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The CLD-909 includes many highly sophisticated features. Like automatic disc and digital sound detection, semi-automatic front loading, subcode output, on-screen programming, as well as on-screen function display. It is fully remote-controllable for stand-alone or system use, and has a built-in computer control port. We’ve also designed a new CD Motor Servo Assembly that lets us make the CLD-909 last 4.7 inches high. Then we added sophisticated electronics like a new Pulse Count IC and Noise Canceller to achieve a remarkable horizontal resolution of 400 lines.

The CLD-909 gives you breathtaking digital audio to match its breathtaking video. From compact discs, of course, as well as many 12-inch LaserVision discs and 8-inch music video discs. And Pioneer’s exclusive Linear Servo system accurately reproduces music from even warped, scratched or dirty CDs.

Pioneer’s revolutionary CLD-909. More than just a new idea. It is without a doubt the finest source of sight and sound you can possibly own. See it at your Pioneer Dealer. Or call 1-800-421-1404.
CATCH THE SPIRIT OF A TRUE PIONEER.
Matthew Polk's Awesome Sounding SDA-SRS & SDA-SRS 2

$1395 ea.

$995 ea.

Matthew Polk, the loudspeaker genius, with his Audio Video Grand Prix winning SDA-SRS and latest technological triumph: the extraordinary SDA-SRS 2, honored with the 1986 CES Design & Engineering Award.
The Genius of Matthew Polk Creates The Second Awesome Sounding Signature Edition SDA!

Polk Audio's Extraordinary New SDA-SRS 2 is Here!

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

"Spectacular...it is quite an experience"  

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

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

"Exceptional performance no matter how you look at it"

Listening to any Polk True Stereo SDA" is a remarkable experience. Listening to either of the Signature Edition SDAs is an awesome revelation. Their extraordinarily lifelike three-dimensional imaging surrounds the listener in a 360° panorama of sonic splendor. The awe-inspiring bass performance and dynamic range will astound you. Their high definition clarity allows you to hear every detail of the original musical performance; while their exceptionally smooth, natural, low distortion reproduction encourages you to totally indulge and immerse yourself in your favorite recordings for hours on end.

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

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

"Literally a new dimension in sound"

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

Like the SDA-SRS, the SRS 2 incorporates: 1) time compensated, phase-coherent multiple driver vertical line-source topology for greater clarity, increased coherency, lower distortion, higher power handling, increased dynamic range and more accurate imaging. 2) a monocoque cabinet with elaborate bracing and MDF baffle for lower cabinet read-out and lower coloration. 3) progressive variation of the high frequency high-pass circuitry for point-source operation and wide vertical dispersion. 4) the use of small active drivers in a full complement sub-bass drive configuration coupled to a large 15" sub-bass radiator for extraordinarily tight, quick and three-dimensional mid and upper bass detail combined with low and sub-bass capabilities which are exceptional. The speakers are beautifully finished in oiled oak and walnut.

Other superb sounding Polk speakers from $85 ea.

No matter what your budget is, there is a superb sounding Polk speaker perfect for you. Polk's incredible sounding/affordably priced Monitor Series loudspeakers start as low as $85 ea. The breathtaking sonic benefits of Polk's revolutionary True Stereo SDA technology are available in all Polk's SDA loudspeakers which begin as low as $395. each.

"Our advice is not to buy speakers until you've heard the Polks"

The experts agree: Polk speakers sound better! Hear them for yourself. Use the reader service card for more information and visit your nearest Polk dealer today. Your ears will thank you.

Where to buy Polk Speakers? For your nearest dealer, see page 121.
Matthew Polk’s Magnificent Sounding New SDA 2A

Matthew Polk stands proudly alongside the latest version of his Audio Video Grand Prix Award Winning SDA 2A
“The Magnificent Sounding New TRUE STEREO SDA 2A Again Demonstrates the Genius of Matthew Polk”

This revolutionary speaker is the most extraordinary value in high end audio!

Matthew Polk’s magnificent sounding new 3rd generation SDA-2A incorporates Polk’s revolutionary True Stereo SDA technology. This patented, critically acclaimed, Audio Video Grand Prix Award winning breakthrough is the most important fundamental advance in loudspeaker technology since stereo itself. In fact, the design principles embodied in the SDAs make them the world’s first and only True Stereo speakers.

Why do Polk SDAs always sound better than conventional speakers? As illustrated in diagram 1: when conventional loudspeakers are used to reproduce stereo both speakers are heard by both ears which causes a form of acoustic distortion called interaural crosstalk which cuts down stereo separation and obscures detail and interferes with the proper reproduction and perception of imaging, spaciousness. As illustrated in diagram 2: Polk SDAs are designed so that each speaker is only heard by the one correct ear (i.e. left channel/ear, right channel/ear), like headphones. The result is dramatically improved stereo separation, detail and three-dimensional imaging. In order to accomplish this (see diagram 3) each SDA incorporates a separate set of drivers which radiates a special dimensional (difference) signal which cancels the undesirable interaural crosstalk distortion coming from the wrong speaker to the wrong ear. High Fidelity called the results “Mind Boggling”.

The Most Extraordinary Value in High End Audio Today

The new SDA-2As, like all the current SDAs, incorporate the latest 3rd generation SDA technology developed for Matthew Polk’s Signature Edition SRS and SRS-2 including 1: full complement sub-bass drive for deeper, fuller, tighter and more dynamic bass response; 2: phase coherent time-compensated driver alignment for better focus, lower-coloration smoother, cleaner, more coherent midrange and improved front-to-back depth and; 3: bandwidth-optimized dimensional signal for smoother high-end and even better soundstage and image. The improvements to the SDA-2A also enabled us to reduce its cost to $499 each. The new SDA-2A is the finest sounding and most technologically advanced speaker ever produced at its extraordinarily modest price. It sounds dramatically better than speakers from other manufacturers that cost 4 times as much and more and is truly the speaker of your dreams at a price you can afford.

“Breathtaking…a new world of hi fi listening.”

The Dramatic Sonic Benefits of True Stereo SDA Technology

The spectacular sonic benefits of SDA technology are dramatic and easily heard by virtually anyone. Reviewers, critical listeners and novices alike are overwhelmed by the magnitude of the sonic improvement achieved by Polk’s SDA technology. One famous reviewer remarked that after hearing the SDAs his wife said that she heard such a dramatic improvement in the sound that she insisted that he replace their current speakers.

“Mindboggling, Astonishing, Flabbergasting”

All Polk’s SDAs, including the new 2A’s produce a huge lifelike three dimensional sonic image which will amaze you. You will hear for the first time instrumental, ambience and subtle musical nuances which are present on your recordings but masked by the interaural crosstalk distortion produced by conventional speakers. Stereo Review said, “Spectacular…literally a new dimension in the sound the result is always better than would be achieved by conventional speakers”. High Fidelity said, “Mind Boggling…Astounding…Flabbergasting…we have yet to hear any stereo program that doesn’t benefit”. With SDAs every instrument, vocalist and sound becomes distinct, tangible and alive; allowing you to experience the spine tingling excitement, majesty and pleasure of live music in your own home.

Other Superb Sounding Polks From $85. to $1395. each

No matter what your budget is there is a superb sounding Polk speaker perfect for you. Polk’s incredible sounding affordably priced Monitor Series loudspeakers utilize the same basic components as the SDAs and begin as low as $85. each. The breathtaking sonic benefits of Matthew Polk’s revolutionary True Stereo SDA technology are available in 5 SDA models priced from $395. to $1395.

“You owe it to yourself to audition them”

The experts agree: Polk speakers sound better. Use the retailer’s service card or write to us for more information. Better yet, visit your nearest Polk dealer today. Your ears will thank you.

Where to buy Polk Speakers? For your nearest dealer, see page 121.
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The CBS Compact Disc Club has the music you want.

Take any 2 for $1 with membership:

How the Club works:
About every four weeks (13 times a year) you’ll receive the Club’s music magazine, which describes the Selection of the Month for your musical interest, plus many exciting alternates.

If you wish to receive the Selection of the Month, you need do nothing—it will be shipped automatically. If you prefer an alternate selection, or none at all, fill in the response card always provided and mail it by the date specified. You will always have at least 10 days in which to make your decision. If you ever receive any Selection without having 10 days to decide, you may return it at our expense.

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10-Day Free Trial: We’ll send details of the Club’s operation with your introductory shipment. If you are not satisfied for any reason whatsoever, just return everything within 10 days and you will have no further obligation. So why not choose 2 CDs for $1 right now.

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The age of CD sound is here—and you have a practical new way to find the CDs you want. As your introduction to the CBS Compact Disc Club, you can choose any 2 CDs listed in this ad for just $1.00. Fill in and mail the application—we’ll send your CDs and bill you for $1! You simply agree to buy more CDs at regular Club prices in the next year—and you may then cancel your membership anytime after doing so.

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My main musical interest is check one:

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- CLASSICAL

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Mrs.

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City
State

Do you have a VCR? (Check one): Yes No
Do you have a credit card? (Check one): Yes No

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Mr.
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State

Do you have a VCR? (Check one): Yes No
Do you have a credit card? (Check one): Yes No

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MUSIC: An International Language

Music transgresses the political boundaries that define countries. Each year, High Fidelity sponsors the International Record Critics Awards (IRCA), which recognize the best classical recordings of the year from around the world. The IRCA judges present the Koussevitzky International Record Award (KIRA), which honors a living composer of an important work. Classical Music Editor Theodore W. Libbey, Jr., tells the complete story beginning on page 102. Below, a look at the winners and jury.

Also featured in this special Compact Disc issue are the annual CD preview and Editor Michael Riggs's report on a comparison test of seven portable CD players.
LETTERS

A VOTE FOR "PARTIALLY DIGITAL" CDs

David Ranada is right on the mark when he writes that "fully digital" Compact Discs are not necessarily better than those derived from analog master tapes ["Bits & Pieces," July]. In my eight months as a CD consumer, I've found that some of the best-sounding titles in my rapidly expanding collection are those taken from 1960s recordings by Ernest Ansermet and L'Orchestre de la Suisse Romande (especially the one with Falla's Three-cornered Hat) and Bruno Walter and the Columbia Symphony Orchestra. It's not just a matter of performance; Those old master tapes seem capable of yielding beautifully balanced and colorful orchestral sound when treated with appropriate respect and expertise.

Arthur S. Leonard
New York, N.Y.

EARLY PROJECTION TV

Your test report on the Klasse Nova 150 front-projection monitor [July] asserts that Advent introduced the world's first home projection set (the Videobeam) in 1973—a claim that's repeated in the article on large-screen television in the same issue. I beg to differ.

More than 30 years ago, both front- and rear-projection sets, with screens as large as 6 by 4 feet, were common in England. I owned one myself. They used essentially the same folded Schmidt optical system illustrated in your article, developed by Mullard, with an ultrabright 2½-inch diameter tube and an aspherical correction lens molded in gelatin. Ingenious. They fell into disuse because of a growing concern over the possibility of soft X-rays being generated by the CRT driven at 25,000 volts (necessary to get adequate screen brightness).

Cyril Fleisher
Prospect Park, Pa.

ON THE ART OF CRITICISM

When my subscription to High Fidelity runs out, I often do not renew, largely because of what I detect to be a sick cast that bores about some of the writing. A case in point is the review by Thomas L. Dixon in the August "CD Spread" wherein he takes Vladimir Horowitz to task for failing technique, lack of dignity, and "awkwardness" (whatever that means in this connection). Dixon pretends to know what is what, but he simply does not! Every performance by Horowitz is different and stands alone. It is never an attempt to be definitive with respect to some cockamamie composition by some halloved genius. It is meant to be piano music first, last, and always: "First of all, I play for the piano. . . ." Horowitz creates his own sound—and the sound on this CD is fine!

Let's face it: Most venerable piano music stinks. It is dull, tortuous, technical-exercise stuff by any standard. Horowitz does more with it than most other pianists, however "technically" correct, facile, or pleasing it is to the conservatory piano-teaching crowd. The vague sneering displayed in this arrogant, obnoxious, and uninformativ review should have been detected by knowledgeable editors—if you have any!

David T. Spring
San Diego, Calif.

Classical Music Editor Theodore W. Libbey, Jr., replies: As the knowledgeable editor who didn't detect the vague sneering in Thomas L. Dixon's review, I must also confess that I didn't realize that most venerable piano music stinks. I can't help thinking that Dixon believes most of it is pretty good, which, I imagine, is why he found fault with these meretriuous performances: I was talking about the performance of Horowitz, not about the music itself. I'm sure Dixon would agree that Horowitz is a consummate performer:

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ability to write it out from memory—a dubiously valuable ability that could be learned by most critics. If based on the proper criteria (knowledge of the score and contemporary style, etc.); critics may tell Levine that his interpretation is too fast or loud, then necessarily they may tell him that he doesn’t “know the piece.” Fortunately, as with Leonard Bernstein, Levine’s conducting is better than his philosophizing.

The main problem with reviews is an emphasis on evaluation at the expense of objective description—fortunately less of a problem with High Fidelity than with a certain rival. Unless one is able to discover that one employs the same standards as the reviewer, it is quite useless to be informed that performance “X” is sublime, unsatisfactory, the best since Toscanini, or whatever. Terry Teachout’s review of the latest installment of the Malcolm Bilson/Seagram/Lara Mozart sonata cycle tells us only that the sound is “poorly balanced” (meaning what? violin too loud?) and the playing “generally charmless—dull and unmitigating.” I find them the exact opposite, but had I written that in a review without saving more, it would have been equally useless. In pre-Romantic music, for example, we need to be told such information as whether there is an attempt at contemporary style, whether ornamentation is added, how much vibrato is used, whether the horns have a brassy burr or are blended with the woodwinds, whether the timpani are struck with wooden beaters, how tempos compare with rivals, and so on. Only then are opinions interesting.

One final point: R. D. Darrell’s observation in his review of six Haydn symphonies that “Derek Solomon’s players are by no means as skilled as Christopher Hogwood’s” is puzzling. As the sets in the series reveal, most of Solomon’s string players and all of his wind/brass/timpani players are shared by all the various London-based “authentic” orchestras; Hogwood’s, John Eliot Gardiner’s, Andrew Parrott’s, etc. Thus, there must be some other explanation for the perceived lack of skill.

Simon Roberts
Jacksonville, Ill.

Thaddeus W. Libbey, Jr., replies: It is up to each of us to discover whether we share the standards of a certain reviewer or not. That is part of the responsibility, and joy, of reading, or of any form of communication. Learning through experience what a reviewer’s biases happen to be is important—and there is no such thing as an unbiased reviewer (or an unbiased listener, for that matter).

As for Terry Teachout’s comments on the Bilson/Lara recording, the things you would like to see written about go beyond the scope of a brief review, which is what I asked Teachout to write. Also, I doubt very much that you or any listener could tell, simply by listening to this tape, what specific kind of bow Lara used in those accounts. Was it a transition pre-Tourte type, like the Cramer, or a Tourte, or a modern bow? If you think I’m splitting hairs, I’m only applying your comment about timpani sticks to the present case—and the sound of each type of bow is quite different, as Lara himself once proved to me.

Your point about the London early music bands all drawing on the same reservoir of talent is quite accurate, and I would have to agree with your conclusion as well. In fact, an upcoming feature will explore this issue in detail.

One last point: I have nothing but admiration for R. D. Darrell’s knowledge of 18th-century style, but I would be reluctant to cast aspersions on the conductor you name, especially maestros Salvi and Fochi, who have taken the trouble to learn a great deal about the style. Fochi, it may surprise you to know, led an entire course devoted to the music of Orlando di Lasso (1532–1594) in Munich four years ago to mark the 450th anniversary of the composer’s birth. Not every old-school maestro is capable of that!

Letters should be addressed to: "The Editors, High Fidelity," 10 E. 40th St., New York, NY 10016. All letters are subject to editing for brevity and clarity.
Here's why... An agent who works for one company can only offer you the policies that his company sells. An Independent Insurance Agent represents several companies. So your Independent Agent can help you select the right coverage at the right price because there are more policies from which to choose. The evidence is clear.

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RAYMOND BURR

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You'll find the Independent Insurance Agent nearest you in the Yellow Pages.
This month's featured product, the B&W Matrix loudspeakers, enters the competition for the High Fidelity Product of the Year Awards.

Cabinet Vibration Quashed!

Loudspeaker-enclosure vibration is an ancient audio bugaboo. The air surrounding a vibrating driver is not the only thing that moves in response to the music. So does the speaker cabinet. Measurements made by B&W Loudspeakers indicate that an enclosure built in the traditional way (with little or no internal bracing) and using conventional materials (such as particleboard) can itself be stimulated to vibrate at an amplitude only 36 dB below that of the speaker's own bass or midrange drivers. Even such exotic cabinet materials as Aerolam (an aluminum honeycomb) and concrete do not perform much better. In addition to spurious sound emission, speaker cabinets can also ring, generating (continued on page 16)

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PS-8a Three-way Point Source Speaker System

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sophisticated three-motor Cassette Decks, plus a new generation of CD Players with the Fine Ceramics anti-resonant construction Kyocera originated.

So you don’t have to settle for an audiophile system that plays in only one room. Kyocera has the one audiophile system that plays in all of them.

KYOCERA

Built right from the ground up.

100 Watts, continuous RMS, both ch. driven, 8 Ohms, 20Hz-20kHz, 0.02% THD
FOR THOSE OBSESSED WITH MUSICAL PERFECTION,
TECHNICS NOW OFFERS FOUR WAYS TO ATTAIN IT.

Compact disc players
for your home. Car. And everywhere in between.

Before we could satisfy your obsession with musical perfection, we had to satisfy our own. And we have.

Our newest home compact disc player is the ultra-sophisticated and fully programmable SL-P500. It plays any selection. In any order. Even by remote. Or you may choose to drive off with the new Technics combination car CD player and digital AM/FM tuner. Its shock-absorbing suspension system helps ensure a truly flawless musical performance no matter where the road leads. Or select our biggest achievement—the incredibly small SL-XP8 portable CD player. It's barely larger than the disc it plays. It even has a built-in AM/FM tuner.

Or perhaps you'd prefer a Technics CD player that comes with everything—because it's part of a perfectly pre-matched audio rack system.

No matter which you choose, you'll experience the musical perfection of the compact disc. Because every Technics CD player has been engineered with a powerful and accurate fine-focus single-beam laser system (FF1).

A word of caution, however. Knowing about Technics CD players could lead to another obsession: wanting to own all of them.

Technics
The science of sound
Currently, B&W Matrix addresses the universal problem of speaker cabinet vibration.

(Continued from page 12) Attempted solutions to both of these problems have usually been expensive, difficult to manufacture, and not all that effective.

B&W calls its ingenious and elegant solution the Matrix construction. It is a "cellular, honeycomb-like structure comprising a series of interlocking, perforated cross-members" that fit into grooves cut into the inside of the speaker cabinet, essentially cross-bracing the entire internal volume (see photograph). The material used for the bracing is said to have "relatively high damping qualities" and a high degree of stiffness when assembled. Acoustic foam fills the Matrix interstices, both to absorb the back wave of the diaphragm and to further damp the cabinet’s own standing waves and resonances. Response traces provided by B&W show that the construction reduces cabinet vibration by more than 20 dB in certain frequency regions (depending on the type of cabinet material and construction under comparison). Cabinet vibration-decay time also is decreased by the Matrix construction compared with particleboard and concrete enclosures.

The technology is used in three new B&W loudspeakers appropriately called, in order of increasing size, the Matrix 1, 2, and 3. All have bass (and bass/midrange. in the case of the three-way Matrix 3) drivers made of "homopolymer polypropylene," which the company says is stiffer and less prone to low-frequency breakup than the more common copolymer form of polypropylene. In a
the casting's rear-surface channels and cross-members are filled with a high-density polyurethane elastomer, resulting in a rigid structure with high acoustical damping. Also damped with elastomer are the back panels of the 1-inch ferrofluid-cooled polamide-dome tweeters used in the series.

Instead of using stepped cabinets or offset drivers to obtain a time-aligned response, the appropriate delays are instituted in the speakers' crossovers. The crossovers have also been designed to have a relatively flat and resistive impedance of 4.5 ohms. Protection from excessive levels is provided by a tweeter-disconnecting circuit: "Loss of high-frequency output alerts the user that input power should be reduced," says B&W.

The Matrix 1, 2, and 3 have system resonance ratings of 60, 51, and 43 Hz, respectively, and sensitivity ratings of 85, 87, and 90 dB SPL (sound pressure level) with an input equivalent to 1 watt into 8 ohms. The Matrix 1 has one 6-inch woofer, and the Matrix 2 contains an 8-inch woofer; the separate bass and bass/midrange drivers of the Matrix 3 each measure 8 inches.

All three loudspeakers are available in real-wood veneers of walnut, black ash, or rosewood. Available on special order is a high-gloss lacquered finish in a choice of colors. The Matrix 1 measures 16 by 9 by 12 ¼ inches and is priced at $495 per pair in walnut or black ash, $699 per pair in rosewood. Dimensions of the Matrix 2 are 23½ by 10½ by 12 ½ inches, and it sells for $695 per pair ($899 in rosewood). The Matrix 3, measuring 35¼ by 10½ by 16 inches, costs $995 per pair ($1,399 in rosewood). Stands for the Matrix 1 and 2 are $199 and $229 per pair, respectively. For additional information, contact B&W Loudspeakers, P.O. Box 653, Buffalo, N.Y. 14240.

**CURRENTS**

**your music.**

**SOUNDCRAFTSMEN POWER AMPLIFIER**

SounDCraftsmen says its Pro Power Four MOS-FET stereo amplifier is designed to cope with the extended dynamic range of music from compact disc players and soundtracks from Hi-Fi videocassette recorders. Power is rated at 205 watts (23 dBW) per channel into 8 ohms, but because of the amp's high-current design, dynamic power of 550 watts (27 ½ dBW) into 2 ohms is on tap. Since the impedance of some loudspeakers can drop to as low as 1 or 2 ohms at certain frequencies (which can trigger protective circuitry in some amps, causing pre-

**Our new UX tapes deliver higher highs, lower lows and wider dynamic range.**

If you're going to listen to music at all, you may as well get it all. No matter how high or low, how loud or soft. Captured so faithfully that trying one of these new tapes at least once is something you owe yourself. And your music.

Each of these four new UX tapes represents the kind of advancement of music reproduction you've come to expect from Sony. UX-ES, for instance, offers the best frequency response of any Type II tape we've ever formulated. Yet UX-PRO actually goes one better with a ceramic tape guide that yields the most incredibly quiet tape housing Sony has ever produced.

Sony UX tapes. Now when a musician really extends himself, so will your tape.
The components you see were designed for the perfectionist. They are expensive. They are the finest we know how to make… which means they are the finest you can own. Each epitomizes its genre and offers maximum convenience and unequalled performance.

The PA-7 STASIS Power Amplifier has an uncanny ability to power exotic loudspeakers. The more exotic the speaker, the more it (and you) will appreciate the PA-7.

The ST-7 AM/FM-Stereo Tuner features an advanced Schotz NR system which enables it to receive stereo broadcasts where they could never be heard before.

The CR-7A Discrete Head Cassette Deck is the finest example of cassette recording technology ever produced—auto calibration, playback azimuth alignment, and a natural clarity that must be heard to be appreciated.

The OMS-7AI Compact Disc Player expands the horizons of digital sound with a smooth transparency and the incredible depth and detail that only Nakamichi digital technology could impart.

And now, the CA-7A Control Amplifier—arguably the most sophisticated preamplifier ever conceived—places control of the entire Series-7 System at your command… from wherever you happen to be.

If you are in a position to invest in the finest in recorded sound, you will find Series-7 Components at a nearby Nakamichi dealer.
With the introduction of the new Yamaha DSP-1 Digital Sound Field Processor, listening to recorded music at home is no longer the next best thing to being there.

It is being there. Quite literally. The most significant advancement in acoustic realism since stereo, the DSP-1 enables you to enjoy performances in the actual listening environments in which they were intended to be heard in the first place. Without leaving your home.

In twelve of the world's most famous sites, to be exact. Including three concert halls, a chamber, cathedral, church, disco, jazz club, rock concert arena, warehouse loft, pavilion, and outdoor stadium.

Additionally, the DSP-1 offers a four-directional presence mode as well as three surround-sound systems: a large theater, a medium sized theater and even digital delay Dolby surround.

Previous analog "surround" processors simply produced the illusion of a sound field by altering the existing stereo signal. The new DSP-1, however, digitally reproduces the actual sound fields of the world's finest listening environments, without affecting the purity of the original source material.

Utilizing the Yamaha-developed four-microphone Single Point Quad sound field analysis technique, Yamaha engineers spent five years analyzing the acoustic architecture of the world's most noted performance facilities, including echo patterns, reflective personalities and such data as timing, volume level and apparent source directionality. This information was then programmed into the DSP-1's computer memory (ROM).

The frequency response and dynamic range...
characteristics from your stereo source material trigger the continuous release of this information, to precisely reproduce the acoustic personalities of selected performance environments.

The reproduction of this acoustic architecture in your home is made possible by the development of a proprietary Yamaha VLSI (very large scale integrated circuit), the YM-3804. It calculates early sound reflections in real time based on the echo patterns stored in the DSP-1 memory — enabling accurate re-creations of those listening environments at the push of a button.

Each reflection is calculated using the very same sampling rate and quantization as compact discs (44.1 kHz, 16 bit linear), producing an output with dynamic range of 94 dB and 0.006% THD, making audiophile quality digital sound field synthesis possible for the very first time.

Every DSP-1 acoustic response pattern has several key response parameters you can alter to customize the size, shape and character of the listening environment.

These include room size, liveness, initial delay time, high pass filter cutoff, low pass filter cutoff and reverberation time.

After modifying a program, you can then give it a name, and store it in one of the DSP-1's 16 user memories.

In addition, there are 16 sound effector programs built in, such as time-delay, stereo flange, tremolo, chorus, pitch change and auto panning. So the DSP-1 can also be used effectively as a musical instruments effects device.

All sound field modes and parameters are controlled from the palm of your hand, since the DSP-1 is operated by a 30-key wireless remote control. This allows you to select the performance environment and adjust parameters — even program them into memory — without sacrificing the perspective of your listening position.

Its large backlit LCD confirms all mode selections and parameter readings as you make them. The remote control also lets you adjust the effect level and front/rear balance, and even give titles to those new modes you program.

The full benefits of Yamaha sound field synthesis is best experienced with four speakers which are powered by the new Yamaha 4-channel M-35B power amplifier, in addition to the front stereo speaker pair, driven by your existing amplifier.

If desired, however, the front left and front right output may be combined with the existing main-channel speakers.

For our thorough White Paper on Yamaha digital sound field synthesis, please write us at the address shown below.

But mere words can never hope to convey the magnitude of this accomplishment. Visit an authorized Yamaha dealer today for a complete demonstration. And discover why stereo alone is now as outdated as living in a castle.

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Buying Guide
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JENSEN CD ADAPTER

THE J-1470 ADAPTER KIT FROM JENSEN simplifies connection of a portable Compact Disc player to car stereo units with back-panel CD or auxiliary audio inputs, such as Jensen’s own JX-45 and JX-55 in-dash models. For players that operate on nine volts, the J-1470 can supply power through the same connection; other models will require a separate power connection through an appropriate cigarette-lighter adapter. Jensen says the device, priced at $29, can be quickly mounted under the dash and its connector positioned within easy reach. Details are available from International Jensen, Inc., 4136 N. United Parkway, Schiller Park, Ill. 60176.

ILLBRUCK’S ACOUSTIC SHEETS

A VERSION OF ILLBRUCK’S PROFESSIONAL acoustic foam is now available for use at home. The rectangular sheets, called Sonex Prophiles, can help eliminate various acoustic faults within a listening room. Illbruck says that problems such as slap echo, standing waves, and high ambient room noise can be quelled by the Prophiles’ anechoic wedge design and open-celled urethane-foam construction. They are packaged four sheets to a box, each sheet measuring 12 by 40 by 3 inches, for a total coverage of 13.3 square feet. Each box sells for $90. Additional information can be obtained by writing Illbruck, 3800 Washington Ave. North, Minneapolis, Minn. 55412.

MARANTZ FRONT END

THE CAR-750 FRONT END FROM MARANTZ includes a convenient front-panel jack for direct connection of a portable Compact Disc player to car audio output. A digital tuner with six AM and six FM presets and an auto-reverse cassette deck with Dolby B noise reduction feed a built-in amplifier rated at 20 watts (13 dBW) per channel into 4 ohms.
Among other features are tape music search, separate bass and treble controls, and a preamp output. The CAR-750 costs $300. For $100 less, the unidirectional CAR-500 offers a 5 3/4-watt (7 1/2 dBW) amplifier and a preamp output. And the "leaker model" CAR-335 ($150) has an analog tuner section and is said to deliver 4 watts (6 dBW) per channel. It, too, has a preamp output. All three models can be connected to the SA-402 power amplifier ($100), which provides both high- and low-level inputs and has remote on/off switching. It is rated at 30 watts (14 1/2 dBW) per channel. Contact Marantz Company, Inc., 20525 Nordhoff St., Chatsworth, Calif. 91311.

BABY LINN TURNTABLE

The LINN Axis turntable is described by its manufacturer as the son of the highly regarded (and considerably more costly) Linn Sondek LP-12. Among the new model's distinguishing features are a motor driven by two low-distortion Class A power amplifiers—complete with heatsink! Linn says the phase and amplitude of the drive signals have been carefully adjusted for precise control of the motor, resulting in reduced motor noise. Once the correct platter speed has been reached, a "smart" drive controller provides only the voltage necessary to maintain that speed, a process that is said to further reduce motor noise. A self-centering independent suspension system for the platter and tonearm assemblies provides shock isolation, and a leveling adjustment is included for calibration of tonearms other than the Linn Basik LVX (a medium-mass model with a removable headshell and a premounted cartridge). Mechanical parts are said to be machined to the same tolerances as those...
employed in the LP-12, with cost savings derived from the use of lighter materials (such as aluminum for the platter) and larger production quantities. Prices: $425 for the turntable alone, $575 with the Basix I.VX tone-arm. For more information, contact Audiophile Systems, Ltd., 3709 Castle Park Dr., Indianapolis, Ind. 46256.

ANGSTROM CD CASE

NEW FROM ANGSTROM IS A COMPACT DISC CASE with a hinged bottom that presents each CD edge-up for easy removal. The CD Safe-T-Case is 35 percent thinner than the standard jewel-box design and has a grooved bottom so that dust and particles settle away from the disc. A three-pack has a price of $4.95. Also available are CD sleeves made of a non-abrasive antistatic polymer to protect against fingerprints, dust, and scratches. Price is $9.95 for a pack of 25. Both products are available through Angstrom Associates (U.S.A.), Inc., 210 8th St., Lewiston, N.Y. 14092.

