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S-90/MX-90

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January 1996

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Boy George between glam rock and a hard place, violinist Leila Josefowicz's stunning debut, Randy Newman's "Faust," and baritone Bryn Terfel performing English songs
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A/V ON THE WEB
Fisher Audio/Video is one of a growing number of companies spending big bucks to create home pages on the Internet's World Wide Web. The site (the address is http://www.audvidfisher.com) offers product information with a dealer locator, entertainment bits, and lots more against a backdrop of "quick-load" color graphics. Other A/V companies on the Web include Mitsubishi, DirecTV, Philips, RCA/Thomson, Sony, TDK, and Toshiba.

GROUNDBREAKERS
Mission's M-time home theater system packs a preamp, a Dolby Pro Logic decoder, an AM/FM tuner, a multichannel power amp, a center speaker, and two powered subwoofers into an elegant TV platform/cabinet measuring only 19 x 28 x 16 inches. The $3,995 system should be appearing in stores by the time you read this... Kenwood puts a new spin on the A/V controller with its KC-Z1, which mates a preamp, a tuner, and a Dolby Pro Logic/AC-3/THX surround processor in a high-styled component featuring a unique LCD touch-screen remote control that attaches to the front panel. The $2,800 system is slated to hit store shelves in March along with a $1,200 companion power amp.

MORITA HONOURED
The 1985 Japan Society Award for outstanding contributions to better U.S.-Japan understanding has been given to Akio Morita, founder and Honorary Chairman of Sony Corporation. With such products as the Walkman personal stereo and the CD, Morita led Sony to become a leading high-tech innovator. Accepting the award for Morita (who is recovering from a stroke), his wife, Yoshiko Morita, said he has loved America and particu-
larly admires its frontier spirit. She added: "Akio will continue to contribute all he can to the U.S.-Japan relationship, to world peace, and to helping the young people of the next generation."

ALL ABOUT FM RADIO

HALL OF FAMERS
Jazz singer Ella Fitzgerald has been inducted into the U.S. National Women's Hall of Fame... Newly chosen for induction into the Rock and Roll Hall of Fame are Jefferson Airplane, David Bowie, Little Willie John, Gladys Knight and the Pips, Pink Floyd, the Shirelles, and the Velvet Underground.

MILESTONES
On January 19, country singer Dolly Parton turns 50... Founded in 1895, the Pittsburgh Symphony Orchestra is celebrating its centennial this season, under its music director Lorin Maazel... Observances of the 100th anniversary of the birth of composer Carl Orff (1895-1982) have included the video documentary "Carl Orff: A Portrait" (BMG Classics 68055), two digitally recorded CDs of his Schulwerk (Celestial Harmonies 13104/5), and a recording of the rarely performed chamber version of his most popular work, Carmina Burana (Bis 734).

RECORD BUSTERS
"Cracked Rear View" (Atlantic), the debut album of Hootie and the Blowfish, has reached sales of 10 million units in only 22 months, according to the Recording Industry Association of America (RIAA).... The RIAA has also certified U.S. sales of 10 million for the soundtrack to The Lion King, making it Disney's best-selling soundtrack to an animated film. The best-selling album by an all-female group is TLC's "CrazySexyCool" on LaFace Records, which has sold 6 million copies.

ENHANCED CD'S: POISED FOR ACTION?
Now that one in three households owns a computer, record companies are hoping that music lovers will embrace a new breed of CD, which in addition to music provides a multimedia experience when run on a computer with a late-model CD-ROM drive. The so-called enhanced CD can include lyric sheets, discographies, photos, video clips, video games, and even a link to a Web site on the Internet.

The Rolling Stones' "Striped" on Virgin ($17.98) features performance footage and backstage jams. Soundgarden's "Alive in the Superunknown" ($15.98), developed by n millenni um for A&M, includes new music, photos, concert footage, and a variety of "surreal" interactive environments.

In the Cranberries' "Doors and Windows" on Philips Media ($24.99), users navigate through the band's favorite pub to access videos, interviews, and more. And Bob Dylan's "Greatest Hits Vol. 3" on Columbia ($22.98) contains lyrics and credits for songs recorded between 1972 and 1989.

The downside: Experts estimate that half of the currently installed CD-ROM drives won't be able to play some of the enhanced CD's, which is why some record labels are setting up toll-free support lines or providing a diagnostic disc. Most enhanced CD's should play on CD-ROM drives bought in the past two years, however.

BOOKS
Amadeus Press has published The Great Tenor Tragedy: The Last Days of Adolphe Nourrit ($22.95) by Henry Pleasants, STEREO REVIEW's London Editor. Pleasants describes it as "the love child" of his career... Cabaret singer Michael Feinstein has an autobiography out, Nice Work If You Can Get It (Hyperton, $24.95).
Perhaps the greatest music is not so much composed, as inspired. Now, there's a way to hear it time and time again that, in itself, is quite inspirational. Bose® Lifestyle® systems.

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In fact, you might say all Lifestyle® systems are not so much engineered, as inspired. For more information and retailers near you call 1-800-444-BOSE Ext. 689.
LETTERS

The Digital Videodisc

Ken Pohlmann's "The Dogs of War" (October "Signals"), about the competing formats for a digital videodisc (DVD), was very discouraging. The thought of another VHS/Beta or MiniDisc/DCC war truly sickened me. For a consumer, it was a no-win situation.

The idea of true, high-quality digital video makes my mouth water. I am very happy that in September the competing conglomerates agreed to compromise on a single set of standards for DVD. The unification of standards avoids consumer confusion and makes possible a healthier competition based on quality and features.

ROSS SELBY
Hampton, VA

The Digital Videodisc, continued from page 73

Now that the two DVD camps have compromised, will they be releasing a recordable DVD, too? If so, will it be record-once, re-recordable, or both? Ken Pohlmann said that the system will be compatible with CD players. Does that mean that DVD players will be able to play CD's, or will CD players be able to play the audio tracks of DVD's? It would be great to be able to play a DVD concert in the car, and the extended playing time would be great for recording your own music CD's.

FRANK D. MICKEY
Bellbrook, OH

The DVD machines slated for introduction late this year will not be able to record, they will be able to play conventional audio CD's in addition to the CD-size all-digital videodiscs, most of which will contain movies. That is not to say that future DVD machines won't offer a recording feature — they probably will. When is another question. While the DVD standard will include provisions for both a write-once and a re-writable disc, manufacturers have not indicated when they might bring such a product to market. The new DVD's will not be playable on standard CD players.

The Listening Environment

Julian Hirsch's "Is Concert-Hall Realism Possible in the Home?" (October "Techni
cal Talk") was right on the money. My experience over the years certainly confirms his point that the listening environment is critical in reproducing recorded music.

Even though most of us can't afford to build an acoustically neutral room, some things can be done to help reduce the effects of the listening room. You can eliminate many room-boundary interferences by simply moving your speakers away from the walls and moving your listening position closer to the speakers. How close should be dictated by your personal preference, but don't be afraid to get really close! If moving the speakers is not an option for you, then move just the listening position. While the effect will not be as dramatic, it should still be very noticeable.

E. RAVEN ELLIS
Eden, NC

AC-3 Upgrade

Would using the Carver Corporation's Z-5 adaptor (described in October's "Watts Playing," page 78) to turn a Dolby Pro Logic receiver's speakers outputs into line-level outputs make it possible to add an AC-3 decoder to the system?

PAT FRALEY
Huntington Beach, CA

No. To add AC-3 decoding capability, the receiver must have enough line-level inputs to receive the six channels of output from an AC-3 decoder. Changing the receiver's output levels has nothing to do with it. At this writing, Yamaha's RX-V2090 is the only AV receiver with enough inputs for an outboard AC-3 decoder. The add-on situation probably won't get much better in the future since most new products will contain built-in AC-3 decoders.

Reproducing Soprano Vocals

Based on Julian Hirsch's review of the Pinnacle 650 speakers a number of months ago, I purchased a pair. With orchestral music, they sound fine. With soprano voices, however, it is a completely different matter. On loud or high notes the sound has a sharp, grating edge (distortion, echo, ringing, beaming, over-miking?).

Armed with four of my latest all-digital CD's of operatic sopranos, I made the rounds of several local high-end stores and auditioned a slew of speakers from other manufacturers. Lo and behold, they all sounded the same as my Pinnacle 650's, give or take a little harshness, or whatever it is I am hearing. At one of the establishments the salesperson volunteered that the problem is not at all uncommon, especially with two-way speaker systems, and said that the only speakers free of it are those with ribbon midrange drivers. What's the scoop?

A. REISMAN
Raleigh, NC

Julian Hirsch replies: Since a wide variety of speakers show the same effect, I wonder if the recordings are at least partly to blame. Personally, I find some soprano voices grating to my ears even when heard live, but I doubt that all two-way speakers would make them sound worse. I have no opinion on ribbon drivers as a solution except to be somewhat skeptical about it.

TV Shopping Tips

Since I am in the market for a new large-screen TV set, I read "10 Tips for TV Shopping" by Tominson Holman (November) with much interest. While the article was...
She got the house, the car, and the furniture.

(And you're still married.)

With all due respect to your better half, perhaps it's time you balanced things out a little. Well, a Pioneer® Cinema Wide Television certainly would be a great way to start. It simply gives you more picture than conventional sets, while innovations like Vertical Contour Control and Multi-Point Digital Convergence add up to the sharpest picture available today. Plus the new Intelligent System Control in our 5 Series gives you one-touch control of your components, even those by other brands. And our TVs are just the cornerstone of our full range of home theater equipment. So call us at 1-800-PIONEER for a dealer near you. And take custody of one of our TVs.

ADVANCED HOME THEATER

very good — informative and thorough — it is next to impossible to carry out many of his suggestions, such as "Watch out for unequal source quality" (Tip #2) or "Watch for changes in picture geometry with picture brightness" (Tip #4), in 95 percent of the retail stores out there. If Mr. Holman had been in many retail stores lately he would know that even getting such basic information as whether a set has a comb filter and what type it is (Tip #6) is an unrealizable goal. And if you do get an answer from a salesperson, the chances that the information is correct are very slim indeed. - Drew Daubenspeck Temple, TX

Shopping for a TV can indeed be a frustrating experience, which is why it makes sense to narrow the playing field before you even step foot in a store. The easiest way to do this is to call a handful of the major TV companies (consult the manufacturers' directory at the back of Video magazine's 1996 Buyer's Guide, now on newsstands) and request a catalog, which should provide such basic information as what type of comb filter a given set has. As for the other recommended areas of investigation, at least you now know what kinds of picture anomalies to keep a watch for. To get the best source quality, ask the salesman to play a laserdisc through the set you're interested in; most stores should be set up to do that, and a salesman will probably try to accommodate you if the store's not too busy. But no one ever said shopping for a TV was easy.

Putting Down Selena

What was the point of running Steve Simels's review of Selena's "Dreaming of You" (November "Popular Music") other than to get another of his hipper-than-thou put-downs into print? If Mr. Simels had some consideration for his readers, he'd have said something about Tejano music and Selena's place in it. Instead, he flaunted his contempt for this music and insulted her fans. Having decided the music was worthless, Mr. Simels had to come up with a reason for the album's sales. Since it couldn't be because so many people like the music, it had to be their morbid interest in Selena's murder. I wouldn't slam a door that hard.

Allen Watson III
Sunnyvale, CA

Assisted Hearing

I have been tested and told that I need a hearing aid. Will I be able to hear high-fidelity music from my system while using the aid? Or would I be better off not to wear it when listening and to use an equalizer to boost the sound in the range where I am deficient (the mid to high range)?

Ronald E. Adkerson
LaVergne, TN

Correction

The GLW 5600 CD rack shown in November "New Products" (page 20) and stated to be available from Progressive Designs has been renamed the Curvare CD Sculpture and is now available for $230 (plus shipping) from Butta Designs, Dept. SR, Suite 506, 2517 W. Fullerton, Chicago, IL 60647, phone, 312-252-3801.

We welcome your letters. Please address correspondence to Editor, Stereo Review, 1633 Broadway, New York, NY 10019. You should include your address and telephone number for verification. Letters may be edited for clarity and length.
ACURUS vs THEM

In a twelve amplifier comparison test Video Magazine ranked the Acurus A150 amplifier number one. The Acurus received an A grade in both Sound Quality and Construction! "More importantly, this amp delivered tons of punch—significantly more than I expected from a '150-watt' amp. The sound had outstanding dynamic outlines and impact, trap drums and big bass events were impressively rendered. There was also an open, highly detailed, but never harsh character to the sound, with notable depth and 'space'." Dan Kumin, Video Magazine

To prove to yourself that the U.S. made Acurus is superior to the foreign made Sony, Rotel, NAD, Pioneer, Parasound, Carver, Adcom, etc. go to your nearest Acurus dealer for a demonstration.
30 YEARS AGO

In the January 1966 issue, our music critics offered their picks for the best recordings of the year just passed. As in previous years, no individual album received a flurry of votes. Most-mentioned classical composer, conductor, and performing force: Igor Stravinsky, Karl Bohm, and the Berlin Philharmonic. Most-mentioned pop/jazz artist: a tie between Ray Charles (whose "Live in Concert" did garner two votes), Bob Dylan, and Thelonious Monk. In music features, guitarist/author Donn Pohren traced the origins and intricacies of flamenco, and William Seward chatted with rising opera star Montserrat Caballe in the diva's first official encounter with the American press.

New products this month included Kenwood's TK-50 transistorized 60-watt receiver ($219.95), Sonotone's RM-0.5 acoustic-suspension speaker ($39.75), and Sony's Model 660 four-track stereo open-reel tape recorder with auto reverse ($575). In test reports, Hirsch-Houck Laboratories examined the Stanton Model 581EL phono cartridge with a built-in record-cleaning brush, concluding that the cartridge "is just about as good as they come, and that is very good indeed."

We call 'em as we see 'em: Morgan Ames informed readers that the tunes on "Lico-rice Stick" by New Orleans jazzman Pete Fountain "are executed properly and in the order listed on the label."

...the few discs to come into my office absolutely unwarped!

In Best of the Month, George Jellinek was wowed by Sir Georg Solti's version of Tchaikovsky's Eugene Onegin on London, while a perspiring Peter Reilly found that Tina Turner's "Acid Queen" was "enough to set off an early January thaw anywhere south of Point Barrow." Elsewhere, Noel Coppage dismissed Loggins and Messina's roots-rock album "So Fine" as "proof that hanging's too good for the son of a bitch who invented nostalgia."

Among new products were the ESS Phase 1 headphones (boasting a frequency response of 20 Hz to 50 kHz), the first application of the ESS-Heil Air-Motion Transformer to headphones. Julian Hirsch reviewed the Technics SA-5550 receiver ("in every respect ... first-rate"), Leslie's DVX dipole speaker system, and Pioneer's PL-15D-II turntable, a semi-automatic model whose performance "we could not fault."

It loses something in the translation: Reviewing "Mother Focus" by yodeling Dutch art-rockers Focus, Peter Reilly declared that one of the tracks possessed "surely the title of the year": I Need a Bathroom.

20 YEARS AGO

And wait till you play it backwards: Technical Editor Larry Klein, in his January 1976 news column, reported on a Columbia LP by Israeli psychic and spoon-bender Uri Geller. The vinyl record itself, Klein observed, "seems to be responsive to Uri's reputed control over the shape of physical objects: it is one of the few discs to come into my office absolutely unwarped!"

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10 YEARS AGO

"Do All CD Players Sound the Same?" was the instantly controversial question posed by a January 1986 feature that gave the results of listening tests conducted by David L. Clark, as reported by Ian Masters. The conclusion, based on six players from Carver, Emerson, Meridian, Sony (two models), and Technics, ranging in price from $400 to $1,400: "Audible differences do exist, but they don't matter unless you think they matter." In less contentious areas of the magazine, Julian Hirsch tested the Thiel CS2 speaker system, which at $1,350 a pair was "worth every cent of its price."

Dumb, dumber, and ...: Reviewing "The Heart of the Matter" by Kenny Rogers, Alanna Nash bestowed upon one song, Tomb of the Unknown Love, "my personal Conehead Award for Dumbest Record of All Time."

— Steve Simels
Adcom has developed a technology so powerful...
The power amplifier is the foundation of every high performance audio/video system. It is also the foundation on which Adcom built its reputation for performance and value. Our new line of Mosfet amplifiers is the powerful result of a new technology built upon our solid foundation of engineering excellence.

"This is the kind of product that shows the best of the high end can be made truly affordable."

Anthony H. Cordesman on Adcom's GFA-5800, Audio Magazine

Our GFA-5800 earned universal acclaim for its sonic performance. And now the same things can be said about our entire new line. After all, we've incorporated the same powerful circuit design and component technology.

Our Mosfet outputs are acknowledged worldwide for their ability to amplify harmonics, musical texture and extended bass with unequalled accuracy.

Our circuit designs, with larger and quieter toroid power transformers and oversized power supply capacitors, deliver the large amounts of current demanded by low impedance speaker loads. The pure simplicity of direct coupling keeps the damping factor high to maximize speaker control and assure clear and uncolored sound at all frequencies.

Using single-ended Class "A" circuitry in the front end, our new line of amplifiers delivers the warmth and smoothness of music other amplifiers can only talk about.

The highest quality circuit boards are another testament to Adcom's commitment to combining

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The GFA-5800: 2 channel stereo, 250 watts into 8 ohms, 400 watts into 4 ohms*

The GFA-5503: 3 channels, 200 watts into 8 ohms, 350 watts into 4 ohms*

The GFA-5200: 2 channel stereo, 50 watts into 8 ohms, 80 watts into 4 ohms*

*20 to 20,000 Hz with all channels driven at less than 0.18% THD

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lies value.

our most affordable, this
in all ADCOM Mosfet amplifiers.

The GFA-5500: 2 channel stereo, 200 watts into 8 ohms, 350 watts into 4 ohms\*.

The GFA-5400: 2 channel stereo, 125 watts into 8 ohms, 200 watts into 4 ohms\*.

The GFA-5300: 2 channel stereo, 80 watts into 8 ohms, 125 watts into 4 ohms\*.

the finest level of components to create outstanding performance.

"You may be surprised to find out how good your speakers are when you first try an amplifier of this quality."

Anthony H. Cordesman
on Adcom's GFA-5800, Audio Magazine

The reviewers are already praising the newest additions to our line of ADCOM Mosfet amplifiers just as they did our award winning GFA-5800. The ability to deliver more power and more current than their predecessors and to drive virtually any resistive/capacitive load — up to its rated output — gives you a full range of ADCOM Mosfet amplifiers that are designed to excel under conditions imposed by even the most demanding speakers. And because of their durable design, all our new amplifiers, like the GFA-5800, not only outperform the competition but will outlive it as well.

ADCOM GFA-5800 and GFA-5400
1995 Hi-Fi Grand Prix Award winners
Audio/Video International

With our new technology, whether you need big power or a small price, from two-channel stereo to an ultimate multi-channel home theater-surround sound system, you always get the best performance and value from Adcom.

Think about it. With Adcom’s dedication to innovative technology and uncompromising performance, you’ll not only hear the difference, the value will come through loud and clear.
Welcome to the real world.

Increasingly people are turning to a place NHT has always called home, the real world. Where performance is paramount – and so are aesthetics, function and value. Where our design philosophy addresses the challenges of your daily life, not those of an audio laboratory.

That’s why increasingly people are turning to NHT. From the legendary SuperZero, with performance totally out of proportion for its size, to the breakthrough Model 3.3, the ultimate speaker. If great audio is your whole world, explore NHT’s corner of it.
**NEW PRODUCTS**

**CONTINUUM**

Continuum's Audio Window preamplifier (top, $1,450) has three inputs, separate processor and tape-monitor loops, and both balanced and unbalanced operating modes. The Audio Stage power amp (bottom left, $1,750) is rated to deliver 200 watts per channel, and the Model 4-3-2 amp ($1,750) is rated at 100 watts x 4, 100 watts x 2 plus 400 watts, or 400 watts x 2. Both power amps are Class A/AB designs. All are covered by a five-year limited warranty. Continuum, Dept. SR, 9941 Horn Rd., Unit A, Sacramento, CA 95827.

- Circle 121 on reader service card

**SHERWOOD**

The RV-5050R A/V receiver from Sherwood has thirty AM/FM presets, five audio and four video inputs (including one on the front panel for a camcorder), preamp outputs for the front, center, and surround channels, a Dolby Pro Logic decoder, and a remote with center- and rear-level controls. The unit is rated to deliver 70 watts into 8 ohms to each of the front three channels and 25 watts to the surrounds, or 90 watts per channel in stereo operation. Price: $499. Sherwood, Dept. SR, 14830 Alondra Blvd., La Mirada, CA 90638.

- Circle 120 on reader service card

**NILES**

Designed for multiroom audio systems, the Niles SVL-4A4 combines a speaker selector, an amplifier selector, and a four-way volume controller in one low-profile component. It lets you connect four pairs of speakers to two amps (or receivers) and select whether amp "A" or "B" feeds a given speaker pair, each of which is governed by its own twelve-step volume control. Impedance-protection circuitry is said to prevent the amps from overloading. Price: $380. Niles, Dept. SR, P.O. Box 160818, Miami, FL 33116.

- Circle 123 on reader service card

**AUDIO-TECHNICA**

Add a TV and a stereo VCR to Audio-Technica's Cinema Sound CS2000 system and you have a basic home theater. The package includes three 8 x 5 1/2 x 5-inch front speakers, a powered/wireless surround speaker, and a bass module with an 8-inch woofer, a Dolby Pro Logic decoder, a 900-MHz transmitter for the surround, and four amps rated to deliver 80 watts to the woofer and 20 watts to each front speaker. A remote is included. Price: $600. Audio-Technica, Dept. SR, 1221 Commerce Dr., Stow, OH 44224-1760.

- Circle 122 on reader service card
NEW PRODUCTS

FULTRON
The Aria AR-CS60 car component speaker set from Fultron includes a pair of 6 1/2-inch mica-filled polypropylene woofers, two 1-inch aluminum-dome tweeters, and two 18-dB-per-octave crossover modules with tweeter-protection circuitry. System sensitivity is given as 90 dB, maximum power handling as 100 watts, and low frequency limit as 50 Hz. A tweeter mounting kit that accommodates surface flush, or angled options is supplied. Price: $260. Fultron Dept. SR, 122 Gavoso, Memphis, TN 38103.

Circle 124 on reader service card

CANON
Designed to be mounted in a corner, Canon's V-100 is described as a wide-dispersion utility speaker suitable for surround-sound applications. Its 13-inch-tall plastic enclosure (also available in white) has a detachable bracket and houses a 5-inch woofer, a 1/2-inch tweeter, and overload protection circuitry. Price: $500 a pair. Canon Audio, Dept. SR, One Canon Plaza, Lake Success, NY 11042.

Circle 125 on reader service card

ALLEN PRODUCTS
The CT-200 Headliner CD Tower from Allen Products Co. holds 200 CD's while occupying only 1 square foot of floor space. The 5-foot metal rack is finished with textured black paint (a white finish can be special-ordered). Available factory direct for $199.95 (plus shipping) from Allen Products Co., Dept. SR, 2454 Rosemead Blvd., El Monte, CA 91733; phone, 1-800-729-1251.

Circle 126 on reader service card

DANIELS AUDIO
The Zern-One CD player from Daniels Audio is a Philips player that has been modified to deliver improved frequency and phase response. Maximum phase linearity is given as ±1°. The player features a DC-coupled analog section, a 192-times oversampling bitstream D/A converter, separate analog and digital power supplies, and a four-pole analog low-pass filter. User highlights include thirty-track programming and a remote control. Available factory direct for $749 (plus shipping) from Daniels Audio, Dept. SR, 178 N. Ridgeland, Oak Park, IL 60302; phone, 708-383-3319.

Circle 127 on reader service card

PROBE AUDIO LABS
Probe's two-piece Jayde speaker consists of a vented subwoofer module containing an 8-inch woofer and a quasi-dipole "satellite" containing a 6 1/2-inch midrange driver, a 1-inch tweeter, and a rear-firing 3/4-inch tweeter designed to enhance spaciousness. The low-frequency limit is given as 35 Hz and sensitivity as 92 dB. The 46 1/2-inch-tall combined cabinet is available with a light or black oak-veneer finish. Price: $3,300 a pair. Probe Audio Labs, Dept. SR, 10223 N.W. 53rd St., Sunrise, FL 33351.

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NEW PRODUCTS

**JVC**
JVC's HR-IP820U VHS Hi-Fi VCR is the first deck to incorporate Gemstar's Index Plus+ tape management system. When you record a program, an ID number and information about the show (including title and length) are stored in a memory chip in the VCR. Details for up to 400 indexed programs can be recalled without having to reinsert a tape. When an indexed tape is inserted into the VCR, you highlight the show you want to watch on an on-screen directory, and the VCR automatically finds it and starts playback. Price: $600. JVC, Dept. SR, 41 Slater Dr., Elmwood Park, NJ 07407.

**B & W**
B&W's CDM1 bookshelf speaker combines a 61/2-inch woofer (with an oversized 11/4-inch voice coil) and a 1-inch alloy-dome tweeter in a 141/4-inch-tall ported cabinet finished in black or red ash veneer. The tweeter is mounted in its own enclosure to reduce diffraction effects. The low-frequency limit is given as 46 Hz. Price: $550. B&W, Dept. SR, 54 Concord St., North Reading, MA 01864-2699.

**STINGER**
Ideal for custom installations requiring concealed wire runs under carpeting, Stinger's SSW416BLK2 flat speaker wire combines four 16-gauge oxygen-free-copper conductors in a PVC jacket with polarity identification. The wire is less than an eighth of an inch thick and about 7/8 inch wide. Price: 75 cents a foot. Stinger Electronics, Dept. SR, 13160 S6th Ct., #502-508, Clearwater, FL 34620.

**PRECISION POWER**
The ArtSeries A600.2 car power amplifier from Precision Power is rated to deliver 150 watts per channel into 4 ohms or 300 watts a side into 2 ohms; bridged-mono output is 600 watts into 4 ohms. It has a regulated power supply, which is said to insure that full rated power is delivered over a wide range of input voltages (11 to 15 volts DC), and a low-impedance protection circuit. The amp is available in a "designer white" or subdued "classic black" finish and is covered by a three-year limited warranty. Price: $649. Precision Power, Dept. SR, 4829 S. 38th St., Phoenix, AZ 85040-2964.

**SOUND DYNAMICS**
The Sound Dynamics THS-10 powered subwoofer — a 16-inch cube containing a 10-inch driver, a 100-watt amplifier, and a two-way crossover — is rated down to 35 Hz. It accepts both speaker-level and line-level inputs and has an 18 dB-per-octave low-pass filter, adjustable from 50 to 150 Hz, and automatic on/off switching. The cabinet, which has a forward-firing vent, is finished in black ash vinyl and has a black grille. Price: $450. Sound Dynamics, Dept. SR, 3641 McNicoll Ave., Scarborough, Ontario M1X 1G5.

