result, of course, is records that sound so artificial and needlessly ornate that they turn into unconscious parodies that nobody can take seriously. That's too bad, because when he's dealing with relationships Springfield is capable of writing with a fair amount of verbal facility and genuine feeling.

The songs about relationships on "Tao," notably *Written in Rock* and *Stranger in the House*, are, as you might imagine, all but buried under the production overkill, and the rest sound

mostly like a lot of recent British singles—by Duran Duran, the Thompson Twins, and so on—that have been run through a food processor. Somebody give this boy a massage and a couple of Valium, or at least take away his drum machines. S.S.

**STING: *The Dream of the Blue Turtles*** (see Best of the Month, page 154)

**THIRD WORLD: *Sense of Purpose***. Third World (vocals and instrumentals). *One to One; World of Uncertainty; Rock Me; One More Time; Children of*

*the World*; and six others. COLUMBIA FC 39877, © FCT 39877, no list price.

Performance: *Pleasantly tame*  
Recording: *Good*

When Third World made its recording debut in the middle Seventies, it showed real promise as a leading purveyor of Caribbean reggae with a contemporary American flavor. Third World's first six albums, on the Island label, made that promise a reality. Now that traces of reggae can be found in the music of highly successful pop groups from Australia to Atlanta, Third World no longer seems so special. If anything, the group seems to have become slicker and more homogenized. "Sense of Purpose," Third World's fourth on the Columbia label, contains a hint of the old authenticity in its lilting rhythms, but the lyrics are tame. Without the political and spiritual bite of genuine reggae, it all comes across as merely inoffensive, medium-paced dance music. P.G.

**JOE WALSH: *The Confessor***. Joe Walsh (vocals, guitars); vocal and instrumental accompaniment. *Problems; I Broke My Leg; Bubbles; The Confessor*; and five others. WARNER BROS. 25281-1 \$8.98, © 25281-4 \$8.98.

Performance: *Sleepwalking*  
Recording: *Better than needed*

Once you get past the droll *I Broke My Leg* and the lazy, back-stroking *Bubbles*, both on side one of Joe Walsh's new solo album, a more tedious record would be hard to find. Walsh's trademark stylings are all here, but without diverting lyrics or songs with even the slightest hint of melody.

Walsh seems very intent on saying Something Important on side two, especially with the seven-minute-plus title track, but I honestly don't think even he knows what it is. Sometimes confession is not only *not* good for the soul, it's boring. A.N.

**DIONNE WARWICK: *Finder of Lost Loves***. Dionne Warwick (vocals); vocal and instrumental accompaniment. *Run to Me; Weakness; It's Love; No One in the World*; and six others. ARISTA AL8-8262 \$8.98, © AC8-8262 \$8.98.

Performance: *Slick*  
Recording: *Good*

Another super-slick outing by Dionne Warwick and her producer Barry Manilow, "Finder of Lost Loves" finds Warwick singing duets not only with Manilow (*Run to Me*) but with Stevie Wonder (two songs from the film *The Woman in Red*) and Glenn Jones (*Finder of Lost Loves*) as well. The title track was written and produced by her old mentor Burt Bacharach with Carole Bayer Sager, and while it's now way past the days of *San Jose*, there are still a few flickers of excitement when Warwick and Bacharach work together. Vocally she's in fine, sinuous form, and her lyric attack still has that detached elegance that made her a star. P.R.

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**RONNY WHYTE:** *Soft Whyte*. Ronny Whyte (vocals); instrumental accompaniment. *If I Should Lose You; Some Other Time; I Watch You Sleep; It's the Going Home Together; A Penny for Your Thoughts*, New York; and five others. AUDIOPHILE AP-204 \$7.98.

Performance: *Only from New York*  
Recording: *Excellent*

Singer Ronny Whyte already has a considerable following among New York cabaret goers, but his new album, "Soft Whyte," should win new converts. It is a smooth collection of ten consistently interesting songs, old and new, delivered in Whyte's typical velvety style against a background that could buffer a fall from the heavens. Guitarist Gene Bertonecini's caring strokes and a brush of gentle strings add considerably to the softness. C.A.

**WILLIE AND THE POOR BOYS.** Andy Fairweather Low (guitar, vocals); Bill Wyman (bass, vocals); Charlie Watts (drums); other musicians. *Baby Please Don't Go; Can You Hear Me; These Arms of Mine; Revenue Man*; and eight others. PASSPORT PB 6047 \$8.98, © PBC 6047 \$8.98.

Performance: *Good fun*  
Recording: *Excellent*

Willie and the Poor Boys (title courtesy of the old Creedence Clearwater Revival album) are a bunch of veteran British musicians—some well known, like Bill Wyman and Charlie Watts of the Stones, some not so well known—who got together to do two valuable things: to play faithful tributes to the r-&-b and early rock that inspired their careers, and to donate some of the proceeds for research into multiple sclerosis. The results are about what you might expect: reasonably authentic takes on a lot of great old songs—by the likes of Little Richard, Otis Redding, Allen Toussaint, and Amos Milburn—lacking only that certain spark of genuine personality characteristic of the British blues movement. Still, everyone concerned seems to be having a good time, and as oldies tributes go, this one catches the sound of the music far more accurately than, say, Robert Plant's recent Honeydrippers project. It's worth a listen. Pick to click: Bill Wyman having an off-key ball with Chuck Berry's sublime teenage romance *You Never Can Tell*. S.S.

**BILL WITHERS:** *Watching You Watching Me*. Bill Withers (vocals); other musicians. *Oh Yeah!; Something That Turns You On; Watching You Watching Me; We Could Be Sweet Lovers; Steppin' Right Along; You Try to Find a Lover*; and four others. COLUMBIA FC 39887, © FCT 39887, no list price.

Performance: *Full of feeling*  
Recording: *Very good*

Although it has been five years since Bill Withers released an album, his singular sound, with its folksy, homespun



TODD GREY/COLUMBIA RECORDS

Bill Withers: vintage

quality and uninhibited sentimentality, is immediately recognizable on this new one. He has made certain concessions to funk, but they are not entirely unwelcome. At least his dance tunes have soulful lyrics and superior melodies. Yet Withers is at his best on the ballads (*Whatever Happens, You Try to Find a Love*, and *Watching You Watching Me*). In a swifter tempo, he rocks along wonderfully in *Steppin' Right Along*, which is out of his best grits-and-gravy bag, and *We Could Be Sweet Lovers* sparkles with a Caribbean flavor. This album is vintage Withers. I hope he won't wait five more years to produce another one. P.G.

**TAMMY WYNETTE:** *Sometimes When We Touch*. Tammy Wynette (vocals); Oak Ridge Boys, Vince Gill (background vocals); vocal and instrumental accompaniment. *Sometimes When We Touch; Between Twenty-Nine and Danger; It's Only Over for You; The Party of the First Part*; and six others. EPIC FE 39971, © FET 39971, no list price.

Performance: *Smooth transition*  
Recording: *Very good*

Tammy Wynette's career has been stalled on the tracks for a couple of years now. Realizing she had to do something dramatic or hang it up, Wynette, one of the classic country singers, decided to opt for a more contemporary sound—at least that's what her little "explanation" (read: disclaimer) on the back of this album would lead you to believe. Actually, there was an underlying romantic pop quality in a lot of Wynette's previous records, so this isn't

a radical departure but a natural progression, and a subtle one at that.

Producer Steve Buckingham has been careful not to smother Wynette in strings or overload her with out-of-character material, although there are two very wrong selections here: the Waylon Jennings-like *Between Twenty-Nine and Danger*, which is too masculine for Wynette, even with a female lyric, and the disastrous duet rendition of the title song, where Mark Gray cries giant crocodile tears. A.N.

**PAUL YOUNG:** *The Secret of Association*. Paul Young (vocals); vocal and instrumental accompaniment. *Bite the Hand that Feeds; Everytime You Go Away; Standing on the Edge; Soldier's Things*; and seven others. COLUMBIA BFC 39957, © BFT 39957, no list price.

Performance: *Good vocals*  
Recording: *Very good*

This album has already made Paul Young Britain's top-selling male vocalist. Well, the British aren't infallible. There are some fine moments on "The Secret of Association," but too much of its impact is neutralized by electronic gimmickry. Burbling synthesizers try to squeeze out the Linn drum, which is busy hustling the percussion's time. Meanwhile, Pino Palladino's facile funk bass, which thinks it's a lead instrument, keeps running into the plinking guitar fills tossed bravely into the fray by a pair of session players. Young is ostensibly a soul singer, but this is soul robbed of its humanity by production that can't distinguish between tinkering and arranging.

Like Young's debut album, "No Parlez," which borrowed from sources as diverse as Marvin Gaye, Joy Division, and Waylon Jennings, "The Secret of Association" mixes original material with an imaginative collection of other people's music, including Daryl Hall's *Everytime You Go Away* Elliot Randall's *I'm Gonna Tear Your Playhouse Down* (also done by Ann Peebles), and—are you ready?—Tom Waits's *Soldier's Things*. Of the covers, the Waits actually works best because Young is largely left alone; a string section is all the accompaniment he's saddled with.

Young's own compositions are mostly quite good, although they invariably sound like someone else. *Tomb of Memories* is meant to suggest the Temptations and Marvin Gaye, and *One Step Forward* was obviously inspired by *Soldier's Things*. But Young can be bad too. *Everything Must Change* could be the Bee Gees on an off night, and *Hot Fun* sounds like "Human League Plays the Sly and the Family Stone Songbook." So where is the real Paul Young in all this? After two albums, we know he's a talented vocalist and a musical chameleon. Whether he'll ever create anything less ephemeral than a neo-Motown Top 10 record in the U.K. remains to be seen. M.P.

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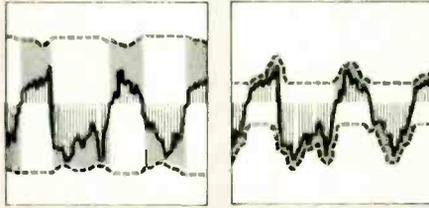
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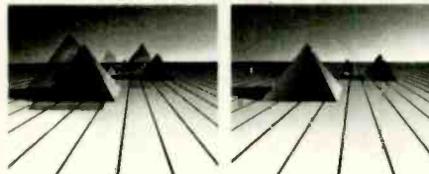
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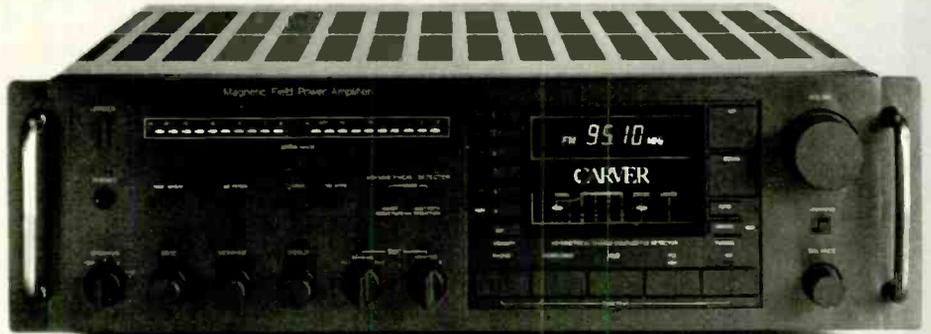
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## SAM COOKE LIVE



**T**HE general public became acquainted with Sam Cooke through recordings, where he came across as an urbane fellow singing a sweet, sophisticated kind of rhythm-and-blues. But there was another, more authentic side to the man that has commonly been overlooked, because he showed it only to live audiences. Born in Mississippi, Cooke became a gospel singer in his teens, and he paid his dues in black-belt bars and clubs long before he became a crossover success in the middle Fifties.

Cooke's only previously released live album was the one he made at the Copacabana in New York in 1963, the year before his death, and it's in the same vein as his other recordings. But now RCA has released "One Night Stand," recorded live in Miami in the same year. For the first time on records, everyone can hear the gutsier Cooke who was known to those who followed his career from the beginning.

On these cuts Cooke employs the hypnotically repetitious spoken exhortations that spring from the tradition of black preaching as well as the blues. Instead of the suave balladeer, he comes across as a bluesman willing to let the funk hang out, lapsing into heavy rapping to whip the ardently responsive audience into a frenzy. Popular favor-

ites like *Chain Gang* and *Bring It On Home to Me* are injected with a raw energy and an urgency that bear witness to Cooke's roots in gospel and blues. It's apparent that he felt at home in this milieu, and the ambience of that night twenty-two years ago is captured marvelously, including some clinkers hit by the local sidemen, led by King Curtis, and, especially, Cooke's lively interplay with the audience.

Although Cooke died—shot to death in a sleazy Hollywood motel at the age of thirty-three—just as his career was beginning to peak, his seminal influence on a generation of popular singers, not all of them black, is undeniable. "One Night Stand" is an important release because it rounds out our recorded picture of what Sam Cooke represented as an artist.

Phyl Garland

**SAM COOKE: *One Night Stand—Live at the Harlem Square Club, 1963.*** Sam Cooke (vocals); King Curtis (tenor saxophone); Cliff White (guitar); other musicians. *Feel It; Chain Gang; Cupid; It's All Right/For Sentimental Reasons (medley); Twistin' the Night Away; Somebody Have Mercy; Bring It On Home to Me; Nothing Can Change This Love; Having a Party.* RCA AFL1-5181 \$8.98, © AFK1-5181 \$8.98, © PCD1-5181 no list price.

\$8.98, © 820 210-4 \$8.98, © 820 210-2 no list price.