BOSTON ACOUSTICS FLUSH-MOUNT SPEAKER

THE MODEL 360, A TWO-WAY LOUDSPEAKER designed by Boston Acoustics, is intended for flush installation in the walls or ceilings of rooms where conventional speaker cabinets are undesirable or inappropriate. Mounting depth is a scant 3 inches. Full-range performance is provided by a 6½-inch long-throw woofer and a 1-inch soft-dome tweeter. The 360 can also serve as a back-channel speaker system in a surround-sound setup. Finish is mat white and can be painted to match the surrounding decor. Measuring 11½ by 8½ by 3 inches, the 360 is priced at $400 per pair. For more information, contact Boston Acoustics, Inc., 247 Lynnfield St., Peabody, Mass. 01960.

VIDTECH STEREO-TV/CABLE CONVERTER

VIDTECH HAS INTRODUCED A LINE OF REMOTE-control cable converters that can supplant an existing TV tuner or be used in conjunction with a computer monitor. The top-of-the-line RS-2001 (called F.I.R.S.T., for First Installable Remote Stereo-TV decoder) is a 139-channel tuner that can decode MTS/SAP broadcasts. Multiple antenna terminals permit connection of and switching between cable and a VHF/UHF antenna, so if the cable system goes down, you can still catch the M*TV* or Star Trek reruns. Audio outputs are provided to feed the sound to a stereo system or a pair of amplified loudspeakers. A switched AC outlet on the back panel allows a connected TV to be turned on and off by the remote; a sleep timer can also be activated from the remote. The RS-2001, at $220, comes ready to install; similar models with fewer features range from $80 to $180. Details are available from Vidtech, Inc., 350 Fifth Ave., Suite 6707, New York, N.Y. 10118.

MINOLTA VHS HQ CAMCORDER

EXPANDING ITS LINE OF VIDEO PRODUCTS, Minolta has introduced the CR-1200S AF, a full-size VHS HQ autofocus camcorder. Weighing in at just 5½ pounds (without battery), it is built around a newly developed MOS solid-state image sensor that divides images into four, rather than three, color components, which is said to give better reproduction of green and flesh tones. Minolta also claims that this new sensor greatly reduces blooming that occurs around vertical lines in an image. The f/1.6 6X power zoom lens (with macro capability) has three focusing modes: full autofocus, manual, and one-shot autofocus (which returns to manual after one shot). A 52mm filter thread is used for compatibility with other Minolta lenses. The picture can be monitored through an adjustable 3½-inch monochrome electronic viewfinder that also displays status information for the shooter. Minimum illumination is given as 7 lux, which is as low as that for most tube-based camcorders (including Minolta's own CR-1100S AF, discussed in June's "Currents").

To complement its upgraded image pickup, the CR-1200S AF includes HQ circuitry to improve overall sharpness of the recorded picture. (Minolta uses two of the four available HQ processes: white clip extension and detail enhancement.) During camera operation, sound is recorded using either the built-in unidirectional microphone or an external mike of the user's choice. The unit records and plays back only at the fastest speed (SP) and can accept an external source and play back prerecorded tapes.

The Minolta Movie CR-1200S AF comes...
with a two-hour battery and recharger, an audio-video input adapter, a carrying handle, a shoulder strap, and RF and RCA connecting cables. Price is $2,485. More details are available from Minolta Corp., 101 Williams Dr., Ramsey, N.J. 07446.

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A UNIQUE AND PRACTICAL FEATURE OF THIS LOUDSPEAKER IS AN “IMAGE CONTROL” THAT ADJUSTS THE OUTPUT LEVEL OF EACH ARRAY, OPERATED VIA AN INFRARED REMOTE CONTROL. FINE TUNING OF THE STEREO IMAGE IS SAID TO BE POSSIBLE FROM ANY LISTENING POSITION, WHILE TOTAL RATED OUTPUT POWER FROM EACH SPEAKER REMAINS CONSTANT.

A PAIR OF MODEL 10S COSTS $4,500. FOR MORE INFORMATION, CONTACT ALLISON ACOUSTICS, INC., 7 TECH CIRCLE, NATICK, MASS. 01760.

( CONTINUED ON PAGE 26 )

To the advertiser preceding us, we apologize for the loudness of our new JXL speakers.

If you’re the advertiser on the preceding page, sorry. We didn’t realize the JXL’s would be so loud.

But if you want car speakers with plenty of power, no apology is necessary. Because the new Jensen® JXL’s are the most powerful speakers we’ve ever designed.

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Together, these elements give you up to 175 watts of peak power handling capability.

So, for car speakers with extreme loudness (CD capability and great looks, too!), buy a pair of JXL’s. You won’t be sorry.

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SENNHEISER WIRELESS HEADPHONES
LIKE WIRELESS MICROPHONES, WIRELESS headphones usually are found in professional venues, such as recording studios and theaters. Sennheiser, however, has designed its new SI/HDJ 234 wireless stereo headphones for home use. The transmitter section can connect to an audio or video system and incorporates the company’s Hi-Dyn circuitry, which is said to provide a better signal-to-noise ratio than other wireless systems. Individual left and right volume controls, as well as stereo and mono mode switching, are contained in the headphone assembly. Prices: $260 for the SI-234 transmitter, $224 for the HDJ-234 headphones. Write Sennheiser Electronic Corp., 48 W. 38th St., New York, N.Y. 10018.

POLK’S NEW SDA S
POLK AUDIO HAS ISSUED TWO THIRD-generation SDA models that incorporate many of the improvements developed for the SDA Signature Edition models, including the flagship SDA-SRS. The SDA-2A, which replaces the SDA-2 (introduced in 1983), contains a 12-inch planar passive radiator, two 6½-inch trilaminar-polymer woofers, and a 1-inch polyamide-dome tweeter. A phase-compensated driver alignment is said to result in improved imaging as well as lower coloration, smoother high-frequency response, and a more coherent midrange. The new model’s price has been lowered to $998 per pair.

The stand- or shelf-mount SDA-CRS+ replaces the SDA-CRS (introduced in 1984) and contains the same active drivers as those in the SDA-2A, but it uses a 10-inch passive radiator mounted at the rear of the cabinet. Price is $890 per pair. For more information on both new models, contact Polk Audio, Inc., 5601 Metro Drive, Baltimore, Md. 21215.
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Phil Collins: No Jacket Required One More Night, Susssudio, Don't Lose My Number, Inside Out, etc. Atlantic 120771
Dire Straits: Brothers In Arms Money For Nothing, Walk Of Life, One World, etc. Warner Bros. DIGITAL 114734
Dvořák, Symphony No. 9 (New World) • Chicago Symphony Orchestra/Solti London DIGITAL 115168
The Cars: Greatest Hits Tonight She Comes, Drive, You Might Think, Shake It Up, others. Elektra 153702
John Cougar Mellencamp: Scarecrow • Small Town, A.O.C., In The U.S.A., etc. RCA 144551
The Glenn Miller Orchestra: In The Digital Mood • In The Mood, Chattanooga Choo-Choo, etc. GRP DIGITAL 143293
Led Zeppelin IV (Runeo) Stairway To Heaven, Black Dog, Rock And Roll, Four Sticks, etc. Atlantic 112014
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CD25
Reliability and Service

BY MICHAEL RIGGS

Every once in a while we get a letter that embarrasses us for not rating the reliability of the products we test. Usually this criticism is accompanied by a tale of frustration that makes the writer’s anger all too understandable. A product that we reviewed favorably fails (usually right out of the box), and the poor soul who bought it spends months trying to get it repaired or replaced. I can sympathize, because it’s happened to me.

Unfortunately, there’s not much we can do about the situation. For example, suppose we get an amplifier in for testing, only to discover that one channel is dead. What does that mean? That the manufacturer makes shoddy, unreliable merchandise? That this particular product in its line is failure-prone? Or that, by the luck of the draw, we happened to get the one bum sample out of a five-figure inventory? We have no way of telling. All we know is that the company probably didn’t honor our request that it check the unit out before shipping. Otherwise, it would have found the problem and pulled another sample.

Surprised? Well, it’s true: Most of the equipment we review arrives on our doorstep factory-sealed, not having seen the business end of a test probe since it left Osaka, Taipei, or wherever it got put together and checked for quality control. The typical test sample thus is a far cry from the hand-selected, tricked-up, one-of-a-kind wonder that people sometimes think is the staple of our laboratory diet.

And we wouldn’t want it any other way. What we would like is for manufacturers to give every component they send to us a last look before it goes out the door to make sure that it is working the way it is supposed to. If it isn’t, chances are very, very good that it is defective and therefore just as unrepresentative as a specially tweaked unit would be. The worst part for us is that we may waste a good bit of time on the least before stumbling on the fatal flaw. When we do hit a snag, we first try to assess whether it is a design flaw (and therefore inherent) or a defect. If we decide the latter, the manufacturer gets the option of submitting a second sample or forgetting the whole thing. Whatever the second sample does is what goes in the magazine. You would think that all such second shots would get a thorough going over before coming to us, but our experience has been that this is not always the case.

That final prerview checks aren’t more common is perhaps something of a tribute to the overall reliability of today’s gear, particularly in light of how sophisticated and complex it can be. (Open up a video-cassette recorder and take a look at what’s going on inside—then try to figure out how come you can buy one for just a few hundred dollars.) Or it may, in some cases, be nothing more than evidence that someone is asleep at the switch.

Anyway, the main point is that the testing we do doesn’t give us the kind of information we’d need to assess reliability. Even if a sample poops out on us, it’s more likely a fluke than a tip-off of some deeper trouble. The only people with access to good information on reliability are manufacturers and dealers. Clearly, the former are not going to tell us if they have a problem, and by the time we could survey the dealers (a difficult and onerous proposition to begin with) and get the results into print, the model in question probably would be either modified or on its way out of the line.

We can, however, give you some advice on getting broken components fixed. One good thing about modern solid-state electronics is that if they are going to fail, they usually will do so almost immediately, while they’re still under warranty. If an amplifier or receiver makes it through the first couple of weeks, chances are it will give you many years of trouble-free performance. Products with mechanical elements—such as turntables, tape decks, Compact Disc players, and VCRs—will eventually require some sort of maintenance, but it may amount to as little as lubrication and a new drive belt.

In most cases, your best bet is a service facility operated by the product’s manufacturer. The technicians are more likely to have worked on your model before, and if it has any characteristic failure modes, they probably will know what they are. This increases the likelihood of a correct diagnosis and should speed up the repair process. Another plus is the greater probability that the shop will have the necessary parts. This is particularly important for Japanese equipment, which sometimes incorporates parts that are proprietary or not widely distributed in the U.S. Even so, you may encounter long delays as the shop waits for some vital but out-of-stock item to make its way across the high seas.

The second choice usually is an independent factory-authorized repair center (possibly the dealer from whom you bought the component). It should have the necessary service manuals and a selection of parts that will cover at least the most common problems. And it probably will have had at least some experience with the model you own. There’s even a chance that the technicians have received training from the manufacturer.

If the item you are seeking to have repaired is out of warranty, you should get an estimate before proceeding. Service work can cost $50 an hour or more, plus parts. Fixing a complex piece of equipment may take a long time, especially if the fault is intermittent (in which case the cause could be difficult to track down). You can easily find yourself spending more to get something repaired than it would cost to buy an equivalent or superior replacement. Many shops charge a fee for estimates, so if the product is inexpensive, you may well be better off not even trying.

Finally, before you run to a repair depot of any kind, make sure that you really have a problem. Something as simple as a blown fuse or a loose signal cable may be at the root of an apparent failure. Paving $50 to hear that you should plug the thing in pains the ego as well as the pocket.
BEYOND CONVENTIONAL AUDIO

THE ONKYO INTEGRA DX-320 WITH OPTO-COUPLING

THE SOUND IS NO ILLUSION

The Integra DX-320 Compact Disc player is the first of ONKYO's new generation of CD players to incorporate our unique Opto-Coupling digital signal processing system. Conventional CD players transmit digital data internally via printed circuit board wiring, which interacts with analog audio signals to produce Digital Signal Interference (DSI), resulting in an audible “harshness” in the music.

Specially designed high speed Opto-Coupling modules in the DX-320 transfer the digital audio and other data signals to the analog output stage via fiber optics, preventing DSI. The result is noise-free, life-like reproduction with none of the harsh sound characteristics often attributed to other CD players. This remarkable new technology can only be found in the ONKYO DX-320.

Double oversampling and digital filtering greatly improve phase and harmonic accuracy. A fully programmable wireless remote control includes memory selection, phrase capability, and indexing for maximum convenience.

Our unique transport design incorporates ONKYO's exclusive Poly-Sorb, a rubber-like compound that improves isolation by absorbing extraneous vibrations, eliminating skipping and mistracking.

The Integra DX-320 Compact Disc player fulfills the promise of digital audio, with sound quality that's as close to the original as anything you've ever heard. Audition the DX-320 at your authorized ONKYO dealer today.
SCRATCH-PROOF COMPACT DISCS?

Not long ago I read an ad for a compact Disc cleaner that claimed that scratches on the surface of a CD can distort the sound. Is this true? I thought CDs were scratch-proof and that digital sound was distortion-proof.

Emilia Nada
Middle Village, N.Y.

Compact Discs are much more scratch-resistant than LPs, but they are not totally immune. If a disc is too dirty or scratched, the laser pickup will have trouble reading it properly, which will cause clicks, noise bursts, or muting.

TRACKING TROUBLES

I am using a Shure V-15 Type V-MR phono cartridge in a well-maintained Dual 1220 turntable. Of the seven pickups I have used in this system, the Shure delivers the best frequency response and tracking. Nonetheless, it will not play a significant portion of my LP collection. This is puzzling, since it tracks the company's test record adequately. The problem seems to be with signals between 3 and 10 kHz recorded at very high levels. The static produced when playing Band 12 of the B&K 2010 test record worsens with each playing. Is there a cartridge that will play my records without distortion?

Edward F. Pickering
Los Angeles, Calif.

We're very surprised that you're having such a problem. We've never encountered a commercial record that the Type V couldn't track (though Shure, apparently, has found a few). If the troublesome records are ones you've had for some time, it may be that you're hearing the damage done by previous pickups' tracking failures. It's this sort of groove demolition that you're hearing build up on your test disc. Otherwise, the most likely culprit is a setup error. Check the tracking force with a good external gauge, such as Shure's SFG-1. Also, listen to see whether the distortion is predominantly in one channel or the other. You can do this by playing the offending passages first with the balance control all the way to one side, then all the way to the other. If it is coming mostly from one channel, the antiskating probably is misadjusted. Many turntables apply too much compensation if you follow the manufacturers' instructions. You may find that backing off a bit on the control will reduce or eliminate the distortion (at least on new, undamaged records).

If that doesn't help and the stylus is in good shape, the tonearm emerges as the prime suspect. Unfortunately, the only way to test this hypothesis is to install the cartridge in another good tonearm and see whether the problem persists. If it doesn't, we can only conclude that you have an unusually demanding record collection, in which case you may be stuck, for we don't know of any cartridge that tracks better than the Type V. One potential solution is the Fidelio Laser Turntable, when and if it comes to market. The tip mass of a beam of light is pretty low, and the compliance is essentially infinite, so it should be very hard indeed to induce mistracking in such a device!

CLEAN BACK CHANNELS

I love rear ambience sound. I own a Sansui QRX-80001 with surround sound and a Carver C-4000 preamplifier. By A/B testing with the same speakers in front and back, I have easily determined that the sound quality from the back channels leaves a lot to be desired. Is there any other system or brand that will deliver equal quality front and rear?

Bernard Bank
Yonkers, N.Y.

That depends on what you find objectionable about the sound from the back channels. The new

To record at high levels you need the right tape. We recommend three. Maxell's new MX and XL-S high-performance tapes deliver just what you need for today's digital music. Great

RECOMMENDED FOR THOSE
digital surround sound processors, such as the Sony SDP-505ES and the Yamaha DSP-1 (see September's test reports), add less noise and distortion to their back-channel outputs than do typical analog models. On the other hand, almost all surround units introduce a high-frequency rolloff in the back, which is desirable. It's not really fair to compare the front and back channels in a surround sound system, because they have different functions. You must judge a system as a whole. In other words, if you're not hearing noise or distortion or balance problems in normal listening, don't go looking for them.

**CD PLAYING TIME**

Since a compact disc can have as many as 99 individual tracks, why are double-length albums, such as Bruce Springsteen's The River, produced instead of combined onto one? 

Jim Arendt
Geneva, N.Y.

One reason is that CDs are limited to a total playing time of about 72 minutes. You can squeeze 99 tracks onto one only if almost all the tracks are less than a minute long. Also, you'll notice that very few CDs run more than 60 minutes, and many contain 40 minutes or less of music. The longer a CD is, the closer the music approaches the edge of the disc and, therefore, the more difficult it can be to make without defects. Consequently, the rejection rate for very long CDs is often higher than it is for ones boasting more modest playing times. Until the manufacturing technology improves, record companies will be reluctant to push the medium to its full capacity.

**FOUR AGAINST TWO**

 Aren't four video heads always better than two? As I understand it, a well-designed four-head VCR has two wide-gap heads optimized for the high speed (SP or Beta II) and two narrow-gap heads tweaked for the slow speed (CP or Beta III). In a two-head machine, however, the gap width has to be a compromise between the two, which degrades image quality. My father and I have virtually identical Panasonic and Magnavox video cassette recorders (both made by Matsushita), except that the Panasonic has four heads and the Magnavox has only two. The Panasonic clearly gives a higher-quality picture.

Marley W. Lond
Hollywood, Calif.

A four-head VCR with head pairs individually optimized for high- and low-speed recording usually will outperform a two-head deck. But these days, most machines use the extra heads strictly for special effects. In other words, you're getting the equivalent of a two-head deck with terrific freeze frame—not always, but usually. Also, it's dangerous to assume that any difference in picture quality is related solely to the heads. Two machines may look identical and still use somewhat different electronics, for example.

**ONE OR BOTH?**

I currently am using a Heathkit AV-1510 tuner with a JBL SA-660 amp. As you can tell, both units have a few years behind them. The tuner has been acting up lately, so I am thinking about replacing it. But will the amplifier do justice to a modern, state-of-the-art tuner such as the NAD 4155, or would I be wiser to replace both components? 

Gene Chmura
Lisle, Ill.

We think that you will appreciate the new tuner even if you stick with your present amp. But it is, as you say, getting rather long in the tooth. Provided you select a well-made, high-performance replace-
ment, a new amp should prove a worthwhile investment.

PREAMP COMPARISON

Recently a friend bought an apt Holman preamplifier to replace his Harman Kardon Citation 1 1. Before he disconnected the Citation, I asked him to play a record. As soon as the APT was in place, he played the same record again, and I could not hear any difference. Later I tried a similar comparison, between the Citation driving a 150-watt power amp and a late-model 40-watt Akai receiver, and found that the Akai sounded just as good, if not better, provided it was not overdriven. Are these reasonable results, or am I missing something?

Salvatore Rendazzo
Lindenfield, N.Y.

They're quite reasonable—exactly what we would expect, as a matter of fact. When preamplifiers do sound different from one another, it usually is because of a difference in frequency response, most often resulting from errors in the RIAA phono equalization, improper cartridge loading, or undersized interactions between the phono input and the cartridge. These used to be fairly common problems, particularly in early transistor equipment, but advances in understanding and technology have almost eliminated them.

Early versions of the Citation 1 1 (the unit had several different phono sections in the course of its history) exhibited complex phono input impedances. In other words, they could not be modeled as a simple resistance in parallel with a capacitance. This can give rise to interaction problems. Fortunately, most of today's premium fixed-coil (moving-magnet and moving-iron) pickups have relatively low output impedances and therefore are less prone to such effects than were previous generations of cartridges. They also are less dependent on capacitive loading to achieve their flattest response. Moving-coil cartridges, because of their extremely low output impedances, are better still in these respects, though arguably not as good in others.

Tom Holman, by the way, was among the first to recognize the importance of these factors and to define how phono preamps should be designed to assure correct performance. The product that bears his name is to this day—nine years after its introduction—among the finest preamplifiers available.

TOO BRIGHT

A few months ago, I bought a Carver receiver and Compact Disc player and ADS speakers. I thought I was having an excellent setup, but the sound turned out to be bright and seemed distorted at the high end. Violins and sopranos sounded shrill. Several weeks ago, I exchanged the receiver and speakers and am now using an NAD 7155 receiver and my old KLH 6 speakers in their place. The sound from the NAD is much warmer and more pleasant to my ear, but it still has some problems. Would it help to exchange my Carver CD player for another model (such as one from B&O)? Or could the discs themselves be at fault? Would a European speaker correct the problem with the Carver player?

Ted Sacher
Brooklyn, N.Y.

First of all, it is very unlikely that the receiver swap changed the sound at all. What's making the difference is the speakers: The old KLHs have a much mellower balance than the ADSs. Nor would switching CD players help, unless the Carver is malfunctioning in some way. And I doubt that you will find any modern high fidelity speakers less bright than your KLH 6s. It is possible that you have got hold of some CDs made from shoddy recordings, or it may simply be that you don't like high frequencies. In that case, your best bet would be to buy an equalizer and use it to knock down the treble some more.

MISSING STEREO TV

I bought a Mitsubishi Hs-600 chem HF-HiFi videocassette recorder with a built-in stereo TV tuner (test report, May 1985) about six months ago. I have it hooked into my audio system so that I can enjoy prerecorded movies in Hi-Fi stereo and also record simulcasts. Television broadcasts are another matter. Two local channels transmit stereo signals, but they don't come through my cable hookup. Does the cable company have to install different equipment to pass the stereo signal along to me?

R. A. Gerbo
Carmel, Ind.

Probably it does. A stereo television signal requires slightly more bandwidth than a mono signal, and this can cause interference between channels on some cable systems.

BLUE SKY

How about combining a microcassette deck with a PC unit? It would get me digital audio in a small package. Would the micro unit have to be stereo?

Gabriel Pena
Bell, Calif.

At least, in fact, it would have to be a phenomenal microcassette deck to handle the bandwidth of the PCM converter's output. That's why video recorders are used for PCM; no present analog audio recorder can do the job. But take heart: Word is that among the first digital cassette recorders will be ultraminiature models similar in concept and size to what you propose.

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

Buy Any Sony Compact Disc Player and get 2 CDs free.

Between September 15, 1986 and January 31, 1987, buy any Sony home, car, or portable compact disc player and receive 2 CDs free from the 20 listed below. (You pay only for shipping and handling.) Just mail the coupon below, together with a copy of the proof of purchase for your Sony CD player.

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346322 Billy Joel
The Bridge (Columbia)

346370 Wham
Music From The Edge of Heaven (Columbia)

346032 Genesis
Invisible Touch (Atlantic)

343322 Wynton Marsalis
Jalisco Tantos, Trumpet Concerto (CBS Masterworks)

346090 Enrique Batiz
Declarative Syn No. 9 'New World' London Phiharmonic (Venture Records)

346010 Jean-Claude Malortie, Coord. . .
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346890 Ruthless People
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And, as a special bonus we'll enrol you in the Sony Compact Disc Club—which offers you the CDs you want at substantial savings! But you have absolutely no obligation to buy anything, ever—and you may cancel your membership at any time.

How the Club works: every four weeks (13 times a year) you'll receive the Club's music magazine. If you want only the Selection of the Month, do nothing—it will be shipped automatically. If you prefer an alternate selection—or none at all—mail the response card, always provided, by the date specified. You will always have at least 10 days to make your decision. If you ever receive any selection without having had at least ten days, you may return the selection at our expense. The CDs you order as a member will be billed at regular Club prices, plus shipping and handling.

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Coupons must be postmarked by February 15, 1987. CBS Compact Disc Club reserves the right to cancel any membership. Offer good in continental U.S. only except Alaska.
To hear why Genesis records on Sony digital equipment, play them back on a Sony Compact Disc Player.

When it comes to capturing the experience of live music, no audio equipment delivers the lifelike reproduction of digital audio.

That's why the only digital recording equipment chosen by Phil Collins, Tony Banks and Mike Rutherford of Genesis is, not surprisingly, the leader in the industry: Sony.

Not only has Sony led the way in professional digital recording equipment, we invented the digital audio system for playback—the compact disc player. Sony also introduced the first home, car and portable CD players. And Sony sells more types of compact disc players than anyone else in the world.

But whichever Sony Compact Disc Player you choose, each allows you to hear the music the way the artist originally intended.

So why not do what Genesis does? Play back the top-selling compact discs like "Invisible Touch" the way they were mastered. On Sony Digital equipment. You'll find that when it comes to bringing you close to the music, nothing even comes close.

The Sony CDP-55. Sony's best value in a full-featured compact disc player.

From its Unilinear Converter and digital filter to its programming flexibility and supplied Remote Commander® unit, the Sony CDP-55 has everything you need in a home CD player.
Introducing DPD™ from Proton

If you're running that terrific new CD player off an amplifier or receiver that's three to five years old, you're missing out on a great deal of clean, uncompromising sound. Most amps of that vintage just can't create the extra headroom that's necessary for accurate digital reproduction. Every time the music hits a peak, your amp will be gasping for breath. And you'll definitely hear about it. Unless you have a Proton 40 Series amplifier or receiver with our exclusive, patented DPD circuitry.

Reserve power in an instant

DPD stands for Dynamic Power on Demand™. Designed for the increased demands of today's digital audio discs and hi-fi video sound, it utilizes a sophisticated, dual power supply which acts as a power reserve. During musical peaks, it delivers up to four times the amplifier's rated power for an amazing six dB of headroom. And DPD handles these boosts much more smoothly.

Plus, DPD sustains that dynamic power up to 400 milliseconds. More than enough time for you to hear all the crisp, clean transient response you've been missing. From the pluck of a cello. To the crash of a cymbal. As faithfully as if they were being performed live.

Best of all, DPD gives you all of this extra power without your having to pay the extra price for a much larger amplifier.

So if you want totally uncompromising digital sound, you can't afford to compromise with your system. That's why you need Proton with DPD. With anything else, you'll be missing out.

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Proton's acclaimed 40 Series Audio Components top to bottom: D940 Stereo Receiver with DPD™, 440 Stereo Tuner, D540 Stereo Amplifier with DPD™, 740 Stereo Cassette Deck and the 830R Compact Disc Player.
Digital-Video Basics

Video components sporting the alluring descriptor "digital" are now appearing in stores. There is and for some time will be uncertainty about exactly what constitutes a digital television set or digital videocassette recorder. But there is no question that the same integrated circuit (IC) technology that made the Compact Disc feasible is about to spur several generations of extended-performance video products.

Two developments have brought about the coming digital-video era: fast analog-to-digital (A/D) and digital-to-analog (D/A) converter ICs capable of translating the high frequencies of a video signal into digital form and back again and large-capacity digital-memory ICs. The latter perform the function absolutely crucial to improvements in picture quality: temporary storage of the video image.

What can we expect from these devices? Unfortunately for those interested in high-fidelity video, the ICs are being used first only to expand the repertory of what Japanese engineers like to call "trick" features. These include adding such things as freeze-frame and picture-within-picture capabilities to monitors and television receivers. "Digital chassis" TV sets will, in addition, perform many of their picture- and sound-reception functions in the digital domain. This has little visual or audible benefit, but it enables the manufacturer to obtain more stable and consistent product quality along with a reduction in parts count and, I hope, a lower retail price.

Videocassette recorders also will gain added flexibility from digital processing. Noiseless fast-scan and freeze-frame functions will become de rigueur for any "digital VCR."9 This probably will become the industry's term for a conventional analog VCR with digital picture-processing functions, even though truly digital VCRs—using digital encoding of the recorded picture—already are being developed.) Although digital freeze frame may seem to some a trivial feature, it makes it possible to create a still picture of indefinite duration, in contrast to a conventional stop-the-tape freeze frame that can last only a few minutes before the video heads start slicing through the tape.

New components, too, will arise from the use of digital-video technology. High on the list of development priorities are video printers. Because the various printing processes being researched are quite slow compared with video frame rates, a video printer must store the image digitally while the printing takes place. And once a video image is in digital form, it can be distributed over any number of comparatively narrow bandwidth media (such as telephone lines, CDs, and computer floppy disks).

Eventually, when video manufacturers start running out of semi-useful trick features to add, they will use digital processing to provide enhanced picture quality. Several significant steps toward higher fidelity video become possible. These include contrast and detail enhancement, ghost elimination, flicker reduction (important for European television), reduction of video noise (snow and grain), and non-interlaced scanning.

An examination of how this last function operates will provide an idea of how digital image storage can be used. The accompanying diagram portrays the scanning of a television frame. A 525-scan-line frame consists of two interlaced fields (diagonal solid and dotted lines). Each field consists of half of the active scan lines and takes one sixtieth of a second to trace out on a picture tube. Each frame, therefore, takes one thirtieth of a second. This scheme is designed to flash images of acceptable resolution on the screen fast enough to convey smooth motion without requiring that the information actually be transmitted at that rate. Motion picture projection uses a similar method, in which each frame lasts one twenty-fourth of a second but is flashed on the screen twice in that period by the use of a rotating shutter.

Several undesirable visual artifacts result from interlaced scanning, among them a visible scan-line structure (especially with large-screen and projection monitors) and flickering horizontal lines. They can be eliminated by progressive scanning, in which a complete set of 525 scan lines is traced every sixtieth of a second. There are several ways to do this. Interfield interpolation displays two successive fields simultaneously and therefore requires storage of at least one field. However, moving objects can blur when this method is used. Another scheme—line interpolation—produces a synthesized scan line (the average of the lines directly above and below it) between each "real" line of a field and requires storage of only two lines of video information at a time. It too has some visual drawbacks (flicker is not reduced, for example).

Video noise reduction also is a form of averaging. The smallest details in an image are likely to be the random grain and snow of noise. Averaging them over several frames results in less noise because random signals tend to cancel each other out. Unfortunately, such approaches stumble on the difficulty of determining what is to be processed and what should be allowed to pass unaltered. Frame-to-frame averaging yields a pronounced decrease in noise level but also a marked blurring of moving objects in the image. Ways to overcome these problems by applying sophisticated digital computations are the subject of intense research, not only because they promise additional video-component sales but because they will be useful in other important fields, such as military and medical electronics.
IT KEEPS COMING BACK TO THE SAME QUESTION: HOW DO YOU SET GAIN FOR THE BEST POSSIBLE RECORDING? I WISH THERE WERE A SINGLE ANSWER, BUT THERE ISN'T—THANKS (IF THAT'S THE WORD), IN PART, TO THE OBLIGATION OF THOSE WHO DESIGN AND BUILD CASSETTE DECKS AND THEIR METERS. SOMETIMES THE DIFFICULTY SEEMS TO ARISE FROM OUTRIGHT KINKINESS ON THE PART OF THE DESIGNERS. OTHER TIMES, AN EFFORT TO SIMPLIFY LIFE FOR THE HOME RECORDIST MISTAKES IN FAILING TO TAKE A BROAD ENOUGH VIEW OF THE FACTORS INVOLVED, AND THEN THE UNEXPECTING USER IS LEFT TO WALLOWS IN EVEN GREATER UNCERTAINTY.

In the bad old days of open reeds and "professional" VU meters, making good recordings often required specialized knowledge. Transients too brief for accurate display by a mechanical meter could easily pass through undetected and overload the tape. Professionals (the only users for whom professional equipment is truly appropriate) knew that bells, for example, had to be recorded at -20 VU, whereas massed strings often could pin the meter (above -3 VU) before causing audible signs of overload. This apparent discrepancy sprang from the very different peak-to-average ratios of the instruments and the inability of the slow VU meters to distinguish them.