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NEW PRODUCTS

RADIAL ACCESS
Radial Access's RA100 CD rack is about the size of a lunchbox yet holds 100 CDs (with booklets). Available factory direct for $49.95 (plus shipping) with an oak (shown), walnut, or black base. Radial Access, Dept. SR, 1776 Mentor Ave., Suite 119, Cincinnati, OH 45212; phone, 1-800-260-9884.

ENGINEERED
Speaker Sneakers from Engineered elevate speaker cabinets off the floor to reduce boomy bass response — without making dents in the carpeting. A set of six (providing three Sneakers per speaker) is available factory direct for $119.70 (plus shipping) from Engineered, P.O. Box 314, Chandler, AZ 85244; phone, 602-786-8100.

AMBIANCE ACOUSTICS
The California Cube system from Ambiance Acoustics comprises two 13½-inch-square vented speakers, each with four 4½-inch drivers, and an active equalizer. Rated down to 30 Hz, the system has no crossover and uses identical drivers to avoid phase-shift, impedance-matching, and SPL-matching problems. Italian-laminate and painted finishes are offered. Available factory direct for $1,995 (including shipping in the U.S.) from Ambiance Acoustics, Dept. SR, P.O. Box 27115, San Diego, CA 92198; phone, 619-485-7514.

DCM
The DCM KX-212 speaker, designed to produce high sound-pressure levels and "bone-rattling" bass, packs two 12-inch woofers, a 6-inch midrange, and a ¾-inch horn tweeter in a 45½-inch-tall enclosure featuring a modified transmission-line design. Low-frequency limit is given as 25 Hz, sensitivity as 104 dB (measured with a 1-watt input at a distance of 1 meter), and nominal impedance as 4 ohms. Finish is black woodgrain. Price: $399. DCM Loudspeakers, Dept. SR, 670 Airport Blvd., Ann Arbor, MI 48108.

PIONEER
With Pioneer's CLD-V860 multi-format player you can sing along with Laser Karaoke discs or play a CD, a CD with graphics (CD+G), or a movie laserdisc. To assist the budding Elvis (Presley or Costello) in you, the player has digital echo and key-shift controls. Among its other features are a three-mode (theater, karaoke, music) DSP surround processor, dual-side play so you don't have to manually flip a laserdisc, and an omnidirectional microphone. Price: $1,100. Pioneer New Media Technologies, Dept. SR, 2265 E. 220th St., Long Beach, CA 90810.
Add great sound and powerful bass
to your computer, TV, radio, CD player
(or anything with a headphone jack)

Now you can add room-filling, high-fidelity sound to almost any product you own, at an incredibly affordable price.

Simply plug the award-winning SoundWorks amplified speaker system into any headphone jack (on your radio, TV, boom box, portable cassette or CD player, multimedia computer, etc.). Then turn it on.

You won't believe your ears.

"Seemingly impossible"
Audio Magazine

SoundWorks' powerful built-in amplifier, twin compact speakers, and subwoofer provide incredible, room-filling sound and powerful bass. Designed by Audio Hall of Fame member Henry Kloss, it may well be his most exciting product ever - and the most affordable.

Never before has so much high-quality, wide-range, natural, "big" sound come from such a small, affordable system. It makes it easy for you to have great sound anywhere.

"For the home or office, SoundWorks hits the right note."
PC Magazine

SoundWorks' great sound and compact size makes it ideal for many situations or locations where a large, conventional sound system doesn't make sense. It has magnetically shielded satellite speakers, so SoundWorks is ideal for use as a multimedia speaker system with your PC or Mac.

$219.99

Complete system with satellite speakers and subwoofer with built-in amplifiers

"More than enough juice to fill an entire room with sound"
MacUser Magazine

It also fits easily into smaller rooms - like kitchens, dens, and bedrooms. Use it with your TV, clock radio, boom box, or Walkman. With a portable CD player, it makes a great sound system for a small apartment or college dorm. SoundWorks operates on either 120 or 12 volts, so you can also use it in boats, campers and cars. And with our optional carrybag, you can even travel with it.

How it works

SoundWorks consists of a powerful subwoofer and two compact satellite speakers finished in your choice of either charcoal gray, or in "computer-beige." Mini-stands are included, or you can attach the satellites to a computer monitor or TV with the supplied velcro kit.

The shoebox-sized subwoofer reproduces only non-directional bass, so it can be placed under your desk, or in back of furniture. It contains a powerful 3-channel amplifier that's been precisely tailored to match the speaker drivers. Its control panel includes a bass level control to adjust the subwoofer output for the size of your room.

When CD-ROM World magazine tested 20 amplified systems for overall sound quality, SoundWorks was rated first - ahead of all other systems. (The second and third place systems cost $399 and $699!) "The sounds that had been held prisoner inside my portable radio and TV were amazing." Audio Magazine

You can buy SoundWorks direct from Cambridge SoundWorks, or at cost-efficient Best Buy stores.

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CIRCLE NO. 6 ON READER SERVICE CARD
Now is the time for all good readers to enter the Rodrigues cartoon caption contest. For the twelfth time our tireless artist Charles Rodrigues has given us a zany drawing without a caption. The editors of Stereo Review invite you to enter the contest by submitting suitably zany captions for the cartoon at right.

The person who sends in the caption that is judged to be the funniest will win valuable prizes: the signed original Rodrigues drawing, US$100, and the glory of having his or her name printed with the winning caption when the contest results are announced in the June or July issue.

Anyone may enter, and there is no limit to the number of times you may enter, but each caption submitted must be on a separate sheet of paper that also contains the clearly legible name and address of the person who sends it in. Entries that have more than one caption per sheet will be disqualified. All entries must be received no later than March 1, 1996.

In addition to Charles Rodrigues himself, the transcontinental panel of judges will include members of Stereo Review's editorial staff and the winners of the eleven previous contests: Thomas Briggle (Akron, OH), Michael Binyon (Weaverville, CA), Bruce Barstow (Philadelphia), Matt Mirapaul (Evanston, IL), Marc Welenteychik (Richmond), Douglas Daughettee (Birmingham), Kelly Mills (Raleigh), Diane Sullivan (Grand Falls, New Brunswick), Brian Hoffman (New York City), Ron Haynes (Nashville), and Douglas Alderman (Novato, CA). Entries will be judged on the basis of originality, appropriateness, and humor. The decision of the judges will be final, and we don't wanna talk about it.

Why are that elephant and that customer kicking the amplifier, and what are the service personnel saying about it? Kick your ideas around! Be creative! Be funny! Enter today! No DNA test is required! You could be the winner!

SEND ENTRIES TO:
Rodrigues Contest
Stereo Review
1633 Broadway
New York, NY 10019

No purchase is necessary. Anyone may enter except the staff of Stereo Review and its parent company (Hachette Filipacchi Magazines, Inc.) and their immediate families. All entries become the property of Stereo Review, and none will be returned. If you wish to be notified of the results of the contest by mail, send a stamped self-addressed envelope to the address at left. In the likely event of duplicate entries, the one received first will be considered the winning entry. The names of the winners and a few runners-up will be published in Stereo Review and may appear in promotional literature for the magazine. Submitting an entry will be deemed consent for such use.

Stereo Review will arrange the delivery of the prize; any tax on it will be the responsibility of the winner.
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Inside Definitive's Revolutionary BP2000

"Definitive's new BP2000 absolutely kills most more-expensive speakers!"

—Brea: Berworth, Home Theater Technology
Definitive's New BP2000 Brings You the Ultimate Listening Experience!

"The first speaker I have been able to audition in my own familiar surroundings that has given me that special thrill that usually costs ten or more times its price to obtain."

- Julian Hirsch, Stereo Review

Speaker of the Decade

Now, with the BP2000, Definitive literally reinvents the loudspeaker. We have combined a six-driver dual D'Appolito bipolar array with a built-in (side-firing) 300-watt powered 15" subwoofer. (Yes, a complete powered subwoofer built into each speaker!) The result is extraordinary sonic performance beyond anything you've ever heard.

Both music and movies are reproduced with unequalled purity, transparency and lifelike realism. And the astounding high resolution imaging and awesome bass impact totally envelop you in sonic ecstasy. They are an amazing achievement!

"Frankly, if circumstances allowed, I would choose these speakers for myself."

- Julian Hirsch, Stereo Review

The Ultimate Home Theater

In addition to being an audiophile's dream, the BP2000s are also the main speakers in Definitive's AC-3 ready Ultimate Home Theater System. This astonishing system is absolutely the finest sounding available. It recreates a "you are there" spatial reality that actually puts you into the soundspace of the original cinematic action.

The complete system combines BP2000s with a C/L/R 2000 center ($650 ea.) and a pair of BPX bipolar surrounds (from $399 ea.). Of course, the dual 15" powered subwoofers are already built into the sleek BP2000 towers. Truly the ultimate listening experience! Visit your Definitive dealer today.

Definitive's new BP2000 brings you the ultimate listening experience. Each revolutionary bipolar BP2000 ($1499 ea.) has a built-in 300-watt RMS powered 15" subwoofer for ultimate performance.

CIRCLE NO. 15 ON READER SERVICE CARD

See our dealers list on page 32

Definitive Technology
1105 Valley Hills Dr. • Baltimore, MD 21217 • (410) 363-7148
AC-3 Logic

Q I have seen advertisements for receivers featuring Dolby AC-3, dubbed "the future of digital home theater sound." Assuming that most of AC-3-encoded movies will soon be available, will I still be able to get any surround effect from them using my current Dolby Pro Logic receiver, or will I have to buy a new receiver?

MARK P. ANGELIDES
Rye Brook, NY

A You’ll have to buy a new AC-3-equipped receiver only if you want to be able to experience the surround enhancements (better separation and so on) offered by AC-3-encoded soundtracks. You’ll still be able to enjoy conventional Dolby Surround playback because all AC-3-encoded movies also contain a Dolby Surround soundtrack. By the same token, all AC-3 decoders (whether stand-alone or built into a receiver or other component) also perform Dolby Pro Logic decoding, so any tapes or discs you now own won’t become obsolete. For the time being, AC-3 is only available on laserdiscs, but it will be included in future digital delivery systems, including high-definition television (HDTV) and possibly the digital videodisc (DVD) system due out late this year.

Adding a Center Channel

Q In our attempt to create a perfect surround-sound system, we seem to have made a grave mistake. The core of the system is an AV receiver that does not include Dolby Pro Logic or a subwoofer output. We feel that our main speakers put out enough bass that we can do without the subwoofer, but we would like to add a center-channel speaker. What do we have to do to achieve this without spending too much money?

GIL HAWKINS
Sun City West, AZ

A There’s really no way to derive a center-channel signal if the surround decoder in your present receiver doesn’t provide one, the best solution is to upgrade to a receiver that has Dolby Pro Logic decoding. Fortunately, that need not be all that expensive these days — such receivers start at about $300 or so.

Of course, that’s assuming you really need a center speaker. The center-channel output provided by Dolby Pro Logic is very effective at anchoring things like dialogue at the location of the screen, even for listeners sitting off-axis, but it’s not always necessary. If the main viewing positions are reasonably close together on the center line of the screen, normal imaging with its “phantom” center might well be enough, and you may find the improvement obtained by adding Pro Logic an unjustifiable expense.

Stereo Bass?

Q My surround-sound system includes a pair of powered subwoofers, but my receiver only has a mono subwoofer output. Is there something I can buy that would give me stereo bass so that I can connect both of my subwoofers?

CHARLES F. WELLS
Lansing, MI

A Don’t worry about “stereo bass” — it doesn’t exist in many recordings. Practically all of the low bass in a movie soundtrack is recorded in mono, and even if it weren’t, low frequencies are mainly nondirectional. I suggest using a simple Y adapter to feed your receiver’s single bass output to both subwoofers. If you really insist on separate feeds for the few occasions when there is a difference in bass between the left and right channels, feed the subs from the main speaker outputs of your receiver, virtually all powered subs have speaker-level inputs.

The Sound of Videotape

Q My hi-fi VCR is capable of audio-only recording. When I use this feature, can the type of videotape I use be a factor in the sound quality I achieve? Could the tape speed affect the sound quality as well?

RANDALL COLLINS
Omaha, NB

A Generally, as long as the tape has a certain minimal integrity (stick with name brands), it won’t affect the recording quality. The enemy is dropout, which can affect the sound by interrupting it; a tape has to be fast because all of the low bass in a movie soundtrack is there. However, by the same token, taping at slower speeds is also slightly more prone to physical disruptions, but if that’s not a problem, the sound should be just as good as at higher tape speeds because the “writing speed” of the spinning head is the same regardless of the linear speed of the tape. I’ve made lots of superb recordings on drugstore-grade tapes at the slowest speed.

CB Terror

Q A neighbor of mine has purchased a CB radio with a rooftop antenna. Many of my equipment is unaffected by the transmissions from this setup, but my receiver conducts all of my neighbor’s conversations loud and clear. I’ve tried shielded speaker wire, extra grounding, and moving the receiver.
"All Definitive’s Bipolar Towers Deliver Astonishing Sound for Music & Movie Perfection"

You must hear the superiority of Definitive’s remarkably affordable BP6, 8, 10 & 20 and experience the miracle of bipolar technology!

"Truly Outstanding" — Stereo Review

Absolute sonic superiority and unexcelled value have made Definitive the leader in high-performance loudspeakers. It’s no wonder experts agree that Definitive’s critically acclaimed bipolar towers (priced from $299 ea.) dramatically outperform the competition.

Our exquisitely styled, American-made, advanced technology bipolar (front and rear radiating) systems are the critics’ choice. They combine lush spacious sound-staging, lifelike depth-of-field, razor-sharp resolution and pinpoint 3-D imaging with powerful subwoofer-quality bass (to below 20 Hz), high efficiency and ultra-wide dynamic range. The result is superb music and movie reproduction so real that it has been called “an incredible sonic miracle.”

"Music and Movie Sound was Stunning" — Video Magazine

Combine BP6s, 8s, 10s or 20s with our matching centers, bipolar surrounds and optional PowerField subwoofers for the most lifelike, spectacular “you are there” music and home theater available. All are completely Dolby AC-3 ready.

Award after Award Confirms Definitive’s Sonic Superiority

- Stereo Review “Dream System”
- Video Magazine Product-of-the-Year
- AudioVideo Speaker-of-the-Year
- CES Design & Engineering Awards
- Sound & Vision Critic’s Choice
- Inner Ear Report Editor’s Choice

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As a professional association of audio/video specialty stores, PARA sets the standards for high quality retail shopping. Member dealers know quality, service, and most of all, they know music and home theater.

PARA Home Theater Specialists

- PARA stores will take the time to ask about what you already own and suggest home theater components that will integrate into your current system.
- PARA home entertainment professionals are educated to explain the newest technologies in clear, friendly language, helping you get the best value for your money.
- Let us help you choose the system that's just right for you.

CALL 1-800-4-PARA 94 to find the PARA dealer nearest you!
"Hands Down, Definitive Offers the Most Bass for the Buck!"

Our award-winning $699 PF15 subwoofer has a 15" woofer, 185-watt RMS amp and floor-shaking 18 Hz response that will ignite your system.

"Shook the Concrete Floor"  
- Stereo Review

We set out to build the world's finest sounding, most powerful subwoofers. And we have. Our PF15 subwoofer is amazing. Our Audio Video Grand Prix winning PF1500 (15" w/ 250-watt amp) is even more spectacular. And our Critic's Choice top 5-star rated PF1800 (18" w/ 500-watt amp) is absolutely nuclear.

All three Definitive powered subwoofers feature our monocoque cabinets, high-power high-current amplifiers, fully adjustable electronic crossovers and massive 15" or 18" drivers. Best of all, experts agree that we have achieved the perfect synergy of powerful, earth-shaking bass for home theater combined with superb transient response and a refined expressive musicality.

Awesome Bass for Your System

To ensure optimum performance in your home, all our subwoofers have superb built-in electronic crossovers with high and low level inputs and outputs, adjustable high pass, low pass and volume controls (plus phase controls for the PF1500 and 1800) to guarantee perfect blending with any system and superior bass response in any room. All are Dolby AC-3 ready.

You must visit your nearest Definitive dealer and experience the absolute ultimate in powered subwoofer performance: awesome bass which thunders down below 15 Hz, yet retains complete musical accuracy for your total enjoyment.
A Sound Career

You were happily floating in dreamland when your alarm clock went off: playing its synthesized version of Für Elise. You climbed out of bed and clicked on the TV, half-listening to the news. During the commute into school you listened to a little radio and a few CDs. Note: Stop by Midas later for a new muffler.

Nothing worse than a large lecture hall at 8:00 a.m. Well, maybe there is — the hall's PA system makes the professor sound like Darth Vader; he grades like Darth Vader, too. After class you made a few phone calls, then zipped into the computer lab to take a look at a multimedia CD on the French Revolution. With the day winding down, you checked out the latest video game at the mall, caught a movie, then headed to the club for an evening of great music.

Not a bad day — thanks to a lot of very talented audio engineers. You see, your day, like all our days, is filled with audio technology. Audio engineers designed your synthesized music alarm clock, microphoned and mixed the TV news, helped design the TV, built the radio-station studio and your radio. They recorded the CD and designed the CD player, amps, and speakers. They engineered your car’s noise and vibration characteristics. They wired up the university’s PA system, installed the telecommunications equipment, built the computer’s sound card, designed the video game’s sound and music, recorded and post-produced the film’s sound, and engineered all that great rock-and-roll music.

The most important technologies are the ones we routinely overlook because they’re so embedded in everyday life. Audio technology affects almost every aspect of our lives. The technological audio infrastructure that surrounds us is the creation of hundreds of thousands of audio engineers. These bright women and men, in fact, have some of the coolest jobs around. Moreover, there’s always room for more bright young engineers, and if you’re searching for a career path, there may be none better than this one.

If you like the idea of a sound career, let me offer a few words of advice. I’ve been working in audio for twenty years, and as a professor of music engineering at the University of Miami I’ve eased hundreds of students into audio careers (no, I don’t grade like Darth Vader). From Madonna to Motorola, from Fox Television to the FBI, from Disney to Dolby, they’ve hired my former students.

As an educator, my first piece of advice is simple: Get a good education. If you’re inclined toward music recording and production, consider a Bachelor of Music degree at a school of music with a program in music engineering. There are at least a dozen universities with excellent programs — for example, Peabody Conservatory, Indiana University, and the University of Colorado/Denver. You’ll combine your musical talent as a performer with solid engineering skills. After graduation, if you’re persistent and talented, you’ll be hauling in Grammys in no time. But be aware that, like every other part of the music business, audio engineering is a very competitive field, and it’s a tough climb to the top. You’ll be lucky to make $20,000 in your first year. On the other hand, if you make it big, you might soon be making $200,000 a year, or even more.

For others, the technical aspects of the industry are most attractive. In that case, seek out a high-caliber college of engineering and a Bachelor of Science degree in electrical engineering from a school such as the University of Illinois, Stanford, or MIT. You’ll start with calculus in your freshman year and wind up programming digital signal processing (DSP) chips in your senior year. Audio manufacturing companies are eager to interview and hire bright young engineers. In a world of temp workers and dwindling benefits, engineers can still command golden employment packages and starting salaries of $40,000 and up.

No matter what your undergraduate degree, if you’re a good student you should go to graduate school and pick up a master’s degree. Consider that you’ve been going to school for about seventeen years; two more years of study will give you an advanced degree and an edge over all those lowly undergraduates. You owe it to yourself, and your future employer will reward you with a higher salary and a faster career track. Alternatively, many companies are anxious to amplify the value of their employees and will cover your costs to attend graduate school.

No matter what your educational path, or its duration, you should consider that the audio industry is constantly reinventing itself. It is fast-paced and fast-moving, and it will chew you up and spit you out in ten years if you stay static. In other words, once you sign on for a career in audio, be prepared to be a student for the rest of your career. For example, you’ll have to read voraciously (ten to twenty magazines and journals every month). You should also join the Audio Engineering Society. This is the premier professional society for audio engineers; the AES Journal runs commentary from the outposts of cutting-edge audio. Its section meetings, conferences, and conventions will help keep you intellectually fit, and the networking is simply fabulous.

The audio industry is fast-moving because it is powered by a colossally forceful engine. Specifically, it is computer-driven. Vacuum-tube power amplifiers and phono cartridges are quaint, but today’s audio engineers speak in binary.

Audio engineers have some of the coolest jobs around, and there’s always room for more bright young engineers. If you’re searching for a career path, there may be none better than this one.

Their recorders are digital, their telephone lines are fiber-optic digital, their hardware circuits and PC boards are designed and laid out on a computer, and software processing controls it all. To be successful in today’s and tomorrow’s audio engineering world, you must be intimately comfortable with computers. Even better, you should be a computer monster. And that doesn’t mean noodling around with “Doom II.” Learn to program. Go out and buy the book Teach Yourself C in 21 Days, and then buy a new programming book every month. In a year or two, companies will be falling over themselves asking you to work for them to help design “Doom III.”

Audio engineering and its associated fields offer some of the most exciting professions available. If you’re thinking about audio as a career path, go for it. As any music engineer will tell you, it’s a great opportunity to play hard and work hard. And say hello to Madonna for me. ☺
Music to Your Ears

"...Talking about it seems to exaggerate its capabilities. Yet there is no denying that no matter how simple the SRS process is, it works remarkably well on any audio source, mono or stereo, and on any system from the cheapest boombox to a stereo TV set to high-end Dolby Pro Logic surround systems. And it does it without having to be pre-encoded on the audio material." Richard Maddox, Home Theater, April 1995.

We’re flattered by Richard Maddox’s comments and every day we hear testimonials from users about how they are amazed by this technology. SRS technology has won numerous accolades and has been granted several patents from various countries. Now through NuReality, the power of SRS 3D sound technology can be conveniently and inexpensively brought into your home with the Vivid 3D Theater.

How it Works

You only have two ears, yet you hear in three dimensions. Patented SRS technology is based on a natural psychoacoustic phenomenon, known as Head Related Transfer Functions or HRTFs, that have been largely ignored by modern sound reproduction technologies. HRTFs allow your brain to localize sound because the spectral characteristics, or frequency response, of the sound varies. These “spatial cues” supplied primarily by the outer ear, or pinna, are transferred to the brain—enabling you to position sounds very accurately in three-dimensional space. SRS technology essentially mimics these diffractive effects of the pinna by extracting information from a recording that originally came from the sides and rear. This ambient information gives you a sense of acoustic space. SRS then uses HRTF-based corrections to cause the ear to perceive these sounds in their original spatial relationships. The result is that the sense of realism you perceive from reproduced sound is dramatically enhanced.

Enhance your System

The Vivid 3D Theater easily connects to your existing system with standard audio cables, which are included. Within minutes you’ll be immersed in dynamic 3D surround sound. Like Richard said, SRS technology works remarkably well on any audio source, mono or stereo, as well as surround sound technologies such as THX® and Dolby Pro Logic®.

The Holy Grail of Audio

The audio holy grail is to make the speakers sound invisible and to eliminate the sweet spot. We feel we’ve achieved this goal with SRS technology and the Vivid 3D Theater. Call today and discover what NuReality products can do for you. Experience SRS Technology for yourself with our free* Demo CD.
Speaking of Shapes

Have you ever thought about the shape of a typical loudspeaker? It would be easy to conclude that the simple rectangular box is the natural shape of a speaker enclosure, since the vast majority follow that pattern. Actually, things are a bit more complicated than that.

Most of the earliest speakers (in the 1920’s) were essentially unbaffled. A cone was supported on a frame and typically driven by a magnetic armature (the voice coil, as we know it today, made its appearance a little later). As a matter of fact, “fidelity” in its current audio sense was unknown in those days, despite the inevitable hype associated with the miracle of transmitting sound via radio through the ether. Mere intelligibility was a sufficient achievement in the 1920’s. The program material was generally AM broadcasts of limited bandwidth, with distortion levels that would drive a modern listener to despair. Phonograph records, whether recorded (and reproduced) acoustically or electrically, were pretty dismal by today’s standards, although, as now, a notable performance could go a long way toward compensating for these deficiencies.

The dynamic speaker, similar in basic design to today’s drivers, was also available in the 1920’s, although for many years (well into the late 1940’s, as a matter of fact) the speakers in home radios were typically operated in open-backed cabinets that severely limited their bass extension and response flatness.

High fidelity, as we know it today, came onto the scene shortly after the end of World War II, in the mid-1940’s. By that time a fledgling hi-fi industry had hatched, and there was a widespread awareness of the importance of clean, extended low-bass response, which remains a staple in today’s hi-fi world.

For good bass, it is necessary to isolate the sound radiated from the rear of the woofer cone from the front radiation; otherwise, the two would cancel and reduce the total bass output. The closed-box speaker, one of the major components of most modern stereo systems, is still probably the simplest (and cheapest) means of achieving extended, relatively undistorted bass reproduction.

Roughly similar bass performance can be achieved with a ported enclosure, such as the well-known bass-reflex design and numerous variations on it. The port, an opening that is usually on the rear or front of the enclosure, actually enhances the bass output over a range of low frequencies, thus yielding a higher efficiency over that frequency range.

In general, a ported enclosure looks just like a sealed-box enclosure except for its port, which is usually concealed by the grille cloth if it is not on the rear panel of the box. There are numerous variations on this theme that involve internal partitions within the enclosure. These may form resonant cavities that modify the system response in certain frequency ranges, or in some cases (so-called “acoustic labyrinth” enclosures) create a long path for the rear radiation from the bass driver to an exit port on the front or rear of the speaker.

Although rectangular boxes have traditionally dominated the speaker world, several other shapes have appeared from time to time, including some truly weird ones!
A bullet-proof argument for the new B&W 600 Series.

The use of our patented Kevlar® cones is reason enough to choose the new B&W 600 Series. After all, Kevlar has always been the standard in B&W's best and most expensive loudspeakers.

But that's just the start of our bullet-proof argument. Because B&W's top-gun engineers loaded a barrage of technical innovations into an entire family of affordable, high performance speakers—the B&W 600 Series.

- Our metal dome tweeters—borrowed from the Matrix 801s—provide near-perfect response to well beyond audibility.
- Beveled cabinet edges and solidly braced enclosures minimize box resonance and the effects of diffraction for truly transparent sound.
- Gold-plated speaker terminals allow for biwiring to reduce component cross-talk.
- You can choose from a full line of speakers ranging from bookshelf to floor standing, center channel to surround sound, even an active subwoofer.
- Prices start at just $400 a pair.

Call 1-800-370-3740.
Only Yamaha Cinema DSP creates phantom speakers to fully replicate a multi-speaker movie theater. So you'll hear sounds everywhere in the room. Even in places where there aren't speakers. We also offer multi-room, multi-source capabilities for increased flexibility.