Performance: *Good*  
Recording: *Good*

*The Tap Dance Kid* has been running successfully on Broadway for some time (at this writing), and for good reason. The book is hopeful, the music is mildly melodic, and the performers all have

charm and enthusiasm. On record, however, it comes across as a very mild effort indeed, with too much padding between the (not very) Big Numbers, stolid sing-out performances, and an atmosphere that is generally lackadaisical. People who've seen the show generally rave about it, and of course they will want the album. As for me, it's too much sweetness and light.

P.R.

## JAZZ



**GEORGE ADAMS-DON PULLEN QUARTET: *Live at Village Vanguard.*** George Adams (tenor saxophone); Don Pullen (piano); Cameron Brown (bass); Dannie Richmond (drums). *The Necessary Blues; Solitude; Intentions; Diane.* SOUL NOTE SN 1094 \$9.98, © 1094-C \$9.98, © 1094-CD no list price.

Performance: *Excellent*  
Recording: *Good remote*

At times George Adams's tenor sounds like wet fingers rubbing across a filled balloon, but his playing also takes you on a return trip through rhythm-and-blues country to the center of jazz past. Everything he does, balloon effects included, works either to build up excitement or to give an old favorite a welcome new wrinkle. On "Live at Village Vanguard," the latest release by the George Adams-Don Pullen Quartet, both leaders are heard to fine advantage. Pullen's piano also blends tradition with treks into the twilight zone, but that's what separates this quartet from other good tenor-and-rhythm-section groups. With Cameron Brown's fine bass and the excellent percussive work of former Mingus drummer Dannie Richmond, this is a first-class, cohesive outfit that is steeped in tradition yet tastefully adventurous.

C.A.

**JOE CARROLL: *Jumpin' at Jazzmania.*** Joe Carroll (vocals); instrumental accompaniment. *Jump Ditty; Honey-suckle Rose; Wah Wah Blues;* and three others. JAZZMANIA 41222 \$8.50 (from Jazzmania Records, 60 Pineapple St., 7B, Brooklyn, NY 11201).

Performance: *Excellent*  
Recording: *Good remote*

His was the voice of bebop, a shining gem in the spirited Dizzy Gillespie band of the late Forties and early Fifties. But like so many distinguished jazz artists, Joe Carroll was put on the back burner by record companies and promoters (and hence audiences) as soon as the musical wind shifted direction. Woody Herman brought him into his Herd of the mid-Sixties, but for many years, until his death in 1981, at age sixty-five, Carroll was forced to take his vocal improvisations and keen sense of humor to not-so-lucrative, out-of-the-way places like Jazzmania Society, a New York loft where this album was recorded in 1978.

More intimate and less commercial than typical studios, such locales often inspire the best performances, and

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Miles Davis: turning his back on music?

"Jumpin' at Jazzmania" is a case in point. Captured here are thirty-seven minutes of the kind of good times Carroll so effortlessly generated, good times made all the better by the relaxed surroundings. Highlights include Fats Waller's *Honeysuckle Rose*, with some highly original lyrics, a wonderful rendition of *Wah Wah Blues*, Carroll's most popular number with Herman, and a lesson in scat called *Jump Ditty*. C.A.

**MILES DAVIS: *You're Under Arrest*.** Miles Davis (trumpet, voices); vocal and instrumental accompaniment. *Human Nature; Time After Time; Katia Prelude*; and six others. COLUMBIA FC 40023, © FCT 40023, no list price.

Performance: *Contrived clutter*  
Recording: *Good*

If this were not a Miles Davis album, you could simply regard it as another failed fusion set. But it is a Miles Davis album, and so an entirely different yardstick applies. Here's the man who gave us such brilliant sets as "Kind of Blue," "Sketches of Spain," and "Milestones" and who virtually sired fusion with his 1971 "Bitches Brew" album. That change in direction did not please the bop purists, but arguments that Davis had turned his back on jazz did not hold water; "Bitches Brew" remains an interesting album. Now, however, I am inclined to think Miles is turning his back on music!

Granted, Davis still plays beautifully from time to time, but saddling himself with a clearly inferior band—as he has done here—seems an odd form of self-inflicted punishment. As for the material...! In 1971 he aimed at the youth market and scored, but this time he is sadly off the mark. "You're Under Arrest" is too passé to raise the purple and green eyebrows of the punk set, even with Cyndi Lauper's *Time After Time*. The gimmick-ridden title tune is one of two that attempt to make some sort of political statement, but they fail to rise above the level of *Purple People Eater* and *Itsy Bitsy Teenie Weenie Yellow Polkadot Bikini*. Fans may find some profundity in these grooves, but I hear not a trace. C.A.

**DIZZY GILLESPIE: *New Faces*.** Dizzy Gillespie (trumpet); Branford Marsalis (soprano and tenor saxophones); Kenny Kirkland (piano); other musicians. *Birk's Works; Tin Tin Deo; Tenor Song; Fiesta Mojo*; and three others. GRP ● A-1012 \$8.98, © C-1012 \$8.98, © D-9512 no list price.

Performance: *The Bop goes on*  
Recording: *Excellent*

The GRP production team of Larry Rosen and Dave Grusin has managed not to mangle Dizzy Gillespie's "New Faces." It's a very nice album indeed. Besides Gillespie's subdued but splendid playing, the album features new Gil-

lespie compositions along with such classics as his *Tin Tin Deo* and *Birk's Works*, all bopped along by a fine rhythm section led by pianist Kenny Kirkland. The set is also enhanced by saxophonist Branford Marsalis, whose playing is maturing nicely. C.A.

**NEW AIR: *Live at Montreal International Jazz Festival*.** Henry Threadgill (flute, alto and baritone saxophones); Fred Hopkins (bass); Pheeroan akLaff (percussion). *Sir Simpleton; Difda Dance; Roll On*; and two others. BLACK SAINT/PSI BSR 0084 \$9.98, © BSR 0084C \$9.98, © 0084CD no list price.

Performance: *Not to be missed*  
Recording: *Excellent remote*

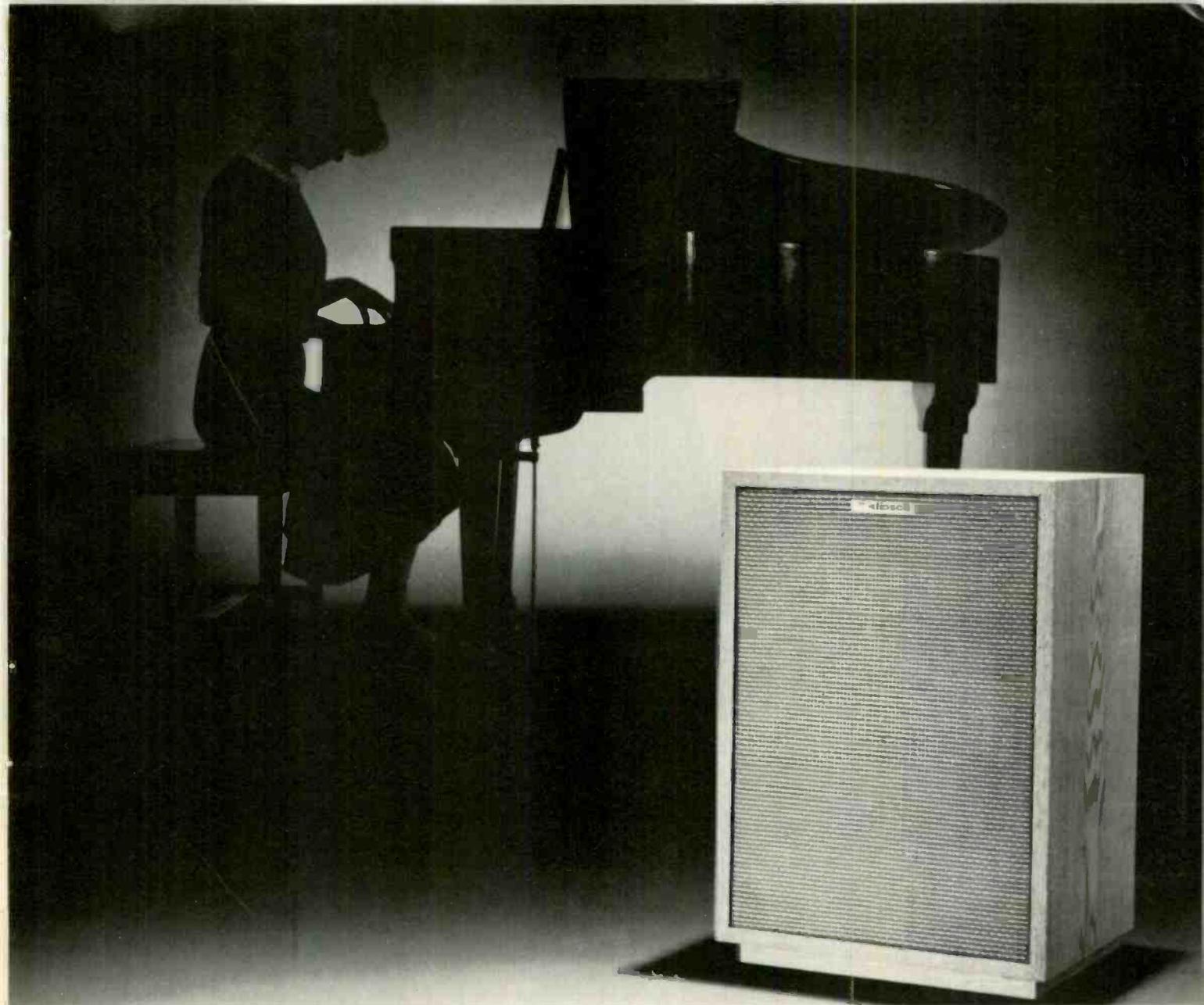
The creativity continues to flow our way from composer-performer Henry Threadgill, an artist whose music suggests the improvisational sense of Charlie Parker's and Louis Armstrong's work and the logical progression of Bach's while generating the kind of emotional and physical excitement that all good jazz shares. New Air, Threadgill's trio with bassist Fred Hopkins and percussionist Pheeroan akLaff, is captured exquisitely on this live album. The entire forty-six minutes is a joy, one of the most satisfying musical experiences ever recorded. If you ever get a chance to catch this group—or, for that matter, any Threadgill performance—don't pass it up. This is what jazz is all about. C.A.

**EDDIE SOUTH.** Eddie South (violin); Django Reinhardt (guitar); other musicians. *Lady Be Good; Daphné; Fiddle Blues; Two Guitars; Dinah; Doin' the Raccoon*; and six others. SWING SW 8405 \$6.98, © SWC 8405 \$6.98.

Performance: *Engaging*  
Recording: *Mostly good*

Never a household name, Eddie South was quite successful in the days when jazz was hot and records revolved at 78 rpm. Today, the violinist's name is recognized only by jazz record collectors and history-oriented fans, but this album in DRG's ambitious series of Swing label reissues should be heard by anyone who likes jazz of the infectious, body-moving kind.

"Eddie South" comprises twelve recordings made in Paris in 1929 and 1937. Only two tracks are from the earlier date, and they are reproduced here with horrendous surface noise. Fortunately, they are also the least interesting musically. The rest of the album is pure joy. Of course, it doesn't hurt to have such stompers as Django Reinhardt and Stéphane Grappelli on hand for many of these sides, and the two takes of the first movement of Bach's Concerto in D Minor for Two Violins, featuring South, Grappelli, and Reinhardt, are by themselves worth a great deal more than anyone is going to charge for this album. I only wish that DRG would do something about the liner notes for the series, like edit them. C.A.



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*Discs and tapes  
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Richard Freed  
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**BACH: *St. Matthew Passion*.** Howard Cook (tenor), Evangelist; Ulrik Cold (bass), Jesus; Barbara Schlick (soprano); René Jacobs (alto); Hans-Peter Blochwitz (tenor); Peter Kooy (bass); children's chorus; Collegium Vocale, Ghent; Vocal Ensemble and Orchestra of La Chapelle Royale, Philippe Herreweghe cond. HARMONIA MUNDI/FRANCE 1155.57 three discs \$35.94, © 401155.57 three cassettes \$35.94, © 901155.57 three CD's \$51.