Knowledgeable amateurs did understand that you had to "push" the level if you wanted the best possible signal-to-noise ratio. Further, they understood that therein lay the importance of the "three-head" deck. Only by listening to the playback as you recorded could you tell how much level was too much; up to that point, the more the better. Professional metering could sometimes tell professional recordists the same thing, but much experience was needed to translate the needle's jitters into useful, precise, reflexively conceived information.

The days of the meter needle are almost gone in home recording and numbered even in professional work. Modern peak-reading display devices are so much more precise and communicative that there really is no longer any need for meters as we once knew them. The argument that they better reflect the subjective loudness of the signal is unimpressive. Ears do that even better, and they don't add to the cost of the equipment. But old habits die hard, and in this case, they often are responsible for metering systems designed with an almost perverse disregard for the advantages of today's fast-acting displays.

For example, not long ago, a manufacturer demonstrated the "quality" of his new top model to me by playing a tape that was peaking at around +8 on its meters. I wouldn't call the sound particularly clean, but it wasn't showing signs of severe overload either. "You can really drive this baby," was the manufacturer's comment. But when we came to test the deck, we found that its overload characteristics actually were unperturbational and its metering preposterous in that the "0 dB" mark was about 6 dB below the DIN 0 standard reference level, forcing levels high enough to make use of the full dynamic range up into the stratospheric (and more coarsely divided) range at the extreme right of the display. Consequently, most users, fearful of running into the red, will never exploit all of the headroom available to them and will wind up with recordings inferior to what they might have obtained had the display calibration been more intelligently designed.

To get good results, you must adjust recording levels quite differently on this machine from the way you would on one with a "0 dB" at DIN 0 or, as is more common, at Dolby reference level. And habits learned on such a deck simply won't work on most others—any more than level-setting techniques acquired with true DIN metering will work well on "this baby." Until the metering on consumer tape decks becomes relatively standardized (should that happy day ever arrive), you must learn each one anew. That's why we publish data detailing the overload and metering characteristics with the various tape types in each of our cassette deck test reports.

Make no mistake, the subject isn't easily mastered—particularly when you take into account the infinitely varying relationships between the music's spectral distribution and the recorder's overload curve for each of the tapes you might use. Here, I'm talking essentially of midrange overload and dynamic range. I'll talk about the highs another time.

AND AGAIN!

IF YOU RECORD FROM FM, YOU'VE PROBABLY BEEN STARTLED AT TIMES TO SEE THAT RELATIVELY QUIET PASSAGES IN THE MUSIC CAN REGISTER UP NEAR THE METER READING FOR EVEN THE STRONGEST TUTUS, WHICH SEEM VERY MUCH LOUDER. YOU MAY BE SEEING A COMPRESSOR OR PEAK LIMITER AT WORK, OR YOU MAY BE WITNESSING A GOOD JOB OF MANUAL GAIN RIDING. IF YOU CAN HUNT AROUND FOR THE SOUNDS IN THE MUSIC, YOU'LL FIND THAT THE TYPICAL 10 dB PEAKS (OR SO) AT DOLBY C OR DBX.

If you want to develop the skill, you'll need practice. I sometimes work out, so to speak, by manually expanding radio programs in which overload hosts play old 78s that have (or should have) greatly varying harmonic properties. If songs are mixed with arias, for example, the maximum levels should not be the same for both, though they almost invariably are. Worse, the host's speaking voices—which usually comes out of his mouth at a distinctly nonsonorous level and therefore must be held at least 10 dB below musical peaks if it's to sound at all natural—usually is cramped up against the same ceiling. It isn't easy to pull good dynamics out of this sort of material, but you'll learn a lot about sound and music, and your perceptions of both, if you try.
THINK OF IT AS THE WORLD’S SMALLEST DIGITAL PLAYER.

Now you can take the dynamics of digital performance anywhere. With TDK HX-S. It captures the purity and nuances of digital sound like no other high-bias audio cassette.

Specifically designed to record digitally-sourced materials, HX-S offers four times the magnetic storage capability of other high-bias cassettes available today. Plus unmatched high frequency MOL (Maximum Output Level) for optimum performance.

With all this going for it, HX-S does more than step-up your pocket-sized player. It also acts like fuel injection for your car audio system. And it can turn a boombox into a portable music hall.

TDK HX-S. One small step for digital. One giant leap for music-kind.

TDK is the world’s leading manufacturer of audio & video cassettes and floppy disk products
Report preparation supervised by Michael Riggs, David Razada, Robert Long, and Edward J. Foster. Laboratory data (unless otherwise indicated) is supplied by Diversified Science Laboratories.

NEC's basic CD player, the CD-500E, includes a full-feature wireless remote control. Reports follow.
This is NEC's least expensive CD player. We're always interested in observing how manufacturers distill their more elaborate products to create the budget models. Some don't try; instead, they create totally different designs at the price extremes. Others simply omit some high-ticket elements without much concern for the overall ergonomics of the resulting design. The CD-500E, on the other hand, is functionally almost identical to the CD-650E and resembles even the lavish 705 but, at the same time, strikes us as a carefully conceived, integrated design in its own right.

The trim front panel is fairly conventional. The AC switch is at the left, next to the disc drawer. Below the display window on the other side of the drawer are the open/close button plus a pair for MEMORY and REPEAT. To the right of the display window are the operating controls: PLAY/PAUSE, STOP, and SKIP in each direction. Below these are a headphone jack and a level control. All of the controls except the AC switch are repeated on the supplied wireless remote control, which is powered by two AA cells.

On the back panel are two sets of outputs: one fixed-level, the other variable. If you plan on doing a lot of headphone listening through the player itself, you're probably better off using the fixed outputs for connection to the system (which will have its own volume) and saving the CD-500E's control for the phones. In a system that doesn't have a remote volume control of its own, however, you may prefer to use the variable outputs anyway. The front-panel control is motor-driven to make the changes ordered from the remote, so it continues to display its setting visually even when volume is adjusted from across the room.

The display window, which also contains the remote-control infrared sensor, shows the track number (or "PU" for "full," if you try to program past the memory's 15-selection capacity) and has four status pilots: for disc loading (it stops flashing once the disc's table of contents has been loaded into memory), repeat, memory (it flashes when a track is memorized, stays lit during memory play), and play (which flashes in the pause mode). If you use the repeat function in regular playback, it will play the entire disc continuously from beginning to end; in memory playback, it will repeat the programmed tracks only in the programmed order.

Immediately after disc loading, the display briefly shows the total number of tracks, but otherwise it tells you only the number of the one that is currently cued or playing. What you give up (and we're not sure that's really the right phrase) are the elapsed-time, time-remaining, and more esoteric readouts (like next-track or index number) of elaborate and relatively high-price players. Many users—particularly those who haven't already become acclimated to these functions—probably won't miss them at all.

Nor is the omission of SCAS—in which...
the recording is audible sampled as the laser cues in on or out—a major loss, except when you're trying to find your way around one of the many poorly laid out classical CDs issued, particularly in the early months of the medium. The Charles Dutoit recording of Ravel's Daphnis et Chloé (London 400 055-2), for example, is a single track lasting almost 56 minutes. With the CD-500E, there is no way you can skip to individual tableaux or dances within the score.

The player's lightweight laser pickup has its own subsuspension to isolate it from potential sources of vibration, and the audio electronics are based on a proprietary NEC dual op-amp integrated circuit. Unlike other NEC models, however, the CD-500E evidently uses straight 16-bit, 44.1-KHz analog-to-digital (A/D) conversion with sharp, "brick wall" analog output filtering (as demonstrated by the amount of ringing and the absence of "pre-ringing" in the pulse and square-wave traces). However, this is customary for budget players; none in the CD-500E's price range use digital filtration.

The filter introduces a slight (about 1/2 dB) response peak near 15 kHz before beginning its steep rolloff at the very top of the band. Ringing in the scope traces is about par or better for this type of player, though the impulse is "upside down," indicating that the CD-500E inverts signal polarity, or absolute phase. (We don't think this matters, sonically, particularly since there's no polarity standard for a lot of other components either, but we're still surprised at how many CD players (bop the waveform) Distortion isn't in the champion class, but it certainly is nothing to look down on either. And sound quality proved excellent—perhaps very slightly "grittier" than average for a CD player, in some tests, but still superb by the standards of typical signal sources.

Like most players we test these days, the CD-500E had no trouble coping with any of the fingerprints or surface obstructions simulated on the Philips tracking test disk. It did falter very slightly on the most demanding of the disc's simulated scratches; we rate it as passing the 900-micrometer signal-gap test, but only just. Insensitivity to lateral shock is excellent, though we found that the player could easily be made to mistrack if struck vertically.

The CD-500E also matched typical current players in reproducing a seamless continuum when programmed to play contiguous tracks—as you would, for example, in playing a concerto whose movements are separate tracks. Many early players did poorly in this test. Perhaps our cabling has helped bring about the significant improvement that we now enjoy.

As a budget model—and the CD-500E is one of the least expensive on the market—this player represents unusually consistent design. The most surprising feature, perhaps, is the full-function wireless remote control and, in particular, its level control. Few low-price CD players offer this important feature. And though some trade-offs have been necessary elsewhere, NEC has made them cannily, with a clear eye to how a relatively simple player is likely to be used. As a result, the CD-500E is an exceptionally attractive value.

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**Test Reports**

**Sansui SE-88 Graphic Equalizer**


Word of the SE-88's advantage over other equalizers we've ever tested: a removable control panel, powered by a pair of AA cells. You can pluck it off the front of the chassis and slide it to your listening position, use all the controls (except the power switch, which stays behind), and when you're through, pop it back into its front-panel "dock." The chassis's infrared sensor is just behind this position, so that the equalizer can receive signals from the control module when it's docked, as well as when it's across the room. This gives you, in effect, both remote and front-panel controls without requiring that you pay for an extra set. Better still, you can use the controls the way you must for best results with an equalizer: from wherever you're listening—even if you're moving around the room.

We successfully altered the SE-88's settings from as much as 90 degrees off-axis—that is, from the plane of the front panel—and some 12 feet away. When we moved behind the main chassis, we lost contact; in most rooms, however, the equipment is set against a wall so that it's impossible to get behind it. At any rate, Sansui seems to be quite conservative in telling you to use its remote no farther than 30 degrees off-axis.

Across the top of the control panel is a series of 14 small, round buttons, each selecting a band for adjustment. Nominal center frequencies are 25, 50, 100, 150, 250, 400, and 630 Hz and 1, 1.6, 2.5, 4, 6.3, 10, and 20 kHz. The actual center frequencies are a little higher than marked, but not by enough to be of any practical significance for music listening.

The right-hand side of the panel controls what the equalizer does with the selected...
There are buttons for stepping response up or down (nominally, in 2-dB steps to ±10-dB extremes) and for stepping the channel mode through the sequence LR (in which both channels are set identically), L, and R (the last two for use when you want different settings in each). Five memory buttons enable you to store and recall EQ curves you've created for different purposes.

The left-hand side controls various operating modes. The equalization can be switched on or off and in or out of the tape-recording feed at two of these. There's a flat button that returns all bands to home base for a fresh start. Two more buttons select the display mode: either the EQ settings or the frequency content of the audio signal (real-time spectrum analysis). The back panel has an on/off switch for a peak-hold feature that, in the latter display mode, keeps the maximum cursor in each band illuminated for about one second, rather than lighting each only for the duration of itstriggering signal. There's a reverse to derive the reciprocal of the currently displayed EQ curve and more buttons for tape monitor switching.

The back has connections for two tape decks, which replace and improve upon the monitor loop the equalizer occupies in a typical setup. Using processor jacks that are "downstream" of the system volume control, such as most pre-out/main-in jumper connections, can cause level-matching problems. If you were to go by the manual, which is particularly confusing about these matters, you would think it impossible to monitor from either deck while you're recording on it. But the three control buttons are marked LINE, TAPE-1, and TAPE-2; under the first two is the legend INPUT SELECTOR and under the third, MONITOR.

In fact, we found we could monitor an appropriately equipped deck attached to the Tape 2 connections and recording from either Tape 1 or the main line input—but not with the EQ switched into the tape feed, which killed the output. And when we tried reversing the setup, to record on and monitor Tape 1, it simply cut off the line source feed and created feedback with Tape 2 as the intended source. If you have monitoring decks, you should use these controls carefully, and if you're not a particularly methodical person, it might be best to take the manual's implication literally and ignore the word monitor on the escutcheon.

The other slightly problematical aspect of the design is the spectrum display, whose sensitivity is a bit low for some equipment. In our setup, we found that maximum levels usually registered, in the midrange, near the center of the display's 20-dB dynamic range. So only the top 10 dB of the signal was visible, and toward the frequency extremes there was even less to be seen.

As a matter of fact, Diversified Science Laboratories' pink-noise tests show that sensitivity rises in the bass (it's up 1 to 6 dB in all bands from 250 Hz down), but it falls off in the extreme treble (down about 6 dB at 20 kHz), further suppressing the already weak signal components (if any) at the top end. Otherwise, it's within 2 dB (1 display element) of the sensitivity in the 1-kHz band. So while the display can be informative, it can't claim the precision or flexibility of a professional spectrum analyzer, which it is not.

DSL's frequency-response trace with the equalizer set "flat" (to 0 dB in all bands) is virtually ruler-flat from about 100 Hz to 10 kHz, with a slight rolloff in the deep bass (to about − 2 dB at 20 Hz) and an even slighter one at the very top of the treble. With the individual bands set at maximum and minimum, the trace essentially confirms the 10-dB nominal range in each direction.

When the lab examined the action of the 1-kHz control in detail, it discovered that the increments aren't quite even, however. The first step in each direction away from 0 dB is about 3 dB at the center frequency; the last two steps in each direction measure about 1 1/2 dB. And though this control has practically no influence below about 100 Hz, any setting except flat displaces the entire treble range by 1 dB or more in the chosen direc-
tion (boost or cut).

Most interesting, however, are the curves for four settings in the three central frequency bands: 630 Hz and 1 and 1.6 kHz (all other bands were left at 0 dB). With all three at their extremes in either direction, the total adjustment range reaches about ±13 dB—significantly greater than the nominal or the amount that can be achieved for a single band. Some ripple develops at these settings, but this is to be expected with any graphic equalizer (to get smooth envelopes at extreme settings, you'd need a parametric) and can be significantly more exaggerated than it is with the SE-88.

The two middle curves, for which adjacent bands are adjusted to opposite extremes, show the maximum slopes achievable and how band interaction limits maximum adjustment, to about ±7 dB for the outside bands and ±3 dB for the one sandwiched between them. In general, the steeper the maximum slope, the less the interaction—but the greater the ripple in the outer two curves. (As usual, there's no free lunch.) In its handling of these matters, we'd rate the Sansui fairly typical of home equalizers. We have just begun testing band interaction in this way, however, and it will be interesting to see how other models compare.

Gain is essentially zero—that is, level-in equals level-out within a small fraction of a dB. The clipping level is lower than average at just shy of 6 volts, but it shouldn’t prove a limiting factor with anything close to normal signal levels. Signal-to-noise (S/N) ratio is luxurious, at almost 100 dB, with all bands set at 0 dB. When the lab moved them all up one notch—probably a more representative condition—the figure was a still-good 77½ dB. The worst-case setting, with all bands at maximum, is one you would not normally choose, but even it delivers an acceptable 69½ dB.

Although the SE-88’s unusual design gives it some significant advantages over conventional graphic equalizers, it may take a little longer to master. In particular, we found that we had to be fairly near the main unit to tell from its status readout whether we were adjusting the left channel, the right, or both; unless you know, you can easily misadjust it. But once we cleared that hurdle, using the SE-88 became almost as intuitive, though not quite as fast, as with a regular model. And frankly, we were surprised to find how seldom we felt a yen for finer gradations of adjustment.

The design’s greatest benefit is, again, the portability of its controls. With the possible exception of ambience devices and the like, equalizers stand to gain most significantly from the current emphasis on remote controls because you can truly judge the effect of any adjustment only at the listening position. With conventional equipment, you must keep jumping up until you have all the controls set right. Once you’ve used the SE-88’s hand-held equalizer controls, you may wonder how you ever got along without them.

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**Yamaha C-85 Preamplifier**

**Dimensions:** 17 1/2 by 3 1/2 inches (front), 13 1/2 inches deep plus clearance for controls and connections. AC convenience outlets: five switched (200 watts max. total), one unswitched (300 watts max.). Price: $800. Warranty: "Limited." Two years parts and labor. Manufacturer: Nippon Gakki Co., Ltd., Japan; U.S. Distributor: Yamaha Electronics Corp., U.S.A., 1660 Orangebrake Ave., Buena Park, Calif. 90620.

Even at first glance, the C-85 preamplifier is unmistakably a Yamaha. It is a direct descendent of the C-70 (test report, April 1983), though several intervening Yamaha designs have been similar in approach and could be cited as more like the C-85 and each other than like competing models from other companies. In a world in which novelty and imitation tend to be the two sides of the same new-product coin, Yamaha’s steadfast refinement of an individual and worthy concept is an admirable exception.

Only the most-used controls are immediately accessible, in three groups. At the left end are the AC switch, pilot light, and headphone jack. At the opposite end is the large volume knob with its outer loudness-compensation ring and a balance “knob” that actually is a knurled wheel whose lower edge protrudes downward from the bottom of the panel. Just to its left are the main (monitoring, as opposed to recording) source selectors, the mute button (which reduced output by 20½ db in Diversified Science Laboratorie’s test), and a tone-dead switch. Most of the remaining controls are behind a flip-down door to the left of this group, though a few are on the back panel.

The recording selector, which includes dubbing options in both directions between the two decks for which connections are provided, is among those behind the door. To (continued on page 45)
The concert continues with the Ford JBL Audio System.

Imagine the music of 12 speakers driven by 140 watts...

Just imagine a car audio system that could really deliver music as rich and powerful as a live concert.

Imagine music emanating from 12 JBL speakers—specifically equalized and adjusted to the surrounding environment and deftly capable of reproducing digitally accurate full-range, high fidelity sound.

- 12 JBL speakers including 2-6” x 9” woofers, 2-3½” midrange speakers and 2-7/8” tweeters located in the rear deck; 2-5¼” woofers mounted in the doors; and 2 tweeters and 2 midrange speakers in the instrument panel. Selective frequency fading so all woofers remain in operation at controlled levels when faded front/rear.

Imagine the sheer impact of 140 watts of total system power. Ample power to virtually eliminate distortion for the most comfortable listening—even at high volume for very long periods of time.

- 140 watts TSP—4 amplifiers, 35 watts per channel into 4 ohms at 1000 Hz with .07% THD. 105 dB SPL maximum acoustic output. Excursion control computer with continuously variable loudness compensation and automatic overload protection.

Then stop imagining and hear the real thing for yourself, exclusively at your Lincoln-Mercury dealer today.

JBL loudspeakers are featured in world renowned sound systems everywhere, including Tokyo’s NHK Hall, Los Angeles Music Center, Tanglewood Music Shed, Frankfurt Opera House and now the Lincoln Continental and the Lincoln Town Car.

Ford JBL

AUDIO SYSTEMS
Some companies make their headphones digital-ready by designing new stickers.

Koss designed new stereophones.

There's an easy way and a hard way to create digital-ready stereophones.

The easy way is just to design a new label for your old phones and hope nobody notices.

The hard way is to do what Koss did with their new line of SST stereophones. They started by inventing a new element specifically designed to faithfully reproduce the wider dynamic range of today's recordings. Then they incorporated this Super Sonic Technology into four of the sleekest, most comfortable phones ever designed.

Naturally, the Koss SSTs have digital-ready stickers just like those other headphones.

But one listen will convince you that the Koss stickers mean something.
(continued from page 42) its left are a pair of parametric tone controls, each consisting of a dual concentric knob cluster for boost or cut level (the center) and bandwidth (the ring), plus a separate knob for the frequency on which the control band is centered. Between these controls and the recording selector are switches for mono/stereo mode and infrasonic filtering.

At the right end of the hidden control panel is the phono mode selector, which, typically for the Yamaha preamps in this series, is unusually comprehensive, at least for Phono 1. For conventional moving-coil cartridges requiring extra amplification, it offers nominal input impedances of 100 and 1,000 ohms. For high-output moving-coil models, there’s a 100-ohm setting, though these cartridges usually will also work well with settings designed for fixed-coil (moving-magnet or moving-iron) designs. For the latter, there are two options: 47,000 ohms with either 220 or 330 picofarads of capacitance. The Phono 2 input commands only one position on the selector switch: for 47,000 ohms and 220 picofarads. A backpanel switch (“normal/−10 dB”) further tailors phono-precamp gain to cartridge output. Normal matches typical pickups, and the lab uses this setting except where the lower gain is specified in our data.

All the input and output jacks are gold-plated. They include three high-level input pairs, marked cd, video, and tuner. There are two output pairs, one with normal polarity and one inverted, for users who consider absolute phase important. The main purpose of the latter pair is to correct for polarity inversion in the power amp to which the signal is fed (reversing the hot and ground leads at the speaker terminals will achieve the same result), but it can also be used to “correct” sources that are phase-inverted with respect to normal practice—if you can tell which ones they are.

Though not as exotic and luxurious a touch as the phono-gain switch, Yamaha’s unusually generous provisions for switching system power will be welcomed by a wider spectrum of users. Not only does the C-85 provide /ave switched AC outlets, but its parts carry current ratings great enough to allow a total of 200 watts through them plus 800 watts through the single unswitched outlet. For most other preamps, current ratings are skimpier; the sheer number of outlets almost invariably is. You still wouldn’t want to try plugging a behemoth amp into the C-85 (and its ungrounded outlets won’t accommodate the plugs on most such amps in any event), but all the rest of your system probably can be handled quite comfortably by its power switching.

Even more unusual is the operation of the C-85’s loudness compensation. Yamaha is among the very few companies to acknowledge that a simple on/off loudness makes no technical sense. Loudness compensation, if it is to be “scientific” (and we sometimes wonder whether it can be, in fact), must be tied to perceived level—not just to the volume control setting. Amplifier gain, loudspeaker sensitivity, room acoustics, and seating position relative to the speakers all influence the relationship between volume setting and how loud the music seems. In an attempt to account for these variables, Yamaha gives you a continuously adjustable loudness-compensation control.

With the loudness ring at maximum clockwise rotation, changing volume adjusts level with no change in frequency response. When the loudness is turned counterclockwise, the level is lowered over much of the frequency range. But even with only 2 dB of midrange attenuation (with the volume set at maximum for purposes of measurement), a slight prominence is introduced at about 27 Hz. As the loudness is rotated further downward, this prominence grows more obvious, and it never falls more than 8 1/2 dB below the starting level. By the time the midrange has been attenuated by about 20 dB, a slight upturn also is apparent in the extreme top of the frequency range. At full rotation, the lower treble (centered near 2 kHz) has been attenuated by 41 dB and the extreme treble (20 kHz) by only 31 1/2 dB.

We must admit that this extreme setting, with response at 27 Hz almost 30 dB above that at 2 kHz, produces graphs that look downright gross. And with volume all the way up and loudness all the way down, the effect sounds gross as well. But that’s not a setting at which you’re likely to arrive by any rational or instinctive use of these controls. Normal settings attenuate audible output so much before you arrive at the compensation extreme that you can barely hear the music, and then the applied compensation does, indeed, enhance its audibility. In fact, the more we used the loudness, the more we came to admire it.

(continued on page 48)
INTRODUCING THE ONLY AM/FM TUNER/CASSETTE DECKS CAPABLE OF CUTTING MULTIPATH INTERFERENCE UP TO 92.9%!
FROM CARVER, NATURALLY.

The new TX-Seven and TX-Nine auto-reverse AM/FM tuner/cassette audiophile decks represent yet another example of Carver's ability to solve previously insoluble audio problems and deliver you more musical enjoyment.

CARVER TUNER TECHNOLOGY TAKES TO THE ROAD.

Each deck employs the same Asymmetrical Charge-Coupled FM Detection circuitry as Carver's revolutionary TX-11a home tuner, along with an ingenious automatic computer logic-controlled antenna switching system that further vanquishes multipath distortion.

In point of fact, no other autosound tuner/cassette decks in the world — regardless of price — even begin to approach the TX-Seven and TX-Nine's ability to maintain a hiss-free, glitch-free, interference-free FM listening environment in your car.

Both also possess a multitude of other useful, state-of-the-art features which will recommend them to the most discriminating autosound audiophile.
COLLIDING WITH MULTIPATH DISTORTION.

By its very definition as a moving reception point, a car FM tuner constantly falls prey to signal reflections from hills, skyscrapers, bridges and even other vehicles. These extra phase modulating signals trick conventional tuners into producing audible sounds we call multipath.

Starting outbursts of clicks, pops, "picket fencing" and other rude and indescribable sounds.

The trouble is, by its very nature, multipath distortion cannot be cured by conventional circuit "improvements". In fact, the better an autosound tuner is, the more faithfully it is deceived into converting phase modulation into ghostly-sounding interruptions in your favorite station.

COMPUTER LOGIC-CONTROLLED DIVERSITY ANTENNA SWITCHING DRIVES AROUND MULTIPATH.

One way to get temporary relief from interference at home is to move the antenna around slightly. That is in effect what the Carver TX-Seven and TX-Nine do with sophisticated circuitry in your car. Instead of physically moving one antenna, they turn your rear defroster into a second separate antenna, 180 degrees out of phase with the first. When multipath occurs, a special smart circuit automatically switches (at the speed of light) to the other antenna, automatically correcting phase and eliminating the multipath before you ever hear it. In serious cases, the circuit actually uses both antennas inputs at once, deriving a signal through sum and difference principles.

ASYMMETRICAL CHARGE-COUPLED FM DETECTION CIRCUIT BRINGS IT ON HOME.

What little multipath distortion gets through the TX-Seven and TX-Nine's unique smart antenna system runs headlong into the remarkable tuner innovation *High Fidelity Magazine* described as "distinguished (by) its ability to pull clean, noise-free sound out of weak or multipath-ridden signals."

It specially treats the critical, multipath-prone left-minus-right (L-R) signal with a Charge-Coupled circuit that detects "dirty mirror image" signals and cancels them before they can reach your ears. Then the Leading Edge Detector circuit processes the final 5% of the L-R and interleaves it with the tuner's receiver matrix.

Alone, without antenna diversity switching, the TX-Seven and TX-Nine's Asymmetrical Charge-Coupled FM Detection Circuit delivers a net noise and distortion reduction of 92.9%. Together, they set a new standard for clean, clear FM autosound reproduction.

THE MULTIPATH MARATHON: REAL WORLD CONFIRMATION IN THE MISTS OF THE NORTHWEST.

Bob Carver is both a theorist and a practical inventor. Circuits that work on paper get exhaustively tested in the field before release.

So he assigned a hapless engineer to map out the ultimate multipath-ridden route for confirmation of the TX-Seven and TX-Nine's special circuitry. With mountains, hills, huge evergreen trees, skyscrapers, large steel bridges, good robust traffic jams and a few assorted six-story-tall Boeing hangars, it didn't take long to map out a 6-mile course that could regularly deliver at least 287 separate multipath occurrences.

Engaging the Asymmetrical Charge-Coupled FM Detection circuit and automatic antenna switching reduced occurrences to an average of two during the same 6-mile course while listening to the same stations!

Although results may vary in your locale, the same 90+% reduction in multipath has been confirmed in other widely diverse portions of the U.S. The TX-Seven and TX-Nine work, and work well.

OTHER REMARKABLE TUNING FEATURES, TOO.

First, the TX-Seven and TX-Nine also receive Long Wave and Short Wave stations. And of course, both tuner/cassette decks have plenty of random presets...you can tune any fifteen AM, FM, SW or LW stations quickly for instant recall. Plus auto-scan and manual tuning.

But they also have a system that makes setting up all fifteen presets virtually instantaneous. Just press the button marked BEST and the tuner's logic circuitry will automatically select the fifteen cleanest, strongest signals and lock them in on the presets!

And that's in addition to your fifteen individual random presets.

As with all Carver products, the TX-Seven and TX-Nine do not sacrifice ease of use for useless, complicated frills. Instead, they answer every possible need without resorting to elf-sized buttons or gizmo flashing light displays.

Their metal-compatible, Dolby® NR, auto-reverse cassette sections rival any in the world. Both the TX-Seven and TX-Nine have separate bass, treble, balance and loudness controls and a full-function LCD display with night illumination.

All operations are signaled with a gentle "beep" that keeps your eyes on the road, not on the compact, ergonomically-styled deck.

There's even a security code system that renders the TX-Seven or TX-Nine inoperable to anyone but you (and a window sticker to impart this discouraging information to others).

If you prefer, the quick removal system that slips out your TX-Seven or TX-Nine in seconds for storage in trunk or house.

THE BEGINNING OF THE PERFECT AUTOSOUND LISTENING ENVIRONMENT.

Out of the hundreds of tuner/cassette models currently available, only the TX-Seven and TX-Nine deliver home-stereo quality FM in your car. They achieve it with unique technology. And they are built to outlast your car, no matter what kind of climate you live in.

Coupled with a clean amplifier, such as The Carver M-240 Car Amplifier and state-of-the-art speakers, your ability to transform your car into a concert hall is almost unlimited.

We urge you to audition the TX-Seven and TX-Nine at your Carver dealer soon. They can put you in the driver's seat of a unique, interference-free musical experience.

THE TX-SEVEN AND TX-NINE

TUNER: 0 Asymmetrical Charge-Coupled FM Stereo Detector 0 Automatic Computer-Controlled Diversity Antenna Switching 0 AM, FM, Long Wave and Short Wave Bands 0 15 Random Presets 0 BEST Circuit for Auto-Selection of 15 Strongest Stations (in addition to 15 individual presets) 0 Preset Frequency Auto-scan 0 Auto-scanner Tuning 0 Manual Tuning 0 LCD Frequency Read-out CASSETTE: 0 Auto-reverse 0 Programmable Music Search (TX-Nine only) 0 Computer Logic Activated Controls 0 Dolby BNR 0 Dolby C NR (TX-Nine only) 0 Metal Tape Bias Selector 0 General: 0 Security Code System 0 Audible Confirmation of All Functions 0 Separate Bass, Treble, Balance and Loudness Controls 0 Full-function LCD Read-out 0 Night Illumination 0 CD Line Level Input (TX-Nine only) 0 Quick Release Removal System 0 Year Warranty SPECIFICATIONS: 0 Tuner: S/N: 76dB 0 S/N: 65dB with Dolby B NR: 70dB with Dolby C NR: 70dB 0 Tape Frequency Response: 20Hz - 15kHz 0 Dimensions: 190mm W x 53mm H x 150mm D (DIN mount)

Dolby is a registered trademark of Dolby Laboratories.
(continued from page 45)

The effect can also be tailored with the tone controls, whose multiple adjustments make them unusually flexible for such a purpose. The bandwidth adjustments are calibrated in arbitrary numbers from 1 (narrow) to 10 (wide). With maximum boost or cut, the curves are up or down by 3 dB (relative to reference level) at frequencies that are about 7 octaves apart for the maximum (10) setting, 5 octaves apart for the median (5/4) setting, and less than 2 octaves apart for the minimum (1) setting. Maximum boost or cut, itself, is remarkably close to the nominal ±12 dB calibration, though it falls a trifle shy of this mark in some instances with the narrowest bandwidth. Center frequencies, too, are quite close to the nominal calibrations.