Phantom Speaker Effect

One minute, you're eating popcorn at home. The next, you're being transported to the wilds of Africa. The swamps of Montana seventy million years ago. Or even the moon. With Yamaha Cinema DSP, anything's possible. That's because only Cinema DSP can create the ultimate cinematic experience, right in your living room. We accomplish this through a unique method of multiplying the effects of Digital Sound Field Processing and Dolby Pro Logic. Digital Sound Field Processing is Yamaha's exclusive technology that reproduces some of the finest performance spaces in the world. Yamaha audio scientists measured the actual acoustic properties of these performance venues. Then transferred that information to microchips that go into our A/V receivers. So you can access it in your home at the touch of a button. And our digitally processed Dolby Pro Logic allows us to place dialogue and sound effects around the room, matching the action on the screen. These two technologies enable us to accurately replicate the full ambiance of a multi-speaker movie theater, in an ordinary listening room. All of which means we're able to offer a growing line of home theater components with Cinema DSP that outperform other comparatively priced products on the market.

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And that brings us to the RX-V2090 Home Theater A/V Receiver. One of this year’s most exciting new components. As you’d imagine, it comes with everything we’ve already mentioned. But, it also offers advanced features you might not expect in a single unit. Like multi-room, multi-source capabilities with two remotes for independent control of main system A/V sources from another listening room. The RX-V2090 has 7-channel amplification with 100w mains and center, and 35w front and rear effects. Pre-outs on all channels. 5 audio and 4 audio/video inputs with S-Video terminals. Yamaha linear damping circuitry. Plus discrete 5.1 channel line inputs for AC-3. And 10 DSP programs including 70mm movie theater. Of course, not everyone has the need for a component this comprehensive. That’s why we offer a full line of six new A/V receivers. So you can choose the one that’s best for you. Which means now all you have to worry about is cleaning up after those elephants before your next trip.

For the dealer nearest you, please call 1-800-4YAMAHA.
Aiwa AD-S950 Cassette Deck

CRAIG STARK • HIRSCH-HOUCK LABORATORIES

The AD-S950 is Aiwa's top-of-the-line analog cassette deck. With a three-head, dual-capstan design, the AD-S950 incorporates Dolby HX Pro headroom expansion together with the full complement of Dolby B, Dolby C, and the more sophisticated Dolby S noise-reduction systems. In addition to automatic selection of bias and equalization for the different tape types, the AD-S950 provides the manual bias-optimizing and tape-sensitivity controls required by Dolby S.

Separate record and playback heads in the AD-S950 allow users to compare the incoming signal directly with the recorded result. The heads are mounted in a common case and use pure-copper coils to minimize residual noise. The two capstans are belt-driven by a DC servomotor. A second DC motor handles the reel drive and shifts the heads and pinch-roller assembly into position.

The window in the cassette-well door of the AD-S950 is rather narrow, and while the relative amount of tape on each reel can be gauged by eye, the labels are not visible. The inner side of the door contains a spring-loaded tape-stabilizer mechanism to damp vibrations that might muddy the sound. The door is not removable, however, which makes cleaning the heads and demagnetizing the heads and capstans somewhat awkward.

When a cassette is inserted, the machine initially emits four loud mechanical thumps, which can be unnerving. These are caused by the operation of the automatic tape-tensioning system, however, and are nothing to worry about.

A calibration button switches in the bias fine-tuning circuit, which uses adjustment tones of 400 Hz and 10 kHz. To optimize performance the user has only to adjust the bias control for equal indications on the signal-level display and then turn the sensitivity trimmer so that the display deflects to a designated mark. After switching the calibration circuit off, the tape must then be rewound to the start of the procedure so that the test tones will be erased at the beginning of a new recording.

Signal levels are shown on a fifteen-segment-per-channel peak-reading fluorescent display, which is calibrated from -35 to +10 dB. Dolby level is marked at -2 dB, but it measured at -4 dB with our calibrated tape. Tape position is read out in minutes and seconds on a four-digit elapsed-time display that automatically blinks when approximately 3 minutes remain on the side. In conjunction with the counter reset, a Zero Return button helps you find a given place on the tape during fast-wind modes.

Light-touch solenoids operate the usual tape-transport functions, which also include cue and review. An MPX button activates a filter to prevent any residual stereo-multiplex components from affecting the accuracy of the noise-reduction systems while record-
What started out as Matthew Polk’s desire to design the ultimate home theater system turned into the most ambitious research project in Polk’s 22 year history. The result, the Signature Reference Theater (SRT), is a home entertainment system of such enormous dynamic range, accuracy, clarity and power that listening will touch you physically and emotionally.

Five proprietary Polk technologies, including Polk’s legendary SDA imaging, are combined to bring you “Performance Without Limits”.

For more information and the location of a Polk SRT dealer near you, call (800) 377 - POLK.

The SRT system consists of 35 active drive units housed in seven enclosures (including two 300 watt powered subwoofers) and a Control Center with wireless remote.

WARNING: THIS SYSTEM IS CAPABLE OF EXTREME SOUND PRESSURE LEVELS. SRT SYSTEMS ARE SUPPLIED WITH A SOUND PRESSURE LEVEL METER TO HELP YOU DETERMINE SAFE LISTENING LEVELS.
TEST REPORTS

ing from FM radio. The usual pause and record-mute buttons are also provided, as is a switch for turning on the deck with an external timer. The wireless remote-control unit supplied with the AD-S950 permits controlling its transport functions from a distance and dimming the control display.

Small front-panel knobs control the bias and record sensitivity along with record channel balance and headphone playback level. A single large knob sets the overall record level. The deck's rear panel carries the record and playback jacks.

As is clear from the accompanying graph, the measured playback response of the AD-S950 was very good. With our ferric and CrO2 IEC-calibrated BASF tapes, response fell by less than 3 dB at 18 kHz and only 1 dB at 31.5 Hz. Between these points the variation was less than 3 dB at 18 kHz and only 1 dB at 18 kHz.

On an overall record/playback basis, response with our tape (TDK MA) was extraordinarily flat — within ±1 dB from 20 Hz to 20 kHz — at the usual -20-dB recording level. Our ferric (TDK D) and chrome-equivalent (Maxell XL-II) samples dropped slightly (2 to 3 dB) at the 20-Hz bass end and more appreciably in the top half octave. At a level of 0 dB the extreme treble range ran into the usual saturation problems, but with Dolby S and metal tape the loss was only 1.5 dB at 18 kHz.

Signal-to-noise ratio (S/N) was very good, ranging from 66.6 dB (ferric tape, Dolby B, A-weighting) to an excellent 82.5 dB (metal tape, Dolby S, CCIR weighting). Wow-and-flutter was 0.085 percent (rated 0.1 percent) on the IEC peak-weighted basis, and 0.046 percent (rated 0.05 percent) on the JIS standard. Dolby tracking error measured only 0.5 dB with our chrome-equivalent tape, and the worst-case error was 2.7 dB, using Dolby S with ferric tape, better figures than we normally obtain.

The AD-S950, if slightly boxy in appearance, was easy to use, and its calibration feature worked perfectly with a variety of tapes we tried on it. Except for its initial thumps whenever it adjusted the tension for a newly inserted cassette, the deck ran quietly and without fuss. The controls are well laid out and well marked, and the display is crystal clear.

With both prerecorded cassettes and those we made ourselves, we found the sonic qualities of the AD-S950 to be very good indeed. Frequency response was broad and smooth, noise was audible only at extremely high playback levels, and wow-and-flutter was inaudibly low.

The Dolby S noise-reduction system is designed to give cassette users the same audible performance they can get from CD's, and in the Aiwa AD-S950 this hope is very nearly realized. Tape users still without Dolby S are well advised to try it on a deck like the AD-S950: Record a cassette with no input signal and play it back at a very high volume level while successively switching from no Dolby to Dolby B, Dolby C, and, finally, Dolby S. At each stage the unwanted noise components will shrink dramatically, with Dolby S knocking out the last remaining low-frequency “grunge.”

No analog copy is absolutely perfect, however, and we found that we could — barely — distinguish the original from the copy, at least with solo-piano recordings. There was also a very slight loss of definition and ambient-produced soundstage width. That's a small price to pay for extending the enjoyable life of a medium long dear to music lovers, and I'm happy to recommend the Aiwa AD-S950 to anyone looking for solid value in a medium-price cassette deck.
For the Price of Nothing, More to Buy, Ever!
**TLC**

**TLC: CrazySexyCool**

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Talking Heads: Popular Favorites 1976-1992/Sad In The Vasseline (Warner Bros) 01414
David Bowie: The Singles Collection 1969-1993 (Ryko) 01659
Judy Garland: Judy At Carnegie Hall (Capitol) 01782
The George Benson Collection (Warner Bros) 01858
Par Shop Boys: Alternative (EMI) 02010
Joshua Redman Quartet: Spirit Of The Moment--Live At The Village Vanguard (Warner Bros) 02221
Windham Hill: The First Ten Years (Windham Hill) 02628
Hank Williams: 40 Greatest Hits (Polydor) 05970
The Phantom Of The Opera/Cast Recording (Polydor) 14029
Fantasia/Smirk. (Warner Bros) 17060
Jerry Garcia Band: Greatest Hits (Warner Bros) 21126
Rush: Chronicles (Mercury) 24095

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[ ] Pop
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[ ] Classical

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Phone Area Code:

Signature:

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ABSOLUTELY LIVE

Dire Straits: Live At The BBC (W/Bros) 02184
Phil Collins: Serious Hits...Live! Atlantic 00024
Genesis: Live In The West...We Walk, Vol. 17/18 (EMI) 02033
Yanni: Live At The Acropolis (Private Music) 02477
Bryan Adams: Live Live Live (A&M) 06497
Dwight Yoakam: Dwight: The Solo Page (Beggar) 06897
Santana: Sacred Fire: Live In South America (Wea) 24992
Elvis Presley: Live At Madison Square Garden (RCA) 30707

FREE: Dina Sus: Forever Blue (Reprise) 08711

Stan Getz: The Best Of The Verne Years, Vol. 1 (Warner Bros) 02513
Saturday Night Fever/Saturday Night Fever/Love (Polydor) 14687
Simon & Garfunkel: The Concert In Central Park (Elektra) 44066
Madonna: The Immaculate Collection (Sire) 54164
The Best Of The Doors (Elektra) 70407
Elvis Presley: The Complete Sun Sessions (RCA) 72289

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Prince: The Hits 1 (W/Bros) 02228
Yes: 90125 (Warner Bros) 02113
Red Hot Chili Peppers: 12 Songs (Warner Bros) 02248
Sarah McLachlan: Fumbling Towards Ecstasy (A&M) 02386
Roger Whittaker: Feelings (And Other Sailing Hits) (RCA) 02557
Taylor Dayne: Greatest Hits (Arista) 03914
John Mellencamp: Dance Naked (Mercury) 04906
Megadeth: Youthanasia (Capitol) 06072
Kirk Franklin & Family (Columbo) 06892

KANSAS: Live At The Whiskey (Intersound) 33961
COCOON: Under A Blood Red Sky (Live At Red Rocks) (Island) 53988
Tania Thompson: The Destroyers: Live (Elektra) 54652
Allman Brothers Band: The Fillmore Concerts (Atlantic) 01555
Van Halen: Here Right, Here Right (Warner Bros) 01165
The Police: Live (A&M) 08551
Imagica: Europe '72: The Fillmore Concerts (Atlantic) 01159

Happy Days: A 2-CD set (Cr) counts as 2 selections.

KANSAS: Live At The Whiskey (Intersound) 33961
COCOON: Under A Blood Red Sky (Live At Red Rocks) (Island) 53988
Tania Thompson: The Destroyers: Live (Elektra) 54652
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TEST REPORTS

Cambridge SoundWorks
Ensemble IV Three-Piece Speaker System

JULIAN HIRSCH • HIRSCH-HOUCK LABORATORIES

The Cambridge SoundWorks catalog describes the new Ensemble IV speaker system as "the most compact, most affordable subwoofer/satellite speaker system ever designed by Henry Kloss." Considering that Kloss is one of the most talented and prolific speaker designers of our time (and definitely not given to exaggeration), it would be reasonable to infer that the Ensemble IV is somewhat special.

Decide for yourself. It is a three-piece system with two small, roughly cubical satellite speakers and a compact common-bass "subwoofer." The bass module has a single long-throw 3½-inch cone driver whose response extends down to 150 Hz. The satellites, which have perforated metal grilles, are finished in dark gray Nextel, but they are also available primed for painting in a color of your choice.

Cambridge SoundWorks is also somewhat unconventional in supplying all the "extras" needed to install its systems. The Ensemble IV comes with a 100-foot roll of insulated, color-coded speaker wire, a wire cutter/stripper, and full instructions for installation. It is also available with three additional satellites for use in home theater systems, as the Ensemble IV Home Theater, making it ideal for enjoying home theater at minimal cost when combined with an inexpensive A/V receiver, a TV, and a VCR.

We measured the performance of the bass module and the satellites both separately and together as a system. The averaged room response of the system was effectively flat above 400 Hz, within 2 dB overall up to about 10 kHz. The satellite drivers' cone resonance produced a 4-dB peak at 12 kHz, but the system's overall output response in our listening room (including boundary effects) was ±5 dB from 50 Hz to 20 kHz.

A quasi-anechoic MLS frequency-response measurement showed an extremely flat response (±1 dB) from 300 Hz to 2 kHz, a 3-dB level rise from 2 to 3 kHz, and a ±2.5-dB variation from 3 to 9 kHz. The satellite cone resonance produced a 7-dB rise between 9 and 12 kHz, followed by a steep drop that reached the original reference output level at about 16 kHz. A close-miked measurement of the satellite's output showed an impressively flat response of ±1.5 dB between 160 Hz and 1 kHz.

We measured the frequency response of the bass module with the microphone at its port. Its response was even more impressively flat than that of the satellites, varying less than ±1 dB from 65 to 170 Hz.

The system's sensitivity was 88 dB sound-pressure level (SPL) at 1 meter with a 2.83-volt pink-noise input. Driving the bass module with 3.56 volts (equivalent to a 90-dB reference SPL), we measured the distortion in its output as between 1 and 4 percent over the range from 1 kHz to 100 Hz, rising to 10 percent at 60 Hz. Although the output fell off at about 20 dB per octave below 60 Hz, the bass distortion did not exceed 20 percent down to 20 Hz.

Neither the system impedance rating nor any other performance specifications of the Ensemble IV are given in the accompanying literature and in-

---

**DIMENSIONS**
- **Bass module:** 6½ inches wide, 8 inches high, 12 inches long
- **Satellites:** 4 inches wide, 4 inches high, 3½ inches deep

**WEIGHT:**
- **Bass module:** 7½ pounds
- **Satellites:** 1½ pounds

**FINISH:**
- **Gray Nextel

**PRICE:**
- **Ensemble IV:** $525
- **Ensemble IV Home Theater:** $400

**MANUFACTURER:** Cambridge SoundWorks, Dept. SR, 311 Needham St., Newton, MA 02164; telephone, 1-800-367-4434

STEREO REVIEW JANUARY 1996 45
The new Rotel RCD970BX is a premium quality CD player that delivers performance and technology normally found only on far more exotic and expensive designs. A new 18-bit ladder-type D/A converter with continuous calibration results in nearly 20-bit resolution. A toroidal transformer and superb quality filter capacitors contribute smooth, uninterrupted power. A CDM9 swing arm ensures instant access, precise tracking and gentle handling of your most cherished recordings. And a new PC board, close tolerance components, and gold-plated, RCA-type coaxial digital output all add to this remarkable music machine's stunning performance. You get all of this and more in an attractive, low-profile, high performance CD player with scan, random, 20-track programming, repeat and time information, plus an infrared remote. We invite you to visit your Rotel dealer and audition the RCD970BX. If you're impressed with the sound, wait until you hear the price.

In our listening tests, the remarkable little Ensemble IV sub/sat speaker system from Cambridge SoundWorks lived up to its impressive measurements.

module is both visually and audibly inconspicuous, but putting your ear close to its port leaves no doubt that it is doing its job. Once you become accustomed to the size of this system, its balance and listenable quality become apparent. As it happened, the only other system we had available for comparison at the time was vastly larger and more expensive. Although the two systems certainly didn’t sound alike or look alike, they were both perfectly listenable, and the Ensemble IV never gave a hint of its minuscule dimensions and price tag to match.

I have a minor cavil with calling the bass module a “subwoofer.” It is a woofer, and a very effective one for its size and weight. But that is mere nitpicking, and I would have to agree with Henry Kloss that this system is one of the top bargains in today’s market. Hearing is believing!
NO OTHER SPEAKER SYSTEM DELIVERS A MORE FORCEFUL THX® EXPERIENCE.

THX criteria are demanding. Exact specifications for efficiency, distortion, power handling, dispersion control and frequency response must be met for a product to earn the THX logo.

Award winning Klipsch Horn Technology is based on the principles of physics. So Klipsch THX speakers are highly efficient, deliver broad dynamics with low levels of distortion, offer controlled directivity and have flat frequency response. It's the same technology found in our full line of audio and home theater speaker systems. And it's the same technology that's made Klipsch world famous for over 50 years!

The goal of a Home THX System is for the viewer to experience a movie soundtrack that's exciting enough for the most demanding director and sound engineer. Klipsch THX will deliver outstanding audio whether you're watching "The Empire Strikes Back" or listening to your favorite CD.
I've worked with a number of professional compact disc recorders and several computer-peripheral CD recorders, but this is the first time I've gotten my hands on a consumer CD recorder. I am happy to report that the Pioneer PDR-99 is light years away from first-generation CD players in terms of its playback capabilities, and it successfully shatters the recordability barrier. Pioneer has overcome a multitude of political hesitations and at last introduced an affordable consumer product designed to play CD's and record CD-R's (write-once CD blanks).

A quick glance at the PDR-99 reassures you that it belongs in Pioneer's Elite series. Its glossy black front panel and rosewood side panels, richer looking than a Rockefeller (or even a Gates), suggest a largesse of expert engineering inside. At first glance, though, you might mistake the PDR-99 for a simple player. All of the expected controls are there: power on/standby, drawer open/close, play, pause, stop, forward and reverse track search (audible manual forward and reverse scan when held down), and headphone level at the front-panel jack.

Closer inspection reveals the PDR-99's more revolutionary aspects. An Input Selector button is used to select a fiber-optic or electrical (coaxial) digital input or a line-level analog input. When the Digital Synchro button is used for recording, the deck senses digital input signals, automatically enables recording, and pauses the recorder when the selected source program ends. Either individual tracks or all tracks can be dubbed from a CD or DAT; in either case, track numbers are automatically preserved in the recording. For nonsynchro recording, you start and stop the process manually using the pause button. A record-mute button inserts 4-second silent segments between recorded tracks. Two potentiometers, marked Record Balance and Record Level, are used only to set analog input levels; they don't operate with the digital inputs.

There are two track-number buttons, marked Auto/Manual and (Manual) Write, and a small red LED associated with them. When you hit the Auto/Manual button, the LED lights up; you then press the (Manual) Write button whenever you want to insert a track number. If you hit the Auto/Manual button again, the LED goes out and the track numbers are automatically updated and recorded in sequence.

There are three track-skip ID buttons, marked Skip Play On/Off, Set, and Clear, that can be used to instruct a CD player to permanently skip over unwanted or spoiled tracks. The Skip Play On/Off button activates the skip function, then you use the track-search buttons to select the track to be skipped and the Set button to insert a skip marker for it. The Clear button cancels skip commands. Skip ID's are stored permanently by pressing the disc-drawer open/close button. The Finalize button is used to write a Table of Contents so that a disc can be played on any CD player.

A large fluorescent display shows typical information, such as track numbers and timing, as well as specialized data for recording. For example, there are two bar-graph level meters, displays for sampling frequency, copy prohibition, and input type, and indicators that light when a pre-finalized CD-R disc is played and when recording is enabled. The display also helpfully flashes a large lexicon of messages such as INPUT CD, NEW DISC, REC FULL, PRO DISC, and FINAL? The Display Off button can be used to deactivate the display except...
AC-3 really gives speakers a workout. Luckily, we've had time to train.

When we started working with the specs for AC-3, Dolby Labs' new digital home theater format, two things were apparent: One, AC-3 is nothing short of spectacular. And two, to realize the advantages of AC-3, speakers must work a lot harder than before.

First, AC-3's improved definition means if your front stage speakers aren't tonally matched, your ears will know it. That's why both our Lynnfield mains and center channel speakers use identical VR tweeters and matched midranges for uniform tonal balance and dispersion. So they easily reproduce the dialog clarity and stunning front soundstage effects that AC-3 promises.

Another AC-3 consideration: Since all speakers may be fed bass extending to 80Hz, centers and surrounds must play low. Good thing our VR10 and VR12 center channels and new Lynnfield VRS Pro surrounds were built to handle this very spec. Finally, a subwoofer must cleanly reproduce five discrete bass channels, plus AC-3's thunderous LFE (low frequency effects) channel — something our new VR2000 300-watt powered subwoofer can do without breaking a sweat. Get the whole scoop on our new AC-3-capable speaker system. Call 617 592-9000. Just remember to do some stretches before dialing.

Boston Acoustics
70 Broadway, Lynnfield, MA 01940. Dolby and AC-3 are registered trademarks of Dolby Laboratories, Inc.
TEST REPORTS

when an operation button is pushed. Conveniently, if you hit the button during recording the remaining recording time is displayed.

All connections except the headphone jack are on the rear. There are four phono jacks for analog input and output. There are also two pairs of digital connectors, a pair of Toslink optical jacks (Digital 1) and a pair of coaxial jacks (Digital 2). A rear-panel control must be switched on to use either digital output and off to use the analog outputs. A pair of miniplug jacks can be used to connect a control cable between the PDR-99 and compatible Pioneer components, thereby allowing a remote-control signal received by one unit to be conveyed to other components in the sound system.

The supplied remote control duplicates many primary front-panel controls and adds a few extra features, including a button that initiates a 5-second fade-in or fade-out. The Program button can be used to set up a twenty-four-track playback sequence, and the Program Check and Clear buttons verify or delete programmed tracks. A time button displays elapsed and remaining time. There are also the random-play and repeat-play buttons that you'd find on any CD player as well as a numeric keypad.

It was with great expectation that I connected the PDR-99 to my home stereo system and started to learn its operation. As with other CD-R-format (Orange Book) recorders, the PDR-99 can play back all standard audio CD's and all CD-R's, even discs without the final Table of Contents. Tracks can be added (up to No. 99) to a partially finished disc until disc space runs out. In addition, skip ID's can be set or cleared only before a recording is finalized. After the TOC is written, extra tracks cannot be added, and discs without a TOC cannot be played on an ordinary (Red Book) CD player. Once the TOC is written, the finalized disc can be played on any player. Because finalized and nonfinalized discs look the same, the PDR-99 has a CD-R indicator that lights when it's playing a disc that is not finalized.

The PDR-99 automatically converts input sampling frequencies of 32 or 48 kHz to the CD standard of 44.1 kHz. The analog-to-digital (A/D) converter employs 1-bit technology, the approach used almost universally in today's digital components; it gives better results than all but the most expensive multibit converters. The 1-bit digital-to-analog (D/A) converter employs Pioneer's Legato-Link Conversion S circuitry, which is said to psychoacoustically restore frequency content lost in digital recording. A newly developed three-beam pickup with differential push-pull circuitry is also employed. The transport uses Pioneer's stable-platter design, in which the disc rests entirely on the platter surface to minimize vibrations, and a motor that is said to reduce rotational fluctuations. Because of that design, discs must be loaded label-side down.

The PDR-99 was righteous on the test bench during both recording and playback. I measured playback response using standard test discs. The Legato Link circuitry tinkers with the frequency response, in this case resulting in a designed dip in playback response to -0.88 dB at 10 kHz, rising to -0.26 dB at 20 kHz. Measurements of dynamic range and signal-to-noise ratio (S/N) verified that noise was fairly low — roughly 90 dB below full scale with A-weighting. Distortion levels were pretty good, and the D/A linearity error was reasonably low. The pickup was excellent at tracking through errors and successfully negotiated the largest (4,000-micrometer) defect on my test disc.

I measured record/playback response by recording test signals through the A/D converters. (Clearly, copying my test discs through the digital inputs would have simply produced clones of the discs, resulting in numbers identical to those found in measuring playback response.) The A/D converters were quite good. Dynamic range and S/N approached 90 dB, and THD+N was similar to the playback measurements except that it rose somewhat at -20-dB levels. The A/D to D/A linearity error remained low at +1.3 dB. The maximum interchannel phase shift and de-emphasis error were also low. In other words, the trip through the A/D converters did not pose significant problems. (Still, you'd want to use the digital inputs whenever possible.)

**MEASUREMENTS**

<table>
<thead>
<tr>
<th>CD PLAYBACK</th>
<th>RECORD/PLAYBACK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAXIMUM OUTPUT LEVEL</strong></td>
<td>2.52 volts</td>
</tr>
<tr>
<td><strong>FREQUENCY RESPONSE (ref. 1 kHz)</strong></td>
<td>20 Hz to 20 kHz +0.0, -0.88 dB</td>
</tr>
<tr>
<td><strong>DE-EMPHASIS ERROR (at 16 kHz)</strong></td>
<td>+0.4 dB</td>
</tr>
<tr>
<td><strong>CHANNEL SEPARATION</strong></td>
<td></td>
</tr>
<tr>
<td>100 Hz</td>
<td>63.3 dB</td>
</tr>
<tr>
<td>1 kHz</td>
<td>81.9 dB</td>
</tr>
<tr>
<td>20 kHz</td>
<td>81.5 dB</td>
</tr>
<tr>
<td><strong>SIGNAL-TO-NOISE RATIO (ref. 0 dB)</strong></td>
<td></td>
</tr>
<tr>
<td>A-weighted</td>
<td>92.0 dB</td>
</tr>
<tr>
<td>unweighted</td>
<td>66.5 dB</td>
</tr>
<tr>
<td><strong>DYNAMIC RANGE (A-weighted)</strong></td>
<td>90.2 dB</td>
</tr>
<tr>
<td><strong>QUANTIZATION NOISE</strong></td>
<td>90.3 dB</td>
</tr>
<tr>
<td><strong>DISTORTION (THD+N)</strong></td>
<td></td>
</tr>
<tr>
<td>1 kHz, 0 dB</td>
<td>0.076%</td>
</tr>
<tr>
<td>1 kHz, -20 dB</td>
<td>0.41%</td>
</tr>
<tr>
<td>20 kHz, 0 dB</td>
<td>0.69%</td>
</tr>
<tr>
<td><strong>LINEARITY ERROR (at -90 dB)</strong></td>
<td>+1.1 dB</td>
</tr>
<tr>
<td><strong>MAXIMUM INTERCHANNEL PHASE SHIFT</strong></td>
<td>(at 20 kHz)</td>
</tr>
<tr>
<td>0.4°</td>
<td></td>
</tr>
</tbody>
</table>
If You Think Surround-Sound Has To Be Complicated And Expensive To Be Good

Listen To This.

Easily Transform Your Existing Stereo And TV Into A Home Theater System For Just $99.