Performance: *Moving*  
Recording: *Great*

Beautifully sung and sensitively paced, Philippe Herreweghe's account of Bach's *St. Matthew Passion* is a moving one. Recitatives, arias, choruses, and chorales follow each other without pause, moving through the events of the Passion in a performance that builds in intensity and drama right up to the final release of the last chorus. Articulating clearly, both singers and instrumentalists achieve a lucid texture that reveals the inner complexities of the score, though never at the expense of the powerfully drawn surface imagery. And the choruses, often playing the role of the mob, are excellent throughout. Altogether a first-rate job. *S.L.*

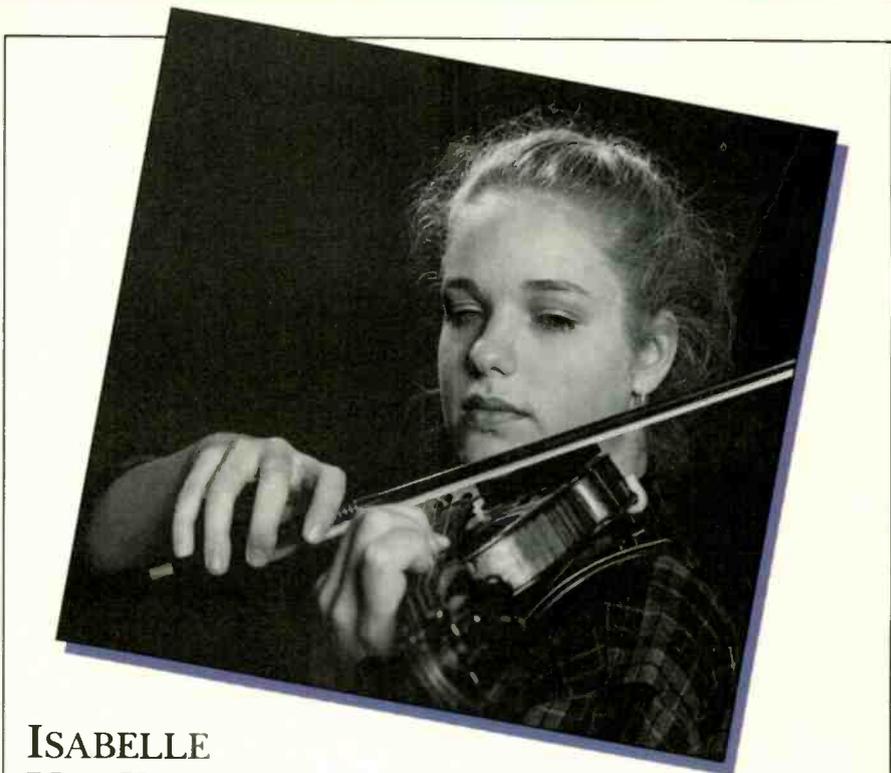
**BERLIOZ: *Nuits d'été, Op. 7*. RAVEL: *Shéhérazade*.** Hildegard Behrens (soprano); Vienna Symphony Orchestra, Francis Travis cond. LONDON ④ 411 895-1 \$10.98, © 411 895-4 \$10.98, © 411 895-2 no list price.

Performance: *Generally good*  
Recording: *Cavernous Berlioz*

Hildegard Behrens is a fine performer, and in particular a fine singing actress. She can be relied upon for taste, commitment, and intelligent use of her powerful and attractive voice, and she delivers a great deal of pleasure in this recording. In the Berlioz, she is at her most persuasive in two of the slower songs, *Le Spectre de la rose* and *Absence*, but in the cycle's opening *Villanelle* both her slowish tempo and her excessive intensity produce an effect of

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## ISABELLE VAN KEULEN

**T**HE young Dutch violinist Isabelle van Keulen was only three months shy of her eighteenth birthday when she made her first commercial recording, a recording of the Haydn C Major Violin Concerto and the Mozart D Major, K. 211, for Philips. And what we get, now that it has been released in this country, is not just fancy fiddling but mature music making at the most insightful level, the very sort of thing you might expect, perhaps, from a seasoned musician who elects to perform these particular concertos instead of big display vehicles.

The second of Mozart's five violin concertos, in fact, is hardly more familiar than Van Keulen herself to most listeners, and, although the C Major is the best-known of Haydn's violin concertos, it has hardly suffered from overexposure. Comparing Van Keulen's performances of them with others by violinists very much her senior, I was reminded most of the recordings by

Arthur Grumiaux, though Grumiaux did not, of course, have the benefit of such wide-open, utterly realistic recorded sound. The splendid Netherlands Chamber Orchestra, under Antoni Ros-Marbá, is beautifully balanced with the soloist at all points, and there is a fine sense of give-and-take between the two performing elements. In the Haydn, by the way, Van Keulen plays cadenzas by the Dutch violinist Jo Juda, and in the Mozart the cadenzas are by David Zinman, the American who was himself the conductor of this orchestra a few years back. An altogether outstanding recording on all counts. *Richard Freed*

**HAYDN: *Violin Concerto No. 1, in C Major*. MOZART: *Violin Concerto No. 2, in D Major (K. 211)*.** Isabelle van Keulen (violin); Netherlands Chamber Orchestra, Antoni Ros-Marbá cond. PHILIPS ④ 412 718-1 \$10.98, © 412 718-4 \$10.98, © 412 718-2 no list price.

self-consciousness that is very much at odds with the spontaneity and weightlessness suggested in both the music and the text.

The Ravel is more consistently convincing, with first-rate orchestral work under Francis Travis. The orchestral contribution in the Berlioz, too, is quite stylish, but many details are obscured, along with the words Behrens sings, in the cavernous sonic frame. Curiously, the Ravel seems less affected. *R.F.*

**BERLIOZ: *Symphonie fantastique, Op. 14*.** Berlin Philharmonic Orchestra, Daniel Barenboim cond. CBS ① IM 39859, © IMT 39859, no list price.

Performance: *Careful*  
Recording: *Gorgeous*

This account of Berlioz's *Symphonie fantastique*, with which Daniel Barenboim launches his new series conducting the Berlin Philharmonic on CBS, is more persuasive than his earlier one

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with the Orchestre de Paris on Deutsche Grammophon. The new recording itself is a knockout, almost certainly the most stunning orchestral sound CBS has yet captured, but the performance still seems too careful by half. It offers a clear, fluent exposition of Berlioz's devices but misses the impetuosity and passion that give this work its unique character. *R.F.*

**CAVALLI: *Salve Regina* (see D. SCARLATTI)**

**CLÉMENT: *O Maria, vernans rosa* (see D. SCARLATTI)**

**DVOŘÁK: *Suite in A Major, Op. 98b* (see JANÁČEK)**

**DVOŘÁK: *Symphony No. 7, in D Minor, Op. 70*. Chicago Symphony Orchestra, James Levine cond. RCA © ARCI-5427 \$12.98, © ARKI-5427 \$12.98, © RCD1-5427 no list price.**

Performance: *Splendid*  
Recording: *Topflight*

This most Brahmsian and most emotionally charged of the Dvořák symphonies has enjoyed at least half a dozen distinguished recorded performances since the advent of stereo, but James Levine's reading belongs right up there with the very best. Although Levine's earlier treatment of the *New World* Symphony was highly charged, he gives the Seventh a decidedly lyrical emphasis. The lovely, *Tristan*-echoing slow movement is handled with all the tender care it deserves, and while the superb scherzo is less taut here than in some other versions, its inner details are marvelously limned. A high point of Levine's interpretation is the slow introduction to the finale, where he builds up the suspense so that the surge into the main allegro gives an extra sense of drive toward the triumphant and defiant closing pages.

On a par with the musical aspects of the performance is the recording itself, in which producer Jay David Saks and engineer Paul Goodman display complete mastery of the tricky acoustics of Chicago's Orchestra Hall. Not only is the full body and brilliance of the Chicago Symphony's beautiful playing captured in all its glory, but everything is in perfect balance through the entire tonal spectrum. I was particularly impressed by the timpani sound, which displays fundamentals and overtones that are in perfect proportion without a trace of tubbiness.

The Compact Disc was not available to compare with the LP when I sat down to write this review, but it can only enhance what is already in every way a fine achievement. *D.H.*

**GESUALDO: *Ave, dulcissima Maria* (see D. SCARLATTI)**

**GRANADOS: *Seis piezas sobre cantos populares españoles; Allegro de concierto; Escenas románticas*. Alicia de Larro-**

cha (piano). LONDON © 410 288-1 \$10.98, © 410 288-4 \$10.98, © 410 288-2 no list price.

Performance: *Fastidious*  
Recording: *Very good*

Almost invariably, I've felt Alicia de Larrocha's London remakes of her Spanish repertoire to be less persuasive than the performances she recorded earlier for Hispavox and released here at various times on the Epic, Turnabout, and Musical Heritage Society labels. I was happy to find this impression contradicted by half of this new Granados collection, but it's only strengthened by the other half.

In the *Allegro de concierto* and *Escenas románticas* Larrocha brings all her authority to bear, and all her conviction too. These are performances against which all others can be measured for some time. In the pieces on Spanish folk songs, though, I miss the insinuating vigor and sheer bite—particularly in such numbers as the *Marcha oriental* and *Zapateado*—that made her performances on Turnabout and MHS so vital. Here she sounds merely fastidious, even to the extent of smoothing out several of the music's more provocative—and shrewdly calculated—rough edges. The sound is unquestionably richer in the new digital recording, but unless you simply have to have this material on Compact Disc, I think you'll find more to enjoy in Larrocha's earlier accounts. *R.F.*

**JANÁČEK: *Lachian Dances*. DVOŘÁK: *Suite in A Major, Op. 98b* ("American"). Rochester Philharmonic Orchestra, David Zinman cond. Nonesuch © 79078-1 \$11.98, © 79078-4 \$11.98.**

Performance: *Neat*  
Recording: *Good*

**JANÁČEK: *Lachian Dances; Idyll*. Rotterdam Philharmonic Orchestra, James Conlon cond. ERATO/RCA © NUM 75191 \$10.98, © MCE 75191 \$10.98, © ECD 88095 no list price.**

Performance: *Excellent Idyll*  
Recording: *Good*

Both of the Janáček works on these albums are youthful ones. The 1878 *Idyll* is a lovely companion piece to the Suite for Strings of 1877, and the Lachian Dances are charmers, every one, and decidedly more easygoing in spirit than Dvořák's famous sets of Slavonic Dances. I found David Zinman's treatment of the dances neat and pert, James Conlon's more heavyhanded. Neither holds a candle stylistically to the performance by the Brno State Philharmonic under František Jilek on Supraphon.

*Idyll* presents fewer stylistic challenges, and the exceptionally beautiful string playing that Conlon elicits from the Rotterdam Philharmonic, performing in a pleasingly warm acoustic surround, makes his recording worthy of serious consideration.

The Dvořák Suite in A Minor began life as a five-movement piano work composed in 1894 in New York following the triumph of the *New World* Symphony. The orchestral version was done the following year, which saw Dvořák returning to his homeland for good. The music is lightweight, with a nice mazurka-style second movement and "Americanist" touches in the two final movements. Frankly, I'd put the piece in the potboiler category, but Zinman's performance is just right and very cleanly recorded. *D.H.*

**LEONCAVALLO: *Pagliacci*.** Placido Domingo (tenor), Canio; Teresa Stratas (soprano), Nedda; Juan Pons (baritone), Tonio; Florindo Andreolli (tenor), Beppe; Alberto Rinaldi (baritone), Silvio. Chorus and Orchestra of La Scala, Georges Prêtre cond. PHILIPS 411 484-1 two discs \$19.96, © 411 484-4 two cassettes \$19.96.

Performance: *Rough*  
Recording: *Satisfactory*

This recording derives from the original soundtrack of the Franco Zeffirelli film of *Pagliacci*, which was telecast fairly recently on the PBS network. It was a first-rate TV show—well designed, well directed to enhance the opera's *verismo*, and well acted by excellent singers who looked right and knew their roles dramatically. We will be fortunate to have more television presentations like it, but, sadly, good TV does not a good record make. The performance on disc and tape is disappointing.

There are effective moments. Juan Pons's Prologue is very well sung; his appeal to Nedda is touchingly pitiable (and Teresa Stratas's rejection of him is unnecessarily shrill). The Nedda-Silvio duet is performed with proper attention to Leoncavallo's amorous melody and, dramatically, to the lovers' desire. The Intermezzo is played with feeling for the atmosphere it is intended to create, and Arlecchino's Serenade is liltily sung by Florindo Andreolli.

Placido Domingo is obviously into his role. On the television screen, his performance was exciting because what we heard complemented what we saw. The same may be said for Stratas, who contributes some lovely musical moments. But the performance of both artists takes the mind's eye—and ear—back to the TV production. You cannot deny the sincerity of this effort; you only wish it was performed without such unremitting tension and, sometimes, near frenzy. In musical nuance, Georges Prêtre's reading compares unfavorably with Riccardo Muti's on Angel, and in vocal splendor the recording falls short of the Domingo-Caballé recording on RCA. Technically it's entirely satisfactory. *R.A.*

**MAHLER: *Piano Quartet Movement in A Minor*** (see R. STRAUSS)

**MONTEVERDI: *L'Orfeo*** (see Best of the Month, page 152)

**MOZART: *Eine kleine Nachtmusik* (K. 525); *Serenade No. 9, in D Major* (K. 320, "Posthorn").** Prague Chamber Orchestra, Sir Charles Mackerras cond. TELARC 1 DG-10108 \$12.98, © CD-80108 no list price.

Performance: *Elegantly vital*  
Recording: *Very good*

Here is the third Compact Disc version of Mozart's festive *Posthorn* Serenade and the sixth of *Eine kleine Nachtmusik*. A certain nimble nervousness informs Sir Charles Mackerras's reading of the *Nachtmusik*, especially in the slow movement, where a faster-than-usual tempo creates an atmosphere bordering on agitation. In the rondo finale, however, Mackerras is generous with repeats. Overall, I found his treatment of the piece, too often handled in routine fashion, to be a stimulating and provocative one.

Mackerras takes the same virile yet transparently textured approach to the elaborate seven-movement *Posthorn* Serenade. Following the ceremonious opening, we get a splendidly pugnacious allegro. The first minuet is in turn festive and coy, the concertante and rondeau redolent with delicious woodwind sonorities. The somber andantino, which prefigures the wonderful slow movement of the later Sinfonia Concertante for Violin and Viola, is a high point here. The second minuet includes the famous posthorn solo, which has a fascinatingly nasal, outdoorsy sound in this performance, and the finale comes across with great spirit.