All in all, the tone controls are remarkably symmetrical, consistent, and predictable in their behavior. Admittedly, the multiple knobs take a little getting used to if you’ve never experienced parametric controls before. Once you learn how to achieve the effect you’re after, however, they will do things that are utterly beyond the reach of conventional tone controls (or even graphic equalizers). Our only regret in this respect is that they can’t be switched into the recording circuit to help you re-equalize problem sources like early LPs, where they can do an audibly superior job of discovering some bloom in recordings that sound downright nasty with the modern RIAA EQ. The fact that the controls are relatively difficult to set up in the first place further argues in favor of taping the re-equalization and, in the future, playing the tape instead.

The phono section, too, measures closer to the nominal values marked on the various settings than is sometimes the case, even in such relatively expensive equipment. Response (measured through the various settings of Phono 1) is quite flat for both moving-coil and fixed-coil cartridges. There is a tiny prominence just below 30 Hz, with an equally tiny rolloff below. A slight treble rise is more apparent. It amounts to about 2/3 dB at moving-coil settings, even less for fixed-coils. Rolloff at the extreme top end is a little more precipitous in the fixed-coil settings: down 3/4 dB at 20 kHz, as opposed to about 1/2 dB for moving coils. Phono noise is exceptionally low, as, for that matter, is the noise through the high-level inputs. Channel separation is much more than adequate, and all of the input and output impedances and sensitivities are appropriate.

We were a bit surprised at the overall response through the high-level inputs. Our data chart shows the respectable frequency response measured with the standard HPF levels and settings, designed to simulate typical use. We would have expected something better than respectable of the C-85, however, and when the lab rechecked the measurement at the maximum volume setting, response did, indeed, prove superb: +0, —1 dB from below 10 Hz to 100 kHz, and down only 3 dB at 300 kHz. Paradoxically, you’re likely to reach anything approaching maximum volume setting (unless you’re using a very-low-sensitivity power amplifier with a low-level source) only with the loudness ring turned way down and considerable loudness compensation applied. So the flattest response is essentially unachievable in normal use.

Overall, not even excepting this minor response anomaly, we consider the C-85 an excellent preamp and an appropriate successor to the C-70, which is saving a lot. There’s a lot to be said, too, for its approach to adjustability, though cost saving isn’t among those virtues. It also demands more understanding of high fidelity for correct use of these controls than is needed to make best use of a high-performance model at the other extreme—say, with no tone controls at all. Which is to say that while the C-85 isn’t for everybody, it will delight those who want or need its particular abilities and know how to make good use of them.

TEST REPORTS

Pioneer CT-A7X Cassette Deck


The CT-A7X, positioned just below the top of Pioneer’s current cassette-deck line, is a three-head unit allowing monitoring from the tape during recording. It has the company’s proprietary laminated-ribbon recording and playback head elements mounted in a single housing, a closed-loop dual-capstan drive, Dolby B and C, and, as befits a model intended for serious recordists, a deflatable multiplex filter. There are also the usual convenience features (timer operation, music seek in either direction, automatic source/tape monitor) (continued on page 79)
Computer PT Boat

It's a swift, incisive, 5 pound powerhouse armed with MicroPro's powerful Wordstar Word Processing and Calc Spreadsheet Programs. This 64K briefcase portable is ready to sink battleship sized desk PCs. Add 2 modems, more software and a superb near letter quality printer, and it's a $1,968 retail value. Price blasted to just $699.

By Drew Kaplan

Attack wasted time. Work where and when you want. Connected to, or competing with a desk top PC, Epson's portable computer is a perfect main computer or companion to one you have.

And competing with a desk top computer for most applications, is no idle joke. Wait till you read about the power and versatility of this computing system.

At only 5 pounds, including its built-in ni-cad batteries, it fits easily in your briefcase, without filling it up.

So, you can have full word processing, spreadsheet analyses/projections, telecommunications and computing power wherever you are, without having to look for a desk or even an AC plug.

Its full size keyboard is 98.6% the size of a standard typewriter, so your hands won't be cramped after hours of typing.

Its non-glare infinitely adjustable, high resolution, full 80 column, 8 line LCD display with full 25 line access, won't give you eye fatigue.

It has battery backed memory in the form of an instant access RAM disk, which you'll use much like a hard disk. And, it has infinite capability to store files through its unique on-board micro-cassette drive which functions more like a floppy disk drive than a cassette drive.

Imagine a microcassette drive with a file directory and high speed access to the beginning of the specific file you want. It knows exactly where each file is.

Now, you'll NEVER waste time when you are stuck waiting, traveling on a train, a plane or sitting in a hotel room.

And, most important. By using normally dead time that gets wasted every day, you'll find you have more free time to spend with your family and friends and to pursue your hobbies. Wow!

So, whether you're a writer and/or a company president as I am, or a student as I once was, this computer will let you be incredibly more productive.

If you're an accountant, which I'm not, you can run spreadsheets and models with the 16,384 cell Calc program.

However, you'll be amazed at how easy it is to use this spreadsheet program and all the things it can do for you. It comes with a great tutorial which will have you projecting your own sales, profit, and more in just about an hour.

Just imagine how effectively you can get your ideas across to clients when you can change variable models of their potential costs or profits right in front of their eyes in their own offices or even at a restaurant while you wait for lunch.

Plus there's a scheduler program for setting up appointments with day by day calendar screens that you can print out. You can even look at a bar chart that shows how you've planned every 1/2 hour for the next 24 days. It's great for slotting in new appointments.

Of course there's a vast reservoir of programs you can buy or even download for free from electronic bulletin boards by using the included modems.

IT GOES WHERE YOU GO

During the day, you can use it at your desk, in the warehouse or in the field for work. It's simply great for writing, inventory taking or sales forecasting.

At night, take it home to finish a project. Then, you can study your stock portfolio or log onto databases to make airline reservations, check the latest price of gold or the specific history of one of your stocks. You can even get the current S&P Green Sheet Reports.

And, look at this. You can actually Next Page Please...
Epson Continued

look up on-line information about public companies’ 10K reports, such as earnings, officers’ salaries and trends. Wow, what a great way to keep track of your competition, suppliers and customers!

If you’re a student, you’ll find a wealth of research information available through your modem on thousands of diverse subjects. There are lots of group forums on-line to help you with educational research. Plus, when you’re through studying, you can even log onto a computer dating board and choose your ideal mate.

And look at this bonus. If you’re at all shy about using modems, we’ve included a $39 value (we sold it for $24) CompServe Membership Package, complete with a full manual and $25 worth of free on-line time.

While many bulletin boards are free, you’ll find that learning your way around CompServe with $25 worth of free time, will give you a good solid knowledge of how to get the information you want from bulletin boards across the country.

HOT LINK

You can directly connect this Epson computer to any IBM PC or Clone or virtually any other computer with a serial interface and any standard communication program, simply by using its cable.

You can download (receive) a file from your desk PC to the Epson to take with you, or upload (send) a file from the Epson to your desk PC for your secretary.

In fact, this system is an incredible replacement for a secretary’s typewriter. Portable WordStar will let you edit, correct and even move paragraphs or sentences at will. A letter won’t have to be re-typed and reproofed if a change is made.

No matter where you use Epson’s computer, you’ll have up to 10-20 uninterrupted hours of computing from its internal ni-cad batteries. Then it will automatically shut down. Even after battery-low shutdown, your memory will be protected by the internal backup battery.

Of course, the AC adaptor/charger is included. So, you can operate from AC or DC to suit your needs.

Geneva’s microcassette drive gives you a choice of storing your files on the RAM disk or on microcassettes. The onboard microcassette drive uses standard 30 or 60 minute microcassettes. Just one 30 minute tape will store up to 50,000 bytes of information (about 25 pages of text).

And, don’t forget, this intelligent machine actually stores a directory at the front of each cassette and in RAM. You can directly access any whole file without having to search a whole cassette. This computer will power off after 10 minutes if you don’t enter data to save its batteries. (Shut off time is adjustable.) Just flip a switch and you’ll be exactly where you were when it powered down.

It can use its on-board clock to turn itself on. And, if you type in a password, your information will be secret.

This $995 Computer comes complete with 4 powerful software programs plus a group of Utility Programs. The programs are stored on ROM Chips that simply slip into either of 2 sockets on the back of the computer.

Again, like a hard disk, these ROM chips are fast and load automatically. You get Portable WordStar, Portable Calc and Portable Scheduler. Plus you get a powerful form of Basic. This system can run virtually any CP/M programs.

You can write very sophisticated programs in Basic. This advanced Basic is so powerful that it even supports such obscure extensions as Innkey$. And, it supports sound, so you can even finish Schubert’s ‘Unfinished Symphony’.

Here’s just one menu from the Utility Programs Rom.

There are two ports on the back of the Geneva. One is a serial port for the optional disk drive(s). The other is a fully programmable RS232 serial port for the superb printer we have included. Or, you can use it to communicate with other computers and external modems.

Of the total 64K in this computer, you can actually store files in a 24K RAM disk. The balance of RAM is used for running your programs. But, don’t fret, there’s lots more RAM and power to come.

THE FLYING WEDGE

A 24K RAM disk will feel like a lot of writing to some. But if you write as much as I do, you’re sure to want more.

Another reason for more RAM is that WordStar creates back-up files which occupy memory space.

Back-up files are really great, because if you are editing a file you’ve written and you really mess it up, you can go back and get your untouched back-up file and start over. So read on for more memory.

Epson makes a $360 accessory (included) called a Multi-Unit which gives you a 64K RAM disk and leaves all the RAM within the computer. Even finds processing.

It’s a small wedge that attaches to the bottom of the computer and doesn’t increase its footprint on your desk at all.

And there’s more. The 1st modem I described earlier is included inside the Multi-Unit Wedge. It’s a 300 baud automatic, auto-dial Tone-Modem.

It’s a terrific modem that comes with a modular phone cable that you plug into any standard phone jack and away you go.

Well you won’t go far, since Epson doesn’t include a modem program. The modem program is a $79 value. We’ve included one that lets you dial in Tone or Pulse, and send or receive files. It’s very sophisticated but it’s very easy to use.

And oh yes, the Multi-Unit has one more feature. It has a 3rd ROM slot for the Utility ROM. So, you can keep 2 programs loaded in the computer. You can swap ROMs in less than 10 seconds, so it’s no big deal, but an extra slot is nice. Once attached, the Multi-Unit actually becomes part of the computer.

GENEVA USER’S GROUP

There is a terrific guy who knows just about everything about the Geneva, including where to find all types of software for more diverse applications.

It’s a free bulletin board. If you have a modem now, you can log on by dialing 1-313-538-6968. The SysOp, as system operators are called, can answer questions and even supply you with public domain software.

He’s been an incredible help to me and he’s got everything from a spelling dictionary to an outline formatter to games. He can even produce ROMs for you or direct you to various bulletin boards you’ll find of interest.

Since he doesn’t work for DAK, I can’t guarantee he’ll always be there, but he has been for me, and at least you’ll get a running start on doing a whole lot more than you, or frankly Epson, probably ever imagined with this computer.
Epson Continued on the road, you may need Epson's $129 acoustic coupler modem. It fits on pay phone and hotel room handsets (the rounded traditional kind only).

It's a 300 baud modem that you can use with any computer. It has its own internal ni-cad batteries and its own charger. Wow, this is some system.

PRINTER HEAVEN
We've acquired a superb $299 List Price NLQ (Near Letter Quality) printer from Seikosha, Epson's sister company. It can take single sheet plain paper or letterhead or fan fold computer paper. And its printing is so good (that I think Near Letter Quality doesn't do it justice.

It's fast, quiet and easy to use. It's AC powered. It has a Self Test Mode, Bold, Underline, Condensed and Expanded Type capabilities. It's a superb value at $299, but to be honest, I've seen it selling for as little as $195.

This printer is the best NLQ printer I've used. I'm proud to have my important business letters printed on this printer mailed from my office.

I can't overemphasize what a powerful word processing system this is. You can type your letter so quickly (so quiet) that I think exactly what you see on the screen).

AND YOU THOUGHT THAT WAS ALL
Epson didn't include free cables to connect any of these devices, but we have. You'll get a $29 cable to connect the Geneva to the printer or to your desk top computer.

But, does your computer have male or female Serial plugs? Well I don't know, so we've included a $19 Gender Bender so you can connect to male or female.

For external modem use, you'll need what's called a Flip (included). It's a $19 value and it makes Epson's cable suitable for a modem. So, wherever you take your Geneva, you can plug in.

THE BEST FREE PART OF ALL
We've written an easy to understand, step by step instruction book that basically instructs you how to take the computer out of the box and how to plug it in.

Then in step by step detail, you'll get into each facet of its basic capabilities.

Of course, you'll get a massive set of individual instruction and reference manuals from Epson and MicroPro too.

By the way, if you suffer from fear of spreadsheets and modeling, in an hour you'll be a confirmed user. MicroPro's Calc tutorial is fabulous.

WHY SO CHEAP?
It's a terrific $1,968 system. And, that's just the problem. Epson designed and built very sophisticated equipment. But they relied on salespeople to explain what was needed to consumers.

Many salespeople don't understand why you need each component and what it does. So, only the very sophisticated consumers who figured it out themselves were able to put together a really productive system.

Enter DAK. Epson was stuck with 6714 computers. We made them a ridiculously low offer (we frankly didn't think they'd accept) for everything. Well, 6714 computers isn't very much to a company the size of Epson, so they accepted.

Then, we sifted through all the components and chose just the most useful, added the printer, the cables and the programs required and slashed the $1,968 retail price down to just $699.

Every Epson Component is backed by Epson's standard one year limited warranty. And, the printer is backed by an almost unbelievable 2 year limited warranty from Seikosha.

THE COMPLETE COMPUTER SYSTEM RISK FREE
Wait till you experience the power and your own increase in productivity, as I have. I'm amazed at the amount of work I can get finished in half hour segments if I'm stuck at a restaurant or during unexpected breaks between meetings.

What's more exciting, is that instead of referring the work to my PC when I get home, I like the keyboard on the Geneva so well that I'm finishing what I start, right on the Geneva.

Just imagine working at your desk, on the patio or in a hotel room. I actually wore an ad on a flight from Atlanta to Boston. I'm using this computer.

If you're not 100% satisfied with its typing or computing or communications capabilities, simply return it in its original boxes within 30 days to DAK for a refund.

To order your Epson Geneva 64K portable computer complete with Portable WordStar, Calc, Scheduler, Basic and CP/M Utilities, On-Board Battery Access, Microcassette Deck, Built-In Ni-Cad Batteries, AC/Charger Adaptor, Extra 64K RAM Disk Wedge with 300 Baud Modem, External 300 Baud Acoustic Modem, Communication Software, NLQ Sheet and Fanfold Printer, plus Cable and Connectors, forget the suggested retail price of $1,968. Call toll free or send your check for just $699 plus $18 for P&H. Order Number 4610. CA res add tax.

OPTIONS
Once you attach the Multi-Unit Wedge or options below, the computer initializes itself to the installed component. So, the following 2 options are instead of, not in addition to, the Multi-Unit.

If you don't need the extra 64K RAM disk memory, you can have the complete system with a Wedge that contains only the Modem for just $629 ($18 P&H) Order No. 4611.

If you don't need a modem and you're into writing long novels, we have the complete system less the modem and Cowon Adaptor Wedge that gives you a 120K RAM disk (Wow) for just $799 ($18 P&H) Ord. No. 4612.

Note: You can still use an external modem. For the many people who already own basic Genevas, you can purchase the $480 modem. Epson can have the complete system less the modem and Cowon Adaptor Wedge for just $200 ($5 P&H) Order No. 4613.

OPTIONS FOR EVERYONE
For massive storage we have Epson's state of the art 3½" floppy disk drive. It's rated at 320K. It has internal Ni-Cad Batteries and an AC Adaptor/Charger. Epson's retail is $599, plus $19 for the Cable and $17 for the Utility Disk for the drive. It plugs directly into the Geneva's serial port and boots automatically. This $635 value is yours for just $189 ($5 P&H) Order No. 4614. Note: You may connect up to two disk drives.

A box of 10 Double Sided Double Density 320K Floppy Disks is just $34 ($1 P&H) Order No. 4615. Note: 3½" disks are the standard format for many of the newest computers.

High Grade Microcassettes for the cassette drive are available in 30 and 60 minute lengths. They come in hard plastic boxes. 30 minute microcassettes are just $2²: ($0.50 P&H). Ord. No. 4616. 60 minute microcassettes are just $3²: ($0.50 P&H). Ord. No. 4617.

The Seikosha printer comes with a unique long life ribbon (up to 2½ million characters). Extra ribbons are just $7 ($1 P&H) Order No. 4618.

You'll buy or download software as you broaden your computing needs. Epson had some great programs in stock.

You can have Travelers Pack: Time, Appointment, $ Expense manager which is fabulous for a lot of reasons. But, if you bill your time, it lets you feed in projects and multiple billing amounts for each client. Each program is on its own ROM and it's a $139 retail value. It's yours for just $29 ($2 P&H) Order No. 4619.

Epson even had a small supply of Ashton-Tate's dBase II on ROMs for the Geneva. It's a sophisticated relational database management program. It's file compatible with desktop dBase II versions. It's a $469 retail value that's yours for just $199 ($3 P&H) Order No. 4620.

Epson also has Ashton-Tate's dTraveler on ROMs which is a less expensive version of dBase II with most dBase II functions. It's also file compatible with desktop versions of dBase II. It's a $329 value that's yours for just $129 ($3 P&H) Order No. 4621.

As you can see from the above software, the Geneva can run even the most complex, sophisticated programs. It makes duck soup out of most of the standard $20 to $99 programs you'll find.

For your desk, your home or for the great outdoors, you'll be able to write, forecast, and compute with mammoth power and in real style. Like a PT Boat, this computer moves in fast and does the job while it lets you escape the chains of traditional deskbound PCs.
Dear Customer,

From: Drew Kaplan

Escort turned down our $10,000 head to head challenge described below. Escort says that Maxon’s Radar Detector is "primitive", "bottom-end" and "an off-shore produced electronics ‘gadget’". I don’t know about you, but to me these words conjure up visions of a cheap toy being produced off in the middle of a rice paddies mean a high manufacturing cost.

There’s no question in my mind that Maxon can manufacture cheaper in an off-shore ‘rice paddy’, but if you pay $245 for Escort or $295 for Passport, it should be based on a head to head test with Maxon, not on perceived retail price points.

FORGET PRICE COMPLETELY

So, forget that Escort costs $245, Passport $295, and Maxon $99	extsuperscript{9}. Let’s judge them on their own merits. And, let’s look at just what Escort itself has to say about our challenge. (Please read DAK’s and Escort’s letters to the right.) Escort says that, “Regardless of the results, such an event lends credibility to the challenger.” Well, they are absolutely correct. That’s why I put up the $10,000 in the first place. Fair is fair.

Plus, there are several radar detectors that claim to have won this or that ranking in “Independent Magazine Reviews.” So, I’m ignoring any reviews and asking for a one on one, head to head test.

But look at what Escort says in their letter: “Range is the easiest detector quality to measure, but by no means the only important quality.” Wow, I thought range was really important?? Escort refers to “goodness” being determined by things not so easily measured.

Well frankly, I don’t know how to measure “goodness”. Escort, in my opinion, is a top notch company. They make a superb product I’d be proud to sell. And, they have great customer service.

DAK has great toll free technical and regular customer service. But, I’d be the first to admit that with over $45 million in profits, Escort can probably run circles around us in advertising, and maybe even in service. But, I don’t think they can beat Maxon’s Radar Detector.

HOW GOOD IS GOOD?

When Escort was introduced, it was revolutionary. But, you can only go so far. And in my opinion (someone else might object), radar detecting has gone as far as it can go. So, while Escort has made improvements, it’s Maxon who has moved mountains to catch up.

DAK UPs THE ANTE TO $20,000

Now I realize that next to $45 million dollars, $20,000 isn’t much, but it’s a lot to DAK. And, I’ll even go one step farther. I’ll print the exact results of the test, win, lose, draw, or no-show in the first catalog I publish after January 1, 1987.

Escort, the ball is now in your court. Below is the “NEW” version of my challenge with the time and amount changed.

I don’t know what else DAK or Maxon can do to prove that the RD-1 Superheterodyne Detector should be judged on its head to head performance against Escort, not on its selling price!

Bob Thetford, the president of Maxon Systems Inc., and a friend of mine, was explaining their new RD-1 anti-falsing Dual Superheterodyne Radar detector to me. I said “You know Bob, I think Escort really has the market locked up.”

He said, “Our new design can beat theirs”. So, since I’ve never been one to be in second place, I said, “Would you bet $20,000 (10) that you can beat Escort?”

And, as they say, the rest is history.

By the way, Bob is about 6’9’’ tall, so if we can’t beat Escort, we can sure scare the you know what out of them. But, Bob and his engineers are deadly serious about this ‘duel’. And you can bet that our $20,000 (was $10,000) is serious.

A $20,000 Challenge To Escort

Let’s cut through the Radar Detector Glut. We challenge Escort to a one on one Distance and Falsing ‘duel to the death’ on the highway of their choice. If they win, the $20,000 (was $10,000) check pictured below is theirs.

By: Bob T. Theford

We’ve put up our $20,000 (was 10). We challenge Escort to take on Maxon’s new Dual Superheterodyne RD-1 $99	extsuperscript{9} radar detector on the road of their choice in one on one conflict.

Even Escort says that everyone compared radar to Escort, and they’re right. They were the first in 1978 to use superheterodyne circuits and they’ve got a virtual stranglehold on the magazine test reports.

But, the real question today is: 1) How many feet of sensing difference, if any, is there between this top of the line Maxon Detector and Escort’s? And 2) Which unit is more accurate at interpreting real radar versus false signals?

So Escort, you pick the road (continental U.S. please). You pick the equipment to create the false signals. And finally, you pick the radar gun.

Maxon and DAK will come to your highway with engineers and equipment to verify the results. And oh yes, we’ll have the $20,000 check (pictured) to hand over if you beat us by more than 10 feet in either X or K band detection.

BOB SAYS MAXON IS BETTER

Here’s how it started. Maxon is a mammoth electronics prime manufacturer. They actually make all types of sophisticated electronic products for some of the biggest U.S. Electronics Companies. (No, they don’t make Escort’s).

By Bob T. Theford
with a $20,000 (was $10,000) check made out to DAK if we win.

into action in just 1/4 of one second.

Just imagine the sophistication of a device that can test a signal 4 times in less than 1/4 of one second. Maxon’s technology is mind boggling.

But, using it isn’t. This long range detector has all the bells and whistles. It has separate audible sounds for X and K radar signals because you’ve only got about 1/3 the time to react with K band.

There’s a 10 step LED Bar Graph Meter to accurately show the radar signal’s strength. And, you won’t have to look at a needle in a meter. You can see the Bar Graph Meter with your peripheral vision and keep your eyes on the road and put your foot on the brake.

So, just turn on the Power/Volume knob, clip it to your visor or put it on your dash. Then plug in its cigarette lighter cord and you’re protected.

And you’ll have a very high level of protection. Maxon’s Dual Conversion Scanning Superheterodyne circuitry combined with its ridge guide wideband horn internal antenna, really ferrets out radar signals.

By the way Escort, we’ll be happy to have our test around a bend in the road or over a hill. Maxon’s detector really picks up ‘ambush type’ radar signals.

And the key word is ‘radar’, not trash signals. The 4 test check system that operates in 1/4 second gives you extremely high protection from signals from other detectors, intrusion systems and garage door openers.

So, when the lights and X or K band sounds explode into action, take care, there’s very likely police radar nearby. You’ll have full volume control, and a City/Highway button reduces the less important X band reception in the city.

Maxon’s long range detector comes complete with a visor clip, hook and loop dash board mounting, and the power cord cigarette adaptor.

It’s much smaller than Escort at just 3½" Wide, 4½" deep and 1½" high. It’s backed by Maxon’s standard limited warranty. Note from Drew: 1) Use of radar detectors is illegal in some states.

2) Speeding is dangerous. Use this detector to help keep you safe when you forget, not to get away with speeding.

SO WHAT’S DUAL SUPERHETERODYNE?

Ok, so far we’ve set up the conflict. Now let me tell you about the new dual superheterodyne technology that lets Maxon leap ahead of the pack.

It’s a technology that tests each suspected radar signal 4 separate times before it notifies you, and yet it explodes

...Challenge Continued

We ask only the following. 1) The public be invited to watch. 2) Maxon’s Engineers as well as Escort’s check the radar gun and monitor the test and the results.

3) The same car be used in both tests.

4) We’d like an answer from Escort no later than December 31, 1986 and 60 days notice of the time and place of the conflict. And, 5) We’d like them to come with a $20,000 (was $10,000) check made out to DAK if we win.
Weird Music?

Now you can listen to music that’s coursing through the AC wiring system of your home. It’s exciting. It’s soothing. It’s vibrant. And, it’s all around you.

By Drew Kaplan

No, I don’t want you to listen to the 60 cycle hum of your AC power. No, I don’t want you to listen to a 120 volt blast.

But, if you’re like me, you’re going to find that this ‘Weird Music’ is really going to end musical frustration. And frankly, I’ve been frustrated.

As you might expect from reading my catalogs, I have 4 complete music systems in my home, and a very large collection of records, cassettes, open reel tapes and CDs.

One reason I’m frustrated is because I can’t listen to my open reel tapes unless I’m at one of my two main systems.

And, if I’m on the patio, in the kitchen, or in the garage, I’m relegated to AM, FM or cassettes on a pocket stereo or portable.

And frankly, I’ve never taken the time to transfer all my albums, open reel tapes and cassettes. So, I haven’t been able to listen to what I want where I want.

WELL, NO MORE

It may seem weird to plug a speaker into an AC outlet, but a new technological breakthrough has allowed me to listen to any music I choose from my best stereo, anywhere in my home.

The music (or speaking) is transmitted through the AC wiring in my home. So, instead of running speaker wires all over my house, I just plug in a speaker wherever I want rich, room filling sound.

I really like it. I had always wanted to have wireless speakers in my living room because my wife hates having me run wires everywhere.

In the dining room, we can have uninterrupted music from one of my auto-reverse cassette decks ‘piped in’ while we entertain guests.

In the bedroom, now I can listen to my old open reel tapes. And in the garage, I can use the continuous programmable playback from my CDs. Of course, my system can transmit AM or FM too.

NOT STEREO AND PROBLEMS

It’s not a perfect system. But, you’ll be shocked by the magnificent rich sound.

And, installation consists of simply plugging its cable into the left and right tape jacks of your receiver and plugging in the AC power transmitter.

It will have no effect whatsoever on your stereo system.

NOTE: Don’t worry about your tape jacks. Extra jacks are provided so you won’t lose the use of your tape jacks.

The 9½" X 4½" X 6" speakers will knock your socks off with their rich full sound. A 4½" woofer combined with an acoustically designed cabinet really belts out the bass, while a 2½" tweeter easily matches the high frequency response of most traditional speaker systems.

A word about noise. You can virtually forget it. This system is virtually noiseless. It operates on VLF (Very Low Frequency) FM that is virtually unaffected by noisy motors and fluorescent lights. It will, however, react to wireless intercoms and the BSR's X10 remote control system that we sell. But, the reaction is momentary and not too bothersome.

So, in short, although it’s not stereo (you can put two speakers in a room), it’s a fabulous sounding way to listen to your favorite music wherever you are.

IT'S PORTABLE

Installation of the speakers consists of simply plugging them in. Then you can adjust their On/Off volume controls. Each even has a handle on the back so you can take them out to the garage, the patio or even to unattached barns.

As long as you’re on the same side of the AC transformer (most houses are), virtually any plug in your home should be a source of your favorite vibrant music.

It’s made by Universal Security and backed by their limited warranty. NON-WEIRD MUSIC EVERYWHERE, RISK FREE.

Wait till you hear the quality and depth of the sound. Wait till you listen to your favorite music in the bathroom, guest room or laundry or bedroom.

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

To order your Wireless Music System complete with Transmitter, Cables and a 2-Way Speaker System risk free with your credit card, call toll free, or send your check for DAK’s breakthrough price of just $699 (5 P&DH). Order No. 4631.

You can add as many extra, Dramatic Sounding 2-Way Powered Speakers as you wish. Each is just $499 (5 P&DH). Order No. 4632. CA rates add tax.

It's big sound wherever you are. Don't just expect boom box quality. You'll have rich deep bass and clean highs. And, best of all, you'll have your favorite music.

But, it’s not stereo. It combines the signals from the left and right channels...
Thunderstruck

It's like riding a roller coaster. You never know what to expect next. About the only thing you can be sure of is that you'll have great sound from this magical new deck. It's yours for just $149, with no catch.

By Drew Kaplan

It's no secret. You can see that it's a double deck for dubbing. You can also see that it features auto reverse for non-stop entertainment.

And, you can even see that it has high speed dubbing for expanding your tape collection or making tapes for your car or personal use.

But, what you can't easily see is what you're going to get when you add up all these sophisticated innovations and then throw in some surprising extras.

STRANGE EGG

And speaking of strange, extra, what would you think of being able to listen to two tapes at the same time. It's great for mixing vocals, but it's a feature that I've never seen before.

But, let's look at some everyday useful features that make this deck totally unique and superbly useful. Of course, it has a frequency response to 17,000hz, so whatever you do will really sound great.

First, let's just listen to a tape. Just put the tape in deck '1' and activate the 'soft touch' play button. Well, that's really too simple. Let's listen to song 3 on side two of the tape.

This deck features forward and reverse APSS. Just touch forward APSS and the deck will locate the beginning of the next song on the tape and start playing.

If you'd like to skip the rest of the song or continue skipping songs, just press forward APSS. If you're listening to a song you'd like to hear again, just touch reverse APSS. The deck will locate the beginning of your song.

Since APSS locates the beginning of each song on your tape, this feature will make it really easy to choose the exact order in which you want to copy songs. APSS even allows you to have the deck pause at your song.

If you noticed above that I said song 3 on side 2 of the tape, it must be clear that this is an auto reverse deck and that APSS will search both sides of the tape.

When you're playing a tape, the deck will reverse automatically at the end of a cassette, or at any time you touch the 'Tape Direction Button'.

JUST THE BEGINNING

Just imagine listening to both sides of a cassette and then having a second cassette start to play both sides on and on, forever. Well, this deck features sequential play between its two decks.

So, you can listen to 3 hours of unrepeated music from 2 standard 90 minute cassettes. Then, the second deck will keep repeating, forever.

Both decks give the option of conventional one-way play or continuous play. Now you can have uninterrupted music while you work or while you relax. And, isn't that what enjoying your music is all about?

AND OH, DOES IT RECORD

Imagine putting a recorded tape in deck '1' and copying BOTH SIDES automatically. Well, with Sharp's new deck, that's exactly what you'll do.

You can copy both sides of a pre-recorded tape onto a single side of a 90 minute cassette automatically. (Both decks can reverse totally independently.)