Movies come to life when you experience them in surround sound by adding depth and realism. Feel the roar of the jets in "Top Gun" or the footfall of T-Rex in "Jurassic Park" in your own living room. And be prepared to experience all the emotion the soundtrack provides with the HTS-1 from Chase Technologies.

NO HASSLE. LOW COST DESIGN.

The HTS-1 surround sound decoder from Chase Technologies upgrades your existing stereo system, no matter how old it is, to the amazing sound you hear at the movie theater. It connects in seconds without complicated wiring, and will make the most dramatic improvement in your systems overall performance since the invention of the CD. Chase's award-winning design has won rave reviews from audio critics around the world, including Popular Science in their August 1995 issue to say, "...nearly identical to Sony's Pro Logic system" which sells for hundreds of dollars more.

Add center-stage drama to your HTS-1 surround sound system with the Dialog self-powered center channel speaker for only $75.

THE HTS-1 DELIVERS AUDIOPHILE-QUALITY SOUND.

To create the stunning effects of 5 channel surround sound without complex and costly equipment, the HTS-1 uses an advanced circuit to extract the surround signals from the left and right stereo signals of the movie soundtrack. It then sends the signal to a pair of rear speakers. We recommend the superior ELF-1 rear channel speakers which come with mounting brackets, and come in black or white to match your decor. Or, step up to the state-of-the-art with Chase's breakthrough 900 MHz wireless speaker system. If running wires across your living room floor and over door jams is an obstacle to setting up a home theater system, Chase is the first company in the world to make "wireless home theater" a reality at last. You'll hear your favorite surround-sound encoded TV shows or tapes played back on a hi-fi VCR come to life with crystal clear clarity. Easily and affordably.

BIG SOUND FOR A SMALL PRICE.

For less than what you probably spent on your VCR, the HTS-1 system produces an incredible surround-sound experience. It's the only system that doesn't require buying a new amp for the rear channels, although it has extra amp outputs for upgrading later. Smart. It goes further, too. In a movie theater, one speaker is centered behind the screen. To get the same dramatic effect with your Chase system, the HTS-1 decoder can send the center-stage sounds to the Chase Dialog, a special powered center channel speaker. Even the Dialog is priced right—only $75.

WS-5500 Wireless Speakers deliver surround sound without the hassle of unsightly wires for only $279 a pair with mounting brackets.

GIVE US A 30-DAY IN-HOME AUDITION.

Experience the intensity and realism of surround-sound in your home with our exclusive risk-free factory-direct offer. Try the HTS-1, or any Chase product, for 30 days. If you're not satisfied for any reason, return the equipment for a full refund. Get into your movies—and into Chase surround-sound. Call now to order!

HTS-1 Decoder $99, $10 S&H (Shipping & Handling)
ELF-1 Rear Channel Speakers $99pr., $10 S&H (specify black or white)
Dialog Powered Center Channel Speaker $75, $8 S&H
WS-5500 Wireless Speakers and Transmitter $279pr., $12 S&H (specify black or white)
WMB-5500 Wall Mount Bracket for Wireless Speakers $59pr., $8 S&H (specify black or white)
CA residents add 7.75% sales tax. Please allow 21 days for delivery.

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CIRCLE NO. 17 ON READER SERVICE CARD
TEST REPORTS

Anyone who has made an analog cassette or DAT recording can make a CD-R recording. For example, it's easy to make a digital-to-digital recording of a track from another CD. Before starting a recording, the PDR-99 automatically makes a short test recording to determine the correct laser power level for writing to the disc (this test is made on an inner part of the disc and cannot be played back by the user). To record, you hit the Input Selector to choose a digital input, hit the Digital Synchro button once, and start the source player. The recorder automatically starts recording at the beginning of the source playback and stops when the track ends. If you hit the Synchro button twice, the entire source disc is recorded and track numbers are entered automatically. When you are finished recording a disc you will want to be able to play on another machine, you hit the Finalize button twice; the finalization process typically takes about 4 minutes. In other words, making a CD-R is as easy as recording a DAT or analog tape — simply select an input and hit record. The difference is that if there is a false start with tape, you can rewind and start over. With a CD-R, although the false start can be marked with a skip ID, the disc space will be lost. There is one caveat here: Some CD players, especially older ones, are unable to recognize skip IDs, which means they will play marred tracks instead of skipping over them.

It is probably worth mentioning that it is imperative not to bump the PDR-99 while making a recording; any mistracking would ruin that part of the recording. Also, any blank or unfinalized disc should be treated with care and kept clean and free of fingerprints, which could affect its recordability. It's probably also worth noting that the PDR-99 is an audio-only recorder. It cannot record (or play) CD-ROM or other computer data discs. And all discs it records are marked with the Serial Copy Management System (SCMS) subcode so that subsequent digital copies cannot be made. For example, a source CD-R disc cannot be digitally copied to another CD-R disc.

The permission/inhibit condition of any source can be checked by pressing either the Input Selector or Record button.

It's also important to note that although the PDR-99 will play any kind of audio CD, it will only record a certain kind of CD-R blank. There are two kinds of blank discs: those intended for computer data or use by audio professionals, on which no royalty is paid, and those intended for consumer audio recording, on which a royalty is paid. Both types of disc come in jewel boxes. Consumer discs are labeled either "for consumer" or "for music use only," but some computer and professional discs are not clearly marked — so buyer beware.

The PDR-99 will not record on computer or professional-use blanks, although computer-peripheral and professional audio recorders can freely use them to record either data or music. The PDR-99 will only record on consumer audio-only blanks, which are priced higher than computer/professional blanks and are limited to 63 minutes of recording rather than 74 minutes — an artificial limitation imposed to discourage rerecording of commercially recorded music CD's, which often run longer than 63 minutes. But CD-R drives are booming in the computer world, and in a short time many new computers will contain CD-R drives (instead of playback-only CD-ROM drives) that can play and record data, audio, and video programs. In light of that competition, the audio industry may be forced to rethink its 63-minute policy.

Another consideration is recording speed. The PDR-99 records in real time, so a 60-minute recording takes 60 minutes. Many computer-peripheral recorders now offer 2x, 4x, or even 6x recording speeds — with 6x speed, a 60-minute recording from a digital source can be made in 10 minutes with complete data integrity.

Although there are a number of professional-audio and many computer-peripheral CD recorders on the market, there are only a handful of consumer CD-R decks available. It is thus difficult to make comparisons, but a few observations may be useful. Professional recorders (similar in design, but with professional inputs and outputs) are more expensive. Peripheral CD-R recorders are somewhat less expensive, selling for as low as $1,000. The PDR-99 lies in between price-wise, and thus is uniquely affordable among consumer audio CD recorders. Its record and playback sound quality would be superior to that of a computer-peripheral recorder in which analog signals may pass through a sound card with low-quality A/D and D/A circuitry. That it is a real-time-only recorder will not bother most buyers. It is an audio product, not a computer product, and its buyers will probably not want to fool around with software menus and hard drives. On the other hand, the 63-minute limitation is a serious shortcoming.

In a world increasingly populated by CD recorders, the PDR-99 follows in the great lineage of other fine audio recorders, eschewing a computer-based approach in favor of good old button-pushing. That, in fact, is its great advantage. It is extremely easy to use and insures that your recorded discs will have state-of-the-art digital audio fidelity. Its input signal path and A/D converters are clearly superior to those found in most computer sound cards, and its playback capability is outstanding. I listened to both recorded and prerecorded discs and absolutely liked what I heard. Although I'm not a big fan of the frequency-reponse tinkering done by Pioneer's Legato Link circuit, I did not detect its effect (I did not try a direct AB comparison with a non-Legato Link player). Instead, I simply enjoyed the great sound quality. In fact, I could be persuaded to buy the PDR-99 even if it was a player only. In that respect, its recording ability is simply a gift. And what a gift it is! Once you have a CD recorder, you'll wonder how you survived this first CD decade without one. If only the industry would see reason and make 74-minute consumer blanks available... . . .

Polemics aside, I freely confess that I eagerly awaited the opportunity to review the PDR-99, immediately fell in love with it when I opened its box, had a blast using it, and just might refuse to send it back to Pioneer — for at least a couple of weeks. After all, I've been waiting a decade to record my own high-quality audio CD's, and I've got a lot of recording to do.

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For many speaker designers and manufacturers, home theater is a relatively new idea. But the people who work at Cambridge SoundWorks—including our cofounder Henry Kloss (who also founded AR, KLH and Advent)—have been involved with the concept of home theater from the beginning. In 1969 (years before VCRs and cable TV), Henry Kloss founded Advent, the company that introduced the first home theater audio/video systems—complete with big-screen TVs and digital surround sound. We have had an ongoing relationship with the people at Dolby Laboratories, creators of Dolby Surround Sound, since Henry Kloss introduced the first consumer products with Dolby noise reduction over 20 years ago. And now at Cambridge SoundWorks we believe we have set a new price-to-performance standard for home theater components.

Because we sell carefully matched and tested home theater speaker systems factory-direct, with no expensive middlemen, you can save hundreds of dollars. We believe the products on these pages represent the country's best values in high performance home theater components. Audio critics, and thousands of satisfied customers, agree. Stereo Review said "Cambridge SoundWorks manufactures loudspeakers that provide exceptional sound quality at affordable prices." Audio suggested that we "may have the best value in the world."

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Cambridge SoundWorks manufactures four speakers for use as center channel speakers in Dolby Pro Logic home theater systems. All four are magnetically shielded so they can be placed near a TV or computer monitor. Center/Surround IV is a compact, one-way speaker identical to our Ensemble® IV satellite speakers. $49.99. Center/Surround III is a small, affordable two-way speaker. $79.99. Center Channel is identical to a Cambridge SoundWorks Ensemble satellite (but with magnetic shielding). $159.99. Center Channel Plus uses an ultra-low, ultra-wide design that is ideal for placement above (or, with optional support stand, below) a TV monitor. $222.99.

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We have assembled a number of home theater speaker systems that consist of center channel, surround and main stereo speakers. The combination we show here is our best seller. It includes our critically acclaimed Ensemble dual subwoofer satellite speaker system, our Center Channel Plus and a pair of our best surround speakers, The Surround. You could spend hundreds more than its $1,219.97 price without improving performance.

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AudioSource Project One
Indoor/Outdoor Speaker

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The AudioSource Project One is a small loudspeaker designed for indoor or outdoor use in a variety of applications. Its drivers are housed in a molded plastic enclosure (ours were white, but they are also available in black and platinum), with an integral pivoted tripod stand that enables the speaker’s orientation to be adjusted across a 90-degree arc. The speaker can be placed on any flat surface or mounted on a wall or ceiling.

The “woofer” of the Project One is a 4-inch driver whose rubber surround allows a considerable cone excursion. Above it is a 5/8-inch dome tweeter with a nominal crossover frequency of 2.5 kHz. A small vent is located below the woofer.

The speaker’s impedance curve showed maxima of 10 and 15.5 ohms at respective frequencies of 50 and 130 Hz. Although there was a broad rise to 6 ohms at 6 kHz, the impedance was 3 ohms (or slightly less) over most of the range below 1 kHz. In a larger speaker that might be operated at fairly high levels this could present a problem for some amplifiers, but we found no evidence of such incompatibility during the listening phase of our evaluation.

We did have a few bad moments, however, when making single-cycle power-handling tests on one of the speakers at low frequencies (100 Hz) and relatively moderate levels (under 50 watts). With no prior warning, the speaker’s output became seriously distorted, and we feared that the woofer had been damaged.

Since this condition persisted for several minutes, we retired the speaker and proceeded more cautiously with the other one, which was not exposed to such harsh treatment. Subsequent listening tests revealed that there was no permanent damage, and both Project One units measured and sounded identical.

These events suggested that the Project One’s woofer might be protected by a self-resetting device such as those used in some other speakers, but the manufacturer tells us this is not the case. To confuse matters further, the speaker’s power-handling is rated (on the rear of its case) as 100 watts, with an 8-ohm impedance. Curious to see what was inside, we opened up the enclosure and found nothing in it but the two drivers and a modest amount of acoustic damping material, plus a 3.3-μF capacitor in series with the tweeter serving as a crossover network.

The Project One’s woofer (which weighs a solid 2 pounds) has a large, heavy magnet structure seemingly out of keeping with its cone size. There was no nondestructive way to determine what, other than an obviously potent magnetic system, was hidden within the magnet structure. But the magnetic system was very well shielded, with a remarkably low external field of less than 2 gauss around the magnetic assembly. So we had to leave the mystery of the speaker’s remarkable recovery from a dramatic overload unsolved — though the experience certainly provided good evidence of the system’s ruggedness.

Otherwise, we encountered no unpleasant surprises in testing and using the Project One speakers. They are designed for use in sheltered outdoor locations, such as porches or patios, where environmental ruggedness can be more important than audio quality. Besides weatherproofing, the AudioSource Project One speakers evidence a level of construction quality not typical of small, comparably priced home speakers. The plastic case is sturdy and well finished, and the connectors are dual binding posts on standard 3/4-inch centers.

The system’s room response (average of the left and right speakers) was quite uniform, within ±4 dB from 80 Hz to 2.5 kHz. A close-miked measurement of the woofer response produced a very smooth, flat curve, with-
"I'm the kind of person who, when you come to my house for a visit, starts playing my favorite records for you before you've hung up your coat. It's "Have you heard this?" and "Wait 'til you hear that!" and "Check out the new so-and-so!"

We've assembled a terrific editorial and design team. We're using recycled paper and have always loved music but feel lost in the contemporary recording glut, I was skeptical. But I met with Steve and Martin anyway. They impressed me with their desire to create a vehicle that would appeal to people who have given up on radio's boring formats but don't have Beavis and Butthead's

"Taste either; people who would naturally love an Aimee Mann or a Son Volt if only they had the opportunity to hear them. The missionary in me could not resist signing on as Editorial/Music Director of GROOVES.

"So here's what we are: an independent CD and magazine dedicated to bringing to our subscribers a creatively programmed sampler of terrific current recordings from artists who have never stopped believing in the ideals of free musical expression. We feature quality work by artists with staying power—whether veterans like David Byrne and the Band or newcomers like Lisa Loeb.

"The key word here is independent. We are not dictated to by Time Life—it's just me, Steve and Martin calling the shots. We are not dictated to by Time Life.

"Which brings me to GROOVES. When these two guys from Time Life Music called and asked me to get involved in creating a CD and magazine that would serve as a sampler of contemporary "adult" rock 'n' roll geared to people who

I can't help it. I've been doing this ever since I learned how to operate my family's old RCA Victrola back in the prehistoric 1950's. I was born to share music. I managed early in life to find a socially acceptable way to fulfill my "vocation"—I went into radio. It was 1967 when a handful of kindred spirits infused the neglected FM airwaves with a deluge of sound, breaking the boundaries of rigid Top 40. It was The Golden Age of Free Form Progressive Radio—it lasted about two minutes. Once the suits and the salesmen saw the dollar signs on the wall they quickly put a stop to our romp through the airwaves. It was, "Goodbye free from fun, hello playlist hell!"

"Which brings me to GROOVES. When these two guys from Time Life Music called and asked me to get involved in creating a CD and magazine that would serve as a sampler of contemporary "adult" rock 'n' roll geared to people who

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"Which brings me to GROOVES. When these two guys from Time Life Music called and asked me to get involved in creating a CD and magazine that would serve as a sampler of contemporary "adult" rock 'n' roll geared to people who
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TEST REPORTS

in ±4 dB from 90 Hz to 6 kHz, which is at least an octave beyond the nominal 2.5-kHz crossover frequency. Our quasi-anechoic MLS measurement showed an excellent, smooth response from its lower limit of 300 Hz to nearly 2.5 kHz, where there was a sharp null of about 20 dB, followed by a ragged response all the way up to 20 kHz and beyond.

The woofer distortion with a 1-watt input of 2 volts into its nominal 4-ohm impedance was low (under 2 percent) above 300 Hz but increased at lower frequencies, rising to 10 percent at 100 Hz and continuing to climb at still lower frequencies (not surprising, considering the woofer's small size and limited enclosure volume).

Besides their weatherproofing, the AudioSource Project One speakers evidence a level of quality in construction that is not typical of small, comparably priced home speakers.

Listening tests proved to be much more encouraging than the measurements (and the unrealistic power and impedance ratings on the case) would seem to suggest. The sound of the Project One speakers, mounted on 26-inch stands about 7 feet apart, was clean and musical, with a distinct but pleasant brightness. Their imaging was precise, and the overall sonic balance was as listenable as one could expect from inexpensive speakers that were obviously never intended for use in a conventional indoor home music system.

The Project One speakers should be well suited to many secondary listening applications, whether indoors or out, but especially in exposed areas. Although we did not evaluate their environmental characteristics, they are certainly affordable, rugged, compact, and versatile in installation — and they are as easy on the eyes as they are on the ears.
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At first, selecting a receiver can seem pretty straightforward: Figure your budget, check the sales flyers, and choose the model with the looks you prefer. After all, you've heard, there's really no difference between a Brand X receiver and a Brand Y receiver at any given price/power level.

There's actually a grain of truth to that bit of hyperbole. The receiver has achieved virtual commodity status, which means that the furiously competitive market assures you an impressive measure of performance and value, almost regardless of which brand you buy. But just the same, there are some very real differences between the scores of available models, in both features and performance.

Perhaps the best way to get a handle on a receiver is to break it down to its classic hi-fi constituents: power amplifier (voltage and current amplification to speaker-driving levels), tuner (radio-receiving circuitry), and preamplifier and user controls. Then again, there's an even more fundamental issue to address first: two channels, or more? Today, the plain-vanilla stereo receiver is fast going the way of the full-sized spare tire. The overwhelming majority of available receivers, including almost all of those above entry-level pricing, are audio/video designs that go beyond two-channel stereo models in two important ways. First, A/V receivers include surround-sound circuitry and extra amplifier channels to reproduce the four-channel soundtracks of Dolby Surround programs on TV and video. Second, they provide inputs and outputs (and switching) for video as well as audio, so that you can enjoy your home theater with simplified and centralized source selection and control.

**EVERYONE'S GONE TO THE MOVIES**

Do you want the A/V upgrade? If you don't plan to expand into home theater — which requires at least three additional speakers, a video source, a suitable TV, and a room to accommodate all of the above — the likely answer is no. And two-channel receivers, dying breed that they are, offer some outstanding values these days: For $250 you can buy a competent model with 50 or even 75 watts per channel and plenty of features. On the other hand, the home theater experience can be a siren song. Many buyers, once they've undergone a topflight A/V demo, are hard pressed to resist the surround-sound call. Yet, whichever way you turn, the fundamentals of performance and quality remain the same.

Multichannel designs do have some fringe benefits: Most models incorporate surround modes designed purely for music listening, to add a more or less realistic sense of ambience to stereo's relatively two-dimensional reproduction. Many models driven by digital signal processing (DSP) even let you dial in specific virtual spaces, such as Concert Hall or Jazz Club.

Still, the bread and butter of A/V receiver surround is Dolby Pro Logic, the consumer equivalent of the Dolby Stereo process employed by commercial cinemas. Pro Logic decodes the Dolby Surround soundtrack found on almost all movie videocassettes and laserdiscs into three front channels (left, center, and right) and one surround channel reproduced by two speakers in parallel, located toward the rear of the listening room. Dolby Pro Logic decoders are universal among A/V receivers these days, but performance can vary a bit.

One thing to check for is channel leakage. With the receiver set to Wide mode, play a movie scene that is principally dialogue but incorporates some ambience, soft effects, and music — and disconnect the center speaker. Some dialogue will leak to the other front (and rear) speakers, but what you hear should be much, much softer than with the center speaker connected; more important, it should be relatively constant in level, with only controlled, low-level "spitting" of "t" and "p" sounds to the sides. Try a few different receivers to get a feel for the range of performance.

Another useful check is for noise. The surround modes will always be a bit noisier than two-channel stereo reproduction, but this must not intrude. Play a well-produced CD at a solid, realistic level in Pro Logic mode. In even the quietest passages, surround-channel noise shouldn't be audible from the listening position; if it remains undetectable when you pause the disc, even better.

**THE LOCOMOTION**

Next up on most folks' receiver checklist is amplifier power. For A/V models, this is specified both for two-channel operation and for Dolby Pro Logic operation. How much electrical oomph is enough? Easy: If a given re-
of the Receiver

IT'S A JUNGLE OUT THERE!

WHAT YOU NEED TO KNOW BEFORE YOU GO SHOPPING
In Search of the Perfect Receiver

Harman Kardon's HK3550 ($529) caters to those listeners who prefer a solid two-channel receiver. Delivering 50 watts a side, the model includes a phono input, two tape monitors, output terminals for two speaker pairs, and thirty AM/FM presets.

The STR-G3 A/V receiver from Sony ($1,000) features the company's VisionTouch system, which enables control of a home theater by means of an on-screen TV display and a single-button remote. The system can also control a 100-disc CD changer.

Luxman's multiroom-capable RV-371 ($1,749) includes S-video jacks and offers digital signal processing of Simulated Stereo, Hall-1, Hall-2, and Stadium modes, in addition to Dolby Pro Logic. Discrete amplification is provided for each of the receiver's five channels.

In the surround-sound world, you have five channels of amplification to worry about. Today, almost all A/V receivers deliver equal power to the front speaker trio, and this is good because the center speaker is actually more important than the left and right. Front-channel power specs for surround sound are usually a little lower than the two-channel stereo specs, since the receiver's central power supply must service five speakers instead of only two. But not to worry: Since in Dolby Pro Logic mode you have three main speakers working for you (plus the surrounds, of course, and possibly a subwoofer), the net result is usually more acoustic potential rather than less.

Most current A/V receivers deliver from one-quarter to one-half the power of the three front channels to the two surround speakers. In the real world, this is almost always adequate. Yet there are cases when surround-power limitations can be audible, as with low-sensitivity surround speakers, large listening rooms that impose distant surround-speaker placement, or highly active, broadband surround receiver plays your speakers as loudly as you like with full musical clarity and with no sense of harshness, strain, or dynamic “squishing” on big musical transients like percussion, then you've got enough.

That’s no definitive answer, of course, but the fact is that power requirements depend entirely on speaker sensitivity, room size and furnishings, and personal taste. In truth, a solid, real-world 50 watts in each of two channels is ample for most people, with most speakers, in most rooms. But there are plenty of exceptions. Speakers that are only a bit less sensitive than the common 89 or 90 dB SPL at 1 watt/1 meter, or a room a bit bigger than usual, or a taste for aggressive rock played loud — all will demand more power. And by more I mean much more: Doubling amplifier power delivers only a 3-dB increase in net loudness, a noticeable but by no means overwhelming gain in volume. Making the sound subjectively “twice as loud” while retaining full dynamic clarity requires five to ten times as much power. The bottom line: More power is always better. (It’s also safer, since overdriven distortion, rather than clean wattage, is what usually damages speakers.)
recordings. Especially with the advent of the Dolby Surround AC-3 Digital system (see "AC-3 for All" on page 64), greater surround power is likely to become more popular. In very high-end home theater systems, equal power all around is almost standard — and it seems only a matter of time before every flagship-model A/V receiver will be approaching or hitting that mark.

Speaking of greater power, it may be worthwhile to check out your receiver candidates' potential for expansion. A stereo receiver that provides preamp-out jacks can, with the addition of a more powerful stereo amp, function as a preamp/tuner down the road — a potentially useful upgrade when speakers, room, or budget limits change. Similarly, an A/V receiver that includes center- and surround-channel preamp outputs lends itself to power upgrades.

WITH THE RADIO ON

A primary job of any receiver, of course, is to receive radio signals — hence the name. FM radio remains an important part of most Americans' leisure listening, so depending on where you live, a topflight tuner could be key. If you reside in a major metropolitan area and listen exclusively to the top two or three big-market, 50-kilowatt commercial pop/rock stations, don't fret: Virtually any receiver you buy should tune these just fine, using only the cheesy dipole antenna that comes packed with it.

If you live 40 miles equidistant between two major cities, however, FM tuner performance becomes a considerable factor. First, don't overlook the fact that $150 spent on a good rooftop FM antenna will yield a vastly greater improvement than $150 spent on a more costly receiver. That said, real differences in FM performance do exist among receivers. Unfortunately, on-paper FM specs can be notoriously poor predictors of real-world results. The best approach is to conduct an at-home trial of the receiver you've settled on. If it is capable of delivering the stations you want with clear, steady, and musical stereo sound, using whatever antenna you have available, it's the ticket.

Nevertheless, a couple of FM specs may be worth a glance. A stereo sensitivity spec for 50-dB quieting can be a rough indicator of a receiver's ability to pull in weak signals. The spec is given in decibels above 1 femtowatt.

Marantz's SR-82mkII ($899) delivers 110 watts a side in two-channel stereo operation. Power output for surround sound is rated at 75 watts for each speaker in the front trio and 35 watts per channel in the rear. Features include dual FM inputs, a built-in timer, and a learning remote.

Surround credentials of the Technics SA-TX1010 ($1,000) include THX certification by Lucasfilm as well as a Theater Effect function for more natural panning among the front channels. Proprietary Class H+ circuitry aims to reduce heat generation and improve dynamic headroom.

Another THX receiver, Kenwood's top-of-the-line KR-X1000 ($1,200), has preamp outputs for all surround-sound channels, including a subwoofer, allowing for flexible system expansion. Five video inputs are provided, as well as five audio inputs (including phono).
In Search of the Perfect Receiver

(dBf) of antenna signal strength, an incredibly tiny signal, and a lower spec is theoretically better here; most receivers fall in the range of 29 to 36 dBf. Capture ratio, in decibels, can help predict a receiver's rejection of multipath distortion, the dirty, fuzzy sound of weak stereo broadcasts (caused by signal reflections, like TV "ghosts"). Most receivers quote from 1.5 to 2 dB here; again, lower is better. But please don't read sensitivity and capture ratio as bellwethers of FM performance. Without careful, competent engineering, which may or may not be reflected in other FM specs, they won't mean a thing. Try before you buy whenever possible.

As for AM radio reception . . . well, most buyers simply don't care. Which is a good thing, as today's receivers are generally pale performers on the AM band, with reception and clarity easily eclipsed by that of the cheapest dialogue in the center channel (and Dolby Pro Logic has been no slouch in this regard). Second, a more spacious and realistic sense of ambience, largely thanks to AC-3's discrete stereo surround channels. Third, "hard-panned" surround effects that Pro Logic cannot deliver (an AC-3 disc allows you to hear a Star Wars Imperial Star Destroyer fly over precisely from front-right to left-rear). Fourth, a concrete gain in dynamic range, particularly in the surround channels, which are clearly quieter than Pro Logic's surround.

In addition, AC-3's LFE channel holds the potential for greater deep-bass dynamics in systems with dedicated subwoofers. Comparing the AC-3 soundtrack to the Dolby Surround audio on the same disc often gives the impression of better, deeper, or at least different bass. Then again, since the AC-3 and Dolby Surround tracks involve entirely different mixes, this impression could be rather subjective.