The Telarc recording, one of the label's first made overseas, is very good, with a lively acoustic surround that suggests a spacious but not excessively reverberant Baroque ballroom. *D.H.*

**PERGOLESI: *Stabat Mater*.** Margaret Marshall (soprano); Lucia Valentini Terrani (contralto); Leslie Pearson (organ); London Symphony Orchestra, Claudio Abbado cond. DEUTSCHE GRAMMOPHON 415 103-1 \$10.98, © 415 103-4 \$10.98, © 415 103-2 no list price.

Performance: *Excellent*  
Recording: *Spacious*

Pergolesi's lovely setting of the *Stabat Mater* shares with his opera *La serva padrona* the distinction of being among the few works attributed to the composer that were actually composed by him. Over the two and a half centuries since his death, his *Stabat Mater* has undergone various arrangements, most of them adding a chorus, some augmenting the string orchestra with winds, brasses, and drums, but it is almost always performed now in the original version, as on this new DG recording, which strikes me as quite simply the finest yet made of the work.

Claudio Abbado has found the music's ideal pulse, and the beautiful sense of flow quite effectively offsets the rather static quality of the text. There is a most effective transparency to the



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sound of the smallish string ensemble, and the occasional wheeze of the organ motor seems an endearing aspect of the overall sonic integrity. Only occasionally, in some of the soprano's louder solos, does the transparency give way to a sense of cavernous expanse. In general, both voices are exceptionally well balanced with the strings, and in the duets they are superbly matched. In every respect, this splendid recording leaves the nearest runner-up pretty far behind. *R.F.*

**RAVEL: *Shéhérazade* (see BERLIOZ)**

**RAVEL: *Sonate posthume; Tzigane; Violin Sonata; Berceuse sur le nom de Gabriel Fauré.*** Dmitry Sitkovetsky (violin); Bella Davidovich (piano). ORFEO Ⓞ S108 841A \$13.98, Ⓞ M108 841A \$13.98, Ⓞ C108 841A \$17.

Performance: *Satisfying*  
Recording: *Fine*

This fine Orfeo recording of Ravel's works for violin and piano has much to recommend it. There may be more persuasive accounts of some of the individual works—by Gidon and Elena Kremer in the early *Sonate posthume* (Philips), by Arthur Grumiaux and István Hajdu in the big Violin Sonata (Philips Festivo)—and, of course, many listeners will prefer *Tzigane* in its orchestral setting. But Dmitry Sitkovetsky and his mother, Bella Davidovich, are never less than satisfying in this music, except possibly in the "blues" movement of the mature sonata, which tends to sound more like a Yemenite lament than like American blues. The recording (Orfeo's first American one, I believe) is also quite fine, and the LP benefits from DMM processing. *R.F.*

**RIMSKY-KORSAKOV: *March* (see TCHAIKOVSKY)**

**D. SCARLATTI: *Stabat Mater.***  
**CLEMENT: *O Maria, vernans rosa.***  
**GESUALDO: *Ave, dulcissima Maria.***  
**CAVALLI: *Salve Regina.*** Vocal soloists; Monteverdi Choir and English Baroque Soloists, John Eliot Gardiner cond. ERATO/RCA Ⓞ NUM 75172 \$10.98, Ⓞ MCE 75172 \$10.98, Ⓞ ECD 88087 no list price.

Performance: *Excellent*  
Recording: *Excellent*

Although the liner notes describe this record as a "posy in honor of the Virgin" ranging musically from the Renaissance to the Baroque, Domenico Scarlatti's magnificent *Stabat Mater* is the work that will draw the most attention. While hundreds of his harpsichord sonatas have come down to us and maintain well-deserved prominence in the repertoire, very little of Scarlatti's vocal music remains. Listening to this poignant depiction of the Blessed Virgin's agony at the foot of the Cross, one senses something of the magnitude of our loss. Written in an archaic contrapuntal style that was already in declin-

ing use in Scarlatti's day, the music is rich in its harmonic language, detailed in its invention, and, above all, powerful in its expression.

The forces of the Monteverdi Choir, supplemented by a continuo of cello, bass, organ, and chitarrone, produce a sensual but clearly textured sound that allows us to luxuriate in its opulence and savor its inner details. John Eliot Gardiner's pacing is appropriate to the tragic text but never wallows in sentimentality or allows the tempos to bog down.

The Marian music on side two, written between the mid-fifteenth and the mid-sixteenth centuries, is equally fine and equally well performed, but anyone paying homage to the Scarlatti tricentennial will want this recording for his *Stabat Mater*. *S.L.*

**SCHUBERT: *Winterreise, Op. 89 (D. 911).*** Jon Vickers (tenor); Geoffrey Parsons (piano). EMI/PATHÉ MARCONI Ⓞ 1731973 two discs \$23.94 (from International Book & Record Distributors, 40-11 24th St., Long Island City, NY 11101).

Performance: *Dramatic*  
Recording: *Close up*

From the activity of the last year or two, it might appear that *Winterreise* is displacing Vivaldi's *Four Seasons* as the most frequently recorded title of our time. This set appears to be Jon Vickers's first recording outside the realms of opera and large-scale concert works. According to the information supplied, he first sang *Winterreise* in public only six years ago and made the recording two years ago.

Great artist that he is, Vickers must have lived with these songs long and intimately before he undertook to perform or record them. His *Heldentenor* range suits them well, and every word is invested with the full weight of its meaning. Geoffrey Parsons's accompaniment is fully in character with Vickers's approach, and the voice and piano are especially well balanced in the recording, which is enhanced by DMM—but which also happens to be just a little too close up for maximum listening comfort.

Vickers takes, on the whole, an overtly dramatic, rather declamatory approach to these songs, and the close focus tends to exaggerate dynamic contrasts in the more "heroic" passages, with a consequent sacrifice of smoothness. Thus, for all the conviction the singer brings to his assignment, I feel that among recent recordings of this cycle the deepest pleasure is still provided by the almost understated one by Ernst Haefliger on Claves and by the cumulative power of Hermann Prey's latest, on a single Denon CD. *R.F.*

**SHOSTAKOVICH: *Piano Concerto No. 1; Chamber Symphony* (see Best of the Month, page 151)**

(Continued on page 185)



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**SIBELIUS:** *Finlandia, Op. 26; The Swan of Tuonela, Op. 22, No. 2; Valse triste, Op. 44; Tapiola, Op. 112.* Berlin Philharmonic Orchestra, Herbert von Karajan cond. DEUTSCHE GRAMMOPHON ● 413 755-1 \$10.98, © 413 755-4 \$10.98, © 413 755-2 no list price.

Performance: *Impressive*  
Recording: *Very good*

What is most immediately impressive in these brand-new recordings from the basic Karajan Sibelius repertoire is the almost Stokowskian richness of tone the conductor gets from the Berlin Philharmonic strings—most notably in *The Swan of Tuonela*, which receives a reading of unique loveliness. To the much-abused *Valse triste* Karajan brings an atmosphere that's redolent of Edvard Munch's paintings at their most macabre. The treatment is highly dramatic, again recalling Stokowski. *Finlandia* is performed in an unusually broad and ceremonious fashion, which to my mind lends new impact to this work.

The unusually deliberate pace here of *Tapiola*—perhaps the peak of Sibelius's achievement as a tone poet of nature and master of the orchestra—may raise a few eyebrows, but the enormous dynamic range Karajan elicits from the orchestra gives the reading great power. The howling blizzard at the end will chill you to the marrow. D.H.

**R. STRAUSS:** *Piano Quartet in C Minor, Op. 13.* MAHLER: *Piano Quartet Movement in A Minor.* Quatuor Ivaldi. ERATO/RCA ● NUM 75146 \$10.98, © MCE 75146 \$10.98.

Performance: *Excellent*  
Recording: *Excellent*

The recent recordings of Richard Strauss's student works have been intriguing not so much for acquainting us with the "seeds" of his mature style as for showing him still working in Classical forms and proving how unsuited he was to such restrictions—unsuited, that is, in terms of finding his own voice. The Piano Quartet Strauss produced at the age of twenty is solid, substantial, and altogether worth hearing, and it is given a persuasive performance here. Moreover, there is a substantial bonus in the form of one movement of a similar work completed by the sixteen-year-old Mahler. The coupling is especially apt, for we hear both likenesses and contrasts in these works of the brilliant contemporaries. Mahler at sixteen had perhaps given a stronger intimation of what was to be his mature style than Strauss did at twenty, and the feeling of personal urgency in this solitary, dark-hued movement is beautifully realized by Christian Ivaldi and his three string associates. The sound is extremely lifelike and agreeably warm. R.F.

**TCHAIKOVSKY:** *Symphony No. 5, in E Minor, Op. 64.* RIMSKY-KORSAKOV: *March, from Tsar Saltan Suite, Op. 57.* Royal Philharmonic Orchestra, André Previn cond. TELARC ● DG-10107 \$12.98, © CD-80107 no list price.

Performance: *Very good*  
Recording: *Very good*

André Previn's approach to Tchaikovsky's much-abused Fifth Symphony is not to tear its passion to tatters but to let the music speak for itself. Even so, the introductory pages are quite dramatic, with effective phrasing and plenty of dynamic nuances. The pacing of the allegro is judicious without becoming prosaic. The slow movement is marked not only by fine solo-horn work but by superb playing in the crucial solos for oboe and clarinet. The woodwinds also shine in the exacting passage work in the trio section of the waltz.

Only in the finale does Previn really impose his will, giving us an imposing introduction, then cutting loose with a hell-for-leather allegro that whips up a good deal of excitement. Telarc's engineering crew found the Walthamstow Town Hall in England a congenial location, achieving sound that is both solid in its impact and balanced over a wide range throughout.

*(Continued on page 189)*

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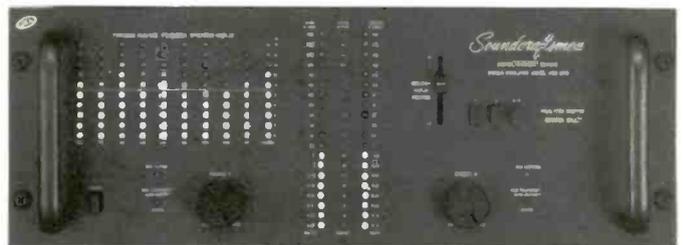
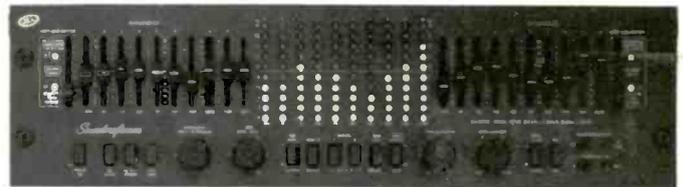
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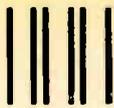
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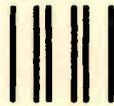
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The somewhat incongruous filler is the brightly colored march from Rimsky-Korsakov's *Tsar Saltan* Suite. Presumably it was included as a kind of sonic showpiece, but given the extended potential playing time of a Compact Disc (something more than seventy minutes), we should have been given the entire suite. *D.H.*

**IVALDI: *The Four Seasons*.** Anne-Sophie Mutter (violin); Vienna Philharmonic Orchestra, Herbert von Karajan cond. ANGEL ① DFO-38160 \$11.98, ④ 4DS-38160 \$11.98, ④ CDC-47043 no price list.

Performance: *Glamorous*  
Recording: *Vivid*

With more than fifty versions listed in Schwann, Vivaldi's *The Four Seasons* concerto sequence undoubtedly is the most often recorded work in the classical repertoire. Herbert von Karajan has recorded it before, but for this version with the splendidly musical Anne-Sophie Mutter as violin soloist, he has reduced the Vienna string forces and added a small organ and harpsichord continuo. For all that, it is no "historically authentic" Baroque performance. Karajan brings his string body on strong, and while Mutter is able to hold her own with verve and sweetness, the continuo counts for very little, even

when it has a prominent role, as in the slow movement of *Autumn*.

As an interpretation, the Mutter/Karajan performance has its vivid moments: finely sensitive solo playing in the slow movement of *Spring*, brilliant solo work in the storm section of *Summer*, some really chill, icy blasts at the beginning of *Winter*, and splendid fury at the end. Even so, it all adds up to an outsized reading that reminds me of one of those super-glamorous coffee-table gift books.

The sound on CD is extraordinarily vivid, even a bit fierce. Great demonstration material of a kind, but for some ears, I suspect, the LP will yield a more comfortable sound. *D.H.*

### Collection

**FELICITY LOTT: *Mémoires sur des poèmes de Victor Hugo*.** Settings by Gounod, Bizet, Lalo, Delibes, Franck, others. Felicity Lott (soprano); Graham Johnson (piano). HARMONIA MUNDI HMC 1138 \$11.98, ④ HMC 401138 \$11.98, ④ HMC 901138 \$17.

Performance: *Lovely*  
Recording: *Unusually clear*

Despite the mixture of composers, this recording is a unified recital in that it is devoted to musical settings of words by a single author. In her understanding of

and identification with the poems, soprano Felicity Lott brings to each song its proper style and particular interpretation. Although generally unfamiliar to American audiences, hers is a voice of great beauty—crystalline clear, admirably supported, and capable of truly ravishing pianissimos. The accompaniments by Graham Johnson are eloquent, and the recording maintains a fine balance between voice and piano.