You can duplicate at normal or high speed. So, you can make copies in half the time of both sides of your cassettes.

This deck has electronic high speed dubbing. Each of its decks has 2 capstans for rock stable tape transport. About the only thing this deck doesn't have it Dolby C. But with its 66db signal to noise ratio with Dolby B, it sounds great.

Note: When you copy tapes, you turn off Dolby. If the tape is already encoded with Dolby B or C, the copy will be identically encoded as well.

Add Sound On Sound. If you sing, this is the deck for you. Here's what you do.

You can play a music tape on deck '1', plug in a mike and sing along while you record everything on deck '2'.

Or, if you're really into professional applications, look at this. Plug in a mike and record your own voice on deck '2'. Then play the tape back on deck '1' and copy the tape onto deck '2'. While the tape is being copied, you can add your self singing harmony. In this way, you can be a duet, a trio or even a chorus.

ROUND AND ROUND IT GOES

It goes forward. It goes backward. And, it goes round and round. Just wait till you see this recorder in action.

You'll sit mesmerized as one tape stops and the other starts. Then it reverses and goes back and forth and back and forth. Are you getting sleepy?

Except for the occasional click as this machine changes decks or reverses direction, nothing will disturb your music for as long as you want with this incredible new deck.

Each deck has its own equalization switches to match tape type. Each deck has full play, pause, and reverse controls. Deck '2' is the deck that records.

The deck is 17" wide, 43" tall and 94" deep. It's backed by Sharp's standard limited one year warranty.

BE THUNDERSTRUCK

RISK FREE

Wait till you hear the clean pure music that this deck will produce. Wait till you get your hands on its solid controls. Wait till you enjoy uninterrupted hours of your favorite music from two different cassettes. And finally, wait till you copy both sides of cassettes automatically.

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

To order your Sharp Dual Cassette Deck with High Speed Dubbing, Sequential Automatic Play, Dual Auto Reverse, and much more, call toll free, or send your check for DAK's breakthrough, no catch, price of just $149 plus $6 for postage and handling. Order No. 4521.

CA res add tax.

Sure it's fancy. Sure it does just about everything but fly. But, what you'll really love is the sound quality and the musical freedom you will enjoy from now on.

DAK INDUSTRIES INCORPORATED

TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week

CALL TOLL-FREE...1-800-325-0800

8200 Remmet Ave., Canoga Park, CA 91304

BE THUNDERSTRUCK
BSR’s Endangered Colossus

Prepare for bone jarring bass and dramatically clear highs from these newly developed 15” 3-way 5 speaker systems that nearly missed their chance to charm an audiophile’s ear. BSR moved its dbx and ADC divisions into one facility and these speakers almost became orphans. So now, they’re yours at a close-out price.

It’s a shame. But, it’s also a great opportunity to get a pair of 15” audiophile loudspeakers with the newest in stereo imaging at a market-breaking price.

Imagine a precisely matched mirror image pair of top-of-the-line BSR speaker systems that combine the acoustical impact of a full orchestral crescendo at full volume and yet offer flawlessly subtle sound detail at 21,500Hz.

You’ll thrill to thunderous bass all the way down to 26Hz. Incredibly rich, full, vibrant sound at low volume will explode with life as you increase the volume.

But before we examine the front speaker complement, the twin overlapping crossovers and the top mounted sonic placement and ambient speakers, let’s see why they were almost orphaned.

You see, BSR, the half billion dollar electronics giant, is the parent company of two of the best names in up-scale audio, dbx and ADC.

Last year dbx developed a new multi-thousand dollar speaker system called the Soundfield One which lets you sit virtually anywhere in your room and have full stereo imaging and terrific sound.

BSR decided to consolidate ADC and dbx into one building (still two companies) and put all its speaker efforts into dbx.

POOR JACK

Well, while dbx’s engineers were off designing their half billion dollar masterpieces, BSR’s Senior Acoustical Engineer (he had been Fisher’s Chief Engineer for 10 years during its top end component stereo days), was designing BSR’s radically new speaker line.

The revolutionary top of the line 15” speaker system, the BSR Endangered Colossus, will let you enjoy superb stereo imaging without sitting directly in front of your speakers.

But unfortunately, in the consolidation move, BSR’s speakers went by the wayside, and so did Jack.

ENTER DAK

After a few fearful negotiations and considering the engineering costs BSR had already expended, they agreed to make the speakers just for DAK.

Because there’s virtually no BSR overhead left on these speakers, and the R&D was all but complete, we’ve gotten these speakers for the flatly the component costs plus a little BSR labor.

And don’t worry about Jack. BSR had him finish the engineering (they really are great people) and they’ll pay him a royalty on each speaker we sell. Besides, the time you read this, Jack is sure to be snapped up as the Chief Engineer at another esoteric audio company.

WHAT’S STEREO IMAGING?

Stereo imagery is the logical separation and interaction between channels. It’s the successful creation of a panoramic sound stage from two channels which is confined, easily located 2 speaker sound.

IT’S WHAT INSIDE THAT COUNTS

Imagine the full thunder of a kettle drum, or the pluck of a string bass being explosively re-created in your living room.

BSR’s 15” sub-bass acoustic suspension driver will revolutionize your concept of low bass class.

Its magnetic structure weighs a thundering 48 ounces. But that’s not all. The magnetic field is developed by the rare earth metal Strontium for state of the art massive but flawlessly controlled bass.

A 38mm voice coil with a 200° centigrade temperature capacity, will handle the most demanding digital or analog recordings. And, a new super rigid cabinet design virtually eliminates coloration due to uncontrolled cabinet resonance.

At low volume, the bass will fill in and envelop you. At high volume, your room, your walls and your neighbors will shake. (Not for apartment dwellers please.)

MATCHED PAIRS

The mid-range and high end of BSR’s speakers are truly unique. Front mounted 8” polypropylene mid-range drivers provide rich sound while top mounted 5” polypropylene mid-range drivers provide an open, lifelike ambiance.

Front mounted exponential horn tweeters provide awesome brilliance to 21,500hz, while top mounted tweeters enhance separation because they are mounted to the outside edge of each speaker.

So, this system has a specific left and a specific right speaker. You’ll find wide, but interactive separation that will vastly widen your ideal listening area.

The imagery will give the illusion of musicians actually playing in front of you. Your music will take on a three dimensional quality. You’ll enjoy superb stereo imagery regardless of each speaker’s specific placement in your room.

MORE SPECIFICS

The exponential horn tweeters, both in front and on the top of these systems, employ 25mm rigid polyphenol diaphragms for stability and accurate response.

Polyamid-imid binders and ferro-fluid coolant allow for a 300% increase in heat dissipation so you can drive the voice coils up to 200° centigrade.

Now, the mid-range. Both the 8” front firing and the 5” top firing polypropylene drivers reproduce the mid-range frequencies like no ordinary speakers.

It’s amazing that so many speaker manufacturers simply slap in 5” paper mid-ranges to reproduce what’s really the major portion of the sound spectrum.

BSR’s 8” and 5” polypropylene mid-ranges are rigid, exacting drivers that deliver incredibly pure uncolored sound.

NOT QUITE FINISHED YET

To prevent phase shift and cancellation, two totally separate crossover networks are employed in these speakers. All frequencies below 800hz are directed to the 15” woofer. The front system routes frequencies above 800Hz to the 8” mid-range to take full advantage of its superb reproduction capabilities.

Frequencies above 3400Hz are routed to the horn tweeter.

The top mounted system routes only frequencies above 1200Hz to the 5” polypropylene ambiance mid-range driver, and frequencies above 3400Hz are routed to the top sonic placement tweeter.

There are level controls for both the top and front mounts allowing you to match the speakers to match your musical taste and environment.

Note: Only the top tweeters are mounted at the the edges. The front mounted tweeters are conventionally mounted for acoustical symmetry.

Each speaker system is protected for up to 200 watts peak, 150 watts continuous power. You can operate these super efficient speakers with as little as 20 watts.

AND OH WHAT A PRETTY FACE

The speaker systems are 30” tall, 19¾” wide and 10½” deep. The low density wood-grain appearance is enhanced by the dark removable grill cloths that beautifully contrast with the rich wood-grain tones. They’re a statement of audio elegance when placed in any room. They’re backed by BSR’s 2 year limited warranty.

A COLOSSAL DREAM COMES TRUE

RISK FREE

You’ll hear depth of sound at low levels that was previously unobtainable. And yes, when you crank up the volume, your music will explode with realism and drama.

Try these speakers in your own system. Then compare them to your Hi-Fi Store with any pair of speakers up to $1000. If they don’t beat all the competition hands down, simply return them to DAK in their original boxes within 30 days for a courteous refund.

To order your matched pair of BSR top-of-the-line 15” 3-way 5 speaker systems with unique stereo imaging risk free with your credit card, call toll free or send your check for DAK’s market-breaking price of just $238 for the MATCHED PAIR plus $22 Shipping and Handling. Order No. 4352. CA res add tax.

It’s a dream system for an audiophile. Sonically pure, thunderously powerful, these BSR speakers will make your future listening years an on-going fabulous, if not earthshaking experience.
Heart Window

Now you can exercise, rest, swim or go out to dinner wearing the latest in computer pulse takers on your wrist. Plus, it's a talented sports watch and a formal dress watch too.

By Drew Kaplan

It's a fact. You can tell a lot about yourself from your heart rate. You can evaluate the condition you are in, how much stress you are under, and how hard you should be exercising.

Think about it. How fast does your heart beat when you climb a flight of stairs? And how long does it take for your heart rate to return to normal?

Well, if you're at all like me, you may be a little out of shape. While I'm only 37, several friends of my own age have recently had heart attacks. And frankly, I'm getting just a bit worried.

You see, I am getting past the point where I can simply say, "I'll get back into shape next year."

So, whether you're a long distance runner (this is the ultimate jogging companion), or just a few pounds overweight like I am, your heart rate will give you a picture of your heart and body's condition.

Now you can take your heart rate anytime, anywhere with the newest in sophisticated electronic pulse takers.

And best of all, this heart computer is contained in a beautiful 24 hour alarm, 24 hour chronograph, LCD watch, that you will be as proud to wear with a coat and tie as you are when you're running.

YOUR HEART'S TARGET ZONE

Your heart, just like any other muscle in your body, requires exercise. Unfortunately, unlike your arms, you can't see your heart's condition just by looking.

The type of exercise called aerobic exercise is specifically designed to exercise your heart. The purpose of aerobic is to reach your heart's target zone.

So what is your target zone? Your target exercise zone is between 60 and 80% of your maximum heart rate. And here's an easy way to figure it out.

Simply subtract your age from 220 beats per minute. So, for me at 37, my maximum heart rate is (220-37) or 183.

So when I exercise I should get my heart rate up to at least (183 X 60%) or 110 beats per minute, and no higher than (184 X 80%) or 146 beats per minute.

With the Heart Window to help me, I can be sure that my workouts are for my heart and neither dangerous escapades or total waste of time. Of course, before beginning any exercise program you should consult your own doctor.

Note: The Heart Window is designed to indicate your pulse rate and aid your exercise, not to make medical diagnoses.

BUT ISN'T EVERYONE DIFFERENT?

Here's the really exciting part. The worse shape you're in, the faster you'll reach the target zone and the less work you'll have to do to stay in the zone.

You see, as you get in shape, your heart doesn't have to beat as hard to do the same amount of exercise. Just as when you work out with weights your arms become stronger, your heart becomes stronger with aerobic exercise.

So the Heart Window is safe for the beginner or the athlete. And, you'll really see your improvement as you exercise. But you don't have to exercise. Just wearing the Heart Window and using it at the office when you're under stress, after you've walked up some stairs or around the block, will make and keep you aware of your body's physical condition.

And look at this. Sit down at your desk and take your pulse. Then drink a couple of cups of coffee and take your pulse again. You'll see just what your morning 'pickup' actually picks up. And, if God forbid, you smoke, take your pulse before and after a cigarette. Wow!

ALL ELECTRONIC

With Innovative's new Pulsometer watch, you'll have supreme accuracy. It's like a direct electronic line to your heart.

You see, unlike other pulsemeters that use a light shining through your finger, or a microphone to take your pulse, this instrument actually measures the electrical impulses that cause your heart to beat.

The back of the watch is one receptor, and the metal touch sensor on the front of the watch acts as the other sensor. Just touch the sensor, and you'll see your pulse on the large LCD Display.

IS IT A DRESS OR SPORTS WATCH?

Innovative Time thinks that everyone interested in their pulse must be a professional athlete. So, they've built this watch with all the athletic extras.

It's not only water resistant, it's guaranteed to 60 feet (although you can't actually take your pulse underwater). It has a stopwatch, a lap timer, and dual finish mode. Its band is made of very tough polymers. So, it's a sports watch.

But wait, I don't like black watches for dress. So, I've gotten Innovative to add a deluxe matching stainless steel bracelet to the watch. It's rendered in stainless and black and is a perfect high fashion choice. So, it's a dress watch.

Plus, there's a 24 hour alarm and an hourly chirp. The stainless band is great for sports or dress. So, you'll get the watch with the black band on it and the high fashion band packed with it, compliments of Innovative Time's superb engineering and DAK's good taste.

The Heart Window is backed by Innovative Time's 1 year limited warranty and comes with a 1 year battery in place.

TRY THE HEART WINDOW RISK FREE

Now you can look at your heart as easily as the time. You'll see how you react to stress, foods and exercise. Don't let DAK's low price confuse you. Take this pulse watch to your own doctor and have him test it.

Try the Heart Window risk free. Try exercising and then check your cardiac recovery rate. If you don't like what you see, you'd better keep the watch. But if you just don't like the pulse watch, simply return it within 30 days in its original box for a courteous refund.

To order your Heart Window, Pulse Sports/Fashion Watch, complete with 2 bands risk free with your credit card, call toll free or send your check for just $49.50 plus $3 for postage and handling to DAK. Order No. 9844. CA res add sales tax.

In the gym, at the track or at the office, you'll have a direct connection to the condition of your heart.
Cable Controller Plus

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

Cable Controller Plus offers:
- Control cable tuning system.
- At just $8.5, we're sure to break the cable market wide open.

MOVIE CHANNELS
If there are movie channels on your cable and they're not scrambled, the Controller is all you need. If they're scrambled, you'll need the cable company's box. Note: Check with your cable company before viewing anything at all, to see if they require you to pay a fee.

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

TOTAL RANDOM ACCESS TUNING
The wireless infrared remote hand controller does it all. It switches both the TV and the Controller on and off, and selects your channels. And, look at this. You can select your favorite channels (up to 6) and store them in a special section. Then just touch the special 'RCL' Recall Button and you'll be able to sequence through only your favorite channels. This is especially convenient if you like to flip through movie channels during commercials on regular TV.

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

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

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

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

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

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

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

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

The Controller tunes all the possible stations that your cable can broadcast, something that would be very expensive to build into standard TVs, because not all TVs are going to be used on cable.

Dreaded dollars extra. You can feed both your TV and video recorder. Or, you can separate them so that you can easily watch one thing and record another.

WHAT IT ISN'T
It isn't one of the infamous 'black boxes' you might have read about that illegally decode various 'Pay TV' channels. On cable, most of the programming isn't scrambled, it's just found outside the tuning range of the average TV.

So, if there is a Pay TV channel that is scrambled, or is only unscrambled on one TV in your house, the Controller is not made and should not be used to tune it in without paying.

Actually 'Cable Ready' TVs and video recorders do basically the same thing as the Cable Controller, but cable tuning is usually an added on feature that often doesn't cover as many channels.

The Cable Controller is back-ed by a standard limited warranty from Universal Security Instruments Inc.

TRY THE WORLD OF CABLE RISK FREE
Relax up to 20 feet away. Change channels, adjust the fine tuning or turn your set on or off. Explore the vast number of cable channels available to you.

Try it risk free. If you aren't 100% satisfied, simply return it in its original box within 30 days for a refund.

To order your Universal 60 Channel Cable Controller, call 1-800-325-0800. Order Number 4147. 

There's a whole new world of entertainment waiting for you just off your normal TV tuning range. With the Cable Controller, you can sit back in your favorite easy chair and tune in the world.
The Observers

At the office or at home, you can scrutinize up to 4 separate areas with both picture and sound. New technology allows a single cable to both power a camera and carry the audio and video signals. There’s even an automatic switcher for up to 4 cameras. It’s all yours at an amazing new price.

By Drew Kaplan

It does it all. And, it’s absolutely terrific. You can monitor loading docks or swimming pools, look for pilferage, shoplifting or accidents.

And, there’s even an output for a video recorder so you can make a permanent record. Now you can see who comes and goes. And, you’ll see what they do.

The system comes with a 12” video monitor, a sequential switching system that allows you to view up to 4 cameras from 4 to 60 seconds each, a camera complete with microphone, and an infinitely adjustable mounting arm.

You’ll also get 57 feet of cable and you can add up to 300’. You can even add a weather resistant case for outside use.

LOOK AT IT DOES

The technological breakthrough that allows you to make a single wire installation lets you have sound and picture monitoring of all types of areas.

Risk areas: Monitor secluded side doors, corridors, equipment yards, tool cribs and other storage areas.

Hazardous areas: Prevent accidents or get help for one fast. You can see when people do unsafe things.

Supervision: You can’t be everywhere at once. Now you can see who comes and goes. Monitor an entire night crew if you’re on the premises, or have an 8 hour tape you can view in about 1½ hours using high speed search on your VCR.

Retail Protection: Don’t leave your employees alone in your store or in your parking lot or structure. Now the manager can be there to assist. And, you can have a recorded audio and video record.

Theft: From shoplifting to employee theft to vandalism, anonymity is the culprit’s protection. With observation cameras, no one knows when they are being watched or when a recording is being made. It’s a safety feature to protect employees from danger and to protect the company from all sorts of crime.

NOT JUST FOR WORK

You can monitor your front door, your backyard, your pool. You can even monitor the animals in your barn or your baby in the bedroom. So, if you raise animals or children, you can always keep an eye on their safety.

And what a secure feeling for teachers, to be able to see the children on the yard at monitor, a perfect ‘parent group’ gift to your school or church.

Always check local laws which may restrict some types of observation.

EFFORTLESS INSTALLATION

From 3 lux to 30,000 lux, you can watch what’s happening with this superb new system. You’ll be amazed at how sensitive it is at low light levels.

And, whatever you monitor, you’ll have a superbly detailed high contrast picture.

While I wrote this ad, I had a camera aimed out the window. As it got dark, I couldn’t see down the street. But the camera’s automatic sensitivity adjusted, so I could see the street on the monitor almost as well as I had in the afternoon.

And best of all, the cameras are incredibly easy to install. You don’t even need AC plugs where you mount them.

And, the infinitely adjustable mounting arms attach with only 3 screws to floors, walls or ceilings.

Switch on the monitor and press a camera button. All power for the entire system comes from the monitor/switcher.

You can have one or all 4 cameras connected. And, connecting the cameras is the simplest thing of all.

This system uses standard round coax type cable, just like your home’s cable TV system. Through this standard cable, Magnavox sends power for the cameras.

And, the camera sends both audio and video signals back down the very same cable. So, installation consists of simply running one standard video cable.

The monitor has a built-in electronic switcher. Most automatic switchers that I’ve seen in surveillance, cost hundreds of dollars. With Magnavox it’s included. You set it to lock onto any camera for a minimum of 4 seconds and a maximum of 60 seconds, or pick one camera.

The signal (both audio and video) from all cameras being viewed can always be sent to your VCR for a permanent record.

And there’s more. By simply running a standard video cable, you can also watch the output of the monitor on other TV’s in other rooms.

ENDLESS USES

Think of the feeling of safety you’ll have when you can monitor both the front and back of your home from the kitchen or the bedroom, or both.

The monitor is 12” wide, 11½” tall by 12½” deep. Each camera is just 9” deep, 4.5” wide and 2½” tall and weighs 2½ lbs. It’s made by Magnavox and backed by their standard limited warranty.

OBSERVE YOUR WORLD RISK FREE

Use it to protect your business or home, your employees, your family and your possessions. If you’re not 100% satisfied, simply return it in its original box within 30 days for a courteous refund.

To order Magnavox’s Observation System, complete with 12” Monochrome Monitor, 4 Station Electronic Automated Switcher, Black and White Camera, 57’ of Cable, and Infinitely Adjustable Mounting Arm risk free with your credit card, call toll free, or send your check for only $229 ($11 P&H). Order No. 4415.

Each Extra Camera with Built-in Microphone, 57’ Cable and Mounting Arm is just $169 ($4 P&H). Order No. 4549.

Weather Resistant Cases are just $39 ($3 P&H). Order No. 4550. CA add tax.

57’ extension cables are just $19 ($2 P&H) Order No. 4551. Note: a pair of cable ends is included, so you can make your own cable, up to 300’.

You’ll have a new sense of security when you can see and hear what’s happening. And, by connecting a video recorder, you can have a permanent record of the comings, goings and actions of everyone on your property.

DAK INDUSTRIES INCORPORATED

TOLL-FREE ORDER LINE

For credit card orders call 24 hours a day 7 days a week

CALL TOLL-FREE . .1-800-325-0800

8200 Remmet Ave., Canoga Park, CA 91304
Tape Collection Expander Plus

Copying tapes is the simplest thing this dual auto reverse, dual recording cassette deck with Dolby C, RMPS, AMPS, Intro Scan and Sequential Record and Play Can Do. It's much more than just two recording decks.

By Drew Kaplan

You’re listening to FM. Suddenly you realize that a song you really like is being played. And unfortunately, you’ve already daydreamed through half of it.

Well, now you can effortlessly build yourself a flawlessy recorded cassette collection of only your favorite songs. Simply set this new relay recording dual cassette deck to record your favorite FM station, and leave. It will record TWO COMPLETE CASSETTES on both sides in sequence so you’ll have 3 hours of recording from two 90 minute cassettes.

When you return, just start listening to one of the cassettes. When you hear a song you’d like, just put the other deck into record and you’ll end up with a flawlessly recorded tape of only your favorite songs.

But look at this! This deck has a feature called Intro Scan. So, if you’re wondering when you’re ever going to have the time to listen to 3 hours of recordings, worry no more.

You can automatically play just the first 10 seconds of each song and only stop and record the ones you want.

And, recording from FM is just one of the many uses for this incredible deck.

LOOK AT ALL IT DOES

If you’re copying a record, you can make two copies at once. You can make one for your car and one for your main stereo at the same time.

You can even use different bias tapes in each deck because each deck has automatic bias sensing.

Of course, copying tapes is where this deck really excels. And, making flawlessly copied cassette is the one you want. So, you can record the ones you want.

You can find a selection on the tape by using AMPS. AMPS (Automatic Music Program Search) lets you touch a button to advance to the next song on the tape. Or, you can return to the beginning of the current song you are playing.

It’s a manual version of Intro Scan which I described earlier. It’s important to remember that both Intro Scan and AMPS automatically function on both sides of the tape. In fact, they ignore the different sides and simply look at your cassette as a 90 minute piece of tape.

But there’s more. There’s RMPS. RMPS (Random Music Program Search) lets you play or listen to 15 random selections on your cassettes.

So, you can listen to song 7, 2, 15, and 6 on either side of the cassette. And you can copy a tape in any sequence you like.

Again, RMPS doesn’t care what side of the tape a song is on. It lets you listen or copy in any order. This may seem odd, but I tend to use this feature to get rid of songs more than I use it to select them.

Let me explain. When I’m copying a record, it’s a pretty good bet that I like most of the album or I wouldn’t be copying it. But there are always a few songs I don’t like. So I make a tape, then use RMPS to eliminate the songs I don’t like.

DREW LIKES IT

Before I talk about the quality of the sound, I’ve just got to tell you about this deck’s automation.

Once you’ve programmed RMPS, one deck will fast forward, stop, then start playing a song. The other deck will switch into record and start at the same time.

Then both decks stop while the first deck ‘looks’ for the next song it is to play. Then they both start up again. This deck is simply mesmerizing to watch in action. And, it also like its continuing relay play. It first plays both sides of deck 1, then it plays both sides of deck 2. That’s 3 full hours of non-repeated music.

But it never stops. It switches back to deck one and starts the whole 3 hour musical experience over and over again.

BUT IT’S THE SOUND

As fascinating as this deck is to use and watch, without Sansui’s meticulous attention to electronic detail, it wouldn’t be worth its computers.

Sansui uses a unique High-Bs hard permalloy head and a double-gap ferrite erase head in each deck. In fact, the specifications are identical for both decks.

The frequency response extends from 20hz to 15,000hz with normal bias, to 18,000hz with CrO2 and to 17,000hz with metal. The signal to noise ratio with Dolby C is 74db.

Each deck has dual capstans. Each deck has an electronically controlled DC motor for rock stable tape movement. And each deck’s takeups and unwinds are operated by still another DC motor.

There is one set of controls for all the mechanical functions. Just select deck A or B. There is record mute for clean intros and exits.

And there is ‘Auto Fade’. Just touch this button when you’re recording, and in 4 seconds your recording volume will fade to zero for clean professional endings. It also operates for intros.

What if you start recording a song that you decide you don’t like. Well, just touch the RCPS button and the deck doing the recording will stop, rewind to the beginning of the selection you are recording and place itself in record pause.

If you are dubbing, the other deck will automatically fast forward to the next song and place itself in pause. Sansui has produced a very intelligent deck.

But, speaking of intelligence, there’s one surprise that I think we ‘tape nuts’ will just have to get used to.

This deck features Automatic Level Control for each deck. Frankly, it does a great job. You won’t notice any of the dynamic range compression that I’ve always associated with ALC.

What you will notice is perfectly recorded tapes every time. I still miss the controls, but I must admit that the recordings are flawless.

The Tape Collection Expander Plus is made by Sansui. It’s their top of the line, and with it you’ll get 1 3/4 wide, 4x2 tall and 9x9 deep. It’s backed by their standard limited warranty.

EXPAND YOUR TAPE COLLECTION AND YOUR MUSIC RISK FREE

Record from the most dramatic digital disk you own. Then listen to the tape. You’ll be sold. Then copy the tape and listen to the copy. You’ll be amazed.

Wait till you see this deck explode into action. Wait till you feel the quality of its controls. If you’re not 100% satisfied, simply return it to DAK in its original box within 30 days for a refund.

To order your Sansui Dual Auto Re-

verse, Dual Recording Cassette Deck

with RMPS, AMPS, RCPS, Intro Scan and much more risk free with your credit card, call toll free or send your check for just $349 (7 P&H), Order No. 4542.

Now you can have great music and total automation. And best of all, along with the audiophile quality, you can easily build a massive, totally personalized tape collection that you’ll enjoy for years.

DAK

For credit card orders call 24 hours a day 7 days a week

TOLL-FREE ORDER LINE

CALL TOLL-FREE. . . .1-800-325-0800

8200 Rammet Ave., Canoga Park, CA 91304
Answering Attack Phone

Let's vanquish the problem of bulky complicated answering machines. And let's conquer the problem of lost beepers. Now when you're out, just the sound of your voice is all you need to retrieve your messages.

Stamp out beepers. Here's a microprocessor controlled answering machine that's so smart it will give you your messages without using a beeper.

But, before we explore just how easy it is to use and all of its sophisticated features, such as, toll saver, 2-way record, and remote saving or erasing of messages, let's take a look at the phone.

Like the answering machine, the phone has attacked wasted motion, complicated commands and uncomfortable fit with the latest in technology.

Here's a phone that will dial any of your 10 most frequently called numbers with the touch of a single button. Just touch another electronic button and the phone will operate in Tone or Pulse.

Another button gives you instant redial. And, as for comfort, well just wait until you cradle the great sounding Phone Company style handset on your shoulder.

This phone which can be desk or wall mounted, is no larger than a conventional feature phone. It's just 9" deep and 8½" wide. And, a standard instantly changeable audio cassette (included) is concealed just to the right of the handset.

TOLL SAVER, OR THE 4TH RING
If you're across town or out of town, why invest a dime or pay for a toll call if you have no messages?
Each time you reset your machine, it will answer the first call on the 4th ring. After it's taken its first message, it automatically starts answering on the second ring. So, when you call in, just hang up if you get to the third ring. You'll automatically know that you have no messages.
If you do have messages, just give the machine a special signal with your own voice, and you'll receive your messages. Then you can have the machine save or erase the messages that you have heard.

MISSILE GUIDANCE
This machine is so smart that it electronically marks each message's location. It knows precisely where your outgoing announcement as well as each message that has been left is located.
The action is fascinating to watch. First, it plays your outgoing announcement. Then, it sounds a tone as it zips to the end of the last message it took.
It then beeps and starts taking the new message. Finally, it rewinds back to the precise start of your outgoing announcement, prepared to start again.

and you'll have a record of the call. Everything is automated. Just touch one of the full logic controlled buttons and this computer answers with a confirming beep and jumps into action.
To play back messages at home, just touch the 'Message Report' Button. A flashing message light even tells you at a glance if you've received any messages while you were out.

EASY INSTALLATION
Just plug in the modular phone jack and the included AC adaptor. Then, just record your announcement.
The Answerer Attack Phone is ready to take messages or act as your super automated office or home telephone. It's made by Unitech and backed by their standard limited warranty.

THE ANSWERER ATTACK PHONE
RISK FREE
It's new. And, it will set you free. From its Phone Company feel handset to its electronic convenience extras to its state of the art answerer, you'll have incredible convenience and simply great sound.
If you're not 100% thrilled, simply return it to DAK within 30 days in its original box for a courteous refund.
To order your Unitech Answerer Attack Phone with totally automated telephone features and easy to use answering machine risk free with your credit card, call toll free or send your check for DAK's breakthrough price of just $99 plus $7 P&H. Order No. 4359. CA res add tax.
Wait till you hear the phone. Wait till you use the 1 touch dialing. And, wait till you hear the sound quality and enjoy the convenience of this answering machine.

MORE SMARST
If you want to record both sides of a call, just touch the 2-way record button

D A K
INDUSTRIES INCORPORATED

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

It has two channels. It has a great sounding speaker. And like a jukebox, simply touch its buttons to choose any one of your 20 favorite selections. Get two channels for $69**, or a single channel unit for $59**.

by Drew Kaplan

Dial a number on one line (like a private line) and ignore the other line, a simple touch of a switch will put you in control of your incoming calls. There's a top mounted Tone/Pulse switch so you can easily use discount services even in Pulse areas.

The phone may be desk or wall mounted and there's an AC adaptor included for great speakerphone performance.

THOUGHTFUL INSTALLATION
There are two standard modular jacks on the back of this phone. One can be used for both Lines 1 and 2 if you have a 2-Line modular jack in your wall.

The second jack is only used if you have two separate modular jacks for your phones now. So, as long as you have jacks, this phone plugs in.

It's made and backed by Unitech, the stereo people, which explains this ad's title and why the sound is so good.

TWO CHANNELS, TWO LINES RISK FREE

Wait till you hear the sound. Wait till you feel the K style handset against your ear or cradled on your shoulder.

Talk on the speakerphone. Touch a one-touch dialing pad. Then make a conference call and really use your two lines.

If you're not 100% satisfied with the feel, the automation or the sound quality, simply return it in its original box within 30 days for a courteous refund.