Still, AC-3 is clearly a technological advance with worthwhile sonic consequences. But there are drawbacks. Expense is one: The current A/V receivers with AC-3 cost about $2,000 (though prices are likely to fall at least a little in the coming year). Also, AC-3 program material is available only via a relatively few newer laserdisc titles — and you need a laserdisc player equipped with an AC-3 RF output (or a $350 conversion) to exploit these discs. And while AC-3 will be part of the U.S. HDTV system and is likely to be found on the upcoming digital videotoc (and possibly in future small-dish satellite systems), nearly all first-generation AC-3 components provide only the AC-3 laserdisc input.

The new AC-3 receivers are top-performing A/V models in all other regards, too. That means high-end Dolby Pro Logic decoding, lots of power, great tuners, and plenty of features. And since their prices are generally only a few hundred dollars or so above similar-performing non-AC-3 receivers, early adopters can still enjoy good value.
Fifties-era vacuum-tube table radios. AM is mostly an afterthought these days, so if normal AM listening or if "DX-ing" distant, late-night shows is important to you, a home trial with whatever AM antenna you plan to use is critical.

UNDER YOUR THUMB
Golden ears aside, the sonic performance of preamplifiers in today's receivers is not much of a factor. Virtually any receiver includes preamp circuitry that is quiet, clean, and broadband. The genuine differences among preamps are made manifest in two areas: ergonomics and input/output facilities.

On the ergonomics front, the ballooning complement of features today — especially in A/V receivers — is a double-edged sword. On one hand, your new receiver probably can do just about anything (including making waffles); on the other hand, finding and using all of the controls can be quite a challenge. And some of these features may be pure puffery — cool technology at first look, but of little long-term utility.

Old-fashioned intuitive knobs are fast going the way of the crystal radio, and densely button-packed front panels and obscure graphics don't help matters much. There's little concrete advice to give here, save this: Try a receiver in the store and get a feel for its "human factor." Are all the controls self-evident? Can you select the CD or tuner input quickly and easily, without hunting over the entire front panel? Can you figure out how to engage Dolby Pro Logic? Is the display easy to read from across the room, and does it convey the most helpful information? Is the remote control easy to use (and easy to read in dim lighting)? Over the years, these and a dozen other ergonomic factors will prove far more important than whether a particular receiver has forty radio presets rather than thirty, or 75 watts per channel rather than 65.

Inputs and outputs matter only insofar as your receiver offers enough of them, and the types you require. Today, not every receiver includes a phono input (though the large majority do), so if you still listen to LP's, plan accordingly. Most receivers include CD and auxiliary inputs and at least one tape-deck input/output set, which is plenty for most users. If you want to

The Digital Acoustics Processor built into JVC's top-of-the-line RX817VTN ($630) renders sound-field modes for Theater-1, Theater-2, Headphones, Dance Club, Hall, Live Concert, and Pavilion. Four-character station naming is available for the forty AM/FM presets.

NAD's AV-716 ($749) facilitates system integration by offering two A/V input/output sets, another A/V input, and four audio inputs, including one for a turntable. A fully independent A/V record selector permits any source to be recorded while viewing any other.

Intended to clarify multichannel playback, the Dynamic Discrete Surround Circuit-A of Denon's AVR-900 ($430) processes the main signals of the three front channels in their original analog form, to preserve their high dynamic range, while the surround signal is processed digitally.
In Search of the Perfect Receiver

The TX-SV424 ($410), a Dolby Pro Logic receiver from Onkyo, has discrete, high-current amplifiers that are designed to drive demanding speaker loads for full clarity on video soundtracks. Adjustable digital delay and a Hall mode are also provided.

Sherwood simplifies the front panel of its entry-level RV-4050R ($399) by locating volume, bass, treble, and balance controls and by assigning selection of Dolby Pro Logic, Dolby 3 Stereo, or two-channel stereo operation to a single pushbutton.

The Optimus STAV-3470 ($500) delivers 150 watts a side in two-channel stereo operation; switched to Dolby Pro Logic mode, it sends 110 watts equally to the left front, right front, center, and surround channels.

Rotel’s RX-950AX ($600) is a two-channel receiver whose inputs include provision for two video sources as well as a turntable; there are outputs for two speaker pairs. Power is rated at 50 watts per channel.

use two tape decks, or a dual-well unit, and you want the ability to copy tapes easily from either source to the other, look for a receiver with two-way tape dubbing — not all models supply this convenience.

A/V receivers include video inputs and outputs integrated with corresponding stereo audio ports; this makes selecting an A/V source a one-step affair. Most receivers provide A/V input sets for a VCR and a laserdisc player, plus a Video-Aux input that is often located on the front panel for camcorder convenience. Once again, if you’ll need more — for two VCR’s, for instance, or for a gaming system or a satellite receiver — make sure there are enough jacks. Not all A/V receivers provide two A/V in/out sets, so if copying videotapes two ways (such as camcorder to VCR and back again) is important to you, check the convenience factor.

Most higher-end A/V receivers include S-video jacks for some or all video inputs (and outputs). These jacks, developed for Super VHS (S-VHS) VCR’s, keep the color and black-and-white portions of the video signal separate and will enable better picture quality from S-VHS (and ED Beta and Hi8) machines. In some cases, an S-video laserdisc hookup will improve the image, but outside of the “Super” formats an S-video connection is generally no big deal; composite-video (RCA) jacks are usually just as good.

Just where on the receiver food chain should you shop? Let your conscience (and bank account) be your guide. Decide which features are most important to you and begin your search. It is true that the higher-end flagships can sound better than many entry-level models, especially in FM quality and in power-amp aplomb at high levels or with low-sensitivity, “difficult-load” speakers. On the other hand, many mid- to low-price receivers offer incredible value and will deliver plenty of oomph in an average-size room.

One final bit of advice: Don’t forget to plan for the future. If you think more power or AC-3 surround may be in the cards for you, concentrate on receivers that have preamp outputs or discrete-channel inputs for an outboard AC-3 decoder. Doing so will help ease the transition to bigger and better things in years to come.

66 STEREO REVIEW JANUARY 1996
If CD is so good, why are some people still in love with vinyl?

In 1994, Americans bought 348 times as many CD’s as LP’s. In marketing terms, vinyl is dead. But LP sales actually increased in 1994 compared to the previous year. Sales of very expensive record-playing components are up, and some audio writers still maintain after all this time that the LP is sonically superior to its digital cousin.

What are these people talking about? Don’t they realize that the compact disc duplicates the sound of the original master tape with no audible distortion, flutter, or change in frequency balance? Why do they keep putting up with dust and dirt, warps, off-center holes, surface noise, phono-preamp noise, cartridge response errors, inner-groove distortion, and all the other problems that plague the old LP? Could they be hearing things the rest of us are missing? And why does the achievement of what appeared to be a long-sought ideal — the delivery to the consumer of a replica of the master tape — sometimes fail to satisfy us?

As a recording engineer and producer, I converted with great enthusiasm to digital tape mastering in 1980, and I welcomed the CD when it appeared in 1983 because I feel that it does deliver the sound of my master tapes — digital or analog — faithfully to the customer. It is a genuine relief not to have to worry about the vagaries of LP mastering, pressing, and playback.

All the same, occasionally I prefer the LP version of a recording to the corresponding CD, and the differences I hear often mirror the descriptions of the analog partisans: The LP may sound smoother, more delicately detailed, rounder, gentler, and more accessible — more musical, if you will — than a CD release of the same recording. Now, there is very good evidence that such differences come not from defects in the digital en-
The Romance of the Record

coding (in other words, it's not something wrong with digital audio as we know it today) but from euphonic effects of the analog record/playback chain. But what are these effects, and are they worth pursuing?

I first wrestled with the LP-versus-CD question back in 1983, when I was researching an article for High Fidelity magazine. There was a recording of that era whose LP version I preferred, Dire Straits' "Love Over Gold." The song "Industrial Disease" is a dense mix with aggressive percussion and a hard, bright vocal sound that on vinyl was not only less unpleasant but also more intelligible. (The improved intelligibility gives the subjective impression of greater detail on the LP.)

Careful measurements of the frequency response of the phono playback system, which contained an audiophile-approved moving-coil cartridge, revealed a broad, distinct rise (about 1 dB) in the lower midrange and bass, a dip of 2 dB or so in the mid-treble (around 6 kHz), and a rising response at the very top.

To assess the effects of the cartridge's response, I used an equalizer to impose the same response onto the CD. That turned out to be doable, though it took many minutes of adjustments to get it right, and no control was moved more than a fraction of an inch from its center position. (Such a curve is impossible to generate with normal tone controls, or even with an equalizer, unless you have high-resolution measuring equipment and lots of time.) With this "correction," the equalized CD's harshness was diminished and the sound was friendlier and more accessible. I preferred the equalized CD's sound slightly to that of the LP, and by a wider margin over that of the unequalized CD, even though the result was a less accurate rendition of what was on the master tape.

Sharp-eyed readers will have realized that this experiment assumes that the CD and LP versions were made from the same master tape and that the LP was mastered without added equalization. These conditions are rarely met: my "correction" curve worked less well, and less predictably, in other CD/LP comparisons.

LP mastering — the last stage before mold plating and record manufacturing, during which the physical grooves are actually cut into a lacquer disc — is an art with a long history and complex practices. Traditionally, the sound of a record was actually finalized at this stage by the mastering engineer, usually working in conjunction with the producer or artists. In the early days of CD this step was often bypassed, especially for rereleases of old recordings, and "master" tapes (some just safety copies, produced with less than exquisite care) were being transferred directly onto CD and released, warts and all. Nowadays, many of the same engineers are back in the loop, helping to prepare the final digital tape for CD mastering.

During the intervening decade, too, engineers and producers have rethought the way that they record and process sound for CD release. Acoustic recordings on CD tend to sound less bright and harsh now that ordinary home playback equipment can be counted on to reproduce the upper octaves faithfully and consistently. And, of course, the mechanical constraints that prevented LP's from carrying high-level deep-bass signals have been removed; for example, the 1991 Dire Straits release "On Every Street" contains bass extending down to 28 Hz.

Searching for the High-End LP

Analog partisans may counter at this point that their playback equipment has continued to improve and that a modern high-end record-playing system still sounds better than even the most expensive CD player. So I went looking for a really good LP system to do some fresh comparisons.

My first discovery was that it's hard to find a good turntable setup, even in a big audio town like Boston, where I live. Most stores, even those selling very expensive gear, now do all their demonstrations with CD's. But a new place in a nearby town maintains a high-end record-playing system, and the proprietor was willing to let me come and listen. (My thanks to Alan Goodwin of Goodwin's High End in Waltham for his generous assistance.)

The system comprised a huge, elegant Basis turntable with a Graham Research arm; the cartridge and electronics were by Spectral Research; for speakers I used both Avalon Radians and the Wilson Audio WATT/Puppy combination. The suggested retail price for the turntable, arm, and cartridge alone — including the phono cables — is $13,800, and the total system price is more than $70,000.

Besides listening at Goodwin's store, I dubbed both the LP and CD sources through the analog input of my DAT mastering recorder so I could listen at home and make some measurements. I did a brief comparison between the original LP source and the digitized-and-reconverted DAT output. Though I did not have time to get conclusive results, the tape sounded close enough to the vinyl source that it was hard to tell one from the other even on this very high-resolution system.

My first and most important com-

THE MYTH OF FRAGMENTATION

Some vinyl fans still argue that digital audio, reconstructed from discrete samples, sounds raw and ragged, while analog, being "continuous," sounds smoother and more natural. A corollary of this theory is that digital recording fails to capture small sonic details and room sounds, while analog preserves them.

This discussion is really a subject for another article, but, briefly, that theory simply isn't true. The analog output of a digital audio device — which is what we actually listen to — is a perfectly continuous and exact replica of the original audio signal; as long as the sampling rate is more than twice the highest signal frequency, sampling does not result in the loss of any information. As for small, detailed sounds and reverberation, any recording system is limited in its ability to reproduce these things by its noise floor — the name given to a plot of the medium's noise level versus frequency. In this regard, the CD is very distinctly superior to the LP.

It is true that unless the analog-to-digital (A/D) converter in a digital recorder is properly dithered — involving the injection of a minute amount of noise into the input — very small signals may be lost. Some very early converters were not properly dithered, but the problem does not exist in hardware made after about 1986 unless something is broken. Meanwhile, the vast majority of earlier recordings were dithered adequately by the noise in the microphone preamps or in the recording venue.

— E.B.M.
parison was between the LP and CD versions of an organ recording made by me and STEREO REVIEW columnist Peter Mitchell. Being very familiar with both the sound of the original music and the sound of the recording on my monitor system, I found the digital version to be distinctly truer to the source. Not only was the timbre more correct, but the stereo image was more specific and precise in the placement of individual organ pipes, and though the LP had plenty of the spaciousness for which it is well known, both the reverberation and the low-level sounds of stop changes and the room came through more faithfully on the CD, with less noise and more clarity.

Still, the cutting and pressing of my own LP was merely competent for its time (1980), and it contains a full 46 minutes of music. The best-sounding audiophile LP’s are shorter, allowing higher signal levels, and are cut directly to disc, or mastered at half-speed or at 45 rpm, and are pressed on exceptionally quiet virgin vinyl. I have early pressings of some of the famous Sheffield direct-to-disc recordings. The one of the James Newton Howard group proved to have clearly better impact and immediacy than the CD version, and so did my near-mint copy of Sheffield’s “Drum Record.”

Those productions are unusual today in that they were originally meant to be released only as direct-cut LP’s; the CD’s were an afterthought, made from analog back-up tapes that were not state-of-the-art masters even for their day. That is evident from the frequency response of the James Newton Howard recording, shown in Figure 1.

The measurements for that graph were made with a one-third-octave analyzer using a long averaging time; about a minute each of the same music from the LP and the CD are stored, and one curve can be subtracted from the other, giving the response of one passage using the other as a reference. In this case, the LP was Sheffield’s presumed ideal, so the CD’s response is plotted with reference to the LP, showing that by comparison the CD version has a slight lower-treble rise and a clearly audible lack of top-end sparkle and detail.

Next, I redid the old Dire Straits comparison, this time using the CD as the reference in the response graph, on the assumption that it was more likely to be faithful to the master tape. The results in Figure 2 show the changes wrought by the LP system. Unlike my 1983 LP system, the modern high-end setup did not boost the bass, but the graph does show a very slightly recessed lower midrange and the expected boost above 10 kHz. Subjectively, both the Avalon and Wilson speaker systems were kinder to both versions of Industrial Disease than my own monitor speakers (Snell Type A-III’s with custom subwoofers). Overall, the LP had a slightly more attractive timbre but somewhat less bass impact.

Figure 1. A real-time analyzer with long-term averaging was used to sample 1 minute of the CD and direct-to-disc LP releases of a Sheffield recording featuring James Newton Howard. The analyzer can subtract one curve from another and print the difference. Here we see the CD’s response referred to that of the LP, with the LP response assumed to be perfectly flat, since Sheffield proclaimed the latter to be the reference. On that basis, the CD, mastered from an analog tape recorded in parallel with the direct-cut LP, shows a slight rise in the lower treble and a larger rolloff at the top; subjectively, the CD version lacks sparkle and impact.

Figure 2. Here the CD release of a Dire Straits recording (see text) has been used as the reference, so what we are seeing is the comparative response of the LP as played back on our high-end phono system, with the CD assumed to be perfectly flat (the inverse of the comparison in Figure 1). Unlike some earlier setups, the LP playback system we used attenuates the bass slightly. It also softens the upper midrange and lowers treble and adds a bit of sheen and air at the very top of the audible range.

Figure 3. The music on the CD and the LP of a Reference Recordings wind-ensemble recording was adjusted for equal loudness. Then the noise floors of the recordings were plotted in one-third-octave bands relative to the output at the standard LP reference level of 3.54 cm/second. Although not plotted, the noise floor of a digital recording processor like that used for the CD recording would be below ~80 dB across the entire frequency range. The overall, A-weighted noise levels were about ~56 dB for the LP and ~62 dB for the CD; the noise on the CD is predominantly microphone and room noise, as the A-weighted noise level of the recorder itself would be around ~76 dB on this scale, or about ~91 dB referred to digital full-scale (0 dB). The digital version is audibly quieter all across the band except at 60 Hz, where a bit of hum in the recording setup appears at equal levels on it and the LP.
Remember that in the original Dire Straits comparison I found it easier to understand the words on the LP, even if that wasn't true in the rematch. Proponents of the LP assert that it captures low-level detail lost by digital recording systems; they claim that in the treble at least, vinyl actually has lower noise. The next comparison reveals the truth of the matter. I played the LP and CD versions of the Reference Recordings production of William Walton's Façade. I matched the music levels of the two recordings and then captured background-noise curves, including the room sound, during a silence between tracks.

Figure 3 contains two curves, representing the noise floors of the LP, played on the high-end setup at Goodwin's, and the CD. Remember that this is during a musical silence that contains room sound (that is, the recorder was not turned off); for most of the frequency range, it is that acoustical background that dominates the CD's noise floor, shown by the lower curve. I also measured the noise floor of a digital processor similar to the one used for the CD version of the Walton recording and found that it was below -80 dB across the entire spectrum, so the noise contribution of the recorder itself would have been negligible.

With A-weighting, which roughly approximates human hearing sensitivity at low levels, the LP's noise is 6 dB higher overall than the CD's, and the differences are greatest in the upper frequency regions, where the LP is alleged to provide greater detail. Technically, this higher noise is rounded contradicted by the data and by the even greater superiority of the digital system's inherent noise floor, which is 20 dBA lower than the LP's.

But what about the subjective difference between the two sources? It's how the music sounds that counts. This was the most interesting comparison of all, because even in its complications it illustrates both sides of this argument so well. The complication is that the LP I used was made from a digital tape master, whereas the LP was mastered from recording engineer Keith Johnson's analog tape recorder. I measured segments of the music, as before, and found the main difference to be in the upper treble and the lower bass; the combination of analog master, LP transfer, and LP playback resulted in a boost of about 3 dB at both ends of the spectrum. That gave the LP more sparkle in the cymbals and percussion, and a more airy room sound, which was actually augmented by the analog version's higher noise. (That a little hiss creates the impression of more treble has been well known since the early days of analog noise reduction.)

The final score? I found things to like in both versions. I enjoyed the airiness of the LP, even though I was occasionally distracted by small surface imperfections in the quiet parts and by a slight residual hum in the phono preamp. The CD was free of those imperfections, but when switching back to it from the LP, I missed the latter's pleasing airiness, and no matter whether it was audible in the recording hall. The vinyl's added top end gave the cymbals and percussion a seductive sheen that in a direct comparison made the digital recording seem to lack in life and, subjectively at least, in detail.

Bear in mind that this was vinyl at its best, with a great recording, careful cutting and pressing, and no expense spared in the playback equipment. Under those conditions I can understand what the LP's proponents are talking about, even if it's a less faithful rendition of the master tape. Under more ordinary circumstances, the LP's noise, scratches, off-center holes (which produce noise that is painful to me now that I'm accustomed to digital's rock-steady speed), and distortion at high levels and from inner grooves almost always make the CD preferable.

THE MECHANICS OF VINYL

An LP is cut from a master tape into an acetate (lacquer) or metal blank, from which molds are made in a three-step process similar to the casting of metal parts. Record mastering, plating, and stamping are mature arts that have been perfected for over forty years. Not only do mastering houses know how to work around the limitations of vinyl, but many engineers and producers of the old school still record their original tapes with vinyl in mind.

The LP-mastering process has always included adjustments of equalization and level that reflect the physical realities of this process. Low bass has to be limited because it is hard for cartridges to track and because the wide swings of the groove take up too much space on the record. As the groove approaches the center of the record, high-frequency signals generate such sharp curves in the groove wall that the stylus, whose edges must be rounded so it won't wear out the groove, can't track them, producing losses in the upper treble. The skillful LP cutter compensates for these losses slightly.

Cartridges and styli affect the LP's sound in playback. The stylus cantilever should for lowest distortion be as long as the analogous part on the cutter, or ¼ inch; but a cantilever that long would flex so much that the highs would be sharply attenuated. The usual ½-inch cantilever length still produces a treble sag between about 3 and 8 kHz in almost all cartridges, including costly moving-coil models. The resonance formed by the mass of the stylus and the springiness of the vinyl, meanwhile, typically causes a rise above about 10 kHz.

These frequency-response errors turn out to be crucial to the LP's "musicality." Many links in the recording chain, including the microphones, were designed with LP's in mind, so many master tapes are too bright in the upper midrange or lower treble. The LP system tends to tame that hardness. Otherwise, the sound is always mildly irritating, and the listener is slightly but consistently repelled, making it very hard to relax and enjoy the music.

The high treble, meanwhile, is not only lightly enhanced -- which adds a sense of "air" to upper overtones -- but quite thoroughly scrambled in phase both within and between the two channels as the stylus and cantilever flex and twist. The randomization of phase contributes further to the sense of spaciousness in the sound. Strictly speaking, these are all colorations, but, depending on the recording, they may often be pleasant and natural-sounding ones. (My thanks to John Rubbers for technical background on these interesting issues.)

— E.B.M.
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In the introduction to the manual for Polk Audio's Signature Reference Theater (SRT) speaker system, the company's chairman, Matthew Polk, says that he told his design team he wanted a system "of such effortless power and clarity that, as you turn up the volume, it literally scares you." The team succeeded in its mission. The sound was very clean and extremely powerful. I was scared.

The system that prompted such a reaction — and not only from me, I might add — costs $8,500 and comprises nine separate components, some handheld, others quite massive. Simplest are the two LS f/x surround speakers, which have been available as separate products for a while ($600 a pair). Their driver complement is two 4½-inch woofers crossing over at 2 kHz to two 1-inch tweeters. The drivers are switchable between dipole (in-phase) and bipole (out-of-phase) operation. Nominal impedance is 4 ohms, and sensitivity is given as 89 dB sound-pressure level (SPL). The LS f/x speakers, which come with wall-mount facilities, weigh about 9 pounds each and measure 11 x 6½ x 9 inches.

Next simplest is the SRT center-channel speaker. Designed for horizontal use, the center weighs 40 pounds and measures 26½ x 6 x 17½ inches. The cabinet shape, with its sloping upper-rear edge, implies set-
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There's never been a CD changer like Alpine's new CD Shuttle, the CHA-S604. You get the unmatched excellence of Alpine sound. And you enjoy the crystal-clear vision of our smallest new design that lets you put your music just about anywhere and watch it move.

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This is the fastest CD changer in the world with split-second action from disc-to-disc because of our linear position sensor slide cam and position sensor. Alpine's legendary skip-resistance is due to silicon oil-filled dampers that insulate your music from shock even in cold climates where conventional rubber dampers become hard and brittle. What's more, this CD Shuttle works with Alpine's exclusive Intelligent Network AI Processor, the most technologically advanced way to link your audio and mobile electronics together.

But then, we are talking about the brand that's standard equipment on every single Lamborghini made.

Look into Alpine's new CD Shuttle. It's clearly superior.
Not too long ago, the concept of a "home theater" was beyond the imagination of most people, including audiophiles whose music systems sometimes did a passable job of simulating a concert hall. Nowadays, unless you have been marooned on a desert island for the past several years, you can hardly be unaware of the rapid growth of home theater. Until quite recently, home theater was affordable only for the relatively affluent, but advances in technology have led to the creation of a consumer market for home theater (A/V) components that promises to surpass that of home audio (if it has not already done so).

Going beyond the two independent audio channels required for stereo audio reproduction, today’s most popular home theater format, Dolby Pro Logic, calls for at least four sound channels and at least five speakers. In addition to the
familiar stereo speaker pair, you also need two surround speakers toward the rear of the room to convey the spatial effects encoded into the program and a center speaker that is close to and either above or below the TV screen. And full appreciation of the bass impact available in some movie soundtracks calls for a subwoofer. The new Dolby AC-3 format makes use of five discrete wide-range channels, plus a subwoofer.

Thus, the old two-channel home stereo system has to be upgraded to five or six channels to reproduce the full sonic impact of many films. While this can be achieved by adding one or more two-channel stereo amplifiers to an existing setup, the A/V receiver, with its onboard surround-sound processor and multiple channels of amplification, provides the most economical (and direct) upgrade path to home theater.

But what if you must have more power, or simply higher-quality amplifiers, than what’s available in a typical A/V receiver? The multichannel power amplifier is clearly designed to address this need, and more and more of them are appearing on the market. A single multichannel amplifier is obviously more convenient to install than several conventional stereo power amplifiers, to say nothing of twice that number of mono-block (single-channel) amplifiers.

For this report we tested a representative group of A/V power amps having from three to six channels and power ratings of 30 to 105 watts per channel into 8 ohms. Their prices range from $699 to $1,150, and all are solidly constructed, relatively compact units weighing between 25 and 50 pounds.

**ACURUS 100X3**

The Acurus 100X3 ($899) from Mondial Designs, the smallest and lightest of the group, has only three channels (the others have five or six channels). Mondial explains this decision by pointing out that adding a readily available stereo amplifier to a three-channel amplifier can easily (and economically) bring the system up to full home theater standards, and also that good A/V receivers usually have line-level outputs for driving external amplifiers. Of course, an A/V receiver will already have the necessary complement of power amplifiers, but it is assumed that a good external amplifier will yield improved performance. Also, there are a few A/V “tuner/preamplifiers” that require external power amplifiers. Using the Acurus 100X3 with an A/V receiver does offer advantages in reduced weight, heat, and bulk compared with a comparably rated amplifier with five or six channels. For a fully equipped system with six channels (including a subwoofer), two Acurus 100X3 amplifiers can do the job easily.

Unlike most of the other amplifiers in this group, the Acurus is not designed to be bridged (a common method of obtaining more power from a multichannel amplifier). The manufacturer points out that bridged amplifiers typically deliver their increased power only into loads with a high and relatively constant impedance (generally 8 ohms). In real-world operation, a speaker’s impedance can vary considerably and may at times fall well below its nominal (rated) impedance (usually 8 ohms or 4 ohms). Therefore, a nonbridged amplifier may be able to drive speakers with less distortion than a comparable bridged unit whose power rating is higher.

The Acurus amplifier is built with fully discrete (not integrated) circuit components, metal-film resistors, and an overall high standard of mechanical assembly. Its front panel contains only a rocker-type power switch with an integral green pilot light. More than half of the entire rear apron is occupied by a full-width finned heat sink. Below it are three gold-plated input connectors and three pairs of multiway binding posts, which accept dual banana plugs as well as wires and lugs.

**B&K AV5000**

The B&K AV5000 ($1,098) is a large, heavy, and fully featured five-channel amplifier. Like most of the amplifiers in this survey, its front panel contains only a single rocker-type power switch. The heat sinks are internally mounted, leaving the rear apron well populated with groups of input jacks, individual knob-operated level controls for each channel, and a row of alternating red and black binding-post output terminals. The spacing of the binding posts prevents the use of dual banana plugs, but single banana plugs and stripped wire ends can be used.