Space permits comment on just a few of the seventeen selections. The first, Gounod's *Sérénade*, is a setting of one of Hugo's most appealing lyrics, and Lott sings it with a simplicity and a floating purity of line that immediately capture the listener. *Guitare* is heard in two settings, one by Bizet, which drowns Hugo's poetry, and the other by Lalo, which makes it live. Bizet redeems himself, however, in the languid sensuality of *Adieux de l'hôtesse arabe*, which Lott communicates evocatively. There are three little-known and rewarding songs by Fauré, one of which is sung by the soprano in duet with herself, along with Liszt's *O quand je dors* and Reynaldo Hahn's *Si mes vers avaient des ailes*, both sung with great purity. In sum, this recording can be recommended to anyone who enjoys Hugo's poetry, the art of the French *chanson*, or just sensitive, tasteful singing. *R.A.*

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# VIDEO REVIEWS

Discs and tapes  
reviewed by  
Chris Albertson  
Louis Meredith  
Alanna Nash

**DAVID BOWIE: *Serious Moonlight.*** David Bowie (vocals); other musicians. *Look Back in Anger; Heroes; What in the World; Golden Years; Fashion/Let's Dance; Breaking Glass; Life on Mars; Sorrow; China Girl;* and eleven others. PIONEER ARTISTS PA-84-097 LaserDisc \$24.95.

Performance: *Pro at work*  
Recording: *Realistic*

David Bowie is, of course, the ultimate pop chameleon, but the Bowie on view in this extremely well-shot document of a 1983 tour stop is a pretty surprising one even for him. It is, in fact, as slick a stage show as rock has ever seen, with every note, every lighting cue, every move (even by the back-up band) choreographed to a fare-thee-well. While it's hard not to respect the intelligence and thought behind it all, you wish somebody had let a little air in. After all, rock-and-roll has always thrived on spontaneity, at least in my neighborhood. But "Serious Moonlight" suggests Las Vegas, an impression heightened by Bowie's latest hairdo. Bleached blond and backcombed, it makes him look suspiciously like Lily Tomlin doing lounge singer Tommy Velour.

Musically, of course, what's here is hard to argue with. The crack band Bowie assembled sounds awfully good except on some of the lush, older material, and the star himself is in good voice. He also plays to the camera like the pro he is, though whether you find his emoting intense or merely hammy is purely a matter of taste. *L.M.*

**ALBERTA HUNTER: *Jazz at the Smithsonian.*** Alberta Hunter (vocals); instrumental accompaniment. *My Castle's Rocking; Rough and Ready Man; Downhearted Blues; Remember My Name; Black Man;* and eight others. SONY 96W50046 VHS Hi-Fi \$29.95, 96W00045 Beta Hi-Fi \$29.95.

Performance: *Characteristic*  
Recording: *Average*

If you are at all familiar with Alberta Hunter, you probably already know the story of how she left a fifty-year career in show business in 1954, became a hospital nurse, and then returned to the limelight in 1977, at age eighty-two, making a phenomenal comeback that maintained its momentum until her death last October. Between 1977 and 1984, she made several albums for Co-



## FIT FOR QUEEN

**Q**UEEN is what you could call a guilty pleasure. Sure, the band's music is utterly meaningless, big-budget arena-rock at its most contrived, but it's so massively overproduced that you just know it's being purveyed with a wink. Not so coincidentally, it's also ideal video fodder, and, indeed, Queen's videos have consistently been among the best made and most entertaining around.

The four new tracks compiled in a Sony Video 45 called "The Works" are no exceptions. In *Radio Gaga* the boys take a slickly edited cruise through footage from Fritz Lang's *Metropolis*, in which they look not at all out of place. In *I Want to Break Free*, they finally tip their collective hand by appearing in hilarious housewife drag (Freddie Mercury, it should be noted, has pretty good legs) and then take part in an impressively surreal dance sequence with members of the Royal Ballet. *It's a Hard Life*, which begins with a quote

from *Pagliacci*, presents Queen on stage in a masked ball that seems inspired by *Der Rosenkavalier*. And in the concluding *Hammer to Fall*, one of the best pieces of Stones-derived hard rock that anybody has made in years, director David Mallet whips up real kinetic excitement in what could easily have been just another badly lip-synced concert sequence.

Add excellent sound to all this, and you get a real audio-visual wallow in all formats (besides the tape versions, this is Sony's first eight-inch laser-disc release). Queen does nothing on "The Works" that is in any way relevant to contemporary life, and I, for one, say more power to 'em. *Louis Meredith*

**QUEEN: *The Works.*** Queen (vocals and instrumentals). *Radio Gaga; I Want to Break Free; It's a Hard Life; Hammer to Fall.* SONY 97W0080 VHS Hi-Fi and Beta Hi-Fi \$16.95, 1-801 laser disc \$16.95.

lumbia, none of which did her justice, wrote music for a Robert Altman film (*Remember My Name*), turned a nondescript little Greenwich Village eatery into a combination goldmine and shrine, and entertained thousands of devoted admirers from concert stages in São Paulo, Minneapolis, Berlin, Detroit, Paris, and Washington, D.C., to mention a few.

This Sony Video LP, taped at the

Smithsonian Institution in 1982, captures a typical Alberta Hunter concert performance. More than seventy-five years had passed since she first sang to an audience, so it is little wonder that she handled this one so well. Although she was at her best in an intimate club setting, when she could look people straight in the eyes and sing her songs to them, she was effective on the concert stage too. *C.A.*

**MISSING PERSONS: *Surrender Your Heart*.** Missing Persons (vocals and instrumentals). *Right Now; Give; Destination Unknown; Surrender Your Heart*. PIONEER ARTISTS PA-84-M015 LaserDisc \$12.99.

Performance: *Future kitsch*  
Recording: *Excellent*

Missing Persons was among the first fave-raves on MTV, thanks to, I assume, the group's high-tech style and the good looks and abundant décolletage of lead singer Dale Bozzio. Forgetting the visuals, however, the band's music is a queasy combination of old-fashioned Sixties girl-group petulance and sci-fi synth pop, and it's eminently unlikable.

The four videos on display here aren't unlikable, though. Mostly they're just dumb. *Right Now* is a semi-animated clip featuring the band at the beach (Mack Sennett's Bathing Beauties doing a Club Med ad); while it's nice to look at, it goes on far too long. *Give*, a stylized performance piece with the band in multitonned makeup on a space-age set, only proves that Bozzio can't lip-sync or dance. And *Destination Unknown* is an utterly muddled bit of rock-star self-pity, with lots of Mylar backdrops.

Only the title clip is of any note at all. Computer animated by Peter Max in an abstract Pop/Op style that's both nostalgically reminiscent of his famous Beatles portraits and up-to-the-minute contemporary, the visuals not only suit the vaguely dreamy atmosphere of the song itself but also serve the valuable function of upstaging the band, which is necessarily only briefly glimpsed. It's cartoony, but refreshingly different as videos go, and at Pioneer's low price it could make the whole disc worth a look. *L.M.*

**RANDY NEWMAN: *At the Odeon*.** Randy Newman (vocals, piano); Ry Cooder (guitar); Linda Ronstadt (vocals). *I Love L.A.; Burn On Big River; Simon Smith and His Amazing Dancing Bear; Marie; Christmas in Capetown*; and fourteen others. PIONEER ARTISTS PA-85-102 LaserDisc \$24.95.

Performance: *Greatest schticks*  
Recording: *Good*

For those of you who live outside New York City, the Odeon of the title, an overpriced restaurant in lower Manhattan, is the original Yuppie watering hole. Finding Randy Newman in such a chic environment is somehow less of a shock than I would have expected, but then, he's always been a classy sort of singer/songwriter.

"At the Odeon" features Newman at the piano doing a career retrospective ranging from the 1966 *Simon Smith and His Amazing Dancing Bear* to more recent stuff like *I Love L.A.* Though Newman's performances have

actually changed very little over the years, he now seems less the subversive ironist and more the hip curmudgeon. The performances here aren't exactly perfunctory (though there is a suggestion of the "And then I wrote" syndrome), but they are a little offhand. (Significant exception: a clearly felt version of the underrated *Baltimore*.)

The contributions of a slightly overweight Linda Ronstadt and a slightly out-of-tune Ry Cooder don't do much to lift this set above the level of a cabaret audition. The program is nicely shot, and sitting through it—once—is not an unpleasant experience. *L.M.*

**MICHAEL STANLEY BAND.** Michael Stanley Band (vocals and instrumentals). *Take the Time; My Town; He Can't Love You; In the Heartland; We Can Make It*; and eight others. SONY 96W50040 VHS Hi-Fi \$29.95, 96W00039 Beta Hi-Fi \$29.95.

Performance: *Has its moments*  
Recording: *Studio si, concert no*

Michael Stanley is a sort of Midwestern farm-team Bruce Springsteen. While he's undeniably just a journeyman, he and his excellent band project a likably gruff sincerity that can't be dismissed, even if this kind of blue-collar rock is beginning to glut the market. Sony's new Video LP of Stanley's recent work derives mostly from a routinely shot and routinely recorded concert in front of a hometown (Cleveland) crowd, and chances are that you'll find it fairly tedious if you're not a fan.

Fortunately, though, the tape opens with three made-for-MTV videos, and they're another story altogether. *Take the Time*, musically a cross between Springsteen and Willie Nelson, is staged as a back-lot spaghetti western with a hilarious twist ending (featuring a certain American movie icon) that I won't give away. *My Town*, a sort of updated

*Missing Persons: high-tech style*



*American Graffiti*, celebrates neighborhood, family, and friends in a nicely unmawkish way. And best of all is the concluding *He Can't Love You*, not only an excellent song but one of the funniest and most rousing videos I've ever seen. It'll make you dance in front of your TV set. Would that all mainstream rock were as unpretentious and likable. *L.M.*

**TEARS FOR FEARS.** Tears for Fears (vocals and instrumentals). *Mad World; Change; Pale Shelter*. SONY 97W50069 VHS Hi-Fi \$16.95, 97W00068 Beta Hi-Fi \$16.95.

Performance: *Compelling*  
Recording: *Very good*

I don't know what they've got in their water over there in England, but whatever it is, it apparently helps them turn out remarkable videos, judging from this and the one by Howard Jones I saw recently. Tears for Fears, as you probably know, is a New Wave duo that turned a lot of heads with its debut album, "The Hurting," the source of the three singles on this Video 45. The common theme here is the quest for order and meaning in today's complex world, and the emotions and anxieties that accompany it make for some pretty provocative music as well as some fairly seductive concept videos. If *Mad World* is the most enigmatic and *Change* the most disturbing, then *Pale Shelter* is the most broadly entertaining, with a parade of surreal images and a crocodile that eats both a girl and a guitar. Very heady stuff. *A.N.*

**38 SPECIAL: *Wild Eyed and Live*.** 38 Special (vocals and instrumentals). *Take 'em Out; Stone Cold Believer; Caught Up in You; Wild-Eyed Southern Boys; Back Where You Belong; If I'd Been the One*; and eight others. A&M 61004 VHS Hi-Fi \$29.95, 21004 Beta Hi-Fi \$29.95.

Performance: *Goin' for broke*  
Recording: *Cluttered*

38 Special does a bang-up job of serving that peculiar hybrid of styles known as Southern rock-'n'-roll, and anyone who gets off on that will want to own this video tape. Filmed at New York's Nassau Coliseum in 1984, the concert charges dead ahead for seventy-five minutes (I have to admit that a lot of the songs sound alike), with Don Barnes and Jeff Carlisi doing their twin-guitar telepathy and Donnie Van Zandt playing court jester—even flying across the ceiling on a high wire at the end of the show. The sound mix could be a lot clearer, and the program a bit shorter, but the lighting, direction, and special effects are all you could ask for. Overall, this is a thoroughly professional job and one of the best concert videos on the market. *A.N.*

by David Ranada



## Color TV Controls

**T**HANKS to developments in integrated-circuit technology, today's TV sets and video monitors require fewer front-panel adjustments than they used to. Many sets no longer have or need vertical and horizontal hold controls, for instance. If set incorrectly, the hold controls could prevent reception of a stable picture. But at least you knew when a hold control was set properly—they were picture-synchronization controls, so if a recognizable and stable picture was visible, the controls were set more or less correctly.

It's a different story with what might be called the picture-quality controls: *brightness*, *contrast* (or *picture*), *color* (saturation or *intensity* or *chroma*), and *tint* (or *hue*). For example, the various screens at a typical TV dealer's showroom can seem to give a wide variety of picture qualities from which to choose. Flesh tones can appear greenish on one screen and orange on another. However, these variations may have less to do with the TV sets' intrinsic picture qualities than with how well adjusted (or misadjusted, perhaps deliberately) their picture controls are.

While a viewer should still judge ultimately on the basis of his own taste, there are some little-discussed but technically "correct" methods

of adjusting a TV's picture-quality controls. Ideally, these methods require the use of a certain test pattern, the EIA color-bar signal (see illustration). The pattern is usually broadcast in the very early morning, before a station's broadcast day starts. (You'll have to sacrifice some sleep in the interest of high-fidelity video.) The same pattern is sometimes also found at the very start of prerecorded video tapes. In any case, many of the principles discussed here can be applied using ordinary TV images.

The EIA test pattern consists of seven vertical bars of color in the upper three-quarters of the screen, with areas of black and white at the bottom. These black and white areas have well-defined properties. The 100 percent white bar is exactly that, the brightest the screen will ever get. Likewise, the black portion is video's "blackest black." You use these two bars to adjust brightness and contrast.

Start by turning the color control all the way down so that the pattern becomes entirely black-and-white. Then turn the brightness control all the way up so that the black bar turns dark gray. Turn the brightness control back down just until the black bar ceases to get any darker. A similar procedure is used for adjusting contrast. Turn the contrast down until the 100 percent white bar is a light gray, then raise it until that bar will not get any brighter.