To order your Unitech 2-Line Speakerphone with 20 number Memory including Long Distance Memory, Redial, Hold, and more, risk free with your credit card, call toll free, or send a check for DAK's earthshaking price of just $69** ($4 P&H). Order No. 4634. CA res add tax.

If you'd like the exact phone without the two-line features, it's yours for just $59** ($4 P&H). Order No. 4635.

Dial a number on either line with just the touch of a Memory Button. Dial without ever lifting the receiver. And talk while you move around the room. It's a great sounding, great looking, automated communication tool.

DAK INDUSTRIES INC.
Call Toll Free For Credit Card Orders Only
24 Hours A Day 7 Days A Week
1-800-325-0880

For Toll Free Information, Call 5AM-8PM Monday-Friday PST
Technical Information... 1-800-272-3200
Any Other Inquiries.... 1-800-423-2886
8200 Remmet Ave., Canoga Park, CA 91304
It’s the sweetest phone that this writer has ever used. From its elegant good looks to its elegant sounding speakerphone, it’s a class act. And, it remembers and dials up to 200 numbers by THE NAME of the person you want to call. Plus, it’s now available in ivory and 1-line models too.

By Drew Kaplan

I’ve used good speakersphones before, but this speakerphone’s sound quality rivals an in-person conversation, not a phone call. How’s that for a description of a phone you can try on a 30 day risk free trial?

2-LINE MASTERPIECE
You can select Line 1 or Line 2. And, you can push ‘Conference’ to combine both lines for convenient business conferences or friendly group calls with friends. There are LEDs that show which line is ‘In Use’, ‘On Hold’, or ‘Ringing’. And, there are different rings for each line. Installation is a breeze. It simply plugs into one standard modular 2-line jack or two modular 1-line jacks. Nothing could be simpler. Just plug it in.

PAGES OF HELPFUL FEATURES
The list of features would have to be microfilmed to fit on this page. There’s a large LCD display that shows you the number you want to call and the number.

An automatic timer tells you exactly how long you’ve been talking. And, a clock appears on the display whenever you hang up.

Every conceivable feature from Mute to Tone/Pulse switching, to Pause, to Flash, to battery backup (2 C batteries included), to three direct Emergency Memory Keys and more is included.

There’s even Automatic Redial which will redial a busy number for you every 30 seconds.

YUPPIE POWER
I’m anything but a yuppie, even though I just turned 40, but when you look at the sleek, swept back, silver-grey HiTec appearance, and when you examine its complete computer keyboard, you’ll understand why it would warm a yuppie’s heart. My heart is warmed by what it does, but I must admit it is impressive.

It’s made by Colonial Data, a research company partially owned by one of the largest inter-connection (big business phone systems) companies in the world.

It is 9½" wide, and it’s backed by Colonial’s standard limited warranty. PUT NAME DIALING ON YOUR LINE RISK FREE
It’s the best sounding speakerphone I’ve ever heard. Dialing by names instead of numbers is a quantum leap in both technology and convenience.

Now, I don’t have to remember people’s phone numbers. I just touch a ‘C’ for customer and let the phone do the rest.

If you are not 100% convinced, as I am, that this is the best sounding, most convenient phone you have ever used, simply return it in its original box within 30 days for a courteous refund.

To order: Name Dialing 2-Line Speakerphone with God only knows how many features risk free with your credit card, call toll free or send your check for DAK’s breakthrough price of just $129 ($4 P&H). Use Order No. 4335 for Silver-Grey. Or, use Order No. 4452 for Ivory.

If you’d like the 1-line model in Ivory without the 2-line features, it’s just $99 ($4 P&H). Order No. 4453. (CA res add tax.)

In DAK’s electronic world, where a new best is achieved almost every day, this phone stands out as the ‘best’ best I’ve ever had the pleasure of introducing.

DAK and the ‘rose by any other name’ phone are not affiliated with CKC Corporation’s Rosa Console.

Call Toll Free For Credit Card Orders Only
24 Hours & Day 7 Gary A. Weeks
1-800-325-0800

For Toll Free Information, Call 8AM-5PM Monday-Friday PST
Technical Information: 1-800-272-3200
Any Other Inquiries: 1-800-423-2866
9200 Remmet Ave. Canoga Park, CA 91304
**15" Thundering Subwoofer**

**Man's best friend meets the audiophile's best friend at an earthshaking bone jarring new price. Now you can add the impact of a 15" subwoofer to any stereo system for just **99**.**

By Drew Kaplan

A puppy may be man's best friend. Woof, Woof. . . . But, now I've got a new friend you can add on to your stereo system. It doesn't need to be taken on walks, washed or fed. But, it makes a great cocktail table for you when you're being fed. And, oh what a woof it has.

**GREAT SOUND FOR EVERYONE**

It's called a subwoofer. And, normally it is the beloved pet of only the most ardent audiophiles.

It's not generally understood that it can be used with virtually any speaker system in any stereo. And, in addition to substantially increasing and perfecting the bass response, it has a significant impact on the mid-range clarity too.

Before I tell you exactly how marvelous your stereo will sound when you connect this subwoofer to it, there are two things you should know.

First, you'll be getting your new friend at a phenomenal price. DAK has sold over 10,000 of Cerwin-Vega's 12" subwoofers. They had a retail price of $332, but we sold them for **$164**.

Second, your new friend comes complete with a paid up health insurance policy in the form of a 2 year limited warranty from its father, BSR.

By the way, the puppy sitting on top of the subwoofer is the same puppy I used with Cerwin-Vega’s, but wait till you hear what's under him now. You'll have BSR's 15" massive infusion of explosive bass, added to your system for just **999**.

But don't be misled. BSR bass is clean and tight; never sloppy or overpowering. It adds a feeling of depth and fullness to your music that you simply can't get with two or 3-way speaker systems.

HERE'S WHAT IT DOES

Basically, the problem with most speaker systems is that they do not overpower the system. In a 3-way system, a woofer may be crossed over at about 800Hz. And, in a 2-way system as high as 3000Hz.

So, the woofer must handle movements of up to an inch at frequencies below about 80Hz, while at the same time attempting to reproduce the very fine vibration type movements of the mid-range frequencies.

It is this difference in movements that causes both the bass to be weak or not precise, and the mid-range to become muddy (intermodulation distortion).

Even the best 3-way systems fall prey to these problems. And, it's why a subwoofer can do so much for your mid-range clarity as well as your bass.

**PROBLEM SOLVED**

BSR's subwoofer has a specially engineered crossover network that sends frequencies above 120Hz to your regular speakers and reproduces just the mammoth movement frequencies from 120Hz down to 22Hz with a special floor firing dual wound super subwoofer.

If you have downstairs neighbors, this subwoofer isn't for you. The woofer is a very special hybrid. It has a mammoth one and one half inch voice coil which allows the speaker to make the very large movements required to reproduce the very low frequencies.

But, it would do a lousy job of reproducing mid-range, which is why, cost aside, manufacturers don't put big voice coils in normal 10" or 12" woofers.

To make the massive movements accurate, this woofer has a very large magnetic structure. This magnetic structure also makes the subwoofer system extremely efficient. (The sensitivity is 91.5db at 1 watt at 1 meter.)

So, whether you have two or three-way speaker systems, with 8", 10" 12", or even 15" woofers, you'll find the sonic improvements staggering.

You'll hear and feel the awesome effect of thunder rumbling through your home. You'll hear a depth and dramatic fullness to your music that won't be heavy but will thrill you with its massive strength.

EASY HOOKUP

It's easy to connect. Simply run the right and left speaker wires from your amplifier to the input terminals of the subwoofer. It works with any system from 20 to 150 watts per channel.

Then, you simply connect the speaker wires from your two standard ohm stereo speaker systems to the output terminals on the subwoofer. They receive the exact signal that they did before except that everything from 120Hz down is routed only to the subwoofer.

Placement of your regular speakers is just as critical as usual for stereo imaging, but the subwoofer can be placed anywhere because low frequency material is totally non-directional.

The subwoofer makes a perfect cocktail or end table. Its rich wood-tone appearance matches any decor. It is 24" long, 16½" high and 20" wide.

**TRY AUDIOFILE'S BEST FRIEND RISK FREE**

The fullness, richness and depth is awe inspiring. Wait till you connect this subwoofer to your system and experience truly massive force from your music.

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

To order BSR's Thundering Subwoofer with its dramatic 15" Dual Wound Voice Coil Subwoofer risk free with your credit card, call toll free, or send your check for DAK's breakthrough price of just **999** ($14 P&H). Or. No. 4514. CA res add tax.

You can’t replace the love and softness of a warm puppy. But, wait till you experience the richness and depth this subwoofer will add to your bass and the clarity you'll hear in your mid-range.
Unfair Competition?

An Unfair Challenge to IBM’s Typewriters and Computers

What if you and every secretary in your office could have powerful computers that were as easy to use, but cost less than IBM electronic typewriters? What if they also ran IBM compatible software? Well, now you can get this 256K IBM PC Clone, the Amber Monitor, the Letter Quality Printer, and The $400 Software Library for just $999.

By Drew Kaplan

Look around your office. Are your secretaries wasting time typing and re-typing letters and documents?

Well, throw out your dumb typewriters. Now typing on an IBM compatible computer can be as easy, and yes, cheaper than using an IBM electronic typewriter.

Every word you type can be stored in the 256,000 character memory or on floppy disks. So, when you make corrections to a letter or document, you’ll never need to retype the whole letter again.

30 MINUTES TO PRODUCTIVITY

In 30 minutes you or your secretary will be comfortably typing letters faster than on any typewriter. This computer is so easy to use that there’s no ‘computer fear’ from non-computer typists.

But, if you’re looking for computing power, get ready to blast off. It is so powerful that it will run Lotus 1-2-3, Flight Simulator and every other IBM compatible program that we’ve tested.

In fact, the manufacturer states in the Operator’s Guide that, “The computer is ultimately and completely compatible with the IBM Personal Computer.”

Actually, typing letters is child’s play for this sophisticated machine. But for $999, it’s sure to be the most popular typewriter in any office or even at home.

So, compare it to the typing ease and durability of say the new IBM Wheelwriter 5 at about $1045, or a Xerox Memorywriter 625 at about $1595.

Or compare just the computer section to the agility, speed, and intelligence of an IBM computer. Then, check our price.

FORGET LIFT OFF CORRECTION

Think about making a change in the first paragraph of a letter you have dictated. Just mark up the draft copy and give it back to your secretary.

She can bring the letter back onto the 80 column 25 line Amber Monitor, make the corrections, touch one button and the letter will automatically print out with your corrections and additions.

You’ll never have to reread or re-proof retyped letters again for errors. And instead of spending 15 minutes retyping and re-proofing, your secretary can be working on your next project.

A typewriter-type word processing program whose commands flash on the screen, when needed, makes this the ideal transition from typewriter to computer.

Look how easy it is to use. Simply touch the F1 key at the left of the keyboard to delete a character. F2 deletes a word. And, F3 deletes a whole line.

F5 turns this machine into a line by line typewriter for typing directly onto envelopes or forms. F6 prints out anything on screen at any time.

This is a magnificently simple program that you or your secretary will be comfortable with in 30 minutes.

But when you are comfortable, you’ll want to open our sophisticated $400 Software Library that lets you really start to use the power of this computer.

(DAK’s added Software shown with included Visual Manuals)

You can type in lists of your customer’s or employee’s names and addresses. Then create a letter, select which names you want to receive the letter, and the computer will automatically print out individualized letters for each person.

So if you want 5 people or 500 people to be notified personally of your newest product or policy, now it’s all automatic.

There’s also a Budget Program, a Calendar Program and even a Portfolio Management Program we have included.

Of course you can use any IBM compatible PC programs from Lotus 1-2-3 to Norton Utilities. Or, you can buy other even more sophisticated word processing programs that even correct your spelling or give you an on-line thesaurus.

MORE THAN A TYPewriter

This IBM compatible computer with its two 360 kilobyte drives, 256K random access memory (more is available), and even RGB full color graphics output, is made by Visual, the 5th largest manufacturer of office graphics terminals.

Visual’s computer is loaded. It has both a Centronics parallel printer output (we’ve included a superb daisy wheel letter quality printer) and an RS232 serial communications port (yes, you can add a modem to access outside data banks, or your main frame computer).

Visual’s 1985 price list shows a list price of $1895 for this computer. And, that doesn’t include the Amber Monitor, the Printer, or the Software Library that we’ve added. It just includes the computer and of course the IBM compatible MS DOS 2.1 operating system.

WHY SO CHEAP?

Visual makes terminals. They thought they’d design a superb IBM Clone and sell it with their terminals.

Well it turned out that Visual’s salesmen weren’t equipped to sell computers and Visual had put too much money into these computers (the built-in color graphics, TTL output, floppy disk drives and lots of other features) to sell them at today’s stripped down prices.

So, Visual has sold them all to DAK and has taken an enormous loss. (But don’t worry about Visual. They are a
You can expand this computer by adding custom cards. There is an expansion port that can be directly connected to an IBM expansion chassis. Of course, the computer is infinitely expandable by running IBM compatible software.

Here's another bad point. This system is bigger than a typewriter. The computer is 18" wide and 15 1/2" deep. And, with the monitor sitting on top, it is 14 1/2" tall. Actually, the computer really isn't any bigger than a typewriter.

But don't forget the printer. It can be placed up to 6' away, but it really belongs next to the computer so that you can easily put in paper, envelopes etc. It is 15 1/2" wide and 12 1/2" deep.

So for most productive use you need a return on your desk that is about 33 1/2" long. Of course, the printer can sit on a typing stand next to your desk or even your credenza. You'll be amazed at the increase in your productivity.

THIS IS NOT A CHEAP STARTER COMPUTER. Forget our price. Put it side by side with a similarly equipped IBM, run the same programs and you'll get the same results.

In fact, it's so compatible that you can interchange disks of your letters and programs between Visual's computer and an IBM PC whenever you wish. Wow! THE PRINTER.

This Silver Reed daisy wheel printer will type on your standard letterhead, envelopes, 3x5 cards or mailing labels. It uses the same type interchangeable daisy wheel direct impact print system as typewriters (heavy duty of course).

And, with the addition of a modem, you can even transmit files from home to the office. Or, you can log onto data bases like Compuserve or Dow Jones.

THE GOOD, THE BAD, & THE BEAUTIFUL.

From your first touch of the rugged sculptured keys of this computer, you'll appreciate the built-in rugged quality.

There's even a 10 key numeric pad. The 83 key keyboard is identical to IBM's PC, except for the addition of lights on the 'Cap Lock' and 'Number Lock' keys.

The contoured keyboard is extremely comfortable. But, I must warn you that if you've never typed on an IBM PC, they've made the Shift keys and Return Keys slightly smaller than on a typewriter and it will take you a few minutes to adjust.

The computer has two floppy disk drives that use double sided double density 5 1/4" floppy disks. Each floppy disk holds 360,000 characters.

As a free gift from DAK, we're including a box of 10 disks. You can store 3,600,000 characters.

The computer uses a 16 bit 8088 Intel processor with a 4.77 MHz clock speed. It is AC powered and UL and FCC listed.

There is 256K of installed random access memory (RAM) for you to use as compared to 128K for most computers and the 7K on the IBM Wheelwriter 5.

We've included Magnavox's latest 80 column 25 line 12" non-glare Amber Monitor. It has 900 lines of horizontal resolution and 350 lines of interlaced vertical resolution to display graphics.

You can also connect an RGB (red green, blue) monitor for full color graphics. With most computers, the internal 'color card' can cost you several hundred dollars. Visual's has it built-in.

You may not take your computer home or to another office every day, but the versatility is phenomenal.

ACCEPT OUR TYPEWRITER COMPUTER CHALLENGE RISK FREE.

Wait till you see this state of the art computer machine on your desk. And wait till you see what its incredible computing power can do for your productivity.

If you're not 100% satisfied with its typing or computing ability, simply return it to DAK in its original boxes within 30 days for a courteous no questions asked refund.

To get your Visual 256K IBM Compatible Computer with Two 360K Floppy Disk Drives, Composite and RGB Outputs, Amber Monitor, Silver Reed Letter Quality Diamond Wheel Printer, $400 value Software Library, 10 Free Double Sided Double Density 5 1/4" Disks and connect cables for the monitor and the printer risk free with your credit card, call toll free or send your check for DAK's limited Close-out price of just $999 plus $24 for P&H. Order No. 4500. CA residents add tax.

OPTIONS

If you're into massive spreadsheets and the largest programs, order the 512K upgrade which doubles the 256K memory. It's installed by the factory for an additional $129 ($5 P&H) Ord. No. 4625.

Add the Factory installed 80 column LCD 25 line display so you can move Visual's computer and work wherever you want. It's just $149 ($5 P&H) Order No. 4626.

If you want to run continuous forms, from mailing labels to checks to letterhead, the Silver Reed Tractor feed snaps on and off in about 30 seconds. It's just $69 ($3 P&H) Order No. 4435.

Use your standard letterhead automatically with the cut sheet feeder. It feeds paper like an automatic copier tray. It's just $119 ($5 P&H) Order No. 4627.

Standard 300,000 character blocks of poly ribbons are just $60 ($5 P&H) Order No. 4345. You'll never see a lifted off correction mark that shows where errors have been removed again. You'll get 'Presidential Quality' letters that you'll be proud to mail every time.

For Toll Free Information, Call (800) 325-8080

1-800-272-3200

Any Other Inquiries . . . . . . . 1-800-423-2866

8200 Remmet Ave., Canoga Park, CA 91304

DAK INDUSTRIES

Call Toll Free For Credit Card Orders Only 24 Hours A Day, 7 Days A Week
Smart Sound Detonator

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

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

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

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

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

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

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

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

You can count on great sound from this top of the line Equalizer/Analyzer. It has a frequency response from 50Hz to 100,000Hz ± 1db. And, it has an incredible 100dB signal to noise ratio.

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

FIRST THE EQUALIZER

YOUR STEREO'S HIDDEN SOUNDS

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

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

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

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

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

TOTAL MUSICAL CONTROL

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

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

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

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

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

But there's more. Don't leave out the mid-range. You can boost trumpets at 300 to 500Hz or a clarinet at 1000Hz.

You can boost or cut any part of the frequency spectrum a full ± 15db.

TAPE DECK HEAVEN

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

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

SIMPLY PLUG IT IN

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

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

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

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

When you want to listen to a tape deck, just select which tape deck you want, turn the switch on the equalizer,
and your tape deck will work exactly as it did before. Except, now you can listen with or without equalization.

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

THE SUBSONIC FILTER

Much of the power drawn from your amplifier is used to drive your woofers. When you drive the amplifier too hard, it clips and you end up with distortion. A subsonic filter removes a lot of non-musical material you can’t hear that exists below 20Hz. So, it relieves your amplifier of a lot of work. It doesn’t actually create more watts (Please, no letters from my ‘technical’ friends) for your amplifier.

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

THE SPECTRUM ANALYZER

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

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

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

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

THE MOUTH AND EARS

It talks. The Analyzer speaks with a voice of pure calibrated Pink Noise. Pink Noise is the standard composite ‘sound’ of all frequencies used for testing in labs around the world. All frequencies from 20Hz to 20,000Hz are generated at the exact same level at the exact same time. It listens too. If you are testing a cassette or a component in your system, use the ‘Line Button’. If you’re testing your whole system with speakers, use the matched calibrated electret condenser microphone (included). Either way, you’ll have a quick, easy and accurate way to evaluate the total sound of your system.

HOW TO TEST

SPEAKERS, EQUIPMENT AND TAPE

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

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

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

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

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

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

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

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

WHY SO CHEAP

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

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

THE FINAL FACTS

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

There are separate sound detonation slide controls for each channel at 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1,000Hz, 2000Hz, 4000Hz, 8000Hz, and 16,000Hz. BSR backs this top of the line Graphic Equalizer/Spectrum Analyzer with a 2 year standard limited warranty. It is 17½ wide, 3½ tall and 8½ deep.

MAKE YOUR MUSIC EXPLODE

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

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

The sound of your stereo will explode with life as you detonate each frequency band with new musical life. And, you can see and measure exactly what you’ve done.
A DC's new Hayes Compatible 1200 baud auto-answer/auto-dial modem is one heck of a duck. And, it's a market buster at just $169.

By Drew Kaplan

Hats off to Hayes. They've just about written the book on specs and protocol for the 1200 baud modem market. Every professional modem bills itself as "Hayes Compatible." But the big question is: How close will its protocol really get to make a top-of-the-line 1200 baud modem? Or, who's getting rich?

ADC's modem is made in the same factory, by the same people, as one of Hayes's biggest competitors. And, ADC's cadastration of Bell and the famous half-billion dollar electronics giant.

So for $169, you'll not only be getting a duck that quacks properly to Hayes modems, but sings like a nightingale to your pocketbook. It can save you a fortune in time with its extra features.

Don't forget. Now you'll get the $39 value (DAK sold it for $24) complete CompuServe Subscription Kit, including $25 worth (Yes, that's twenty five dollars. Wow!) of on-line time, added by DAK, when you buy ADC's Modem.

DUCK SOUP

Any compatible RS232 standard serial port, will work flawlessly with this modem. And, virtually any modem or terminal software that's compatible with Hayes, will be compatible with ADC.

We've even got intelligent programs, called "tricks", that you can use them to activate your IBM PC or Clone, and your Apple IIE or IIC. Of course, you can supply your own cables and modem programs for these computers or for any other computer you may own.

I've owned a Hayes 1200 baud modem for about 2 years. I just unplugged it and plugged it in ADC's to operate my Hewlett-Packard dumb terminal which I use at home to monitor DAK's computer.

The only differences I noted were improved monitor sound, more screen display, and more RS232 compatibility. And oh yes, one last extra. I use a few local data bases whose phone lines are always busy.

Well, ADC's intelligent modem recognizes a busy signal, hangs up and keeps retrying the number every 30 seconds.

There are less important (to me) extras like day, date and time, an extra phone jack and auto tone/pulse switching. So, you'll love it for discount services.

DO YOU NEED TO KNOW?

Just think, you can transform your PC into a terminal that can interact with main-frames. You can download information from your main-office computer and run Lotus, Wordstar, or you name it. It's all possible with your PC and modem.

You can exchange information with other computers. Say you're a writer, you can send a chapter from your home or office in to Los Angeles, have it edited and sent back to you.

You can even send it directly to type-setters and have a book or a newsletter prepared from your transmitted file.

It's really great when drafts of contracts are flying back and forth. Why retype everything over and over again?

Electronic mail lets you type in your message and you won't have to worry about playing telephone tag any longer.

You can get the weather in Baltimore, the latest quote on your company's stock, or even reserve a seat on the next flight to Las Vegas. You can upload public domain source code (there's an enormous amount of free software) or sample the newest programs before you buy.

There are pay data bases like CompuServe and The Source that have information about anything, and thousands of free bulletin boards about everything from Ham Radio to Parapsychology.

There's even a book that lists and describes such diverse data bases as one with 6500 references about coffee, to one with 2,000,000 on agriculture. Of course, economics, medicine, law and computers are all well represented.

THE TECHNICAL SIDE

OR, WHY 1200 BAUD?

The ADC Modem will communicate at 1200 baud (about 120 characters per second) or 300 baud (about 30 characters per second) automatically, depending on the link at the other end.

So, it's clearly a decision of money and time. 1200 baud is roughly 400% faster than 300 baud, so if you transfer data across the country, you save 400% on your phone bill. And think of the time $198 can save you!

If you download material from pay data bases, even though some charge more for 1200 baud, you still come out way ahead because of the amount of information you get per dollar.

It comes with a modular phone cord that you simply connect to any standard modular jack. And, it uses standard Bell 103 and 212A protocols. It operates in half or full duplex.

Its built-in microprocessors let you automatically answer in-coming (auto-answer) calls & act on all Hayes commands.

It even waits for dial tones and phone network tones during auto-dial. The modem is 9/" X 5 1/4" X 2/".

It's backed by ADC's standard 1 year limited warranty.

HOOOKING IT UP MADE EASY

All you need is a serial output, a cable and a modem program. Use your own for any computer. Or you can use ours for the computers below. All our modem programs on disk let you save, upload and download files. Look how easy it is.

If you own an IBM PC or a Clone, usually you'll find an RS232 serial port already built-in. All you need is our cable and modem program on disk, which we've packaged together for just $29 ($3 P&H). But, before you order your cable, you may need a short sex education course.

Sex Education 1A. You need to determine whether your computer's RS232 connector is male or female.

If you look at the picture below, you'll note that ADC's RS232 Modem connector has holes going in. It's a female. If it had copper pins sticking out, it would be a male. Now wasn't that simple?

So, if yours is female, order our male cable and modem program Or. No. 4353. If you have male pins sticking out, order our female cable, Order No. 4354.

If you don't have an RS232 port, we have a serial interface card for your IBM or Clone, complete with cable and modem program for $99 ($4 P&H). Or. No. 4355.

For your Apple IIC, your serial interface is built-in. All you need is our cable and modem program on disk. They are just $99 ( $3 P&H) Order No. 4356.

For your Apple IIE, you'll need a serial interface with an RS232 port, a cable and a modem program. It's all yours for just $89 ($4 P&H). Order No. 4357.

1200 BAUD SMART DUCK RISK FREE

For business or pleasure, you'll communicate, gather information and save time. If you aren't 100% satisfied, simply return it in its original box to DAK within 30 days for a courteous refund.

To Order Your ADC 1200 Baud Intelligent Modem, now including CompuServe's Complete Subscription Kit (nothing else to buy), with $25 worth of on-line time, risk free with your credit card, call toll free or send your check for DAK's market busting price of just $169 plus $6 P&H. Order No. 4334.

The OnLine Directory of over 1,100 Data bases, complete with descriptions

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

Computer Power Director

By Drew Kaplan

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

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

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

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

BUT IT'S CONVENIENT
There are 6 protected 3-wire outlets on the back. 5 are switched off from the front. One is unswitched but spike protected so you can leave a peripheral on.

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

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

Above, you can see The Power Director between the Visual IBM® Compatible Computer and its monitor. It is 1¼" high, 13¾" wide and 12¼" deep.

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

PROTECTION & CONVENIENCE comes in handy.

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

Now, I'm using my new Power Director with 4 different monitors. With this added protection, maybe I won't lose data again. And, I've learned to save my data much more often since my loss.

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

On one board, I found the numbers of 40 other boards. Wow, there's so much information, education and entertainment.

Hayes, Lotus, Wordstar, IBM, and Apple II/E are registered trademarks of Hayes Microcomputer Products, Lotus Development, MicroPro, International Business Machines and Apple Computer.

DAK INDUSTRIES INC.
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For Toll Free Information. Call BAM-SPM Monday-Friday PST
Technical Information. 1-800-272-3200
Any Other Inquiries. 1-800-423-2866
8200 Remmet Ave., Canoga Park, CA 91304
Stealth Bomber Improved

The Pentagon may pay billions for the new Stealth Bomber that flies automatically and is invisible to enemy radar. But, you can have Teac's Stealth Reversing Automated Cassette Deck with dbx that can even record the full dynamic range of CDs for less than the price printed on Teac's February '86 dealer cost sheet.

Stealth's invisible. Enemy radar can't see it. And, it's the newest electronic marvel to grace the drawing board. Now, you may be thinking that there's not much in common between a Stealth Bomber and an automated cassette deck. After all, a Stealth Bomber sure can't fly backward. But wait, before you decide.

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

Of course it has other 'radar avoidance' in the form of Dolby B & C, but dbx does much more than noise reduction.

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

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

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

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

In addition to switchable Normal, CrO², and Metal bias switches, you'll have fine bias adjust. You can actually fine tune the bias to decrease or increase high frequency response.

So, you can exactly match the brand of tape you use (DAK, I hope), or tailor the sound to fit your taste. And, you'll make perfect recordings when you use the linear input level controls and sensitive peak reading LED VU meters.

COURSE CORRECTIONS

When you're listening to a tape, you may want to skip to the next song or play the same song over again. This is really useful when you're recording.

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

This autopilot can take you backwards, forwards or around the world again. You can play and record in both directions.

And finally, without even worrying about refueling, you can have your music totally uninterrupted. With just a touch of the button above, you can have your music play over and over again.

Now you only need to get up to change cassettes when you feel like it, not when the cassette ends. It's the best way to enjoy your music. your way. BUT IT'S THE dbx

While dbx is the ultimate noise reduction system, complete with its vibrant 90db dynamic range, this deck also lets you record and play with Dolby B and C.

But, you just can't get the full-range dynamic hiss free response across the entire frequency range without dbx.

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But, you just can't get the full-range dynamic hiss free response across the entire frequency range without dbx.
Like the awesome thundering power of a tidal wave, negative ions will wipe pollution out of your environment. And like the rising and falling tides remove pollution from the beach, your environment will be kept pollution free.

Nothing stands up to the mighty force of a tidal wave. And when the wave recedes, it takes everything with it.

And like the mighty suction of the receding ocean waters, pollutants in your air, from smoke to pollen, will succumb to the power of the Ion Tidal Wave. Here’s how it works.

**IN AND OUT**

First the mighty wave strikes. The force of this wave’s wall of water consists of 15.5 trillion negative ions per second.

Being negatively charged, the ions attach themselves to any positively charged particles in your air. Pollutants such as cigarette smoke, pollen, smog, car exhaust and insecticide dust, all have positive charges. So, the negative ions are drawn to them like magnets.

Then the awesome wave of negative ions stops. The negative ions, complete with the attached pollutants, start drifting to your positively charged walls, ceilings and floors.

But wait. Just as the ocean reclaims the water that it so forcefully delivered in a tidal wave, the base of the Pulsair becomes a powerful positive collector and sucks the ions, with the pollutants attached, back to itself.

So, instead of falling to the floor or sticking to your walls, most of the pollution is pulled back to the Pulsair. Just like the rising and falling tides, your environment will be cleansed by the action of the ion wave.

If you want to see an ion generator remove smoke, here’s an easy test. Place a standard clear kitchen bowl over the ionizer. Puff some cigarette smoke into the bowl. Then plug in the ionizer.

Before you can say, “Pulsair Kill!” the smoke will be totally gone. It’s an easy test and it’s sure to make you a believer.

You’ll get a graphic example of just what negative ions can do—smoke, pollen, other pollutants in your environment.

**BIG BERTHA OF GENERATORS**

Pulsair is the third generation of ion generators. First there were simple generators that generated negative ions.

Negative ion generation is used in hospital burn wards and computer chip manufacturing to remove microscopic particles that can adversely affect patients and chips alike.

These ion generators worked fine. In fact, they worked so well that your walls became the home of the particles they removed from the air.

In my opinion, black walls are a lot better than black lungs. But they worked so well, that consumers complained.

Then came bipolar collectors which sent out ions and concurrently collected the ions in the air. (We still sell one that works great for just $39).

Your air could be cleaned, your walls didn’t get too dirty and everyone was happy. The only negative was that the ions couldn’t go as far because they were being pulled back by the collector even as they were sent out.

**Enter Big Bertha.** Pulsair is different. It is bipolar, but it operates just like the ocean’s rising and falling cleansing tides.

By sequentially sending out a massive wall of negative ions, then shutting off, and finally turning on its collector, a massive constant circulation of ions occurs that cleanses your room like never before.