The B&K AV5000 makes extensive use of discrete circuits together with a Class AB pre-driver stage and a Class AB MOSFET output stage. According to the manufacturer, it has limited protection against damage from output short-circuits, and the inputs are said to be balanced to minimize noise pick-up, although the connectors appear to
be conventional (unbalanced) gold-plated RCA-type phono jacks.

All five channels are rated at 105 watts into 8 ohms. B&K says Channels 1 and 2 and Channels 4 and 5 can be bridged to provide single channels rated at 200 watts into 8 ohms.

**CARVER AV-405**

The Carver AV-405 ($850) has two front channels rated at 100 watts each, a center channel rated at 110 watts, and two surround channels rated at 50 watts each, all into 8-ohm loads.

The amplifier is electronically protected against overloads and overheating. Should an overload condition occur, internal relays disconnect the speaker loads. Carver points out that driving the amp hard into a load of less than 2 ohms will also trigger the protective system.

The rear apron of the AV-405 is relatively uncluttered compared with some of the other amplifiers in this group. It contains only five pairs of output binding posts, which accept dual banana plugs as well as wires and lugs. The corresponding input phono jacks form a similar group a few inches away.

This was the only amplifier in the test group to be fitted with handles on its front panel (an optional feature). Since it is one of the smaller and lighter units tested, the feature is probably more cosmetic than functional, although it would have been greatly appreciated on some of the true heavyweights in the group!

**KENWOOD KM-X1**

The Kenwood KM-X1 ($899), one of the largest and heaviest amplifiers in the group, was designed as a companion to Kenwood's KC-X1 A/V tuner/control amplifier, with the two units (similar in size and styling) forming the functional equivalent of a very large, powerful, and versatile A/V receiver. The six-channel KM-X1 does not depend on the KC-X1 for its actual operation and control, however, and is therefore equally suitable for use with other preamps and signal sources.

The KM-X1 is the only amplifier in the test group that is rated to meet Lucasfilm's THX standards, and it carries the THX logo on its panel. THX compliance requires, among other things, a considerable power-delivering capability, and to this end, the KM-X1 is also the only amp in this group to have a cooling fan on its rear apron. The fan is thermally switched by the temperature of the internal heat sinks. In a (literally) silent testimonial to the thermal mass and overall conservative design of the amplifier, the fan never came on during our tests, nor did the amp's exterior get particularly warm.

The front panel of the KM-X1 has two rectangular switches at its opposite ends. One is the overall power switch (a small pilot light is located above it) and the other is a speakers on/off switch. While the latter might be useful under some circumstances to
**COMPARISON TESTS**

**KENWOOD KM-X1 ($899)**

Channels: six  
Rated Output: 100 watts per channel (into 6 ohms)  
Dimensions: 17¾ inches wide, 6¾ inches high, 15 inches deep  
Weight: 44 pounds  
Manufacturer: Kenwood, Dept. SR, P.O. Box 22745, Long Beach, CA 90801

Silence the speakers without switching off the amplifier, it is normally used only when the amplifier is controlled by the KC-X1 tuner/preamp, which switches the various speakers on or off as required for the selected operating mode of the system.

Another highly visible feature of the amplifier is also related to speaker switching. Across the bottom of the front panel are what appear to be six large rectangular buttons marked with the identifications of the six channels, with a small pilot light above each one. Actually, these are not control buttons but indicator lights. When the amplifier is used with the KC-X1 control unit, the lights come on as required by the selected operating mode. When the amp is used without the KC-X1, all the speaker lights come on — a rather unusual power pilot light.

The rear apron of the KM-X1 presents a neat, uncluttered appearance. The speaker outputs are in two groups of three at opposite ends of the panel, flanking the fan grille in the center. The left side of the back panel has speaker binding posts marked Right Surround, Right Front, and Subwoofer; the opposite side of the panel has a similar group marked Center, Left Front, and Left Surround. The binding posts do not accept dual banana plugs. The input phono jacks are grouped above the right-side connectors.

The rear panel also has sockets for standard eight-pin DIN and twenty-five-pin RS-232 connectors to connect the KM-X1 to the KC-X1 control unit.

**NAD MODEL 916 ($699)**

The NAD Model 916 ($699) is a compact six-channel amplifier rated at 30 watts per channel. Although it is considerably less powerful than some of the other amplifiers in the test group, each pair of channels can be bridged to form a single channel rated at three times the power, or 90 watts.

Bridging is accomplished by moving a slide switch near each pair of speaker output terminals. For example, NAD suggests that bridging Channels 1 and 2 and Channels 3 and 4 would create two 90-watt amplifiers for the main front speakers in a two-channel stereo installation, leaving Channels 5 and 6 as independent 30-watt amplifiers for driving speakers in another room. Alternatively, in a home theater system, two channels could drive the front speakers, two others could be bridged to drive a subwoofer, and the remaining two could drive the center and surround speakers. As with any bridged amplifier, it is recommended that the speakers have 8-ohm ratings if this mode of operation is used.

Like some other NAD amplifiers, the Model 916 has a feature called a Soft Clipping circuit to minimize audible distortion should the amplifier be driven beyond its linear range. The circuit can be activated (separately for each pair of channels) by a switch on the rear of the amplifier.

Below the output binding posts for each pair of channels are small knobs that set the level separately for each channel. Below them are phono jacks for the line-level signal input and for
the corresponding line output, which is buffered so that a low-impedance load (or even a short-circuit) will not affect the signal reaching the amplification circuit. This feature allows the amp's line outputs to be daisy-chained to amplifiers in other rooms without degrading performance.

**PARASOUND HCA-806**

The six-channel Parasound HCA-806 ($1,150) is the largest, heaviest, and most expensive amplifier in this group. Although it is not easy to make power-output comparisons between multi-channel amplifiers that offer many different combinations of bridged and unbridged channels, we had no difficulty in ranking the HCA-806 as the true "heavyweight" of the group — and not merely in its mass.

The front panel contains a rocker-type power switch with adjacent red and green LED indicators. Initially, a red Standby light comes on for a few seconds until the amplifier circuits stabilize, when it is replaced by a green Operation light. During operation the red light may be activated by an overload, a short-circuit, or an internal fault, all of which will shut down the amplifier until the condition is corrected. The panel also contains a row of six current-overload LED's that monitor the status of the six channels. Activation of these lights indicates the onset of audible distortion (which should rarely occur in normal operation).

The HCA-806's output connectors are five-way binding posts spaced to accommodate dual banana-plug connectors. Unlike the connectors on some of the other amplifiers in this group, the Parasound's occupy almost the entire width of the rear apron of the amplifier, which makes it easier to connect the speaker wires.

Above each speaker's output connector is the corresponding input phone jack and a knob-operated level control. There are also several miniature toggle switches interspersed with the controls and connectors. Two of them control the status of Channels 3/4 and 5/6, selecting either normal independent operation or bridging them to create a single more powerful channel from each pair.

There are also two switches identified as Loop 1/2-3/4 and Loop 1/2-5/6. These allow a single stereo source to be reproduced through up to three pairs of stereo channels (for multiroom installations) without using Y connectors is the corresponding input.

The HCA-806 is rated, with obvious conservatism, at 80 watts per channel, with all channels driven, into 8-ohm loads. Unlike some of the others, it also carries a 4-ohm rating, of 120 watts, and even a 180-watt rating for each of the two bridged channels.

**THE TESTS**

The procedures for testing multi-channel amplifiers are pretty much the same as for conventional stereo amplifiers, although the logistics can get complicated. We use bulky 250-watt, 8-ohm precision resistors and, to keep the test setup from getting overcrowded, we drive only two channels at a time and measure only one of them. While this is not in exact compliance with the EIA RS-490 Standard Amplifier Test procedure we normally follow, it does suit our primary goal: to establish what these amplifiers can do under essentially identical operating conditions.

Most of the tested units have identical amplifiers in all channels. The Carver A-405 uses lower-power amplifiers for its surround channels, which is perfectly acceptable for home theater applications since with Dolby Pro Logic all channels will never require the same peak power simultaneously. Even with the new Dolby AC-3 digital surround format, movie soundtracks usually will not need as much power for the surround channels as for the front, though AC-3 music recordings, when they are released, may have different requirements. Besides, using surround speakers of only slightly higher sensitivity than the front speakers can make up for a difference in amplifier power. Furthermore, all but the NAD amplifier have very substantial power ratings for all their channels, and every one of them proved to be conservatively rated, though the NAD has no extra dynamic headroom and should not be driven hard.

As shown in the accompanying table of laboratory measurements, the figures for output at clipping (a condition that ideally should never be encountered in actual use) provide a comparison of the ultimate power capabilities of these amplifiers.

For each amplifier, we measured the total harmonic distortion (at 1 kHz) at its rated maximum power and also at 1 watt output, which is a fairly typical playing level for soft and moderately loud music.

**Sensitivity** is the input level required at 1 kHz to develop a 1-watt output into 8 ohms. Most of the units fell in the same broad sensitivity range. A higher sensitivity is, generally speaking, neither good nor bad...
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COMPARISON TESTS

LABORATORY MEASUREMENTS

<table>
<thead>
<tr>
<th></th>
<th>ACURUS 100X3 ($899)</th>
<th>B&amp;K AV5000 ($1,098)</th>
<th>CARVER A-405 ($850)</th>
<th>KENWOOD KM-X1 ($899)</th>
<th>NAD MODEL 916 ($699)</th>
<th>PARASOUND HCA-806 ($1,150)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF CHANNELS</td>
<td>three</td>
<td>five</td>
<td>five</td>
<td>six</td>
<td>six</td>
<td>six</td>
</tr>
<tr>
<td>OUTPUT AT CLIPPING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(watts, 1 kHz, 8 ohms)</td>
<td>168 W</td>
<td>172 W</td>
<td>Front, 137 W</td>
<td>153 W</td>
<td>40 W</td>
<td>136 W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Center, 143 W</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Surround, 78 W</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DYNAMIC OUTPUT</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(watts, 8 ohms)</td>
<td>195 W</td>
<td>210 W</td>
<td>Front/Center, 144 W</td>
<td>156 W</td>
<td>40 W</td>
<td>126 W</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surround, 76 W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYNAMIC HEADROOM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(watts, 8 ohms)</td>
<td>2.9 dB</td>
<td>3 dB</td>
<td>1.36 dB</td>
<td>1.93 dB</td>
<td>0 dB</td>
<td>1.97 dB</td>
</tr>
<tr>
<td>SENSITIVITY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1 watt output, 8 ohms)</td>
<td>127 mV</td>
<td>100 mV</td>
<td>100 mV (front)</td>
<td>100 mV</td>
<td>190 mV</td>
<td>155 mV</td>
</tr>
<tr>
<td>DISTORTION (THD, 1 kHz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at rated power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 1 watt output (8 ohms)</td>
<td>0.011%</td>
<td>0.013%</td>
<td>Front, 0.063%</td>
<td>0.0056%</td>
<td>0.007%</td>
<td>0.024%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Front, 0.043%</td>
<td>0.016%</td>
<td>0.005%</td>
<td>0.019%</td>
</tr>
<tr>
<td>NOISE (A-wtd, re 1 watt)</td>
<td>-80 dB</td>
<td>-96 dB</td>
<td>-108 dB (front)</td>
<td>-94 dB</td>
<td>-96 dB</td>
<td>-95 dB</td>
</tr>
<tr>
<td>FREQUENCY RESPONSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(20 Hz to 20 kHz)</td>
<td>+0, -0.05 dB</td>
<td>+0, -0.18 dB</td>
<td>+0, -0.17 dB</td>
<td>+0, -0.68 dB</td>
<td>+0, -0.2 dB</td>
<td>+0, -1.2 dB</td>
</tr>
</tbody>
</table>

from the user's standpoint, since the preamplifier will set the actual listening level of the system.

We measured the A-weighted noise level referred to an output of 1 watt, which placed all of the amplifiers on the same basis so that we could judge the audiability of their internal noise. Despite the seeming disparity between the highest and lowest noise measurements (80 dB and 108 dB), none of these amplifiers exhibited any audible noise at the listening position during actual use (or would we expect any at any conceivable listening distance).

As with any properly functioning power amplifier, the frequency-response measurements were all ruler-flat through the audible range.

THE BOTTOM LINE

Although the measured performance of these amplifiers may appear to vary rather widely in some respects, from the user's standpoint they were remarkably similar. These are all first-rate products, and none of them exhibited substandard performance in any respect.

Like any good amplifier operated within its ratings — and if you do exceed the linear range of most of these amps, your speakers may be in mortal peril! — those six amps did not have any distinctive "sound" of their own. Of course, they are not all alike in other respects, as is obvious just from lifting them up. Even the "lightweights" of the group weigh in at 25 to 30 pounds, and the heavyweights are definitely not to be taken lightly!

More important, their different features and designs give them strengths and weaknesses for different applications. Given their diversity, it is reasonable to ask if any of these amplifiers would be especially desirable for a specific home theater application (aside from their prices, which span a sufficient range to make that a factor in some cases). For a couple of them, the answer is obvious. Whether a specific installation requires power of 100 watts per channel or more will depend on the speakers' sensitivity, the size of the room, and the owner's viewing and listening preferences. Some program material truly requires a lot of power for the intended impact (the Jurassic Park soundtrack is a good example), and if that sort of fare is your preference, go for all the power you can afford. Five of the amplifiers we tested can deliver that much power without straining, but the relatively low-power NAD 916 cannot (unless bridged).

On the other hand, if your taste runs to less spectacular recorded sound, and your speakers are of average or greater efficiency, even the NAD 916 should be more than satisfactory (and its distortion was one of the lowest in the group). And with bridging, it has all the power (for fewer channels) that most people will ever need.

The Acurus 100X3, the only three-channel design we tested, offers exceptional flexibility in installation. Although it is one of the most powerful amps in this group, its price is about average. It is also relatively compact and can be used easily to upgrade a reasonably good stereo or low-power A/V receiver, which can then drive the surround speakers or one or two subwoofers.

The Kenwood KM-X1 differs from all the others we tested in being essentially half of a "super" A/V receiver designed and constructed in two parts. Obviously, when used with its companion tuner/preamplifier it provides exceptional convenience and performance, with all the electronic and control functions of a deluxe A/V system. On the other hand, on its own it is a reasonably good stereo or low-power A/V receiver, which can then drive the surround speakers or one or two subwoofers.

One thing is certain: Any of these amplifiers should do a fine job in a first-rate home theater system.
From our value packed new TX-SV424 up to our breakthrough THX model TX-SV919, ONKYO has written the perfect home theater script, one with award-winning performances for both design and technology.

In the first few seconds of the movie you'll hear the ONKYO difference. Differences that only oversized transformers and discrete output stages can deliver. Differences that allow ONKYO receivers to supply the power hungry demands of today's special effects laden soundtracks. Whether you're listening to whispers or weapons.

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HOW TO BUY COMPUTER SPEAKERS

TIRED OF THOSE LITTLE SQUAWKERS THAT CAME WITH YOUR PC?
REPLACE THEM!

These days most computers come with a CD-ROM drive, a 16-bit stereo sound card, and a pair of small speakers that are probably okay for monitoring warning beeps or for casually browsing multimedia discs. But if you read this magazine, you're accustomed to much higher-quality sound than many so-called "computer speakers" are capable of delivering. Whether you're exploring "Myst," clicking your way through Bob Dylan's "Highway 61" interactive disc, or playing a CD of Mozart in the background while you run a spreadsheet, you understandably want — no, deserve — the best possible sound.

So how do you go about upgrading your computer's speaker system? Well, you could simply plug a pair of ordinary speakers into the computer's audio output jack (provided you have the right adaptors). That probably wouldn't do much good, though, since the amplifiers built into most computers rarely eke out more than 2 watts a side, and often only a fraction of a watt. A more workable solution is to pick up a decent set of powered computer (or "multimedia") speakers, which have their own built-in amplifiers.

Powered computer speakers come in two basic configurations: the standard stereo pair and the three-piece system, which includes a bass module, or "subwoofer" (a woofer by ordinary speaker standards). Generally speaking, you have to spend at least $100 to get a system that is substantially better than the speakers that come with many computers.

WHAT TO LOOK FOR

Aside from good sound, there is really only one essential requirement for powered computer speakers: a single volume control that is readily accessible and clearly marked. Because of a lack of standardization on the audio side of computer software, sound levels tend to vary wildly from one program to the next, which means that you have to adjust the volume more often than if you were simply playing CD's on your stereo system. Few things are more annoying than having to reach around to the back of a speaker to tame a blaring soundtrack! While volume adjustments can usually be made via software, it's a heck of a lot easier just to turn a knob.

Of course, there are other computer-speaker features that might come in handy depending on what kind of system you have and how you use it. One is input mixing. You'll need a mixer if you want to listen to your CD player or radio while you're playing a game or running a sound-oriented...
HOW TO BUY COMPUTER SPEAKERS

While most powered speakers have an on/off switch, it may not matter if you plug them into the computer's switched power outlet so that the speakers will turn on whenever the computer is turned on. An on/off switch will be necessary, however, if you plan on listening to a noncomputer sound source through a mixer.

THINGS TO AVOID

As with anything else, there are also a few computer-speaker features that you should avoid. One is automatic power-on. Amplifiers with "auto on" remain in standby mode until an audio signal is detected, when they automatically turn on; they shut down about a minute after the audio signal disappears. This feature makes sense if you want to conserve power in a battery-operated system, but otherwise it can be extremely irritating. The turn-on process is not instantaneous, so the amplifier often cuts off the first note of music. In worse cases, the amplifier adds insult to injury by popping loudly as it turns on. Subwoofers with automatic power-on circuitry are not a problem, however, as long as they power up quietly.

Another dubious feature found in some computer speakers is the noise gate, a circuit designed to suppress background noise caused by the sound card and the soundtrack. As long as the level of the input signal remains above a predetermined threshold level, or "gate," the amplifier works normally, but as soon as the signal level drops below the gate, its gain drops to zero, effectively muting the output. The problem is, the noise gate introduces an annoying swishing sound when it kicks in. Noise gates also produce another unnatural effect, most noticeable during quiet soundtracks that contain dead space, as when a piano is played slowly: You can hear background noise during each note, but not between notes. Of course, to casual listeners such flaws may not be that noticeable, especially if the computer's fan is particularly noisy.

Finally, as hinted earlier, you may want to steer clear of speaker systems that have a separate volume control on each enclosure — a very clumsy arrangement. Also avoid systems with knobs that are hard to reach or too small to adjust easily. Other sticky areas include powered speakers that have no volume control at all and three-piece systems that have volume controls on the bass module, which is obviously meant to be tucked away in a corner or under a desk!

Of course, some of these problems can be fixed with an external volume control. The most convenient device I've seen is a $13 accessory sold by Cambridge SoundWorks for its SoundWorks powered speaker system that has a 12-foot cable. Radio Shack sells a $5 headphone volume control (catalog No. 42-2459) that'll work, but it's integrated into a 1-foot cable, which means you'll probably still need an extension cable, and the control itself is too small to grab easily. In computer stores you may find external volume controls designed to stick onto the side of a monitor. Just be careful: Cheaply made controls introduce noise.

INSTALLATION AND SETUP

Powered computer speakers are typically small enough to fit almost anywhere, which is good because you really need to experiment with location...
to achieve the best possible sound quality. Start by positioning the speakers as close to ear level as possible and about 3 to 4 feet apart; any deviations from that will probably degrade imaging and stereo separation, though sometimes compromise is necessary. If the speakers go on a shelf, try to align the front of each one with the forward edge of the shelf so that the sound projects into open space. If the speakers absolutely have to be placed on a table, try to elevate them (at least a few inches) to minimize reflection problems. In the case of a three-piece system, the location of the bass module can vary. Most people put it on the floor next to the desk. If you want more bass output, place it near a wall or, better, in a corner.

Wiring powered speakers will certainly add to the maze of cables that already festoon your computer station. If you want the speaker to turn on with your computer, you may need to change the power cable between the computer and monitor. If that cable has CEE connectors (three parallel flat prongs), get some CEE-to-standard-three-prong cables and use an ordinary three-way power-plug adaptor to provide an outlet for the speakers. Nearly all powered speakers come with a large AC adaptor, which should be kept away from your monitor. If the monitor starts shimmering or flickering, move the adaptor farther away.

In most computer speaker systems, the amplifier and controls are usually housed in the right speaker. If you are left-handed, or if the left speaker position is simply easier to reach, you can swap the speakers and reverse the left and right plugs as long as the speakers have RCA phono jacks. If they use stereo miniplugs, wire in a channel-reversing adaptor (available at an electronics parts store) to keep the left and right channels in their correct positions.

Beyond those suggestions, there isn't much else you can do to optimize your computer's sound system — except, of course, to silence the computer itself (which can be quite noisy). If you have a tower configuration, at least put the main processor on the floor, away from your ears. Otherwise, it's extremely difficult to quiet the noisy fans and whirring hard drives that plague many computers. In my office, I've gone so far as to put the processor on the other side of a wall; the two monitors, the floppy disk and CD-ROM drives, the keyboard, and the mouse are all on my side of the wall. Not exactly an easy solution, but it works for me.

**HOW DO THEY SOUND?**

After spending several weeks listening to computer speaker systems, one conclusion stands out: When it comes to music, it's hard to beat the sound quality you can get from a basic two-channel receiver (about $120) and a good pair of conventional bookshelf speakers (less than $200). Still, a number of computer speaker systems are worth checking out. Unless otherwise noted, the systems I evaluated have a volume control and headphone jack on the front panel.

In the $100 to $150 price range, three of the powered speakers I auditioned performed respectably. Atlantic Technology's M110 ($119 a pair) sounded good on music but emphasized sibilants on voice recordings. It includes mixing facilities and has a very tiny volume control and a recessed headphone jack, which, unfortunately, would not accept most of the headphone plugs I tried. Jensen's JPS45 ($149 a pair), which has a volume control on its side and a headphone jack on its rear panel, had decent if undistinguished sound. Finally, Apple Computer's Apple Design Powered Speaker ($139 a pair) did a good job with speech but sounded a little rough on music, particularly when played moderately loud. The Apple system has mixing facilities (with a noise gate on the minijack input but not on the phono-jack input).

In the $200-and-up price category, SoundWorks, a three-piece system from Cambridge SoundWorks ($220, including remote volume control) delivered better sound than the less expensive speaker pairs mentioned above, but it lacks both mixing facilities and a headphone jack. Atlantic Technology's M105 powered Bass Toaster ($229) did a good job of fattening up the bottom end when used with the M110's, but it catapults the system price up to $348. Finally, the Bose MediaMate ($339 a pair), a powered speaker with a continuous mixing control, was able to turn out surprisingly good bass for its small size (7\(\frac{1}{2}\) x 3\(\frac{1}{4}\) x 8\(\frac{1}{8}\) inches). Among these three systems, the Cambridge SoundWorks system is the best buy and Atlantic Technology's combined M110/M105 system is capable of delivering the best sound — but only by a slim margin. The Bose MediaMate falls somewhere in between.

The most expensive speaker I auditioned was Advent's PowerMaster AV570 ($399 a pair), formerly available under the Acoustic Research name. While it was the best-sounding computer speaker I have heard, it has three serious flaws: separate left and right volume controls, a noise gate, and automatic turn-on circuitry. It also lacks mixing facilities and a headphone jack.

The bottom line: Any of the computer speaker systems mentioned above — or a basic stereo system if you have $300 or so to spend — will deliver much better sound than the low-quality speakers that typically come with today's multimedia computers. And a good sound system is what you need to experience the realism and depth that the soundtracks of today's video games and multimedia CD's offer. If only there were a way to silence the computer.

_Cary Lu is a regular contributor to Macworld, Family PC, and Inc Technology magazines._

STEREO REVIEW JANUARY 1996 91
July 20

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Much of "Cheapness and Beauty" is about self-realization — but also about what George calls "being caught in a trap." Seesawing between the celebration of sexuality and the pull of religion, George has made a record that pulsates with passion and tension, whether he's taking on the bisexual who married into the straight life in Unfinished Business or raging against the wrong kind of paradise in Your Love Is What I Am. Overall, this album's portrait of the former George O'Dowd is vastly different from that of its predecessors, with its reliance on live instruments instead of technology, its dead-eye language ("You walk like Jack and you love like Mary / And you're more than a bit of a queen"), and its hard-fisted delivery. In fact, the singer is through half of the program before his voice — deeper now, and more serious — recalls the soft guile it had in his Culture Club days.

"Cheapness and Beauty" is full of hellish references to love at a terrible price (no happy endings here) and self-loathing balanced with the occasional stab at gay pride. Uplifting it is not. But it is also the most real music Boy George has ever made. And just maybe the most important, too.

Alanna Nash

BOY GEORGE: Cheapness and Beauty.
Funtime; Satan's Butterfly Ball; Sad; God Don't Hold a Grudge; Genocide Peroxide; If I Could Fly; Same Thing in Reverse; Cheapness and Beauty; Evil Is So Civilised; Blindman; Your Love Is What I Am; Unfinished Business; II Adore. VIRGIN 40492 (50 min).

Leila Josefowicz's Stunning Debut

There has been no scarcity of remarkably gifted teenage and pre-teen violinists lately, but even so the debut recording of young Leila Josefowicz — playing the Sibelius and Tchaikovsky concertos with Neville Marriner and the Academy of St. Martin in the Fields — is a heartening event, and by no means because of the age factor alone. Josefowicz, Canada-born and California-bred, turned eighteen only a few months ago; she apparently began her professional activity at the age of ten or eleven and is currently studying at the Curtis Institute of Music in Philadelphia. The vitality she brings to these concertos is not expressed in terms of unbridled energy but is accompanied by an evidently instinctive refinement that keeps expressive elements effortlessly and convincingly within certain bounds — as well as the by now expected technical assurance.

Josefowicz has been performing and touring with Marriner for more than five
NEWMAN DANCES WITH THE DEVIL

Rock-and-roll embodies many things, but a literary sensibility is usually not among them. So Randy Newman’s Broadway-bound rock musical version of Goethe’s Faust, recast as a contemporary morality play, is a gale of fresh air. In these times of punk-rock clones and half-baked alterna-dreck, it stands as a red-letter day for those who like their pop music leavened with a little genuine wit and insight.

Newman’s “Faust” is an out-and-out riot, faithful in its outline to the characters and plot turns of the early nineteenth-century original but utterly up-to-date in tone. Indeed, Goethe’s classic tale seems more apropos than ever to the late twentieth century in general and the culture of rock-and-roll in particular. That’s because the original was in part a darkly comic ode to rebellious youth, which despite its pitfalls is held to be the engine capable of saving humanity. Viewed through this lens, the nexus between Faust and rock-and-roll is inescapable. The only surprising thing is that it took so long for someone to make the connection.

The casting is one of the most brilliant aspects of this project. Drawing from a pool of singer/songwriters who have been his peers since the early Seventies, Newman matched them to roles in ways that caricature elements of their public personas: James Taylor a cheerfully complacent God, Linda Ronstadt the doe-eyed Margaret, Bonnie Raitt the worldly-wise Martha, and Don Henley the brainy, brutish Faust, whose calculating insensitivity offends even the Devil, performed with pompous cackery by Newman himself. The contrasting viewpoints between God’s affable well-meaning and the Devil’s cynical, rapier wit come fast and furious, as when Newman interrupts a Taylor-led gospel singalong (Glory Train) with a harangue on the whole of religion: “You know it’s a lie / It’ll always be a lie / The invention of an animal / Who knows he’s going to die.”