(You might see the picture distort slightly if the contrast is set too high.)

Contrast controls on color TV sets and monitors have a relatively narrow adjustment range because changing the contrast by any great degree also requires changing the color setting to compensate for the resulting alterations in color intensity (saturation). Some color sets have a "picture" knob that performs this dual action automatically.

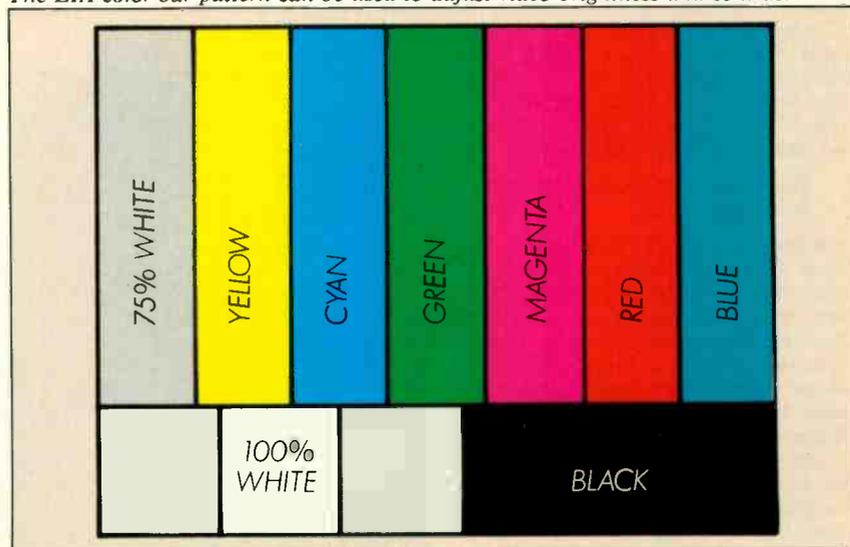
Just as the black-and-white areas

*While a viewer should judge ultimately on the basis of his own taste, there are some technically "correct" methods of adjusting the picture-quality controls on a TV set.*

of the test pattern have specifically defined properties, so do the color bars. They are made up of very simple combinations of the primary colors used in television. The red, green, and blue bars are, in fact, the three TV primaries. The others are equal-intensity combinations of two primaries: the yellow bar is green and red, the cyan is green and blue, and the magenta is red and blue. The 75 percent white bar at the left is made up of equal intensities of all three primaries.

On a correctly adjusted set, only

The EIA color-bar pattern can be used to adjust video brightness and contrast.



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the proper primaries will be glowing in each bar. Looking closely at the screen (with a magnifying glass if necessary), you should see only the blue phosphors lit up in the blue bar, the red and green phosphors in the yellow bar, and so forth. By adjusting the tint or hue control, you can determine which phosphors light up where.

Professionals sometimes set monitor color by looking only at the blue component of the color bars. Either switching off the red and green electron guns or looking through a blue filter (Wratten 47B), a pro can adjust the controls until all the bars containing blue (75 percent white, cyan, magenta, and blue) appear to have the same shade and intensity. Ordinary consumers cannot shut off individual electron guns, of course, nor do they have access to the proper filter. So you are forced to use the same eyeball method that is actually used by most professionals. With the color control turned up, simply adjust the tint until the yellow and magenta bars look "right." There is only one position of the tint control where both colors will be correct. The yellow should be neither orange nor green, and the magenta should be neither red nor purple.

The last adjustment is for color saturation. Setting the color control is largely a matter of taste, though when it is set too high the images will appear to have an unnatural glow, and when it's set too low they'll look too pale. The color-bar pattern is standardized and originates in a special signal generator, but any color-bar signal from a broadcast or video tape is an adjustment tool that is usable only for that particular TV station or tape. Different stations or tapes may require different settings, as will program material from different time periods and sources.

Viewers outside the U.S. and Japan have even fewer controls to worry about—but less ability to correct for the color vagaries of different program materials. The PAL video system used in most of Western Europe requires only color, contrast, and brightness controls. And, as one might expect, Eastern Bloc SECAM-system viewers have even less control: only contrast and brightness are adjustable.

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## THE PERFECT SPEAKER

(Continued from page 62)

The BES design harks back to some of Bell's earliest work in transducer design, preceding even the phonograph, but it resembles nothing else on the market today. And it is highly controversial among designers. Jim Winey is one such skeptic. "All physical bodies have one fundamental resonance. I don't think their design concept for the diaphragm is valid."

It should be noted that Winey's own Magneplanar diaphragms are tuned to produce multiple resonances by varying the tension of the diaphragm across the frame from one point to another, but the goal is to suppress standing waves and not to propagate them.

### *The Vanishing Loudspeaker*

The most marvelous device in the loudspeaker inventory awaiting Rice and Kellogg at Bell Labs in 1923 was an oddity known as the "singing arc," or corona-discharge loudspeaker. Like Hobrough's ribbon, it resulted from an accident.

In the second decade of this century, when radio transmissions were first electronically amplified, radio technicians began to be aware of a strange phenomenon. The high-voltage signal used to modulate the transmitter would occasionally form a bluish orb of luminous gas. Out of the glowing orb the sounds of the broadcast would emerge, faint but distinct—"like tongues of flame," as one observer put it.

Experimental loudspeakers were developed using this principle, and Rice and Kellogg tested one. They didn't really understand its operation, and in any event they weren't impressed with its performance. It wouldn't produce anywhere near the full audio bandwidth, and besides, it gave off large amounts of ozone. Obviously it wasn't a strong contender for development.

The singing arc sang very little for the next two decades. Then, sometime in the late 1940's, a French nuclear physicist named Siegfried Klein rediscovered the phenomenon and attempted to make a workable loudspeaker. By 1950 he had succeeded. He called his device an "ionophone."

In principle it seemed like the ideal loudspeaker. It was free from mechanical resonance, and it was virtually massless and infinitely compliant. It appeared to be a significant breakthrough.

Considerable money was spent on

making the ionophone into a practical consumer product in the 1950's. Decca, Audax, and Telefunken all had prototypes, and a consumer version was finally brought out by the DuKane Corporation in the United States in 1962. Subsequently, Fane in England and Realon in Japan brought out their own versions. The DuKane speaker, known as the Ionovac, was later manufactured by a company called American Audio Components. It went off the market only a few years ago.

All of the early consumer ionophones were horn-loaded and mated with conventional woofers. Some versions had response down to 1,000 Hz. Predictably, they created a certain sensation in the audio world, but they were never taken very seriously by knowledgeable consumers.

But the failure of the consumer products did not trouble Siegfried Klein, who in any case was not directly involved in any of them. He kept right on tinkering.

I met Klein in 1982 at a Consumer Electronics Show. With his shoulder-length white hair and great aquiline nose, he resembled the nineteenth-century romantic conception of the lone scientist, but his manner was artless, almost childlike. He showed me his latest loudspeaker with its extraordinary tweeter, a globe of wire mesh atop a large, black steel box, a blue flame clearly visible behind the mesh. Then, with barely suppressed glee, he put on a recording of a jazz drum solo. The fidelity was astounding. Klein walked up to the tweeter and placed his face close to the flame, the singing arc. He blew at it like a child puffing out a birthday candle. The flame danced wildly, but the crash of cymbals and the pulse of drums were uninterrupted. He laughed. I asked him how much amplifier power his speaker required—the sound pressure in the room was in excess of 105 dB. "Ten watts," he replied. "That's all you need."

Klein's tweeter, which is made by Magnat of West Germany, is not sold in the U.S. The amount of ozone it produces is considered dangerous, and it has been surpassed in sophistication and performance by a much more complex loudspeaker called the Hill Plasma-tronic.

Devised by the eminent laser physicist Alan Hill, the Plasma-tronic works on the same general principle as Klein's ionophone. The

corona discharge, which is actually a cloud of glowing plasma, is formed by a powerful bias current, and its amplitude is modulated by a music signal. The music signal raises and lowers the temperature of the cloud and induces sudden pressure changes that result in sound waves. The process is analogous to the production of a thunderclap following a lightning flash.

Hill's plasma driver operates from 200 kHz down to 700 Hz and produces a 90-dB sound-pressure level 10 feet away with virtually perfect phase and amplitude linearity and a distortion level of under 1 percent. Conventional cones handle the rest of the audio bandwidth. Unfortunately, the speakers sell for \$10,000 a pair and must be specially ordered.

"I don't make money on them," insists Hill, who supports himself and his audio interests by producing laser generators for military and industrial use. "If the system were mass-produced, it could be sold for about \$2,000 retail, and I believe eventually something like it will become the dominant loudspeaker technology."

Perhaps Hill has built prototypes with response down to 50 Hz and has developed seven different types of massless loudspeakers based on principles other than the corona discharge. Amplifier designers Nelson Pass and John Iverson have also done work in this area, and Iverson has indicated he will be undertaking extensive research toward developing a practical full-range massless driver. Meanwhile, however, the Magnat and the Hill are the sole commercial representatives of the species.

### *Back to the Cone*

Paradoxically, the latest exotic loudspeaker to emerge in the marketplace is a cone, the phenomenal Walsh driver. The Walsh vies with the BES geostatic for unconventionality. In its pure form it utilizes a single cone for all frequencies, 20 to 20,000 Hz. The cone stands free at the top of the cabinet, with its voice coil and magnet structure at the summit. What would normally be the driving surface faces downward into the cabinet.

The Walsh operates in a controlled breakup mode, with progressively smaller portions of the cone responding to the movements of the voice coil as the frequency rises. In other words, the sound-producing part of the cone diminishes to nar-

rower and narrower areas around the voice coil as the frequency goes up. This process occurs in steps and over discrete bandwidths, and it is accomplished by fabricating the cone out of several concentric rings of heterogeneous materials. The rings function as progressively lower low-pass filters, the larger the ring the lower, going outward from the voice coil to the surround; the lowest frequencies move the whole cone. High-frequency response is maintained by use of a very light voice coil, and damping is employed to smooth frequency response.

The Walsh is capable of passing a low-frequency square wave, a feat that attests to its excellent phase and amplitude linearity. Dispersion is also exemplary: 180 degrees at all frequencies in current versions.

### *Survival of the Fittest*

Most exotic loudspeakers are not marketing gimmicks. Instead, they are genuine attempts at improving loudspeaker performance. But, good intentions aside, no exotic has seriously challenged the overwhelming market dominance of the cone. Why?

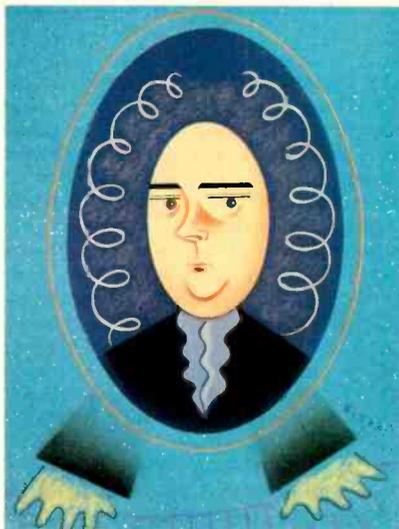
"Cones are much, much better than they were," says Keith Johnson, a recording engineer who recently designed a very unconventional driver for Entec Corporation. "It's scary. Twenty-five years ago, no cone could match the performance of an electrostatic. That's changing."

Irving Fried, erstwhile importer and exporter of exotics and now a manufacturer of conventional, if refined, cone loudspeakers, takes a bleaker overall view of the exotics. "They're all nonlinear in one way or another," he told me, "and you can't get any level out of most of them, especially electrostatics and ribbons. Digital audio will kill the electrostatics. They just can't handle the dynamics or the bass."

But in the next breath Fried added, "Cones won't survive that much longer either. In a few years a simpler kind of diaphragm will be perfected, and eventually we'll have a good massless driver."

Indeed, rumors have been leaking out of Japan that certain hi-fi manufacturers there, long eager to challenge American and British domination of the loudspeaker market, are hard at work developing various sorts of massless drivers. We may have to redefine exotic speakers yet again. □

### BASIC HANDEL (Continued from page 149)



and sensitively played by Hans-Martin Linde, with Christopher Hogwood and Pere Ros supplying imaginative continuo support.

Several trio sonatas and solo sonatas for oboes and continuo are heard in exciting performances by Ronald Roseman and Virginia Brewer, oboes, with Donald MacCourt and Edward Brewer furnishing an excellent continuo (Volume I, Nonesuch 71339; Volume II, Nonesuch 71380). All in all, Handel's chamber music has been neglected and cries out for more exposure.

### *Harpsichord Music*

Handel was a virtuoso keyboard player, which is evident in the music he composed for the harpsichord alone. Listen to the delightful album by Igor Kipnis aptly named "The Virtuoso Handel" (Nonesuch 79037). A selection of suites from Handel's second book of harpsichord music, including the magnificent G Major Chaconne, has been recorded brilliantly by Trevor Pinnock in an album entitled "Chaconne" (Archiv 410 656-1).

The nature of Handel's music is such that the selection of one recording over another is a more personal matter than it is with Bach—and the critic's neck is therefore stuck out much further. Just as the Schwann catalog lists only a small portion of Handel's vast output, this introductory buyer's guide has covered only a small portion of what exists on records. But even at the expense of leaving out some interesting repertoire, my aim here has been to lead the beginning Handel collector to a few of the most exciting available performances. □

### HOW TO BUY SPEAKERS (Continued from page 53)

buy speakers. Granted, there are some apparently competent engineers among the proponents of esoteric speaker cables. Nevertheless, the usual reasons advanced for the efficacy of the special cables are technically off-the-wall. Every objective test I have heard about, including the rigorous ones described in the *Journal of the Audio Engineering Society*, has failed to reveal any virtue in the esoteric cables that is not found in the standard (and far cheaper) 12- or 14-gauge single-conductor stranded wire you can buy in an electrical-supply store.