Minute by minute, hour by hour, day by day, the sequence continues. First a massive wave of ions is sent out. Then seconds later, it’s sucked back to the collector. You can’t hear it. You can’t feel it. But, watch the smoke disappear.

**CIGARETTE BUTTS & BOULDERS**

Fans with charcoal or furnace type filters may remove some large particles like cigarette butts and large ashes from the air. But, they’re just about useless for anything under 5 microns.

Over 90% of air pollution particles are smaller than 5 microns. So, there just isn’t any other reasonable defense for you other than a negative ion generator.

Pulsair is just about the only air cleaning system which can remove and collect tobacco smoke, dust, pollen and even bacteria from the air.

Pulsair constantly cleanses all of the air throughout its tidal area. In contrast, fan driven filter type machines can only clean the air that they actually draw through themselves.

**NOT A NEW IDEA**

Actually, the negative ion manufacturers didn’t think of this great way to clean the air. God did.

If you’ve ever smelled the sweet country air after a thunderstorm, or near the breaking surf at the beach, you know the invigorating feeling that comes over you.

Pulsair does for a 250 square foot area, what Nature does for the entire country side. It seems that positive ions are associated with pollution and negative ions with good fresh natural air.

There are also people who manufacture a negative air ionizer that let you think more clearly, sleep better and feel happier.

There’s no way to prove or disprove the claims. But, it is safe to say that if all these things come from cleaner, pollution free air, it just may be possible.

A removable, washable filter comes with Pulsair. You just rinse the filter when it gets dirty. And wait till you see just what Pulsair removes from the air before it gets into your lungs.

It is 6" tall. It’s made by ISI, an innovator in negative ion technology. And, it’s backed by their standard limited warranty.

**A CLEANSING TIDAL WAVE RISK FREE**

Make the smoke test. Let it wipe out the pollution (like other people’s cigarette smoke) in your home or office. If you don’t think you’re breathing cleaner fresher air, simply return it in its original box within 30 days for a refund.

To order your Ion Tidal Wave Negative Ion Generator with your credit card risk free, call toll free or send your check for just $89.95* ($4 P&H). Order No. 4633.

I can’t guarantee that it will help you sleep, solve crime, or improve your sex life. But it’s tidal surges will give you cleaner air to breathe, and that’s priceless.

**DAK Industries INC.**

Call Toll Free For Credit Card Orders Only 24 Hours A Day 7 Days A Week 1-800-325-0800

For Full Free Information, Call 805-253-3200 Any Other Inquiries. 1-800-423-2866

8200 Rammet Ave., Canoga Park, CA 91304
Now you can test your air conditioner, your hot water heater, your wine or your pool. Here's the latest in temperature measuring devices, at a breakthrough price. Plus, you can even set temperature alarms.

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

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

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

Now you can measure the temperature drop of your car or home air conditioners. (That's the difference between the room air temperature and the temperature of the air coming out of the duct that's measured by the probe. See picture.) The extra large LCD display is exceptionally clear. And, because it never shuts off, it's the perfect room air temperature sensor for your desk or night stand.

If you're like me, you'll be checking the temperature of everything from your coffee to your bath. When I measured the output air from my typesetter that I use to make this ad, I found it was 107°F. It's not supposed to be above 90°, so I installed a fan. The Hot Probe might have just saved me a bundle of money.

TEMPERATURE ALARMS

Because of the experience with my computer, I got the manufacturer of the Hot Probe to add temperature alarms. You can set alarms to sound if the temperature rises above or drops below any temperatures you have selected. It operates on one AAA battery (not included) and it's backed by Willas's limited warranty.

TRY THE HOT PROBE RISK FREE

If you're not 100% satisfied, simply return it within 30 days in its original box for a refund. To order your Hot Probe Sensor risk free with your credit card, call toll free, or send your check for only $29 ($3 P&H) Order No 4330. You may not save an expensive computer like I did, but if your air conditioner is low on Freon™, you might just save your compressor. It's a neat device.

Audio Telescope

Pick a voice out of a crowd or a sparrow's song out of a tree with this super-directional shotgun microphone

It's tough. If you've ever tried to record a singer while you're sitting in the audience, or a conversation from across the yard, you know that your microphone seems to pick up everything but what you want to record.

Now you can record a lecture from the back of the room or a bird's chirp from across a field.

The sound will be crystal clear with a wide full frequency response from this incredible super-directional electret condenser microphone.

Electret condenser microphones capture sounds never before possible outside the recording studio. By using battery driven circuits, these microphones can use a more sensitive sensing membrane to capture sound vibrations. Very little mass must be moved, so these new mikes are incredibly sensitive. The Audio Telescope is powered by one AA battery (not included).

It comes with both a conventional mike stand mount and a stand. And, it's great for video recording.

The microphone itself is totally isolated from the stand by polymer O-rings.

So, it actually floats. It will not pick up motor noises or vibrations.

It is 17" long and comes with a full length foam wind screen. There is a mini phone plug for video camera use, plus a 20 foot mike cable with both mini and 1/4" plugs for a professional recording. It's backed by a manufacturer's standard limited warranty.

TRY THE AUDIO TELESCOPE RISK FREE

Record lectures, concerts or nature, risk free. If you don't feel you've made totally professional recordings, simply return the Audio Telescope in its original box within 30 days for a refund.

To order your Audio Telescope risk free with your credit card, call toll free or send your check for only $69 plus $4 for postage and handling. Order No. 9736. You'll be able to make superb recordings that were never before possible.

DAK INDUSTRIES INCORPORATED

TOLL-FREE ORDER LINE

CALL TOLL-FREE . . . 1-800-325-0800

8200 Remmet Ave., Canoga Park, CA 91304
The $599 Plain Paper Muncher

Royal is out to take over the plain paper copier field with a barrage of features and reproduction quality that's equal to DAK's $3000 copiers. At home or at the office you can now have superb copies on plain paper for $599.

By Drew Kaplan

It was my first luxury. I rented a Xerox machine for my office at home. Every time I made a copy of a letter or a magazine article, I felt successful. My wife copied recipes and a never ending series of school projects for our kids. I could copy checks, tax returns or receipts. But, it cost me $100 per month for the rental, plus a charge per copy.

ROYAL BLASTS PRICES

Well, now at home or in my own office at DAK, I can make perfect copies of letters, documents and even pictures from magazines with Royal's all new plain paper desk top copier.

I use the same paper I used with my Xerox. I can even use DAK letterhead. And, I can even copy on both sides.

This copier lets me keep plain paper in its cassette paper holder (on the right) and I can feed different paper like DAK letterheads or the back side of a page I've just copied into the left side.

Frankly, it makes just as good copies as DAK's main $3000 copiers. In fact, because it's only 14½" wide, it sits on my desk, so I use it most of the time.

I do get up and use our main copiers when I have to enlarge or reduce something. And I use our main copiers when I copy large computer reports. Royal's copier only copies B½ by 11" paper. You can make up to 79 unattended copies at the rate of 10 per minute. And here's something I really like.

All of our main copiers turn themselves off after about 7 minutes of inactivity to save energy. Well, so does Royal's.

But Royal's does more. When you turn it on, it takes 30 seconds to warm up before you can make your first copy, as do our main copiers.

But with Royal's, you just touch the copy button twice and leave. In 30 seconds, it will make 1 to 79 copies for you automatically.

SAME METHOD

Just like our other office copiers, this machine uses a photoconductor drum and dry toner. What's really nice is that the toner comes in a slip-in cartridge.

The inexpensive toner cartridge will provide you with up to 2500 copies. And by inexpensive I mean $49! which works out to about 0.019 per copy. And look at this, because Royal's copier uses dry toner, it won't dry out. So, if you make 10 copies a month or 500, just turn it on and it's always ready.

So, at your desk you'll copy letters with out walking half way across the building and at home you'll copy letters, school projects, newsletters and recipes.

HOME OR OFFICE

You'll love the quality. As you can see on the control panel, you can not only select the number of copies you want, you can alter the intensity.

You can make dark solid copies or lighten up for colored backgrounds. This copier simply produces identical quality B½" by 11" copies to DAK's main office machines. Wow!

So, if you don't need to copy 11" X 14" computer reports or enlarge or reduce your originals, there's simply no reason to spend more than $599.

If your family is like mine, a day won't go by that you won't use this copier. My wife copied the text of my son's speech. I made a copy of a disputed bill. And there's so much more.

My son borrowed a book for a report and copied 20 pages. We had to send a copy of our cancelled check for a house payment. And, I copied a poem from a book for my son to learn.

At the office we have several large expensive copiers. But, we have a 64,000 square foot building. I can buy 5 of these for the cost of one standard machine.

And, since the copy quality is identical, several departments are putting them in. They're thrilled and I'm happy because they'll save time (which is money for me).

THE UGLY SERVICE PROBLEM

Well, it had to rear its ugly head. Everyone knows that copiers need service. But Royal has made a quantum leap in eliminating most service.

which is a major cause of service, is user removable. Just turn one thumbscrew and pull it out. A new drum assembly, complete with rollers that you simply slide in yourself, costs just $799.

So if yours goes bad, Royal figures it's good for about 2 years if you make about 400 copies per month, just slide in a new one. Everything else can be cleaned.

So, with Royal you can forget typical service problems. It's backed by Royal's standard limited warranty.

MAKE PERFECT COPIES RISK FREE

I love having a copier. I make copies of things that I file so I don't lose the originals. I never have to get in the car when I need a copy of a document at home. And, I don't need to leave my own office to make a copy when I'm at work.

If you're not 100% satisfied with the perfection of the copies or the ease of use, simply return it to DAK in its original box within 30 days for a refund.

To order your Royal Plain Paper Copier complete with a toner cartridge and with Both Sides Copying Capability, and the ability to Copy Books and Magazines risk free with your credit card, call toll free, or send your check for just $599 (S18 P&H) Order No. 4434.

Extra 2500 Copy Black Toner Cartridges are just $499 (S3 P&H) Order No. 4435.

Now, every small business, every Doctor's office, every hard working executive and every home can have a plain paper copier. Wow, it's so great to have.

Xerox is a registered trademark of Xerox Corporation.

DAK INDUSTRIES INCORPORATED
TOLL-FREE ORDER LINE
For credit card orders call 24 hours a day 7 days a week
CALL TOLL-FREE...1-800-325-0800
8200 Remmet Ave., Canoga Park, CA 91304
Remote Control Blowout
Command Consoles, Modules & Computer Interfaces
Burglars will think you've got a family of 10 at home when you're out. And, you'll feel like you got a butler, 2 maids and a security guard when you're home. And now, for just $19.95 you can interface your computer.

By Drew Kaplan

It's late at night. You're in bed. The lights are romantically low. The stereo that is playing in the background, as well as your lights, will be automatically turned off after you're asleep.

As you peacefully drift off, you'll be secure in the knowledge that a burglar on the prowl, your family still appears to be moving about.

CHEAP THRILLS

Romantic lighting, burglar deterrents and energy saving controls, are just the beginning of this remarkable, installation free, remote control system.

Now you can remotely turn on, off and dim your lights, thwart burglars, and even turn the lights on or off in an unattached garage or barn.

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

From my own nightstand, I can dim the lights in the bedroom, turn off my son's TV and turn on our outside security lights or all the controlled lights in the house. Wow!

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

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

THE COMMAND CONSOLE

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

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

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

You can even move it from room to room because its total installation consists of simply plugging it in. Or, at DAK's super low price, you can put Command Consoles in as many rooms as you wish.

No matter where a Command Console is, you can control lights, fans, TVs, and stereos anywhere in or around your home.

HERE'S HOW IT WORKS

As you push each button on the command console, a powerful but silent, encoded signal is sent down its AC cord into your home or office wiring.

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

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

Wherever you want to control a light or appliance, all you have to do is plug-in one of the system's controller modules. Each module has a rotary dial numbered from 1 to 16. Just dial in a number to match one of the 16 number buttons.

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

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

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

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

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

You can move the modules from place to place or change their code numbers in seconds. And of course, if you move, your system goes with you.

THE TIMER

This sophisticated electronic brain can perform 32 tasks. Just plug it in and you're in operation.

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

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

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

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

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

Or, you can have your porch lights come on so you'll never enter a dark house. You can set your hall light to come on at 11PM and off at 6AM. And you can have your electric blanket shut off at 7AM and come back on at 10PM.

TELEPHONE CONTROL TOO

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

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

You can call home and turn on your lights before you leave work or before you leave a midnight party. It's a great security device.

SOME NEAT IDEAS

You'll find the system changes and bends to meet your exact needs. You can set several modules to the same number so that the front and rear lights can come on together.

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

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

It's like getting free dimmers thrown . . . Next Page Please
in with your remote control system. So, for bedside lamps, swag lamps, ceiling lights, track lights and garage lights, you'll be in full command.

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

With a little imagination, you can adapt other electronic devices that will let you water plants, control green houses, and of course, make use of audio cassette decks with 'timer ready' switches.

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

QUITE A SYSTEM

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

Think about how nice dimmed lights would be in your bedroom or living room. If you're at all like me, you'll love all the 'plug-in' things you can do with X10.

199$ COMPUTER CONTROL TOO

It's amazing. Look at your computer screen. Pick a lamp anywhere in your home and touch a button. Both the lamp on the screen and the 'real' lamp will jump to life. And, it's yours for just 199$.

You can choose 10% to 100% intensity. And, not only can you turn anything you choose on or off right now, you can program the device to come on or turn off multiple times today, tomorrow, or any day(s) you wish during the week. USE YOUR COMPUTER-DON'T LOSE IT

What's really neat is that you can operate the system directly from your computer, but you store all your programmed instructions in X10's 80C48 microprocessor based Control Center.

And look at this. The Control Center instantly connects and disconnects from your computer without tying it up.

The control center has battery back up (9V battery not included), and you can back up all your stored commands on the copyable X10 master disk.

So, not only is your programming protected, but you can store summer, winter, and vacation schedules on disk.

In fact, although the included software supports at least 95 devices (minimum, depending upon which computer you own), you'll have access to 256 command capabilities. So, you can program anything you like. Imagine all the exciting things you can program your computer to do. Wow!

FULLY COMPATIBLE

X10 has over 70,000 customers with X10 systems. The standard modules that you already own are 100% compatible. So, for 199$, how can you go wrong?

How is it done? Well, your computer tells the Command Center what you want done. The Command Center then sends a silent encoded signal throughout your home's electrical system.

If it says, "Number 7 module turn on to 40%", only number 7 will respond. Of course, groups of modules can be controlled and you can assign several lights, such as outside flood lights, to the same number. It's all easy. It's all flexible.

BACK TO THE ACTION

OK, you're sitting at your Commodore or Apple IIE or IIC Computer. You'll see pictures of a variety of rooms. Just tell your computer what types of devices you'd like to control.

Whenever you would like to place a lamp or appliance, just choose one from a screen like the one shown above. These pictures, or ICONS as they are called in computers, will appear. There are many types of devices to choose from.

If you were at your IBM PC you'd see text. (You can even control your whole office or factory.) If you were at your Macintosh, you can draw your own rooms, even using Macpaint. Wow!

So, with Command Consoles or with your computer, or with both, you'll have control never before possible of electrical devices in your home or office.

Wait till you feel the power of your computer surging through your home. A security mode can make your lights come on and off at random times for security. You can even manually control 8 devices from the Console itself.

All Command Consoles, Modules and Computer Interfaces are backed by X10's standard limited warranty.

FINAL CLOSE-OUT RISK FREE

It's simply thrilling to use. It's security. It's convenience. And, it's fun.

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

To order any combination of Command Consoles, Modules and Computer Interfaces call toll free, or send your check for the amounts shown below.

Order any combination of Command Consoles and modules you desire.


2) Event Clock Timer—Lets you control 8 modules with up to 2 on and 2 off commands to each. Also acts as a command base plus sleep and security extras. Just 269$ (2 P/EH). Or. No. 9777.

3) Telephone Remoter—Phone home and control 8 devices. It's also a base. It's just 399$ (3 P/EH). Order No. 9778.

4) Lamp Module—Controls/Dims lamps up to 300 watts plugged into walls. Just 119$ (1 P/EH). Order No. 9779.

5) Wall Switch Module—Controls/Dims lights now controlled by wall switches. 500 watt capacity. Just replace your wall switch with this automated module. Just 129$ (1 P/EH). Order No. 9780.

6) Appliance Module—Controls stereo, TVs, or anything with motors. 15 amps, 1200 watts. 1/3hp rating. Just 119$ (1 P/EH). Order No. 9781.

An X10 Computer Home Controller complete with appropriate software disk and cable is just 199$ (4 P/EH).

7) For your Commodore 64 or 128, it simply plugs in. Use Order No. 4376.

8) For your Apple IIE or IIC, use Order No. 4379. Note: For the Apple IIE only (the IIC has one built-in), you'll need a serial interface (same as for a modem). It's just 79$ (2 P/EH). Order No. 4380.

9) Most IBM PCs & Clones have a serial port, so X10 should simply plug in. Use Order No. 4410.

10) For your Macintosh, the X10 simply plugs in. Use Order No. 4411.
No Button Chess

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

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

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

It's the newest version of 'follow the bouncing ball.' Now it's follow the blinking light. So, let the war begin!

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

SIMPLE TO USE

Notice that I said, "simple to use", not simple to beat. Using this computer is incredibly easy. Just move your man. The computer will know exactly what you've done.

Then it's the computer's turn. Two LEDs will light to show you the man the computer wants to move. Then two more light show you where to move the man.

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

BUT, THERE ARE BUTTONS

The only buttons you really need are the on/off switch and the new game button. But, look at this.

There's help. Just touch a button, and the computer will join your team. It will pick your best possible move. A second button touch will send its brain back to pick its best response.

You can cheat. Let's say you make a really dumb move. After you see what the computer is going to do to you (hor-
Just interchannel balance, is fitted with a cordings level. Fade-ins then are simply a question of advancing the main knob until it is stopped by the ring, which increases the force necessary to turn the knob. Indicative of the design approach is the powered cassette-compartment door: It closes automatically when you drop in a tape, but—unlike those in some "ultraconvenience" models—it can be closed by hand as well.

Conception and operation are, in a word, straightforward. Tape-type selection, for instance, is entirely automatic, responding to the encoding keyways built into cassette shells. You can’t fine-tune for the particular tape at hand (or make successful recordings on old Type 2 or Type 4 cassettes without the keyways), but neither can forgetfulness cause grossly incorrect settings with current name-brand cassettes.

The tape brands that Diversified Science Laboratories used in testing the CT-AX’s record/play functions (based on recommendations from Pioneer that included some now withdrawn formulations) were Maxell XL-II as the Type 2 chrome-compatible ferricbalt, Maxell UDS-I as the Type 1 ferric, and TDK MA as the Type 4 metal. The slight sags in the Dolby-on curves with the Type 2 formulation suggest that a more sensitive tape (or an internal readjustment of recording sensitivity) could yield flatter midrange response, though at the expense of some exaggeration in the range between 5 and 10 kHz, where all the tapes displayed some rise.

Overall, however, the Type 2 record/play response is very good. Response with the Type 4 tape is even better, though similar in general shape. Best of all in flatness and, particularly, sensitivity matching are the curves with the Type 1 formulation. That tape also displays the flattest high-level (0 dB) trace, up to self-erasure at about 7 kHz, though this presumably is a case of two mirror images—a roll-off in the range where the response tends to peak—making an apparent right. In the 0-dB Type 2 curve, the roll-off is slightly greater than the rise (which is clearly visible in the Type 2 trace recorded at −10 dB), for a net response that slopes very slightly downward.

The ability to handle strong highs is certain good for both the Type 1 and Type 2 tapes, however, and it’s distinctly better than good with the Type 4 metal, whose 0-dB curve rises slightly in the emphasized range, but, with Dolby C operating, remains within about 1 dB of flat right up to 20 kHz. Even without noise reduction, response holds up to just above 10 kHz, which is very respectable, even for a metal tape.

Playback response with the lab’s BASF test tape rolls off a little toward the top end, apparently as a result of only a fair match between the tape azimuth and that of the deck, as evaluated on the basis of output stability at high frequencies. Overall playback response is very smooth—even in the deep bass. There is a slight output disparity between Type 1 and Type 2.

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\[ \text{A Q U I C K G U I D E T O T A P E T Y P E S } \]

Our tape classifications, Types 1 through 4, are based on the International Electrotechnical Commission measurement standards.

**Type 1** (IEC Type I) tapes are ferric requiring “normal” bias and 120-microsecond playback equalization.

**Type 2** (IEC Type II) tapes are intended for use with 70-microsecond playback EQ and higher recording bias. The first formulations of this sort used chromium dioxide, today they also include chrome-compatible coatings such as the ferricbals and a few metals.

**Type 3** (IEC Type III) tapes are dual-layered ferrichromes, implying the 70-microsecond (“chrome”) playback EQ. Approaches to their biasing and recording EQ vary somewhat from one deck manufacturer to another, when they are accommodated at all. Formulations of this type are no longer being made.

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

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*OCTOBER 1986 79*
The best CD Player is a matter of opinion. Many opinions.

Feuer und Flamme

DENON DCD-1500
typically £399

The current range of Denon players covers the ground from true to audiophile models. The DCD-1500 sits bang in the middle of the range as far as price is concerned and could best be described as being a full-feature domestic machine that is built with audiophile attention to detail. Rather like the second generation of Sony players, the Denon uses separate converters for the two stereo channels rather than a time-sharing of one, thereby escaping phase problems of approach. The tri-oval oversample has two separate phase filters built into the machine, one for each stereo channel. The circuit design is such that each side is its own converter. In the main, the DCD-1500 is an outstanding player at list price and a phenomenon at its price in my opinion. It’s the best deal in today’s CD player market.

The Real Deal

This Denon DCD-1500 is well designed throughout. It looks well thought-out and is capable of careful maintenance, but it’s not a cheap item to spend the right amount of money on. The main Search and Skip controls are fine. The keypad is in the centre bottom of the player. The keypad is duplicated to the right side of the comprehensive display while the Repeat and Shuffle buttons can be seen on the top right. The display gives continuous readout of Track/Number. It’s a neat machine and it’s worth every penny.

Beispielweise spielt der klopfige Netzrauf mit vier einzel...
The audio critics of the world hardly ever agree on anything. But when it comes to superlative CD players, Ken Pohlmann, Len Feldman, Masamitsu Fukuda, Ulrich Smyrek, David Prakel, Yoshiyuki Ishida, Artur Jung, and Hideo Kaneko recommend one model with amazing consistency: the Denon DCD-1500.

How did Denon achieve this exalted status? Not by offering useless buttons, switches and fluorescent displays. But by developing better digital circuitry, building to higher standards, and using better parts. Our proprietary Super Linear Converter is the only one that actually corrects D/A transfer distortion. Each circuit gets its own separate power supply. And our filters are computer-analyzed for linear phase. So you hear sound that rewards the most critical listening.

In a player as reasonably priced as the DCD-1500, these refinements are enough to make even a hard-boiled critic stand up and cheer. And now there’s more cause for celebration: three new Denon CD Players. They’re built on the same principles as the DCD-1500, and they’re even more affordable.

So if you want to hear the best that the Compact Disc format has to offer, get yourself to a Denon dealer. And don’t forget to tell him who sent you: Ken, Len, Masamitsu, Ulrich...
Introducing The
One Remote That Does
The Work Of Four.

The Control Central™ Remote.

Things are getting out of control. Separate remotes for your TV, VCR, stereo, CD or cable converter can be more control than you can handle.

But now you can replace up to four remotes with one. An infrared remote that works with most video equipment made today.

The Control Central™ infrared remote from General Electric.

To program Control Central, just flick the switch to “learn,” place it head-to-head with the existing remote and press matching buttons on each.

In minutes, Control Central can memorize the operating codes of up to four separate infrared remotes. It’s that simple.

And it reprograms just as easily for new or added equipment.

You can get the convenience of this one remote for yourself, or give one as a gift.

Control Central. The one remote that keeps everything under control.

We Bring Good Things To Life.

“GE” is a registered trademark of General Electric Company.
Understanding the metering is a little more difficult than usual, at least with the tapes chosen for the lab testing. Where two meter readings are shown in our data column, the first is for off-the-tape monitoring—the mode into which the deck automatically switches when you begin recording and the one necessary for listening to the recorded results. The second figure, following the slash, is what shows on the meters with the monitor switch set to read the source signal. As you see, the latter reading usually is higher. This probably reflects the sensitivity mismatch that causes the slump in midrange response with the Dolby circuits on; if the deck were readjusted for the sensitivities of the tapes actually in use (and, again, the disparity is least for the Type 1 ferrite), the source and tape meter readings probably would match exactly.

Since they don’t, the meaning of the meter readings is harder to interpret than usual because different headroom factors must be allowed for depending on the monitoring mode. And even then, the source/tape difference isn’t entirely consistent, as you can see. This is due partly to the “quantized” nature of the meters, which respond only in discrete increments, and partly to some vagaries in the metering itself.

We don’t want to make too much of these matters, however, because the metering actually is distinctly better than average in at least one key respect: It is calibrated in 1-dB increments all the way from –4 to +6 dB (with respect to the deck’s own 0-dB mark) and in 2-dB increments out to –10 and +10 dB. This is exceptionally fine subdivision for a home deck and genuinely informative. The total scale reaches down to below –20 dB and up to +10. The range from +5 dB up indicates overload for Type 1 and Type 2 tapes, from +6 dB up for Type 4. These markings are a reasonable match to the lab data but—again—require interpretation, depending on whether source or tape is being read.

Erasure and channel separation both are excellent, and the remaining electrical figures are very much what you might expect of a deck in this price class. Mechanically, it is among the most impressive we’ve tested from Pioneer in recent years. The closed-loop drive delivers tape motion that is exceptional in both speed accuracy and freedom from flutter.

In short, the CT-A7X is a capable deck that, to a large extent, stays out of your way in recording or playing tapes. That is, it intrudes neither by preempting functions that many of us would rather manage for ourselves nor by imposing sonic aberrations. Paradoxically, those negatives add up to a positive experience in using the machine. If you’ve been turned off by the complexity of many cassette decks, try this one; it could bring back the fun of recording.
driven positive while the other is driven to a complementary negative voltage. This creates twice the total voltage drop between the terminals (and therefore four times the power into any given load) that can be achieved with a fixed ground and one driven terminal and is the primary means of obtaining relatively high output power from the 12 volts of a car battery. As a result, Denon’s “+” and “−” terminal markings don’t mean “hot” and “ground” (both are hot) but are so marked and color coded to ensure that you connect the two speakers in phase with each other. Neither side can be grounded to the car chassis.

As is common in car stereo, which is unfettered by the Federal Trade Commission rules that govern home-audio power ratings, Denon gives two power specs for the DCA-3175. The first says the unit will produce a maximum of 40 watts per channel; the second, following FTC rating practice, says that it will deliver 28 watts per channel over the full audio bandwidth with 0.05 percent distortion. In Diversified Science Laboratories’ bench tests, both figures proved to be essentially spot-on. Among other things, the disparity between ratings dramatizes the importance of knowing what sort of power spec you’re looking at.

All measurements were made with the input-sensitivity switch at initial, which would be appropriate for much of the car-stereo equipment we test and comparable to line level in home gear. The low presumably is intended for use with DIN-spec equipment. Curiously, the S/N (signal-to-noise) ratio is slightly more favorable with the greater gain, which usually tends to amplitudes thermal noise as well as signal. Either way, the figure is quite generous. The lab did find some DC-to-DC converter by-products in the audio output, but they were more than 65 dB below output at all test levels (0, 14½, and 16 dBW).

Harmonic distortion is very low at 0-dBW (1-watt) output, exceeding 0.01 percent only at the top of the frequency band and even then producing only the relatively benign second harmonic in any measurable quantity. At the rated output of 14½ dBW (28 watts), distortion at all test frequencies is close to 0.05 percent—also too low to be of any practical concern, though it contains significant quantities of the third harmonic.

Denon says that the avoidance of a chassis ground in the output minimizes the possibility of ignition-noise pickup in the sound. (There is provision for chassis-to-chassis grounding of the amp, which the somewhat skimpis owner’s manual indicates is obligatory). But the lack of an output-to-chassis ground won’t cure RF (radio frequency) interference in the head end or in the wiring leading from it to the amp. And one source of RF is the DCA-3175 itself, the lab discovered (it probably comes from the DC-to-DC converter). Our remaining tests didn’t turn up any FM interference attributable to this, but that isn’t to say that it might not make special shielding desirable in some installations.

But, to repeat, the standards of both audio and mechanical design are what appeal above all in the DCA-3175. The intricate extrusions at each side that act as heat sinks for the power transistors are intriguingly formed, not only as functional convection “chimneys” but as aesthetic objects. It’s definitely a class job, right down to the Allen screws that hold the top plate in place. That it sounds good—a lot better than you can appreciate in any moving vehicle of our acquaintance—goes almost without saying.
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ARMY.
BE ALL YOU CAN BE.
In the world of compact disc players, the only thing more surprising than the rate at which prices have fallen is the speed with which manufacturers have shrunk the whole works down to Walkman-like dimensions. First came Sony with its D-5, followed swiftly by a raft of competitors. In July, we cataloged 13 models, and more were introduced at the most recent Consumer Electronics Show (see "New Products: Summer '86," September). By some estimates, portables now account for nearly half the CD players sold, so we thought it would be a good idea to see how they stack up. To that end, we brought together representative models from seven manufacturers for a thorough wring-out at Diversified Science Laboratories.

Although similar in basic concept, the players vary in the details of their design—sometimes rather dramatically. The Sony D-77, for example, includes an AM/stereo-FM radio in a package scarcely larger than the amazingly small, but radioless, D-7 (test report, April), while the Toshiba XR-P9 comes with a wireless remote control and an angled stand that doubles as an AC power adapter. This greatly strengthens the Toshiba's appeal if you plan to use the player at home as well as on the go.

Another player particularly—if paradoxically—well suited to domestic use is the Hitachi, which is larger than the others (mainly because of its built-in battery compartment) and has its display panel and many of its controls on top rather than on the front. This makes the DA-P100 somewhat easier to operate on a tabletop than most other portables. At the same time, it is more susceptible than average to mistracking, which would tend to discourage over-the-shoulder or in-the-car disc playback. It is perhaps better thought of as a transportable, easily moved from place to place but best used on a stationary surface.