Henley shines as the combustible Faust, here written as a bright but basally amoral college student with a ballooning ego who adapts rather too easily to the power and popularity bestowed upon him by the Devil. In The Man, one of the musical’s pivotal songs, Faust cements his deal in a nightclub, reveling in his tawdry moment in the spotlight (the metaphorical parallels with the seamier side of rock celebrity are inescapable). As lives are ruined or taken, the saga inex-
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A paradox lies at the heart of most performances of twentieth-century English art songs: While the music and the poetry celebrate the joys of simple country life, the singers are usually effete urban artists with plummy accents who never laid eyes on a plow in their lives. There have been notable exceptions — the contralto Kathleen Ferrier, for instance, brought genuine earthiness to her magnificent, forthright interpretations of traditional songs. Now, with "The Vagabond," his first recording of English songs, the Welsh baritone Bryn Terfel — widely praised for his earlier Schubert collection, "An die Musik," and his performances in Mozart operas — lays an immediate and undeniable claim to a place in the first rank of interpreters of this music.

From the first stanza of Vaughan Williams's *The Vagabond*, Terfel unleashes an almost overwhelming musical power, grappling with the piece as though it were a wrestling challenger rather than a score. When this son of a sheep farmer and former rugby player tells you that all he wants is "Bed in the bush with stars to see, / Bread I dip in the river," you don't doubt that he has actually slept outdoors and seen plenty of rivers besides the Thames. Yet for all his power, Terfel brings true elegance and grace to this music. His phrasing of Gerald Finzi's Shakespeare songs is achingly, shiningly beautiful. When he moans, "Not a flower sweet, on my black coffin let there be strewn," only a stone could be unmoved. If this man ever decides to sing "Ol' Man River," invest in Kleenex.

Terfel's genius lies in the astonishing freshness of his communication. Rather than merely impersonating the illiterate sailor in John Ireland's *The Vagabond* (quite a different song from the Vaughan Williams), or the melancholy old men in George Butterworth's rather prissy settings of poems by A. E. Houseman, Terfel somehow actually becomes them, and makes their songs into musical conversations with the listener.

And I haven't even said anything yet about the voice — what a flexible, richly hued, marvelous thing it is. It is a tribute to Terfel's artistry that you become so deeply engrossed in his musical storytelling that you don't notice what a beautiful instrument he has until the experience has ended. He is accompanied sympathetically on the piano by Malcolm Martineau, and recorded with thrilling fidelity by the Deutsche Grammophon engineers.


**RAVEL:** Gaspard de la Nuit. DEBUSSY: Pour le Piano; Three Preludes. STRAVINSKY: Three Movements from "Petrouchka."

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CIRCLE NO. 28 ON READER SERVICE CARD
TONY BENNETT: Here's to the Ladies.
COLUMBIA 67349 (67 min).
Performance: The Toniest!
Recording: Fine
The one classic pop singer to cross over to Generation X, 69-year-old Tony Bennett has become the Harry Connick of the mid-Nineties. "Here's to the Ladies," the latest in Bennett's series of tribute albums (following homages to Frank Sinatra and Fred Astaire), annexe a full orchestra to the singer's working trio. This time out the husky-voiced crooner (whose warm style actually owes the most to Louis Armstrong) cherchez la femme to sing the praises of the distaff side of the jazz-pop world. Bennett celebrates female icons as justifiably legendary as Billie Holiday (a dramatic God Bless the Child, featuring Doug Richardon's bass) and Judy Garland (a romping Over the Rainbow, with an introductory verse that the High Priestess of Judyism never sang), as undeservingly neglected as Margaret Whiting (a stunning Moonlight in Vermont), and as overrated as Barbra Streisand (the first treatment of People to actually swing). Within the big band, the most prominent soloist is Ralph Sharon, Bennett's pianist of the last forty years, whose arpeggios resonate all the more warmly against shimmering strings. Last year's Grammy-winning "Unplugged" confirmed Bennett's standing with the MTV demo- graphic; "Here's to the Ladies" proves aptly named return to near-form. One song, I'm Ready, even alludes to a rebirth and baptism ("I'm ready to let the rivers wash over me"). Dignified and graceful, the album tells of tough victories and close defeats, making a powerful connection with the listener both socially and spiritually.

Chapman is most concerned with matters of metaphysical and carnal passion. In Heaven's Here on Earth she weds a single-note acoustic guitar line, light percussion, sparse electric guitar, and woodwind to an intense meditation on peace and understanding. In At This Point in My Life she imparts a wisdom too easily forgotten: "The search to live honestly / Is all that anyone needs." As usual, Chapman's smoky, deep-wood voice ferrets out the dark, hidden crevices of the soul. The Promise, a love song that veers near the profound, will put a lump in your throat. And if her ecology concerns aren't enough, Chapman puts into words a lump in the listener both socially and spiritually. She is as a singer that he really shines, making a powerful connection with the listener both socially and spiritually.

TRACY CHAPMAN: New Beginning.
ELEKTRA 61850 (65 min).
Performance: Graceful
Recording: Good
Although Chapman never comes up with a song as starkly memorable as Fast Car, she makes up for it in material that supports her cries for personal integrity. Rarely stooping to sermonize, Chapman knows full well that it takes more than trends and truculence to effect true healing, whether of the spirit or the flesh. This album is as good a beginning as any.

DON DIXON: Romantic Depressive.
SUGAR HILL 5501 (41 min).
Performance: Assured
Recording: Excellent
Don Dixon wears his heart on his album title in this worthy collection. It's a true solo record: Dixon plays every instrument (except for drums and percussion), which is appropriate to the soul-searching he undertakes in this brooding memoir. He is also a surehanded producer and songwriter, but it is as a singer that he really shines, cutting loose in a supple voice that packs the conviction and judicious self-containment lacking in a mass-market rocker such as Michael Bolton. (Dixon is closer to the likes of Darius Rucker of Hootie and the Blowfish, who has cited him as a primary influence.) In "Romantic Depressive," Dixon's subject matter is evenly divided between doleful reminiscences about love's labors and reflections on himself and the world from the vantage point of midlife. He waxes bittersweet in I Should Know Better, an uncommonly pretty tune co-written by pianist Bland Simpson (of North Carolina's Red Clay Ramblers); this is surrounded by the conscious song (The Rupe of the World) falls short. Her no-nonsense recognition of a hollow-hearted man (Smoke and Ashes) is remarkable in its quiet evolution from starry-eyed optimism to cold reality. Although Chapman never comes up with a song as starkly memorable as Fast Car, she makes up for it in material that supports her cries for personal integrity, rarely stooping to sermonize. Chapman knows full well that it takes more than trends and truculence to effect true healing, whether of the spirit or the flesh. This album is as good a beginning as any.

A.N.

TRICKLE-DOWN MUSIC
So here's the shock: A bunch of Boston garage-rock veterans get bored one weekend and form a joke band. They put on powdered wigs, adopt fake British accents, and write songs about the joys and trials of being filthy rich. These include a rant about how hard it is to get good help nowadays (Little Rickshaw Boy), a salute to a role model (Little Lord Fauntleroy), and a song allegedly about clothing (I've Got My Ass-Coin My Dickie). Wouldn't you know it — the concept catches on, the guys get signed to a hot indie label, and they make what may be the funniest good album of the year, "Let Them Eat Rock." (Upstart 026). Not only have Upper Crust wrung an entire CD out of the joke, but they've made a quintessential Boston garage disc. Now how long will it be before someone does this without the irony? Brett Milano
exertions of Giving Up the Ghost and Angel Angel, the latter a sprightly tune nudged along by handclaps and a Motownish bass line. Dixon turns introspective in 25,000 Days, fortungrily facing himself in the mirror, and he dredges up a detailed account of the Vietnam-era draft and his near-miss as a college student in Lottery of Lives. Songs like these and a comic-relief instrumental entitled Good Golly Svengali serve to balance Dixon's bouts of lovelorn melancholy with a broader outlook. "Romantic Depressive" is an album by a stalwart soul who, refreshingly, isn't afraid to flinch from adulthood. P.P.

PETER FRAMPTON: Frampton Comes Alive II.
EL DORADO/J.R.S. 34368 (75 min).
Performance: Better than expected
Recording: Good live

I hate to break the news, but Day in the Sun, which opens this apparent sitting duck of an album, is a really good song — so good that I've had to shove all the cheap jokes I was planning to make at Peter Frampton's expense. Despite the lower profile and the receding hairline, Frampton is about as good in the mid-Nineties as he was in the mid-Seventies — still not about to change anyone's life, but still writing some of the more spirited fluff around. Though never a wellspring of depth, Frampton was hardly the worst thing about the Seventies: after all, he could always turn a hook and play a decent guitar solo. And his aw-shucks stage manner, in retrospect, was sort of refreshing.

Instead of skimming the better songs from his dozen or so studio albums, "Frampton Comes Alive II" includes mostly new material. But the basic ingredients are familiar: a handful of polite rockers, a bunch of wide-eyed love songs, enough instrumental workouts to prove he can play, and a quasi-blues barnstormer where he shuns his has to do with her, uh, relatively advanced years. I mean, get real, kids. Why else would those execs get behind Alison Krauss (whose music is indistinguishable from what Harris has been doing forever) rather than the older model? Then again, what do we expect from a world in which Renee Russo (!) is deemed too old to be Val Kilmer's love interest in Batman Forever? In any event, the good news is that Harris has recast herself as what she was back in her days with Gram Parsons — that is, as a sort of cutting-edge folkie. Paired with producer/performer Daniel Lanois, who has proven himself comfortable with everybody from Bob Dylan to U2, Harris works her achingly pure soprano through an eclectic bunch of songwriters from Rodney Crowell to Neil Young, and the sonic backdrop Lanois has erected for her (Ambient Acoustics?) is spare, spacious, and unerringly right. You haven't lived, for example, until you've heard the sound of psychelike/bluegrass/grunge melange that Harris and Lanois extract from Jimi Hendrix's May This Be Love?

The result is simply one of the strongest albums that Emmylou Harris has made to date. Clearly, Nashville's loss is everybody else's gain. S.S.
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POPULAR MUSIC

JOHN HIATT: Walk On.
CAPITOL 33416 (65 min).
Performance: One of his best
Recording: Good

John Hiatt has taken his act on the road and gotten it together. "Walk On" is a collection of songs he wrote during his "Perfectly Good Guitar" tour, and it's a perfectly good album, filled with his cockeyed, sweet-and-sour wisdom. As usual, Hiatt delivers a wondrous blend of moods and opinions, from his bloodshot perspective on uncertain love to his cackling perspective on loopy American culture to his wistful perspective on life as we don't know it.

First and foremost, there is the title cut, a most idealized wrenched bit of trouble. It's a song noir, from the evocation of muggy nighttime New Orleans to the chorus about the woman who is waiting back in a hotel room for the man who is pacing the city. Hiatt piles foreboding image upon foreboding image — and then sings with such a restrained straight-edge that the tune cuts like a razor. You don't really feel the pain, but you see the bloody lines.

The word pictures in "Walk On" work beautifully because Hiatt doesn't slap you upside the head with them. The guy in Ethylene doesn't just miss his woman, he misses "that crocheted thing you kept on the Kleenex box." The guy in Shredding the Document, who is fed up with all the ya-hoos blabbering on TV, is now adamantly refusing to talk to anybody... well, maybe Larry King... but then again, no... but then again, maybe Oprah Winfrey.

The music is swell, too. David Immerglück — familiar to those who have enjoyed his work on all kinds of stringed things for Camper van Beethoven, Monks of Doom, and the Ophelias — contributes zesty and tasteful mandolin, and he can play a banjo like a hard-rock guitarist. Just as important as the album's fine musicianship is the way the backing tracks stay in the background.

John Hiatt is not an easy man to please. He doesn't always like it, but this is his job. God bless him. R.G.

K.D. LANG: All You Can Eat.
WARNER BROS. 46034 (36 min).
Performance: Celestial
Recording: Very good

In her first album since the soundtrack to Even Cowgirls Get the Blues, the Big-Boned Gal from Alberta bypasses both the Nashville circuit of "Absolute Torch and Twang" and the mirror-ball cabarets of "Inkgence" for a concert stage in her own head. While the title should raise a smile, coming from this very public lesbian, the new album is far less about physical love than about idealized sensuality. In fact, relying on instrumental tracks nearly as odd and sometimes as dissonant as those of the movie soundtrack, "All You Can Eat" is more like a stream-of-consciousness fantasy or an unrequited love affair of the mind, replete with courtship, sex, and rejection.

From start to finish, k.d. lang sounds as if she has just awakened from a lovely dream and is lying on her pillow, thinking of the woman who has captured her heart. For all its internalized heat, the album relies almost exclusively on slow-to-midtempo rhythms and free-floating yet bottom-heavy ambient melodies. The singer threatens to break into a sweat only in the jazzy Get Some, the teasing Sexuality (a gauzy come-on in which she asks, "How bad could it be? If you amuse yourself with me?") and the album's strongest song, I Want It All, in which her libido comes alive, her arty soprano takes a dramatic leap, and she finally lays her desires on the table. "All of your body / All of your mind / All of your affection / All of the time... every ounce of you and your love... I am on my knees." Not a trace of her former cowpunk persona, persona lingers around the edges, nor any of the exquisite ache and tension of Constant Craving, which was her most mainstream single.

Along the way, Lang and her longtime collaborator, Ben Mink, work in halfhearted allusions to conservative politics and its oppressive effect on sexual identity and practice (Acquiesce), as well as vague references to the pressure and privilege of fame (If I Were You). But it is the power and the spiritual endorphins of love that really consume her. How much they'll consume you depends on how much you treasure her enfolding voice — and how much sleep-walking you're willing to put up with. Alternately brawl and invigorating, "All You Can Eat" is one album that precisely lives up to its title.

A.N.

MORRISSEY: Southpaw Grammar.
REPRISE 45938 (52 min).
Performance: Trying
Recording: Okay

Morrissey's latest aural anxiety attack is one of his weirdest and weakest records. Over the years, he has periodically changed musicians between albums to relieve the monotony of his endless kvetching and to liven up the landscape surrounding his limited vocal range. But in "Southpaw Grammar" he winds up with a crew that plays the Spiders from Mars to his crestfallen Ziggy Stardust. The band's ham-fisted glam rock is inappropriate to a personality as trite and circumspect as Morrissey, and the combination overwhelms the poor guy.

"Southpaw Grammar" starts out with the biggest hummer of Morrissey's career, an eleven-minute dirge entitled The Teachers Are Afraid of the Pupils that sounds like the Sisters of Mercy meet the London Symphony Orchestra. Built around discordant two-
note riffs, the song stubbornly refuses to end, and no one seems willing or able to stop it. The album closes with "Southpaw," another labored ordeal that runs on for ten minutes.

In between these art-rock train wrecks are half a dozen somewhat more succinct and satisfying tracks. Even here, though, the tug of war between band and singer throws things off, as in "The Operation," which opens with some sort of arena-rock drum solo and ends with a frenetic guitar rave-up à la the Yardbirds' "I'm a Man." "Southpaw Grammar" shows Morrissey caught in a fast current, out of control and holding on for dear life — a guess on his own record.

**SMASHING PUMPKINS:**

*Mellon Collie and the Infinite Sadness.*

**Virgin 40861** (two CD's, 125 min).

**Performance:** Stellar

**Recording:** Creative

Here is the alternative movement's first genuine art-rock epic — and it took Smashing Pumpkins to make it. Leader Billy Corgan has never hid his ambition to craft an album that will endure like the Sixties and Seventies classics he loves, and with "Mellon Collie and the Infinite Sadness" he realizes his goal.

The diverse and daring two-CD set begins and ends with nods to landmark double LP's: The opener is a moody piano instrumental ("The Eternal," of the Elton John album "Goodbye Yellow Brick Road"), and the finale is an ironic lullaby ("The Cuckoo's Song"). In between comes a wide sweep of songs that absorb the best things about modern rock while daring to aim for grandeur.

Given Smashing Pumpkins' usual love for guitar jams, there's a notable lack of instrumental excess. All but three of the twenty-eight songs fall in the range of three to four minutes or so, many of them substitute keyboards or strings for lead guitar, and the occasional jams are done tastefully — particularly in "Porcelina of the Vast Oceans," a textural marvel that justifies its nine-minute length. This is the first Pumpkins album where the guitar dynamics are built around songs instead of vice versa. Corgan has made a few quantum leaps as a songwriter, channeling his mood swings into material as guitar-brutal as Where Boys Fear to Tread and as gorgeously melodic as "Lilly (My One and Only)." The richest section is saved for album's end, where the screaming outbursts in X.Y.U. are followed by a string of haunting, neopsychedelic pop numbers. Romantic depression has seldom sounded this good.

Like most other double albums, "Mellon Collie" also has its dead spots — specifically a stretch of midtempo songs midway through the second disc, as well as a couple of experiments that don't come off (especially the harp-and-poetry departure "Love"), but there are enough gems here to revive the old idea that self-indulgence can be a good thing.

**RED HOT CHILI PEPPERS:**

*One Hot Minute.*

**Warner Bros. 45733** (61 min).

**Performance:** Incendiary

**Recording:** Super

The latest guitarist to pass through that revolving-door position with the Red Hot Chili Peppers is Dave Navarro, formerly of Jane's Addiction. Making his debut in "One Hot Minute," he brings more substance to the band than anyone since the late Hillel Slovak. This just might be the Chili Peppers' finest hour, an album of unsettled moods running hot and cold, earthy and transcendent, sex-mad and meditative, funky and poppy, airy and hard. The eclecticism recalls the glory days of Parliament-Funkadelic in that the Chili Peppers mix it up without ever straying too far from the groove.

Navarro takes to his role like an equal fourth member, pulling the others toward his stylistic preferences (he is decidedly not the original bassist Flea revisit their chemically fueled rat race. Singer Anthony Kiedis and drummer Chad Smith, a coolly rational exhortation to leave the groove.

The richest section is saved for album's end, where the screaming outbursts in X.Y.U. are followed by a string of haunting, neopsychedelic pop numbers. Romantic depression has seldom sounded this good.

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**Collections**

**A TESTIMONIAL DINNER:**

*THE SONGS OF XTC.*

**Thurston 57019** (46 min).

**Performance:** Very filling

**Recording:** Tastes great

The trouble with tributes? Too often, bands doing covers sound like mere cover bands. Fortunately, most of the folks at "A Testimonial Dinner" take the songs of XTC and run with them, crafting an inventively homage to a British group that began in 1977 as punkish pranksters before eventually turning into pop artisans — a trio lauded by their big cult as (you've heard this one before) The Best Thing Since the Beatles (but I tend to agree).

**STEREO REVIEW**

**JANUARY 1996**

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Shawn Colvin: Live '88.

Plump 5901 (45 min).

Most successful performers fear the release of recordings from the warm-up stages of their careers. But Shawn Colvin needn't be embarrassed by this pre-stardom concert from 1988. All her seminal songs are here — Shotgun Down the Avalanche, I Don't Know Why, Another Long One, Something to Believe In — and most of the time her pillow-soft voice terrifies out their hidden emotions. A fine document of an artist who at the time was about to glue the rest of the world in on her secret.

Julian Cope: 20 Mothers.

American 43044 (72 min).

After the dark trilogy of "Peggy Suicide," "Jehovah's knees," and "Autogeddon," Julian Cope serves up twenty self-described "love songs" written for mother, mother-in-law, and Mother Earth but also for wife, kids, brother, Kurt/Courtney, and... Christopher Robin. Some of the tracks are squarely pop; others drift in the rock soup that helps make Cope a favorite eccentric. Another masterwork from an earthy visionary.

Dance Hall Crashers: Lockjow.

510/MCA 11326 (41 min).

The crashers in question are four guys as a power-pop/punk/ska outfit with two gals as dual lead vocalists, and they've definitely got the beat — plus the loud guitars, the fast-and-loose songs, and the love game lyrics. Production and performances are equally keen. Playing this CD is like opening a big sack of potato chips: The tracks are so addictive, you can't listen to just one.

Stuart Dempster: Underground Overlays from the Cistern Chapel.

New Albion 076 (62 min).

"Underground Overlays" was recorded in a large, deep cistern north of Seattle. The trombone and conch shells played by Stuart Dempster and his assisting musicians produce overtones and echoes that convey an eerie sense of the primitive and the mystic. The use of an Australian instrument, the didjeridu, further contributes to the air of exoticism. It's all more than a little weird, but it's intriguing, and even compelling.


Alanna 5563 (41 min).

The first in a projected series of twenty CD's of great popular songs in instrumental arrangements, this disc travels from I Found a Million Dollar Baby (1931) to the Beatles' Yesterday. All are played by Green's Pops Concert Orchestra in a smooth, pleasing "beautiful music" manner, which should appeal to all ages but especially to the more serene Baby Boomers.

Hole: Ask for It.

Caroline 1170 (18 min).

The release of this six-song EP of early material by Courtney "America's Favorite Teenager" Love and band has been a long time coming, for obvious reasons. The big question — why, as my mother used to ask, is this woman hollering? — remains unanswered, but "Ask for It" does afford one perverse pleasure: the loudest cover of a Velvet Underground song (Pale Blue Eyes) ever committed to disc. Oh well, thank God that Love's not exploiting the death of her husband or anything.

Marcus Hummon: All in Good Time.

Columbia 66124 (45 min).

Here's proof positive that the James Taylor/Dan Fogelberg School of Sensitive Acoustic Music has set up permanent headquarters in commercial Nashville. Marcus Hummon, educated at Williams College and Vanderbilt, has seen his songs recorded by Wynonna (Only Love), Alabama (Cheap Seats), Hal Ketchum, and Patty Loveless. Such royalties go a long way toward a BMW.

Planet Squeezbox: Accordion Music From Around the World.

Ellipsis Arts 3470 (three CD's, 184 min).

Who knew the accordion was so universal an instrument? These selections show everything it can do, in material that ranges from avant-garde to tango to zydeco. It's mostly happy, celebratory music with some plaintive songs for contrast. An interesting successor to Mickey Hart's "Planet Drum."
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on the whole, a traditional set, largely due to the excellent, more conservative approach of tenor saxophonist Mark Shim and a rhythm section headed by pianist Larry Willis with Keter Betts on bass and Jimmy Cobb on drums. Listening to the album is not unlike enjoying a savory apple and having to eat around a worm hole or two. I like most of it — but perhaps a rehearsal might have been in order. C.A.

ABDULLAH IBRAHIM TRIO: Yarona.
ENJA/T1trio 88820 (56 min).
Performance: Intimate
Recording: Likewise

A friend of mine who occasionally gigs with Hamiet Bluiett likens the experience to a portrait artist dabbling in finger painting. Another former Bluiett sideman told me, “He wants you to play weird, and he doesn’t like rehearsals because the group might become too smooth.” Maybe so, but Bluiett didn’t completely discard the old rulebook at the sessions that resulted in “Young Warrior, Old Warrior.” Sure, he takes his baritone sax up and down some unusual paths, the ensemble is a bit on the rough side, and no one calls for another horn takes up the first disc and goes well in-depth and in-timacy. And Johnson, who is frequently called on to carry the melody while Ibrahim trills around it, merits praise for handling a difficult task extremely well. F.D.

DON SICKLER: Night Watch.
UPGRO UPID 2739 (60 min).
Performance: Well-balanced
Recording: Very good

Nobody knows more unjustly overlooked tunes by the likes of Elmo Hope and Hank Mobley than Don Sickler, who has served as an arranger or in an advisory capacity on a number of the finest bop dates of the Eighties and Nineties. Sickler’s first album under his own name in about a decade reminds us that he’s also a capable trumpeter. In “Night Watch” he shares solo space with pianist Richard Wyands and four other horns, including tenor saxophonist Ralph Moore and the unsung veteran trombonist Carl Fontana. Though this is very much an arranger’s date, Sickler gives himself and the others ample room to blow, and Fontana is in especially good form. The choice material includes two numbers each by Kenny Dorham and Walter Davis, Jr., and a novel interpretation of Charles Mingus’s “Scenes in the City,” in which Sickler captures the spirit of the original and still comes up with something fresh by isolating and developing one lovely phrase. F.D.

THE RHYTHM AND THE BLUES

The Forties was an eventful decade for jazz. At one end, the Swing Era peaked and became history; at the other, bebop emerged. Sandwiched between these milestones were a New Orleans renaissance, a boogie-woogie craze, and the crystallization of a new sound that in the following decade would evolve into rock-and-roll. That sound was rhythm-and-blues, whose texture came largely from the newly electrified guitar and the aggressive tenor saxophone, and although R&B was basically regarded as pop music, the lines between it and jazz were often blurred.

Most R&B recordings were made at small independent labels, upstarts such as Savoy, Specialty, Aladdin, Atlantic — and Mercury, a Chicago company that recorded some of the most exciting music of the period. “Blues, Boogie, & Bop;,” a seven-CD set of Mercury’s Forties sessions, is in so many ways a history lesson that starts with Albert Ammons and His Rhythm Kings accompanying Sippie Wallace, a classic blues singer of the Twenties, and takes us to the doorstep of bop. Ammons’s influential piano takes up the first disc and goes well into the second; he was one of a handful of outstanding boogie-woogie players, and here he is heard at his best. The remainder of Disc 2 features Helen Humes, a wonderful vocalist who by then had left the Count Basie band. Her accompanists include Teddy Wilson, Mundell Lowe, and a band led by trumpeter Buck Clayton, with fellow Basie-ites Walter Page and Jo Jones in the rhythm section. Disc 3 is devoted to pianist Jay McShann, best known as the man whose Kansas City orchestra gave the world Charlie Parker. (Bird isn’t represented in this collection, but singers Jimmy Witherspoon and Walter Brown are.)

Thirty Eddie Vinson sides cover the fourth disc and spill onto the next. A fine alto saxophone player and an even better singer, Vinson achieved enormous popularity fronting his own well-oiled big band and recording such hits as Kidney Stew Blues and Cherry Red Blues, both included here. Completing Disc 5 are two sessions by Roy Byrd (a.k.a. Professor Longhair) and each one by Julia Lee and Myra Taylor, the latter a historical footnote who nonetheless had a pleasant, sweet style à la Ella Fitzgerald.

Disc 6 veers into straight jazz by the bands of Rex Stewart, Buddy Rich, and Cootie Williams. Stewart’s growling, numbling cornet style fit well in the Ellington band of the late Thirties and early Forties, but his four numbers here are not among his best. The Buddy Rich orchestra — represented by twelve selections, including four Tadd Dameron arrangements — brings us stylistically to bop, while the three Williams sessions that end this disc typify the period’s jump bands, with Willis Jackson’s frenetic, screaming tenor bringing to mind Jazz at the Philharmonic at its wildest.