Other speaker "accessories" include special "spiked" stands and individual pointed feet meant to be installed under speaker cabinets. The spikes or points are said to provide improved coupling to the floor or other surface on which the speaker is installed. It seems to me, how-

*The usual reasons advanced for the efficacy of the special speaker cables are technically off-the-wall.*

ever, that going out of your way to couple the vibrations of a speaker cabinet to the shelf or breakfront top on which it is installed will simply force the support structure into vibration too. I don't know whether that will have any audible effect, but if it does, it surely won't be a desirable one.

If the mounting surface is the floor, the effect of spiking, if any, will depend on the floor structure. Coupling a speaker cabinet to a rigid, poured-concrete floor will help "clamp" the speaker panel resting on the spikes and, therefore, to some degree, inhibit vibration in the other panels of the cabinet. If the speaker cabinet's walls are inadequately braced and damped, this may be helpful. Since most home floors are *not* poured concrete, though, how well you like the sound of your spiked speakers may depend on how well you like the sound of your newly vibrating floorboards.

But if you are convinced that expensive cables or spiked stands make your speakers sound better, why should I try to persuade you differently? After all, it was Dumbo's magic feather that ultimately gave him the faith to flap his ears and fly. □

by Larry Klein



## Dolby Puzzles

**Q** I recently bought a cassette deck and have a few questions regarding its noise-reduction system. The deck is equipped with Dolby B, Dolby C, and an MPX filter. What will happen if Dolby is used during playback of a tape that was not recorded with it? What will happen if Dolby is not used with a tape that was recorded with it? Also, what does the MPX filter do, and when should it be used? None of this information was covered in the cassette deck's instruction manual, and I haven't been able to find it elsewhere.

MARK POHNDORF  
Summit, NJ

**A** It has always amazed me that some of the most sophisticated and carefully engineered hi-fi and video components are accompanied by confusing, incomplete, and sometimes scarcely literate instruction manuals. Companies should be made aware that they do themselves—and the entire audio industry—a disservice when they produce a manual that ignores as many important questions as it answers. I'm forwarding Mr. Pohndorf's letter (and this answer) to the manufacturer of his cassette deck, and I would be pleased to pass on comments from other readers about good or bad manuals they may have encountered.

To understand the audible effects of the Dolby encoding and decoding circuits it is necessary to know how Dolby noise reduction works. Here is a simplified explanation:

When the Dolby encoding circuit is switched on, it boosts the low-level (soft) high frequencies in the audio signal before they are recorded on the tape. The applied boost is about 10 dB with

the Dolby B system, 20 dB with Dolby C. If you listen to a Dolby B encoded tape without the Dolby decoder switched in, it will sound somewhat bright but still acceptable. (It will not sound as bright as it would if a 10-dB high-frequency boost were applied with a tone control, because a tone control acts on both the soft and the loud parts of the signal.) A Dolby C encoded tape played without decoding sounds unacceptably shrill to most people because of the greater (20-dB) boost. Playing a Dolby C encoded tape through a Dolby B decoder reduces the high-frequency boost to an acceptable 10 dB or so.

The purpose of boosting the low-level high frequencies before recording is to enable them to be reduced a complementary amount before playback. When the original frequency balance is restored by cutting back the boosted highs, the high-frequency noise (hiss) produced in the recording process is reduced by approximately the same amount: 10 dB for Dolby B, 20 dB for Dolby C. If a tape that is not Dolby encoded is played back with Dolby decoding, it will sound somewhat muffled or dull because its low-level high frequencies have been reduced (without having been boosted previously). If the program material or non-Dolby tape is very noisy, switching in the Dolby B circuit will sometimes improve the sound.

MPX refers to *multiplex*, the technique used to broadcast stereo FM. The purpose of the MPX filter is to remove from the audio signal the 19- and 38-kHz tones used in stereo tuners to decode stereo FM broadcasts. If these tones—or other low-level high-frequency noise—were mixed in with the audio signal, they could cause the Dolby circuits to misbehave. A good MPX filter will have no audible effect on the signal and prevents recording problems when using Dolby noise reduction.

## Equalizers vs. Expanders

**Q** While shopping for a stereo system, I asked for a demonstration of a dbx dynamic-range expander and was impressed by what I heard. The conversation with the salesman drifted to equalizers, at which point he said that a dynamic-range expander makes an equalizer redundant. Is he right? I have always thought that the two components operate on an entirely different basis.

JIM CARROL  
Bramalea, Ontario

**A** They do. The confusion expressed by the salesman's statement is apparently quite widespread, because the equalizer-vs.-expander question appears in my mail just about every month. An equalizer enables separate

adjustments to be made in different parts of the audio spectrum, boosting certain frequency bands and cutting back others. Its purpose is to compensate for inadequacies in the recording or playback process or to produce special effects.

The purpose of an expander is to restore the natural ratio of soft to loud passages that is (usually) lost in the recording process. During record production the soft passages are raised in level so as to make them louder than groove and tape noise, and the loud passages are reduced in level to ensure that they will be playable by a low-cost phonograph and to extend playing time by conserving groove space. An expander reverses that process, making the soft passages softer and the loud passages louder.

Both types of units could be said to operate in the cause of greater sonic realism, but they are focused on different problems and solve them in totally different ways.

## Digital-Ready?

**Q** What does "digital-ready" mean? Is this just another gimmick to get the consumer to buy new equipment? I bought my equipment (Klipsch speakers and a 125-watt Soundcraftsmen amplifier) before the whole digital business started, and I'm concerned that I may have to replace them.

WILLIAM S. PEIRCE  
APO New York, NY

**A** Fear not. Although I have no idea what most manufacturers specifically have in mind when they refer to their products as "digital-ready," here are some things they *might* mean:

### Amplifiers

- The dynamic range or signal-to-noise ratio equals or exceeds that of a digital Compact Disc.
- The auxiliary input will take the high peak outputs of a CD player without overloading (clipping).
- The amplifier has sufficient power to handle high-level peaks without clipping when driving a low-to-medium efficiency speaker.
- The amplifier will accurately reproduce all the subtleties and nuances in digital program material.

### Speakers

- The system is very efficient and doesn't need high power to play very loud.
- The system can play very loud.
- The system will accurately reproduce all the subtleties and nuances in digital program material.

In general, I think it is safe to say that with your equipment you are probably "digital-ready."

## TV Stereo

**Q** In your column not too long ago you said that if receivers lack an audio input for video, the auxiliary input will work as well. I connected the audio output of my TV to a Y-connector plugged into the right and left aux channels of my receiver. Now, when the TV is on, I get great stereo sound from it. Why does this happen? Can everyone get it?

MARVIN FIELDS  
Baltimore, MD

**A** I really doubt that you are getting it, unless your receiver has a built-in stereo-synthesis circuit. I suspect that what you are really hearing is two-speaker mono, but there may be something about your room acoustics, your speakers, or their placement that provides a sort of illusion of stereo. A difference in your speakers' frequency response, or a time delay between them of 15 milliseconds or more caused by spacing or room reflections, can create such an illusory stereo effect. In any case, though, if everything is working out satisfactorily, don't question, enjoy!

## Loudspeaker Efficiency

**Q** In magazine articles, speaker efficiency is generally discounted as a factor in sound quality, while high-power amplifiers are often credited with providing improved sound because of absence of clipping, etc. Why should the electrical audio power provided by the amplifier be of greater interest than the fraction of that power that comes out of the speaker as useful acoustic power?

BILL STAMPER  
Columbus, IN

**A** Speaker efficiency certainly should not be discounted, particularly in these digital days, but in and of itself efficiency still has nothing to do with sound quality. Incidentally, the term "sensitivity" is more commonly used in specifications and test reports than "efficiency." They refer to the same characteristic—the relation between a speaker's power input and acoustic output—but measured in different ways and stated in different terms.

In the past, most speaker engineers pursued whatever design paths they expected would lead to the desired sonic results within their operating constraints of cost and enclosure size. Efficiency was generally not one of their design criteria, except that it was usually considered prudent not to let it get too low considering the dearth of reasonably priced 1,000-watt amplifiers.

For some speaker designers, widespread home digital music sources changed all that. (Although there were some pre-digital discs and tapes with a

very wide dynamic range, they were appreciated only by the super-audiophiles.) If you like your music loud, the wide dynamic range on some CD's can push a 40-watt amplifier well into clipping on peaks. At whatever volume level you are playing, every additional 3 dB of dynamic range in the program material doubles the power demand on the amplifier. On the other hand, 3 dB of extra sensitivity in a loudspeaker decreases the power demand on the amplifier by half.

But increased speaker sensitivity (or efficiency) doesn't come easy. The tradeoff goes something like this: a speaker system with bass that goes much below 60 Hz or so must be either large or inefficient. To put it another way, a small, high-efficiency system cannot have good low-bass response. This is not a rule established by some Guild of Loudspeaker Engineers but simply reflects the laws of physics.

The bottom line is this: speaker-system efficiency is obviously a good thing to have, other factors being equal. Unfortunately, in respect to enclosure size and low-bass performance, all other factors are not equal. But once you understand the tradeoffs involved, you are in a far better position to make knowledgeable choices.

## Two into One

**Q** Recently I read an instruction manual that warned against connecting two outputs to one input. In the past I've Y-connected the two outputs from my stereo preamp to the input of a mono tape recorder. What kind of damage could this have done to my system, and would it have affected the amplifier and speakers as well as the preamplifier? How would the sound quality be affected? What would it cost to repair?

PETE PAVLICH  
Cleveland, OH

**A** Calm yourself—there's no problem! The only no-no that comes to mind in regard to combining outputs is in connection with power amplifiers. The two hot (+) terminals of a stereo amplifier should never be joined in an attempt to drive a single speaker with the combined output of both channels.

It is possible to "bridge" the two outputs of some, but not all, stereo amplifiers (which provides more power than the combined output of the two channels) by connecting a speaker across the two hot terminals. The amplifier circuit also has to be modified to supply a properly phased drive signal to the bridged mono output circuit. Those wishing to use a stereo amplifier in a high-powered mono mode should check with its manufacturer for the recommended procedures.

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## SEPTEMBER



by Christie Barter  
& Steve Simels

**T**HE late Artur Schnabel called him "the best pianist" he had ever heard. Conductor Claudio Abbado has been quoted as saying, "Genius like this comes along once in a century." Cellist (and conductor) Mstislav Rostropovich has described him as "a miracle—a creation from God." He is celebrating his sixteenth birthday on August 30.

He is the Athens-born pianist Dimitris Sgouros, who at fourteen was signed to an exclusive recording contract by EMI. A coupling of the Brahms *Paganini Variations* and Schumann's *Symphonic*

tember 13. Sgouros's latest Angel recording is a Liszt recital featuring seven of the *Transcendental Etudes* and the *Mephisto Waltz No. 1*. □

**M**arianne Faithfull may not be quite as photogenic now as she was back in the days of Swinging London, but the blonde songstress's voice remains as "idiosyncratic" as ever. Which probably explains how she wound up on A&M's forthcoming "Tribute to Kurt Weill." Put together by the same people who did similar tributes to Nino Rota and Thelonious Monk, the album features Faithfull warbling *Ballad of the Soldier's Wife*, along with the likes of Todd Rundgren (*Call from the Grave*), Tom Waits (*What Keeps Mankind Alive*), Sting (*Mack the Knife*), and—we are not making this up—Lou Reed, singing *September Song*. Look for an October release. □

**W**HY is Sir Laurence Olivier slapping the make on Jean Simmons in the pages of America's most widely read music and equipment magazine? So that we can alert you to MCA's home-video release of *Spartacus*, the Stanley Kubrick epic that boasts what just may be the greatest film music ever written by an American (in fact, short of Prokofiev's *Alexander Nevsky*, it just may be the greatest film music ever written by anybody).

The work of Hollywood veteran Alex North, the *Spartacus* score is absolutely spectacular in its home versions

*Olivier, Simmons: epic*



Faithfull: idiosyncratic

(VHS Hi-Fi, Beta Hi-Fi, and laser disc), and the 1960 stereo sounds as if it had been recorded yesterday. It also sounds a good deal better than it did on the analog LP. Such sonic excitement is only fitting, given that the film has been aptly described as a three-hour piece of music with accompanying pictures. Soundtrack fans will miss this one at their peril. □

**W**HO'S THAT BEHIND THE FOSTER GRANTS? None other than Yoko Ono, the conceptual artist and songwriter who just made *Good Housekeeping* magazine's list of the Fifty Richest Women in America. Recently feted by Elvis Costello and Rosanne Cash on the tribute album "Every Man Has a Woman," Ono was the business manager of her late husband, John Lennon, and she continues to administer their \$150-million fortune even today, as she gears up for her first solo tour.