The seventh disc, mostly alternate takes and fragments, is aimed at the collector who absolutely must have everything ever recorded. A lot of this is unremarkable, but the disc does contain two newly discovered recordings by pianist Mary Lou Williams, one of the most innovative women jazz has produced.

All told, these eight hours of sounds strikingly reflect a pivotal period in American music. The accompanying eighty-two-page booklet is informative, and the packaging — a plastic case in the shape of a Forties radio — is attractive. Chris Alberson

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Voices of Light

If the names Ruth Cunningham, Martha Genensky, Susan Hellauer, and Johanna Rose don't immediately ring a bell, you're not hopelessly out of touch. These talented women are the voices of Anonymous 4, acclaimed for recordings of early music on the Harmonia Mundi label. Their latest CD, however, is a Sony recording of American composer Richard Einhorn's Voices of Light, a new work inspired by the Danish filmmaker Carl Dreyer's classic 1928 silent film The Passion of Joan of Arc. Einhorn uses the vocal quartet to depict the complex character of the martyred Joan, and his score for orchestra, chorus, and vocal and instrumental soloists mixes Gregorian chant and medieval, Renaissance, Baroque, and minimalist musical styles. On the recording, released in October, Anonymous 4 is joined by the Netherlands Radio Philharmonic Choir and Orchestra, all under the direction of conductor Steven Mercurio.

Performance: High drama
Recording: Live and in your face

In this concert recording from the 92nd Street Y in New York City, the iconoclastic Bach specialist João Carlos Martins performs the preludes from Book I of The Well-Tempered Clavier while his countryman Arthur Moreira-Lima plays Chopin's Op. 28 preludes. Instead of one set following the other, they are interlaced, with the preludes arranged according to their common keys. The juxtapositions are sometimes revealing — showing, for example, the remarkable similarity in the busy passagework of each composer's D Major prelude. The program ends with the D Minor preludes, in which Chopin's seems to pick up where Bach's leaves off.

Call it a gimmick if you will, but the performances are genuine edge-of-the-seat experiences. Martins sometimes storms the keyboard so lustily in his part that you wish he'd quit trying to turn Bach into Godzilla and just play some Liszt, but there are lots of "ah-hah" moments, too, when he delivers the kind of insightful flourish associated with the young Glenn Gould. Even better are the Chopin preludes of Moreira-Lima, who studied in Moscow and epitomizes big-personality, chance-taking, rhythmically free musicmaking. Chopin's works can seem somewhat narrow alongside the wondrous contrapuntal complexity of Bach's, but not with Moreira-Lima's epic-style playing. No living Chopin pianist is more fascinating. Labor Records is missing a big opportunity by not extracting a single Chopin CD from this set.

D.P.S.

BEETHOVEN: Piano Concertos Nos. 2 and 3.
Till Fellner (piano); Academy of St. Martin in the Fields, Neville Marriner cond. ERATO 985339 (66 min).
Performance: Neat
Recording: Excellent

Till Fellner, 24, is a rising star on the international pianistic horizon. A pupil of Alfred Brendel, he won the Clara Haskil International Competition in 1994, and that earned him a recording contract with Erato. The Beethoven Piano Concerto No. 3 can be interpreted in terms of late Mozart or else treated as a precursor of the composer's own later heroic manner. Fellner opts for the late-Mozart manner and gives us a fairly small-scale but beautifully articulated account of the solo role. It is in the Concerto No. 2 (actually the first of Beethoven's concertos in order of composition) that young Fellner really shows his stuff, with elegance, wit, zest, and, of course, brilliance to burn. Neville Marriner is, as always, a superb collaborator. The recorded sound is crystal clear throughout.

D.H.
The recorded sound is just fine — rich-toned and spacious.

**HOVHANNESS: Symphony No. 6 ("Celestial Gate"); Prelude and Quadruple Fugue; Tzaikerk; Prayer of Saint Gregory; Alleluia and Fugue; Concerto for Orchestra No. 7.**

1 Fiamminghi, Rudolf Warthen cond. TELARC 80392 (79 min).

**Performance: Outstanding**

Recording: Lovely

T
e has assembled an entrancing anthology of works by Alan Hovhaness that encompass both his liturgical and exotic styles. The "liturgical" Hovhaness finds its contemporary counterpart in the works of John Tavener and Arvo Pärt, but he was writing in this manner almost fifty years ago and has persisted through more than 360 works and fifty-two symphonies, the best of which border on the sublime.

The orchestra of Flemish musicians who call themselves I Fiamminghi, under their conductor, Rudolf Warthen, play all this music with uncommon conviction and poetic passion, and the Basibas of Borne Es-pérance in Belgium yields a sound of surpassing luminosity and warmth, not only from the string body but also from the remarkable first-desk trumpet, Benny Warne.

The disc opens with the gorgeous Symphony No. 6, or "Celestial Gate," in which modal polyphony and arsico recitative play a major role — for it ranks with Hovhaness’s best-known work, Mysterious Mountain. Next is the early Prelude and Quadruple Fugue, a fine polyphonic study with never a dull moment (I produced the first recording of it, with Howard Hanson for Mercury, forty years ago). Tzaikerk (Evening Song) is an exotic Armenian-style chamber piece for flute, violin, timpani, and strings, and the serene Prayer of Saint Gregory features that wonderful solo trumpet. Alleluia and Fugue for strings is in somewhat the same liturgical vein. Closing out the CD, the Concerto for Orchestra No. 7, composed for the Louisville Orchestra in 1953, is a blockbust that calls on all of Hovhaness’s exotic modal-polyphonic and bimodal techniques. Highly recommended!
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AMERICAN LANDSCAPES

The guitarist Sharon Isbin commissioned and gave the premiere of all three of the concertos on her first-class "American Landscapes" CD: John Corigliano's Troubadours, Joseph Schwantner's From Afar, and Lukas Foss's American Landscapes.

My favorite is the Foss, which neatly merges the composer's early Copland-influenced Americana style with the imaginative freedom and innovation of his later avant-gardism. The middle movement is a series of remarkably original variations on I Am a Poor Wayfaring Stranger, and the finale brings in a solo violin and piano to jam with the guitar while the orchestra plays Ives's favorite tune, America the Beautiful, in a different key. It sounds kooky, but it works. What Rodrigo and Segovia have done for the Spanish guitar, Foss and Isbin have done for the American steel-string guitar.

Schwantner began his career as a classical, jazz, and rock guitarist, and his familiarity with the instrument, rare among classical composers, enables him to create a fluent solo part in a concerto that is both neat and intensely dramatic. From Afar, subtitled "A Fantasy for Guitar and Orchestra," is said to be the first guitar concerto ever commissioned by a major American orchestra (the Saint Louis Symphony); the version here is the composer's own very effective one for chamber orchestra. The title suggests something distant, recollected in tranquility, but the immediacy of this music, dashingly performed by Isbin, is anything but distant and tranquil.

Corigliano's Troubadours (Variations for Guitar and Orchestra), with its evocations of medieval music, is the least successful of the three pieces — partly because, in at least two of the movements, its various elements, old and new, seem undigested. In the last movement, though, a long, slow variation on a troubadour melody takes over, and this extraordinarily beautiful and original musical conception turns a hodgepodge into a deep and breathtaking meditation.

Isbin is entirely at ease with the disparate styles and demands of these pieces, and the excellent Saint Paul Orchestra under the dynamic Hugh Wolff is a perfect partner. There are a lot of guitarists before the public today, but few have the musicality, vision, and sheer gumption of Sharon Isbin.

Eric Saltzman

SHARON ISBIN:
American Landscapes.
Sharon Isbin (guitar), Saint Paul Chamber Orchestra, Hugh Wolff cond.
VIRGIN 55083 (67 min).

SIBELIUS: Symphonies Nos. 2 and 6.
London Symphony, Colin Davis cond. RCA Victor 68218 (71 min).
Performance: Excellent
Recording: Superb

The Sixth Symphony was a high point of Colin Davis's earlier Sibelius cycle with the Boston Symphony Orchestra on Philips. It is the least emotional of the seven Sibelius symphonies, and its relatively objective character seemed especially well suited to Davis's general approach. It still is, but now, nearly twenty years later and with another orchestra, but one whose Sibelian background is at least as formidable as the Boston Symphony's, his approach to the more colorful Second has become a great deal more involved — and involving.

Where Davis's Boston performance of the Second seemed curiously reticent, as if he might have been embarrassed by the demonstrative nature of the work, with the London Symphony he appears comfortable in accepting it on its own terms. This does not by any means imply indulgence or excess. One of the defining features of Sibelius's personal style is the essential dignity at the base of even his most impassioned or overtly pictorial utterances. But Davis no longer appears to feel it necessary to be overprotective of the composer in that respect. He has tightened up here and there, particularly in the opening movement, so that the whole reading has greater flow, as well as greater thrust, and the work builds with a sense of real spontaneity — and indeed of inevitability — to a convincingly climactic finale.

There was far less need for Davis to readjust his approach to the Sixth, and the pairing of these two works, both so persuasively set forth, makes for a most illuminating contrast. The orchestra is at its best throughout, and the recording itself parallels Davis's interpretive approach in insuring that all the colors are vividly clear without neglecting the overall balance. R.F.

R. STRAUSS: Also Sprach Zarathustra; Der Rosenkavalier, Suite; Don Juan.
Bavarian Radio Symphony, Lorin Maazel cond. RCA Victor 68225 (77 min).
Performance: Fine
Rosenkavalier Recording: Mostly good

Recordings of Also Sprach Zarathustra and Don Juan come a dime a dozen these days, and not even RCA's hype on behalf of the Dolby Surround-encoded recording can convince my ears that this performance by Lorin Maazel and the Bavarian Radio Symphony Orchestra can match those by Eugène Ormandy on Angel, Herbert von Karajan on DG, or Herbert Blomstedt on Denon — or, for that matter, either of Fritz Reiner's versions of Zarathustra on RCA. Maazel's strong points come to the fore in the lyrical episodes of both works, but elsewhere I miss the dash and precision he achieved on the best days of his Cleveland Orchestra tenure, nor am I especially happy with the acoustics of the recording locale, Munich's Herkulessaal, which is too aggressive in the upper-middle register.

The Rosenkavalier music is a different matter, chiefly because Maazel and the Bavarian respond so well to all those gorgeously lush tunes. He wrings every ounce of color and sentiment from the music, and here I find the interaction between the scoring and the hall acoustic friendlier to the ear. While there have been many recordings of the various waltz sequences from Der Rosenkavalier, a full-blown suite gets recorded less often, and I'm inclined to put Maazel's new version at the top of the current heap.

D.H.

TCHAIKOVSKY: Symphony No. 5; The Snow Maiden (excerpts).
Academic Symphony Orchestra of the St. Petersburg Philharmonia, Alexander Dimitriev cond. Sony 46680 (54 min).
Performance: A knockout
Recording: Punchy

Sony's program notes are not wholly explicit as to the provenance of the Academic Symphony Orchestra of the St. Petersburg Philharmonia. It seems to have been founded in 1931 as a radio orchestra. At any rate, conductor Alexander Dimitriev not only knows his Tchaikovsky from A to Z, but he has the musicality and common sense not to vulgarize, in any sense of that word, the much abused Fifth Symphony. This is a reading of tremendous zest and power that recalls those of the Leningrad Philharmonic's great long-time maestro, Evgeny Mravinsky. What a relief to hear the opening bars played at a decent pace.
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and not as mournful. The rest of the movement comes off with irresistible brilliancy; the lyric passages are impassioned without the rubato's ever becoming mangled. The famous slow movement, with its horn solo, builds up superbly to its savage theme. The famous slow movement, with its horn solo, builds up superbly to its savage theme, and the main body of the movement goes at a terrific clip; the closing pages bespeak a true triumph rather than a hollow victory. In short, the old warhorse gets a new lease on life here. I would put this version, despite occasional harsh sonics, among the top ten currently on CD.

The Melodrama, Buffoons' Dance, and Winds and Percussion, Op. 83. This record is a real treat! D.H.

VERDI: La Traviata.
Angela Gheorghiu (Violetta), Frank Lopardo (Alfredo), Leo Nucci (Germont), others; Chorus and Orchestra of the Royal Opera House, Covent Garden. Georg Solti cond. Decca 448 1/9 (two CD's, 127 min).

Performance: Superior
Recording: Excellent

A nyone thinking of La Traviata as a sentimental operatic war horse should turn at once to this highly rewarding recording. Georg Solti conducts the Royal Opera House Orchestra with committed care for Verdi's musical intentions, so that many passages assume unworlded life and importance. His luminous reading of the score is played and sung by an admirably schooled, and dedicated, orchestra and chorus.

Of the three principal roles, that of Violetta is unquestionably paramount. Her lover, Alfredo, is an ardent young man whose character is summed up by amorousness, jealousy, anger, and remorse. His stolidly bourgeois father, Germont, is still more two-dimensional, both blunt and blundering. Not so Violetta. Into her the composer poured his understanding of multisided love, of personal joy and of sacrifice, and, in the opera's final moments, of resignation. The role offers the singing actress every possibility for an integral musico-dramatic creation.

And Angela Gheorghiu achieves just that. Her soprano voice has unusual beauty and expressiveness, and she handles it skillfully and with taste, meticulously observing Verdi's score markings. She is among the most effectively poigniant Violettas I have heard. As Alfredo, Frank Lopardo sings with accuracy, conviction, and musicality. Leo Nucci creates a credible Germont despite some woodiness in his top register.

Though this performance was recorded live at the Royal Opera House in December 1994, sounds of stage business are at a minimum, and applause occurs only at act ends. It's notable that the opera is recorded complete (it is customary to cut several passages and all reprises). Verdi, however, knew what he was about, and Solti knows it, too, for under his direction here the work assumes a seamless shape.

R.A.


Performance: Unerringly Transparent

A ll three composers on this album were leading lights of German music who were forced to emigrate to the U.S. during the dark days of Nazism. Hindemith's Wind Septet was written shortly after World War II on the occasion of Hindemith's return to Europe, and it harks back to his freshest and checkiest work of the 1920's. Ernst Toch, the least known of the three, wrote his charming...
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CLASSICAL MUSIC

QUICK FIXES

BACH: St. John Passion.
Arnold Schoenberg Choir; Concentus Musicus Wien, Nikolaus Harnoncourt cond. TELDEC 74862 (two CD's, 110 min).
The sensuous mezzo-soprano of Marjana Lipovsek is one of the main attractions of this set, along with the articulate Evangelist, tenor Anthony Rolfe Johnson. While some of Nikolaus Harnoncourt's tempos and dynamic contrasts may seem eccentric, the interpretive license enables him to convey great dramatic depth in this most tautly constructed of Bach's narrative works. D.P.S.

DEBUSSY: Trio. RAVEL: Trio.
Andre Previn (piano); Julie Rosenfeld (violin); Gary Hoffman (cello). RCA VICTOR 68062 (48 min).
Andre Previn's elegant pianism is the main distinction of this recording of the Debussy and Ravel with violinist Julie Rosenfeld and cellist Gary Hoffman. At least eight other CD's combine these works, and most throw in the Faure trio for good measure. The CD of all three by the Trio Fontenay on Teldec would be my choice — comparable sound and performances, and more music. D.H.

FAURE: Piano Quartets Nos. 1 and 2.
Scheuerer Piano Quartet. DISCOVER 920231 (64 min).
A discovery indeed! The four youngish Scheuerers (two brothers, two sisters) give the impression of being comfortably "inside" the Faure idiom, and yet not too comfortable to bring both works to life with unexpected freshness as well as genuine affection. Their technically secure, well-recorded performances are more than competitive at this label's super-budget price. R.F.

MOZART: Requiem.
Soloists; Boston Baroque, Martin Pearlman cond. TELARC 80410 (46 min).
The principal interest of this recording is the new performing version by musicologist and fortepianist Robert Levin, which attempts to make the traditional version by Sussmayr more "Mozartean." It may have its merits, but this is not a very distinguished performance, with some dull playing by the strings and mushy diction from the chorus that are captured all too well by Telarc's crisp sonics. J.J.

EVA MEI: At Midnight (Songs by Rossini, Bellini, and Donizetti).
Eva Mei (soprano); Fabio Bidini (piano). RCA VICTOR 68025 (68 min).
The Rossini segment here consists of eight ariettes from Serate Musicali, and the Bellini and Donizetti selections are amiable salon pieces. Eva Mei's renditions are unfailingly artistic, perhaps even too artistic in some passages where more spontaneity is called for. The words could also be projected more clearly, but her singing is charming and purely intoned. She is clearly a lyric soprano of bright promise, very well supported here by pianist Fabio Bidini. G.J.

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CLASSICAL MUSIC

wind-and-percussion pieces in Santa Monica, California, in 1959. An odd feature is the way the music grows in size from short little pieces for a few instruments to a rather substantial ensemble finale.

All that is minor musical matter compared with the major item here. Kurt Weill's Violin Concerto, one of his most original and felicitous works — and not bad for a 24-year-old. For starters, it pits the solo string against a wind orchestra (with one double-bass). The form as well as the sonority is quite original. The concerto starts out with a rather hard-edged Andante con moto, followed by a group of short divertimento movements — scherzo, cadenza, and serenade — and ending with a rondo. The violin part is mostly hard-driving but often relaxes into a more charming manner. There is no overt jazz influence — that was yet to come — but the piece is, in its way, jazzy. The music everywhere vibrates with energy, and there is a dark undercurrent to the surface wit and play.

I can't imagine anything better than the performance here, which has both energy and transparency, qualities that don't always go together or mesh so well. Soloist Christian Tetzlaff's tone, pitch, and phrasing are refined and even delicate, if he errs it is on the side of neatness and good behavior, but the performance is not without bite. The first movement starts in a reserved manner that only makes the subsequent build-up more effective. Tetzlaff appears to lead the process in more ways than one: there is no conductor, and yet there is unanimity between soloist and orchestra: the strong sense of dramatic rise and fall and unerring sense of tempo must come from the soloist. The recording, from West German Radio, perfectly serves the clarity and the edge of all three works.

E.S.

Collection

BEN HEPPNER: Great Tenor Arias.
Munich Radio Orchestra. Roberto Abbado cond. RCA Victor 62504 (61 min).
Performance: Auspicious
Recording: Excellent

Canadian Ben Heppner has come a long way since his 1988 debut. The tenor leads has sung in Milan, London, Vienna, Munich, and Chicago and at the Met - Florean, Peter Grimes, Lohengrin, Walther — have invariably been demanding. He tackles a relatively conventional repertoire in this recital debut of arias by Verdi, Leoncavallo, Puccini, Giordano, Bizet, Meyerbeer, and Massenet, and it is a pleasure to report that he comes off with great distinction. A natural spinto with a voice of substance and a freely produced top, he presents a formidable Cavaradossi, Chenier, and Calaf and brings sensitively modulated phrases to the arias from Le Prophète, Le Cid, and HéroïADE. Both his Italian and his French are idiomatic. Only a few imperceptibly centered notes are minor blemishes in this otherwise outstanding effort. The orchestral support under Roberto Abbado is sumptuous.

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Georg Solti

New Worlds to Conquer

Georg Solti, at 83, is one of the last survivors of the great generation of conductors that emerged after World War II. While most conductors his age slowly reduce their repertoire to a narrow core of familiar works that they can — and sometimes do — perform in their sleep, there seems to be no project too demanding for Solti. He continues to maintain a recording schedule that might daunt a man half his age, adding new works to his catalog and revisiting others.

This fall he returned to Chicago, where he served as music director of the Chicago Symphony Orchestra from 1969-1991, to lead a series of concert performances of Wagner’s Die Meistersinger von Nürnberg, one of the most challenging works in the classical canon. The concerts were taped by London Records, which will release the set on CD in 1997. Solti’s fiftieth anniversary year as an exclusive artist reads translations of the poems.

Last year Solti added an even more key work to his repertoire, Verdi’s La Traviata, which he conducted at Covent Garden, the opera house he directed from 1961 to 1971. Like the maestro’s homecoming Meistersinger in Chicago, the Traviata performances were recorded live by London (448 119). His Violetta was a sensational young Romanian soprano named Angela Gheorghiu. “I was just flirting with the idea of recording Traviata,” Solti said, “when I saw La Bohême with Gheorghiu and Roberto Alagna at Covent Garden. I was immediately convinced that it could be done — as much as you can judge a Violetta from Mimì.”

Apparently, leading the world’s major symphony and opera-house orchestras isn’t enough for Solti. In 1994, under the auspices of Carnegie Hall, he created an orchestra of young American musicians and section leaders from the Big Five symphony orchestras. More than 800 tapes were submitted by young players from throughout the United States, and Solti himself listened to some 350 of them over the course of a few days. “It sounds horrible,” he said, “but I assure you it was a most enjoyable experience.”

The sixteen-day workshop culminated in a series of concerts in Carnegie Hall in June 1994, which — naturally — were recorded live by London Records. Recently released, the CD (444 458) includes works by Smetana, Wagner, Brahms, Richard Strauss, and Shostakovich. It is truly a live performance, for each of the works was performed only once.

The young musicians play with verve, power, and precision, and there’s scarcely a wrong note in evidence. The performance of Shostakovich’s Symphony No. 9 is particularly impressive, capturing the constantly shifting moods of humor and pathos in this complex piece with elegant style. Solti said he has every intention of carrying on with the project, hoping to return to Carnegie Hall for another workshop/concert series in 1997.

“I can’t leave it,” he told me, “because I enjoyed it too much. Even now, two years after the event, the memory of it, the sound of that evening, lives on.”

— Jamie James
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The Future of the CD

Last winter two impressive proposals were unveiled for new CD-size discs using “high-density” technology that would have a much greater information capacity than the CD. These proposals quickly became the focus of an intense international standards war, because the first use of the new technology will be in the digital videodisc (DVD). The DVD will deliver a laserdisc-quality picture, discrete 5.1-channel home theater sound, 2.2 hours of playing time, and a large variety of movies at prices not much higher than those of music CD’s.

Developers also envisioned several other potential markets for the huge capacity of the DVD. Since CD-ROM discs are the basis of a flourishing information-storage industry, larger-capacity DVD-ROM discs are likely to serve an even larger market, especially in business applications. The newest CD-based videogame systems from Sega, Sony, and Nintendo continue to grow in visual complexity and power, and eventually they’ll need the capacity of the high-density disc. Finally, the same technology can be used to make an audiophile Super CD.

Both of the proposed DVD formats offered five to twenty times more information capacity than a CD, but in some ways they were incompatible. The MMCD (Multi-Media CD) format from Sony and Philips, developers of the regular CD, would rely on newly developed 3M technology to permit two layers of information to be played from a single-sided disc, with instant switching between them. The competing SD (Super-Density) format promised double-sided recordings with far greater data capacity, and a Matsushita variation would allow two layers to be read from the same side of the disc. The SD system won the support of a broad alliance of manufacturers and Hollywood film studios.

During the spring and summer, partisans for the warring SD and MMCD camps hardened their positions, refusing to negotiate a compromise. In his October 1995 “Signals” column, written during the summer, Ken Pohlmann likened this victory-at-any-cost approach to the MAD (mutually assured destruction) nuclear-war policies of the U.S. and U.S.S.R. during the Cold War. Finally, in mid-September, the warring DVD camps bowed to pressure from the computer industry and agreed to compromise on a set of universal standards that all will follow.

Some corporate executives, anticipating that the DVD may become even more popular than the VCR or the Walkman, intend to have the first DVD players and movie discs in stores before Christmas 1996. Let’s assume that this happens. How much longer after that will it take for the first DVD-based audio-only Super CD’s and players to arrive in stores?

Probably not until around the turn of the century. First we’ve got to decide what we want the Super CD to be. The developers of the various DVD proposals have already defined in detail the signal content of a disc for digital video applications. But in the case of the other applications that will be based on the same technology (DVD-ROM, game disc, audio Super CD), the new high-density disc technology will be in the digital videodisc format. The DVD will deliver a laserdisc-quality picture, discrete 5.1-channel home theater sound, 2.2 hours of playing time, and a large variety of movies at prices not much higher than those of music CD’s.

In the next decade something called the High Quality Audio Disc could replace the CD.

is basically a tabula rasa, a blank slate on which engineers must write a new recipe.

Of course, the optical and mechanical specifications of the new disc are standardized. But the signal content is wide open, beginning with such elementary issues as the number of channels. A group of mostly British audio researchers, known as the Acoustic Renaissance for Audio, have been exploring what a high-density Super CD might contain. Their name for it is the High Quality Audio Disc (HQAD), and in the next decade it could evolve into a replacement for the CD.

CHANNELS. The HQAD would be a next-generation disc and would last well into the next century. For obvious reasons its range of possibilities must include conventional two-speaker stereo playback as well as the popular home-theater formats (the L, and R, channels of encoded Dolby Surround, the new AC-3 system of 5.1-channel discrete-surround coding, and alternative 5.1-channel systems such as DTS or the European Musicam/Surround format). But the HQAD is mainly about music, not about movies. How can multiple channels of sound be captured so as to reproduce every aspect of hearing live sound in a concert hall or cathedral, including both horizontal and vertical surround information? "Full-sphere ambisonics" encoding is one such system, but few people have heard it. Most people, even audio professionals, have heard only the compromised UHJ version of ambisonics coding, and other approaches to full-sphere surround recording remain to be explored.

RESOLUTION. The 16-bit resolution of the CD has long been thought to be adequate for even very demanding signals. But in recent years, as recording engineers have begun using 20-bit A/D converters to record their master tapes, they have been discovering that subtle aspects of sound are rendered more clearly with 20-bit than with 16-bit resolution. (Note that only part of this improvement makes its way into CD’s made from 20-bit masters; at best such CD’s may yield about 18 bits of effective resolution.) Proposals for HQAD and other Super CD variants consistently plan to deliver full 20-bit resolution, or better, to the listener.

BANDWIDTH. The 44-kHz sampling rate of the CD has always been a need for sharp filtering at half that frequency in recording and playback, which often has been a source of criticism. An audiophile post-CD format would employ a sampling rate of at least 50 or 60 kHz to permit the use of more gradual filtering. Meanwhile experiments at Pioneer with double-speed DAT recording, though not yet backed up by rigorously scientific comparisons, have indicated that the inclusion of ultrasonic harmonics in a recording may give it a more natural quality, even for listeners who cannot hear discrete overtones above 15 kHz.

COMPATIBILITY. Obviously an audiophile Super CD might contain either two-channel stereo or six to eight channels of full-sphere surround sound, recorded in either case with at least 20-bit resolution and twice the CD’s sampling rate. Record companies around the world will need to agree on standards for the many possible signal formats that could be included in a high-density disc. They will also have to face a central issue: Should the Super CD be designed to be backward-compatible, so it can play on conventional CD players as well as new DVD-based hardware? If not, retailers would have to struggle with the hated dual inventory, distributing and stocking both “regular” and “super” versions of every new recording.

Next Month: How the Super CD will be completely compatible with conventional CD’s, and other matters.
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