Other women with musical connections who made the list were Dorothy Rodgers, widow of composer Richard Rodgers, said to be worth \$100 million, and Alice Tully, the Cornyng Glass heiress who gave us Alice Tully Hall at Lincoln

Center. The poorest of the women on *Good Housekeeping's* list is a book editor at the Doubleday publishing company who is said to be working on Michael Jackson's autobiography. Her personal fortune is estimated at only \$25 million, and her name is Jacqueline Kennedy Onassis. □

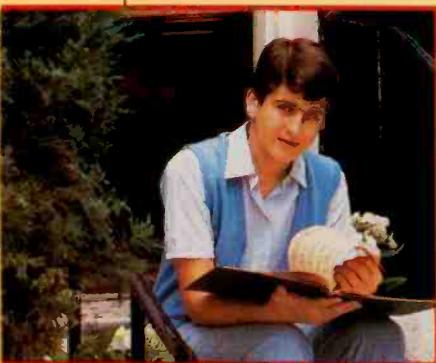
**T**EN years ago Steve Reich wrote and supervised the recording of his *Music for 18 Musicians*. On records and tape it has since sold nearly 100,000 copies worldwide and has made of Reich a sort of cult figure, appealing to a predominantly young, urban audience that turns out in droves any time his music is performed publicly.

Such was the case when one of his latest works, *The Desert Music* (inspired by and based on texts by William Carlos Williams), was premiered at the Brooklyn Academy of Music almost a year ago. For each of three performances, according to the *New York Daily News*, "the crowd overflowed literally into the streets, where hundreds of people waited in vain for ticket cancellations." And it's bound to happen again when *The Desert Music* hits the road for an East Coast and Canadian tour next year.

Meanwhile, Nonesuch is releasing a recording of the work in a performance by the forces involved in last fall's première, which included a chorus and members of the Brooklyn Philharmonic under the direction of Michael Tilson Thomas.

Also coming from Nonesuch is the soundtrack *Philip Glass* composed for *Mishima*, a film about the life and death of the Japanese novelist Yukio Mishima. Awarded a special prize at the Cannes Film Festival in May, *Mishima* is set for U.S. release this fall, more or less concurrently with the album. □

**F**OUR British composers have been commemorated in a new set of stamps issued by the U.K. Post Office. Available in denominations ranging, in U.S. currency, from roughly twenty to forty cents, they honor



Sgouros: genius

*Etudes* (released here last year by Angel Records) was Sgouros's first album under that contract, and it was followed by a recording of Rachmaninoff's Third Piano Concerto. But these demanding pieces represent no more than the tip of the iceberg: the official Sgouros bio claims that the young pianist has more than thirty piano concertos in his fingers.

One of these is Tchaikovsky's popular B-flat Minor Concerto, which EMI sources seem to think Sgouros will record next. Another is Chopin's Piano Concerto No. 1, in E Minor, which Sgouros played for the first time publicly in Caracas, Venezuela, in the fall of 1983. A video tape of that performance, with the Caracas Conservatory's student orchestra, will be shown on the Arts and Entertainment Network on Sep-

RICHARD HOLTY/ANGEL RECORDS

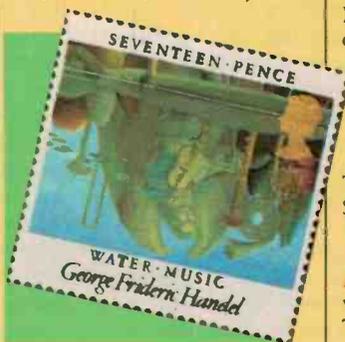


George Frideric Handel (and specifically his *Water Music*), Gustav Holst (*The Planets*), Frederick Delius (*The First Cuckoo*), and Edward Elgar (*Sea Pictures*).

The last three composers were all born within twenty years of one another during the second half of the nineteenth century. Handel was their senior by almost two hundred years. We celebrate his three-hundredth birthday this year (see "Basic Handel," page 146). □

**T**HE year 1985 has been rich in tricentennial and other high-digit anniversaries, and almost all of them have been duly observed with numerous, often beautifully packaged, record releases. But the kid on the block, the composer Alban Berg, who would have been only one hundred years old this year, was large-

Issued on LP only and titled "Alban Berg: The Published Works," the



album draws from DG's extensive catalog for most of its entries, including the operas *Wozzeck* and *Lulu*. Both of these recordings (which date from the Sixties) are conducted by the late Karl Böhm and feature baritone Dietrich Fischer-Dieskau in leading roles. Both have been mainstays of the recorded repertoire as well. Other vocal works, including the concert aria *Der Wein (The Wine)* and two versions of the *Seven Early Songs*, were recorded especially for this set.

Among the orchestral works are Berg's *Three Orchestral Pieces* and *Three Pieces* from the *Lyric Suite*, both performed by the Berlin Philharmonic under Herbert von Karajan, and the *Violin Concerto*, played by Itzhak Perlman with Seiji Ozawa and the Boston Symphony.

Especially noteworthy is the packaging of the Gallery Series, which DG is introducing to American buyers with this Berg release. The series takes its name from the art-

work chosen for the album covers and from the overall graphic presentation. In this case, the paintings and drawings are by Egon Schiele, a contemporary of Berg's and as much a leading exponent of Viennese modernism in the early years of this century as Berg was. The set carries a list price of \$6.98 per disc, or \$69.80. □

**M**USIC and art converge in today's jazz world with the advent of the East Thirteenth Street Band.

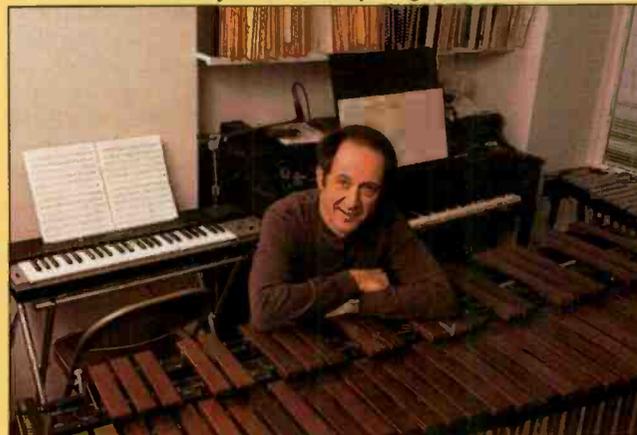
smart folks at PolyGram have put together an eighty-four-minute concert program culled from various stops along his most recent American tour. The result—titled *Across a Crowded Room*, after his current LP—will be available on tape (Sony) and LaserDisc (Pioneer). It catches Thompson and his superb back-up band, including Any Trouble's Clive Gregson, at something approaching their best. If you've never seen the man, grab this one immediately. □



Ono: in the Top Fifty

ly overlooked until Deutsche Grammophon came up with a handsomely produced ten-record boxed set in its new (to the U.S.) Gallery Series.

Reich: *Desert Music for the urban young*



Portrait sketch by Egon Schiele (Staatliche Graphische Sammlungen, Munich)

formed by the eminent painter Larry Rivers and several of his buddies. All of them began their professional lives as jazz musicians (Rivers plays tenor sax) but have gone on to pursue careers in other creative-arts fields. Today they play gigs all over the New York area, rehearsing when time permits in Rivers's East Thirteenth Street loft on the edge of Manhattan. Their first album, including a poster of the cover art by Rivers and Howard Kanovitz (trombone), is being released this month by Rizzoli Records at a suggested list of \$24.98. □

**T**HEY said it couldn't be done, but Richard Thompson, legendary English folk-rock and greatest living exponent of sixteenth-century heavy-metal, has finally made it into home video. The

**G**RACE NOTES: Foreigner's Mick Jones is contributing a song to the next **Everly Brothers** album, once again to be produced by **Dave Edmunds**. . . . Video fans: look out for a collection of **Marc Bolan** clips (Passport) as well as live sets by the **Fixx** (MCA), **Chuck Berry** with **Tina Turner** (Passport), **Prince** (Warners), and the **Scorpions** (RCA/Columbia), also tapes culled from *Your Show of Shows* (Media). □

Thompson: video debut



by Ralph Hodges



Bob Carver and  
High-End Heresy

**B**OB CARVER came out of nowhere in the early Seventies with modest magazine ads for the Phase Linear 700, an affordable power amplifier rated at 350 watts per channel with lots of headroom. At the time, 60 watts per channel was generally considered heavy-hitting, and the best-selling Crown DC-300, with 150 watts per channel, was considered the leading super-amplifier. This magazine's attitude toward Phase Linear's rating changed gradually from "Who needs it?" to "Perhaps; maybe." A subsequent Hirsch-Houck Labs test of five "super-power" amplifiers not only vindicated Phase Linear's power specification but also supported Carver's contention that such obscene amounts of power were appropriate and perhaps even essential for realistic reproduction of wide-dynamic-range material. The power race was on, and Phase Linear was the front runner.

Unfortunately, serious audiophiles, at first receptive to more powerful amplifiers, soon reached the conclusion that some high-power amplifiers didn't sound very good (and I think they were right, in retrospect, but not for any reason directly related to high power). There was even a reactionary period during which high-enders explored

the charms (appreciable, but not universally utilitarian) of 30-watt and smaller amplifiers. Certain circles began proclaiming that big amplifiers were not so much high-end products as high-tech products, conceived by engineers rather than aesthetes, and hence fundamentally unmusical. Carver could not avoid being tarred by this broad brush.

The situation was probably worsened as Carver, first as principal of Phase Linear and then as president of his own Carver Corporation, emerged at full strength as an unsurpassed audio innovator with unbridled enthusiasm for his brainchildren and a constitutional abhorrence of "me too" technology. No new Carver product has ever appeared without featuring some "fresh new inspiration"—or some "gimmick," depending on your point of view.

Ready or not, the world was rapidly presented with the Autocorrelator, the Magnetic Field Amplifier, Sonic Holography, the Asymmetrical Charge-Coupled FM Detector, and the Digital Time Lens, and it will probably soon see the Cathedral Generator. All of these novelties have credibly firm underpinnings in the scientific literature, and they all have the capacity to change what you hear; they can distinctly alter the sound of a familiar recording—qualitatively, dynamically, and, especially, spatially. The question before the high end is, do these changes enhance or degrade the "authenticity" of the musical experience, and should purist audiophiles believe in Carver or in what the rest of the high-end world is doing?

The scope of Bob Carver's activities is too broad to examine in full in a short column, but his overall intent is clear from his remarks in a recent interview:

"Yes, I would call the 'typical Carver customer' a high-end customer, and one who shares with me a passion for music and the quality level of reproduction necessary to bring it to life. But I'm convinced that that sense of life, that sense of being present at a live musical event, cannot be approached closely enough by conventional straight-wire-with-gain techniques to make a six-year-old believe in it.

"There are areas in an audio system where a purist philosophy probably belongs: the power amplifiers, line amplifiers, and, factoring in RIAA equalization, the phono section, to name three. However, I suspect that a musically sensitive stereo listener, seeking a satisfactory presentation of the textural and spatial aspects of music, would be extremely disappointed with even a hypothetically perfect straight-wire-with-gain system. This is because stereo itself is basically wrong."

Stereo itself *wrong*?

"Stereo as currently implemented," Carver continued, "lacks the capability of presenting temporal cues—of reproducing or even suggesting, except in a confused way, the interaural time differences that are so much of the story of how we interrelate sound and space in real-life listening situations. In a sense, what is needed is more information than is present in a typical stereo recording. What we do with something like Sonic Holography, however, is to organize the temporal clues that may be present so the ear-brain mechanism can make better sense of them. Even that, the best we've managed so far, makes a difference that those who haven't heard it could scarcely believe."

Sonic Holography, for those to whom the typically Carverian term is unfamiliar, is a complex acoustical-cancellation technique by which the right ear is prevented from hearing what the left speaker is doing, and vice versa. It is not so much a refutation of conventional stereo as a powerful refinement of it. Properly demonstrated, it does make a difference that those who haven't heard it could scarcely believe.

"I try to work, with all the science I can muster, to build rational, affordable products that impinge on a real experience," Carver said, "and I guess I get my best reception from people who are sophisticated, educated, musically attuned, but not yet predisposed to any particular philosophy of sound reproduction, and who do not consider a hint of a real-seeming sound field an intrusion on their listening."

Whether or not you agree with him on what's real, you'll always hear something new and remarkable from Bob Carver. □

# If you can't afford it, spare yourself the heartache of listening to it.

We are all aware that, money aside, it is an easy matter to upscale our quality of life, but difficult to lower it. In this regard, ignorance is bliss, and strict abstinence is sometimes better than a taste of something finer that we can't have. So it is with the Concord HPL-550 Tuner/Amplifier/Tape Deck. One listener could ruin you.

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One listener to all of this and you will be exhilarated. But then, if you can't afford it, you will be depressed. What will it be? Exhilaration and depression, the full human gamut? Or blissful ignorance? The trouble is, if you have read this far you are no longer blissfully ignorant.

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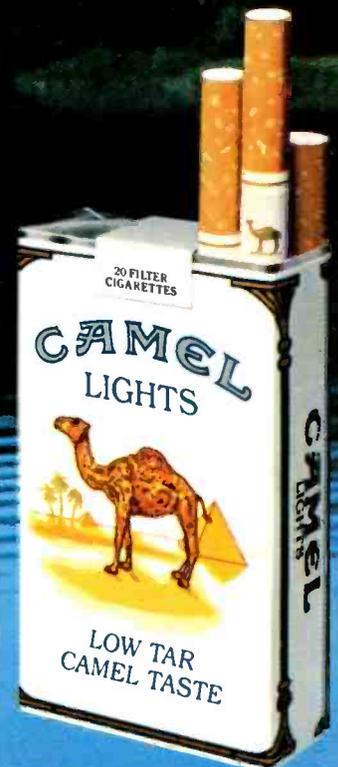


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