The most compact of these miniature machines (barely edging out the Pioneer) are the JVC, the Quasar, and especially the Sony, which draws on-the-go power from a snap-on battery pack rather than a carrying case. These players probably are about as small as is possible; certainly they could not be any less wide or deep. Yet all three boast fine performance and an extensive array of features, including audible search, repeat, and track-sequence pro-
<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency Response 1</th>
<th>Signal-to-Noise Ratio 2</th>
<th>Harmonic Distortion 3</th>
<th>IM Distortion 3</th>
<th>Channel Separation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>without de-emphasis</td>
<td>with de-emphasis</td>
<td>without de-emphasis</td>
<td>with de-emphasis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 Hz to 20 kHz</td>
<td></td>
<td>40 Hz to 20 kHz</td>
<td>300 Hz to 20 kHz</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Hitachi DA-P100</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>89 dB</td>
<td>0.070%</td>
<td>0.089%</td>
</tr>
<tr>
<td>JVC XL-R10K</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>94 dB</td>
<td>0.056%</td>
<td>0.089%</td>
</tr>
<tr>
<td>Pioneer PD-C7</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>91 dB</td>
<td>0.049%</td>
<td>0.014%</td>
</tr>
<tr>
<td>Quasar CD-8936</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>92 dB</td>
<td>0.051%</td>
<td>0.025%</td>
</tr>
<tr>
<td>Sony CP-10</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>92 dB</td>
<td>0.055%</td>
<td>0.010%</td>
</tr>
<tr>
<td>Sony D-77</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>91 dB</td>
<td>0.051%</td>
<td>0.015%</td>
</tr>
<tr>
<td>Toshiba XR-P9</td>
<td>+0.0, -1 1/2 dB</td>
<td>+0.0, -1 1/2 dB</td>
<td>84 dB</td>
<td>0.126%</td>
<td>0.040%</td>
</tr>
</tbody>
</table>

1 Response data is for the worse of the two channels at the line outputs.
2 Total harmonic distortion plus noise (THD+N) within the audible band.
3 Twin-tone intermodulation distortion, with test signals 70 Hz apart.

Consider that even some full-size home players do not provide this capability. The fact that programming is included in so many portables is indicative of the degree to which they are being used in the home: Few people are going to enter a track sequence while they're walking down the street or driving a car. So we wanted to see how the performance of a broad sampling of portables would compare to that of typical home units.

Although all the players we tested turned in quite respectable scores, none of them performed up to the level we've come to expect from high-quality homebound models. The disparity is most apparent in the frequency response and distortion figures. None of the players exhibited gross distortion under what we would consider normal operating conditions, but only the Sanyo delivered numbers as low as we're used to seeing from conventional units, and a couple of them—the JVC and the Quasar—produced large amounts of wideband distortion when fed strong 19- or 20-kHz test tones. This is a phenomenon we noted in some early home players, and though it isn't pretty, it's not really any cause for concern either. Signals containing that combination of level and frequency do not occur in music. At more realistic levels for such high frequencies (as reflected in the measurements at -24 dB), the distortion is acceptably low.

Frequency response also is less impressive on these portable players than on typical domestic machines. The best of the lot in this regard—the Quasar CD-8936—holds the error to ±3/4 dB, which is very good indeed by ordinary standards. But quite a few home units come in at ±1/4 dB or better, and most of the other portables we tested exhibited a substantially greater deviation than the Quasar. Still, these consist mainly of rolloffs at the extreme top of the audible range, where there's little musical information, so the loss seldom is of much (or any) audible consequence. The small rises shown by a few of the players in the vicinity of 10 kHz probably would be more noticeable on music.

The most likely source of these response anomalies is...
in the output filtering necessary to remove ultrasonic sampling artifacts from the signal. Impulse response measurements indicate that all these units use straight 16-bit, 44.1-kHz digital-to-analog conversion with steep-slope analog filters cutting just above 20 kHz. Such filters are complex and can easily create response ripples if the component tolerances are not very tight. Another potential source of error is in the networks used to restore flat response to discs manufactured with noise-reducing treble pre-emphasis.

Although our data table and graphs show response only from the line outputs, DSL also measured the response at the headphone jacks. In almost all cases, however, there is little difference between the two. The principal exception is the Hitachi, the only player tested that has a tone control. At all settings, this control caused a dip of 2 to 3 dB centered at about 1 kHz. Pushed all the way up, it boosted the output above 1 kHz by about 2 dB; all the way down, it introduced a rolloff of a few dB per octave above 1 kHz, yielding a response similar to that created by the high filters on the JVC and Quasar units. Such a rolloff can be highly desirable when listening to treble-rich recordings on headphones.

With few exceptions, the other tests proceeded uneventfully—a tribute to the remarkable engineering that has gone into these products. Channel balance and separation are so good on all of the players that you need not even take the numbers into consideration. The Toshiba generates somewhat lower output than the other players (you will have to turn your system’s volume control up an extra 6 dB or so to get the same loudness you would from the other units), but this is of essentially no practical significance. However, on the few recordings possessing extremely wide dynamic range, you might notice the XR-
P9's slightly higher than average noise floor, although this would be the exception rather than the rule.

Another test that tripped up a few models was the one that checks a player's ability to correct and track through gaps in a disc's signal layer, such as might be created by a manufacturing defect. The Hitachi and JVC showed some distress here, as did the Pioneer to a lesser degree. However, none of them perform any worse in this respect than did many early home players, and on discs without serious defects, there should be no problem.

One surprise from the testing is that the player with arguably the best overall measured performance is also among the lowest-priced: the Sanyo CP-10. But it's a tight race for that lead spot, and all of the other models can claim advantages in size, features, or ease of operation that you might find preemptive.

Comparisons within the group aside, the question for many people these days is whether to buy a portable or a full-size player. If you expect to do the great majority of your listening at home, chances are you will be happier with a standard tabletop unit—mainly because it will be easier to use, and perhaps also to some degree because of performance advantages. But our tests demonstrate that if mobility is a high priority, a portable can serve nicely both in the home and out: The sacrifices are astonishingly small relative to the benefits.
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THE LATEST IN MOBILE MUSIC GEAR INTRODUCED
AT THE SUMMER CONSUMER ELECTRONICS SHOW

If you've been shopping
for an in-dash tuner/CD
player, there's both
good and bad news from
the Summer Consumer
Electronics Show. The bad
news is that prices have not
come down as they have for
home players, and they
probably won't. And with
retail prices still above
$500, well above the aver-
age front-end price, the
large volume that helped
reduce home-player prices
can never develop.

Nonetheless, there are
new entries in the format.
Denon's DCC-8900 ($900)
is one. At the upper end of
the price scale for single-
disc players, the 8900 earns
its keep in metropolitan areas with a removable-chassis de-
sign. The same Super Linear digital-to-analog converter
found in Denon home CD players is an integral part of its mo-
 bile unit. Alpine, citing "consistent sales" of its CD-only
model 5900, is only the second company to offer both a play-
er alone and a tuner/CD combination with the introduction
of its 7900 ($800). Conspicuous by its absence at the Summer
CES was Alpine's prototype CD-changer, shown previously
in Japan and at a recent Nashville dealer meeting.

When the Pioneer DEX-77 ($800) makes its debut this
fall, it will be the first tuner/CD player to incorporate a code
security system. Instead of activating the usual alarm sirens,
the DEX-77 is rendered inoperable when its power is inter-
rupted. Without entry of the correct four-digit code to reac-
tivate it, a "hot" DEX-77 is unplayable and, the logic goes, not
worth stealing. The only
problem with this deter-
rent, which is also used in
Philips and Carver front
ends, is that it's going to
take a while for the word to
got out that there is no res-
sale market for such misap-
propriated goods. Lock
your car.

Technics, a relative
newcomer to the auto-
sound market but no
stranger to CD players,
wasted no time in introduc-
ing its CQD-P5 ($700). A
similar disc/tuner com-
bination, the CQF-800
($700), will be available
from Panasonic. Kenwood
showed a nonfunctional
prototype combo for late-
1986 introduction at an unspecified price. The lone player-
only unit I found was the Sansui CDX-500 ($500). Noticeably
missing from all the latest players is the CD-sleeve concept
originally introduced by Yamaha.

Along with high cost, another reason that in-dash CD
players are slow to catch on is that motorists are satisfying
their digital addiction by hooking a portable player to the car
system. If you'd like to try this, there are a number of ways to
go about it. CD inputs on the back of the receiver are the
most common accommodation. They are currently provided
on a number of new models by JVC, Sherwood, Jensen, and
others. This design has two inherent problems: how to get to
these usually inaccessible jacks and where to get power for

Jay C. Taylor is car stereo products manager for Crutchfield.
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the portable. A Jensen adapter, the J-1470 ($20), provides a permanent spot to patch into the system as well as a power source that works for most, but not all, portable CD players. The Parasound CD-S1 ($30) is designed to provide the same power and patch-in convenience for component systems with an outboard amplifier. Some front ends are being introduced with mini-jack inputs on the front of the receiver for easier access. Two Proton models, the 203 ($319) and the 214 ($349), have been retrofitted with this feature (and are identifiable by the suffix ‘CD’), which is also available on the new Technics QCR-7500 ($360).

Finally, there’s a clever $25 device from Recoton, the CD-20, that simply loads into the receiver like a standard audio cassette and plugs into the portable CD player’s output jack. Using technology developed by Larry Schotz of tuner fame (this guy’s name is on everything these days!), the tape head of the in-dash deck transmits your favorite CD through to the rest of the system. I had assumed that this wouldn’t be a very satisfactory arrangement, since it must be somewhat limited by the performance of the in-dash tape unit, but I was startled by the good results obtained from some modest tape sections. Caution: Although the packaging asserts that the CD-20 will work with any cassette car stereo, it is useless in some Pioneer and other companies’ products that use a tape-slash canceling system requiring appropriately high tape tension before the deck is activated.

A prototype digital-format RDAT deck was shown in an in-dash configuration at a Sony press conference, but it was tethered by massive cables to an outboard processor the size of a suitcase. Although the entire affair can be reduced to manageable proportions, it is most likely that the final unit will not include a built-in tuner. Given the sluggish sales of CD-only players and an undoubtedly higher price, digital audio tape may not be a major factor in autosound until the end of the decade... if at all.

One of the best features of this CES, strictly in terms of car stereo, was the absence of some big-name manufacturers. While this might not sound like much of an attraction to you, it allowed me the pleasure of poking around in the hotels reserved for smaller displays and high-end audio. I had the rare opportunity to fondle the merchandise and, more important, to listen.

And so it was with great pleasure that I stumbled across a proud name resurrected. Altec Lansing Voice of the Highway speakers not only boasted the latest in cone materials (woven carbon-fiber woofers and polyimide-dome midranges and tweeters) but sounded excellent despite fierce competition from the also-notable new Altec home speakers nearby. The new line includes two 6-by-9s, the three-way ALS-693 ($250) and the two-way ALS-692 ($200); the 6 1/2-inch two-way ALS-62 ($150); and a 4-inch dual-cone model, the ALS-40 ($110). All four models incorporate a Linear Double Damper, a spider arrangement that more precisely aligns the woofer cone, allowing for a narrower voice-coil gap and increased efficiency without sacrificing reliability.

Not to be outdone, Alpine featured two new speakers: the 6399 ($390), a 6-by-9 three-way, and the 6289 ($220), a 6 1/2-inch two-way with similar technology. Both incorporate woven carbon-fiber woofers for low mass and high rigidity. Alpine also chose polyimide tweeters for their flat response, as well as a dual-spider system to improve woofer cone linearity at high levels.

If you haven’t been content with a single Cerwin-Vega dual-voice-coil subwoofer pumping out the low notes, the company’s die-cast monsters are now available in a single-voice-coil version as well. Why own a single 15-inch LE-15D ($180) when you could step up to a pair of LE-15Ss ($180 each)? Better yet, try an 18-incher, the LE-18S ($345), which is available in both 4- and 8-ohm versions, but only in the single-voice-coil format. Where you might find a spot to mount even one of these behemoths is another question altogether. Other subwoofer models (6-by-9, and 8, 10, and 12 inches) are also available for those of you with rear decks slightly smaller than a football field.

Without cutting huge holes in your rear deck, you can still get to the bottom of things, musically speaking, with the new Alphasonik SC-10 subwoofer cabinet ($200). Featuring a downfiring 10-inch woofer, the SC-10 is aimed at the van/
Here's what happened when the experts compared Rotel audio components against the competition:

**HI FI CHOICE** “Best Buys” RA820, RA820BK, RA872, RB870

**WHAT HI FI?** Awards winner 1985, RA840BK

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**STEREO REVIEW** sums up their tests of RA870/RB870 bridged: “We can not recall seeing any other integrated amplifier that can match its distinctly above-average power-output capacity.”

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**COMPETITION**...

**WHAT COMPETITION?**

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hatchback market, but it could do double duty in a home set-up. A carpeted enclosure and a carrying handle add to its transportable appeal. Targeting an even more specialized application, the new Stillwater Designs CTF Super Sport ($420) fits into the rear storage well of late-model Camaros and Firebirds. While not the first speaker to fit this spot, the CTF is the first full-range system to be invisible when installed and held in place by the hatch itself.

INSTALLATION SPACE MAY OFTEN BE A PROBLEM, BUT FINDING AN AMPLIFIER TO DRIVE A CAR SYSTEM TO OUTRAGEOUSLY HIGH LEVELS IS NOT. Alphasonik showed two new models, each of them part of a new Class-A MOS FET series that features reduced current consumption and improved thermal efficiency. With 150 watts per channel, the MA-2150 ($500) might not realize the full potential of the aforementioned Cerwin-Vega, but it is bridgeable to 300 watts in the mono mode, and another could be added for maximum punch. Alphasonik will also enable you to be the first on your block to have 300 watts per channel with the MA-2300 ($700). After all, you could always bridge it to 600 watts when and if the Cerwin-Vega folks decide that a 24-inch subwoofer is just what the autosound world wants.

Other monster amps on display included an unusual 120-watt mono unit from Alpine, the 3520 ($280). A built-in network allows it to reproduce either the left or the right channel or the sum of both inputs. Fujitsu Ten's UM-142 ($400) can deliver either 100 watts per channel in stereo or 40 watts each of four channels.

Removable receivers, which are gaining wide acceptance from security-conscious consumers, added yet another Kenwood model to their number, the KRC-134 ($479). Other new "extractables" include Targa's HT-3000 ($300) and Blaupunkt's four new DIN models designed for use with an optional quick-release adapter. All four feature Blaupunkt's exclusive ARI traffic information circuitry. The new Houston model ($700) can be controlled by an infrared remote, while the latest Tucson model ($600) is Blaupunkt's first C-Qam stereo-AM receiver.

How to fill all that extra space in late-model domestic dashes got some new answers as Fujitsu Ten displayed its new 1½-DIN QMX-3570 ($149). Being a spectrum analyzer/amplifier combo, the 3570 offers not only high power but mids bands of green and amber dancing lights. If you prefer the normal 2-inch-high radio and would like to fill the space above with something other than an equalizer, the new ½-DIN amplifiers from Technics, the GYM-125 ($100), and from Sansui, the SMX-300 ($189), should be a perfect fit. Half-DIN equalizers and EQ/amplifiers too numerous to mention were everywhere at the CES, many with subwoofer outputs, adjustable crossover points, or spectrum analyzers. One feature of these units that makes for a nice demonstration is preset equalization curves—but does anybody really change the EQ when he switches from rock to jazz with a high-quality system?

The latest in in-dash cosmetics? New receivers from Technics, Sherwood, Panasonic, Fujitsu Ten, and others sport night illumination that is switchable from one color to another to match your car's interior, usually from amber to green (reminiscent of the color debate with video display terminals). A good compromise could be good, old red LEDs, for that submerged submarine look.

And now for something completely different. Have you ever listened to television without bothering to watch? Proton is betting that some programs, such as morning magazines and the evening news, lend themselves to listening almost as much as radio broadcasts. Proton further predicts that given the choice between only hearing a favorite soap or missing it altogether while stuck in traffic, most daytime TV addicts will opt for the former (especially if they haven't already set up their VCRs for time-shift recording). Thus the P-2037 car AM/FM/TV/cassette receiver ($579) was born. The feature struck me as ridiculous at first, particularly because it adds to the retail price. On second thought, it was amusing to contemplate legions of gridlocked soap opera fans sobbing at the wheel over the latest tragedy. After all, further consideration, I can't wait to try one. It might finally provide serious competition for the usual wireless conversation and warm-over rip-and-read wire service news that constitutes typical drive-time radio fare. Thanks, Proton.
VIDEO'87

(CONTINUED FROM PAGE 99)

Akai's AA-V405 ($550) is a typical example. It has three audio-video inputs (VCR 1, VCR 2, and TV/Disc) plus three audio-only inputs (phonograph, CD, and tuner). C-Qam stereo AM reception, and two audio tape recording loops. There is a seven-band graphic equalizer and a surround-sound processor with four-way balance control. The built-in TV tuner has 16 station presets and provides MTS (but not SAP [separate audio program]) decoding of stereo broadcasts. All controls except the equalizer sliders are on the infrared remote.

Kenwood has introduced four A/V receivers. The top unit is the KV-A90R ($480), rated at 100 watts (20 dBW) per side and equipped with switching for videotape dubbing and a seven-band graphic equalizer. Pioneer, with two models, tops out at the VSX-5000 ($570), which can deliver the same rating into each of two channels, or 70 watts (18½ dBW) apiece into four, for use with the built-in surround-sound processor.

Shure calls its Power Station ($549) a video/hi-fi system expander, but it can also be considered a quasi-four-channel audio-video integrated amplifier. It contains connections and audio and video switching for three audio-video sources, a magnetic phonograph cartridge, and an audio tape deck, along with tone controls, a video sharpness control, and a stereo-synthesis circuit. There are four 30-watt (14½ dBW) amplifier channels available; the rear ones are for signals obtained by the unit's built-in Dolby Surround decoder. This circuit also has concert- and spatial-surround modes. A supplied remote control adjusts volume and interchannel balance and selects the surround-circuit mode.

Yamaha's AVC-50 amplifier ($449) includes video signal processing and is designed as the heart of a remotely controllable audio-video system. Technics' A-919W integrated amp (price not yet available) switches (but doesn't process) video signals; the AV-350D ($500) controller combines video enhancing, surround processing, and back-channel amplification in a single box.

Remote control is turning out to be an important ingredient in the recipe for convenience. Consumers are becoming accustomed to operating TVs, VCRs, and Compact Disc players without leaving their chairs. If your existing gear doesn't have remote capability, you can add it with a box like Sony's ST-7TV ($300), a separate audio-video tuner with MTS/SAP decoding that joins existing TVs with audio systems. Add-ons like this provide stereo audio and remote control of channel selection and volume for the entire setup; some also offer surround-sound decoding with power amplifiers for the rear speakers. Another combination that may simplify some arrangements is the addition by Sony, Akai, and others of a remotely controllable stereo preamp, power amp, and surround-sound decoder to a VCR, which then becomes the focal point of an audio-video system: Add a monitor and speakers and you're in business.

The remote transmitters for all those separate components may cause a major case of coffee-table clutter. GE announced the RRC-500, a new version of its universal remote unit that can memorize the output codes of as many as three other transmitters. The $99 device is said to provide easier programming and operation than its predecessor. Philips, meanwhile, offers a special remote control on its top-line Magnavox, Sylvania, and Philetco sets that already contains the operating codes for 29 different VCR models and 15 cable converters. (The rumored universal remote from Apple II designer Steve Wozniak's new company did not appear at the show.)

Keeping all those controls intelligible can be a problem, so RCA, Technics, Pioneer, and others have developed systems that display the current remote function on the TV screen.

If you're a dyed-in-the-wool component freak, DBX has a way to connect everything to everything with its DAV-600G audio-video switcher ($390). This unit can switch a videodisc player and three VCRs or audio recorders with dubbing from one to another. In addition, it can accommodate four signal processors, including video enhancers, tape noise reducers, and a PCM encoder.

The SH-AV44 ($320) from Technics is an audio-video switcher with a Dolby (and non-Dolby) surround processor and back-channel amp built in. Luxman's T-107 ($600) combines a stereo (MTS) TV tuner with a video switcher. It is remotely controllable.

100 HIGH FIDELITY
CALL ME CRAZY, FOR 18 YEARS, IT was the unshirkable obligation of HIGH FIDELITY’s classical music editor to rendezvous with the other members of the magazine’s International Record Critics Awards (IRCA) jury somewhere in Europe, usually at one of the top summer festivals. He had to leave his office to fly to places like Montreux, Granada, Salzburg, and Aix-en-Provence for long days and longer nights of winning, dining, sightseeing, concert-going, and other hardships, now and then a few rough sessions with his hard-nosed colleagues, all in order to sit at a table and award prizes and write about the experience afterward (“...there I stood in the Alpine meadow, transported to another world by the sound of cowbells drifiting up from the herd below”). Then one of the jurors—I think it was Ingo Harden—got the idea that maybe it would be fun to have the meeting in America one summer. Before I could get him replaced, my own publisher, William Tynan, said, “Hey, Ted, it’s HIGH FIDELITY’s 35th anniversary. Don’t you think it would be a good idea to have the IRCA meeting here this year?” I said, “Sure, Bill, there are even some members of the panel who would like to come to the States for a change,” and silently kissed my expenses-paid trip to Europe goodbye.

But of the 19th annual IRCA proceedings began with a whimper (mine), they conclud- ed with a bang, as two of the most prestigious music festivals in the country played host to the jurors and provided the backdrop for our recognition of the year’s best recordings. The decision made last year to hold the meeting during the first week in July dictated this unusual bit of bi-hostal maneuvering. Forced to choose a site, I decided it would be best to avoid New York City prior to the Fourth of July, as plans had already been announced for the celebration to end all celebrations, Liberty Weekend. That left one obvious and, as it turned out, very appropriate alternative: Tanglewood.

The first—and in many ways still the greatest—of America’s big-orchestra summer music festivals, Tanglewood meant something special to the members of the jury. To European ears, no other festival’s name has quite the same ring. Moreover, the place is firmly associated with the memories of Serge Koussevitzky, and because the IRCA panel is also responsible for choosing the recipient of the Serge and Olga Koussevitzky International Record Award (KIRA), there was a built-in connection. Finally, HIGH FIDELITY magazine got its start just a few miles down the road from Tanglewood in Great Barrington, and the ties between the magazine and the Berkshires remain strong, not least because our publisher still commutes from North Egremont. (In fact, he knows those back roads so well that he rented a 12-passenger van for a week and became our chauffeur.)

We arranged through the Boston Symphony Orchestra to have the jurors attend several dinners and concerts at Tanglewood, the dinners especially elegant affairs served at Seranak, the Koussevitzky’s lovely home on a rise overlooking the Stockbridge Bowl. Vera Gold, the orchestra’s assistant press director, was our host on these occasions and the source of many kindnesses during our stay. She arranged for the orchestra to provide a picnic lunch for the jury and the press on the Fourth of July, at which music director Seiji Ozawa, artistic administrator Costa Pianacsi, and guest conductor Michael Tilson Thomas all put in appearances. She also saw that we made off with half a case of 1981 Sonoma County Cabernet Sauvignon specially bottled for the orchestra, two bottles of which came in very handy during the final, rather difficult afternoon of our deliberations.

Having enjoyed a brief stay there several years ago, I decided to reserve a conference room and make arrangements to lodge the jurors at the Red Lion Inn, in nearby Stockbridge, feeling that the colonial country-inn atmosphere and the staff’s reputation for attending to every detail would go a long way toward making our meeting a success.

No detail was overlooked. HIGH FIDELITY Associate Editor Mildred Camacho, who for several months had served as travel agent for the jurors and made some of the most complex flight bookings ever recorded, went to the Berkshires a couple of days before the meeting to shake everything down. Contributing Technical Editor Robert Long, like Tynan a resident of the Berkshires, installed the sound system in our conference room and made sure everything was in perfect working order before any of us arrived.

WITH SUCH WONDERFUL CONDITIONS, IT was easy to have a pleasant and productive meeting. Well, reasonably pleasant. It wouldn’t have been IRCA without the occasional small frustration or fit of pique. Because we had budgeted only three days for the actual discussion of the records and the formal voting, I had intentionally kept the field smaller than the last two years’ nominations, both for the IRCA and Koussevitzky prizes. Still, there were logistical problems. Jose Luis Perez de Arteaga did not submit his ballot on time, and his personal-choice recording (IRCA rules allow each juror to select one title as a personal choice, which is automatically included in the final slate) showed up at about the same time he did. At least the disc he selected—an Ensavo digital recording of three symphonies by the late-18th-century
Spanish composer Carlos Baguer, a contemporary of Beethoven, performed by the Orquesta de Cámara "Reina Sofia" under the direction of Gonal Comellas—proved to be an exceptional find that we all enjoyed.

It was sad news from Sweden, however. Bengt Pleijel, who had successfully disguised the fact that he cannot travel by air because of inner-ear sensitivity, tried to book passage to New York on a Polish freighter offering mediocre accommodations and making stops all over the North Atlantic at a cost half again as much as that of the private stateroom on the Queen Elizabeth 2 that we had reserved for his return. Frustrated by the awkwardness of this arrangement, Pleijel finally withdrew from the meeting. But efficient as always, he sent us detailed assessments of each of the IRCA and KIRA records he received, which I read to the other jurors as we discussed them. He also accomplished the very significant task of setting up our next year's meeting in Finland, about which more later.

As usual, some records never reached us. The green banana for 1986 goes to Harmonia Mundi, U.S.A., which provided us with exactly none of the six recordings we requested from it, one of which won a prize anyway. Lest it seem that I have singled out that label, I will add that the parent company, Harmonia Mundi, France, likewise ignored a request from Alain Fantapie to send out to the European members of the jury review copies of two issues he had nominated, one of which was his personal choice. Deutsche Grammophon's European offices failed to send records to several jurors, though in New York, DG was among the first to respond to our request. The folks at CBS headquarters in New York were similarly supportive, but French CBS dragged its feet, prolonging a years-long war with the French critics. Alors, c'est la guerre!

We are used to dealing with recalcitrant labels and records that never show up. In most cases, we throw them out. But in a few cases, when those members of the panel who have heard the record voice strong support, we go out of our way to see that everybody gets to hear it. That's exactly what happened with the Harmonia Mundi recording of Francesco Cavalli's Xerse, featuring the Concerto Vocale under the direction of René Jacobs. At the eleventh hour, with half the panel at Tanglewood listening to a rehearsal, Tyman and I drove over to the Berkshire Record Outlet on the other side of Lenox, grabbed Xerse off the shelf, and returned to the Red Lion, where the members of the jury who hadn't heard the record were being held hostage. That's when those two bottles of California Cabernet came to the rescue.

After listening to an hour's worth of the opera, we realized why the jurors who had heard the whole thing had been so enthused. As a student of early music, I was immediately struck by the accuracy and expressiveness of the singing, the rightness of the tempos, the coherence of the whole conception. Some complaints were raised that the music itself lacks inventiveness and originality. I disagreed. And the recording is a technical gem, with a correct forward placement of the instruments, close miking of the voices, and a wonderfully vivid sense of image and sound stage. Clearly one of the year's best, the album was voted a prize in spite of our disappointment with Harmonia Mundi.

No such extraordinary measures were needed with the other two IRCA winners. The vitality and freshness of Nikolaus Harnoncourt's approach to Mozart's Die Entführung aus dem Serail made his recording of that

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**Serge and Olga Koussevitzky International Record Award**

Lutoslawski: Symphony No. 3. Los Angeles Philharmonic Orchestra, Salonen. CBS Masterworks IM 42203 (d).

Kopytman: Memory. Bashiri: Jerusalem Symphonies Orchestra, Beriniti. Jerusalem ATID 8506 (d). (Distributed by Harmonia Mundi U.S.A.)

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**1986 IRCA Prize-Winners**

**JURY**

Alain Fantapie, France
Edward Greenfield, Great Britain
Harry Halbreich, Belgium
Ingo Harden, Germany
Alfred Hoffman, Romania
Theodore W. Libbey, Jr., United States
Pierre Michal, Switzerland
José Luis Pérez de Artenaga, Spain
Bengt Pleijel, Sweden (absent)

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**MOZART: Die Entführung aus dem Serail.** Kenny, Watson, Schreier, Gamlich, Salminen; Mozart-Orchester des Operahouses Zürich, Harnoncourt. Teldec 8.35673 (d, 3).

**CAVALLI: Xerse.** Concerto Vocale. Instrumental Ensemble, Jacobs. Harmonia Mundi HMC 1175/78 (a, 4).

**BEETHOVEN: Sonatas for Piano, Nos. 2, 4.** Gilels. Deutsche Grammophon 415 481-2 (d).
Pricing professional musicians and amateurs. Its goals remain: to cultivate a more lively interest in music, to aid young musicians through sponsorship of concerts and competitions, and to focus attention on the American composer and performer. To its president is Bruce L. Rubenstein; past presidents have included Walter Damrosch, Norman Dello Joio, and—from 1961 to 1975—Olga Koutraszyk.

**MUSICIANS CLUB OF NEW YORK**

The Musicians Club of New York, which administers the Koutraszyk Award of the American International Music Fund and provides the cash prize of $3,000 jointly with High Fidelity, was founded in 1911 "to bring about a better understanding and closer fellowship among musicians and lovers of fine music." Comprising professional musicians and amateurs, its goals remain: to cultivate a more lively interest in music, to aid young musicians through sponsorship of concerts and competitions, and to focus attention on the American composer and performer. To its president is Bruce L. Rubenstein; past presidents have included Walter Damrosch, Norman Dello Joio, and—from 1961 to 1975—Olga Koutraszyk.


**BERWALD:** Symphonies (4). Gothenburg Symphony Orchestra, Järvi. Deutsche Grammophon 415 502-1.

**COUPERIN:** Works for Harpsichord. Moroney. Harmonia Mundi 1184.

**HANDEL:** Solomon. English Baroque Soloists, Monteverdi Choir, Gardiner. Philips 412 612-1.

**MENDELSSOHN:** Symphonies (5); Overtures (3); Scherzo from Octet, Op. 20. London Symphony Orchestra, Abbado. Deutsche Grammophon 415 553-1.

**OFFENBACH:** La belle Hélène. Norman, Alter, Chauviré; London Symphony Orchestra, Abbado. Deutsche Grammophon 415 500-1.

**ROSSINI:** II viaggio a Reims. Ricciarelli, Gasdia, Ramey; Chamber Orchestra of Europe, Prague Philharmonic Choir, Abbado. Deutsche Grammophon 415 498-1.

**TCHAIKOVSKY:** Iolanta, Op. 69. Vishnevskaya, Gedda, Krause; Orchestre de Paris, Rostropovich. RCA Erato NUM 73207.

**VERDI:** Don Carlos. Valentini-Terrani, Nucci, Raimondi, Ricciarelli, Domingo; Teatro alla Scala, Abbado. Deutsche Grammophon 413 316-1.

**MASSIMILIANO DAMERINI:** Piano XX (works by 20 composers). Damerini. Frenzy 3 DAN.

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**OTHER NOMINEES**

**IRCA**

Single discs

**BEETHOVEN:** Piano Concertos Nos. 3, 4. Petralia; Concentreovbouw Orchestra. Haitink. CBS Masterworks IM 39814.


**LISZT:** Dante Symphony. Rotterdam Symphony Orchestra, Conlon. RCA Erato NUM 75924.

**MAHLER:** Symphony No. 1. Frankfurt Symphony Orchestra, Inbal. Denon C37 7537.

**MARTIN:** Piano Concertos Nos. 1, 2; Ballade. Antonini; Turin Philharmonic, Viotti. Claves D 8509.

**MOZART:** Sonata for Two Pianos. SCHUBERT: Fantasie. Lupu, Perahia. CBS Masterworks IM 39511.

**PRAGOFIEV:** Symphony No. 6. Scottish National Orchestra, Järvi. Chandos ABRD 1122.

**SCARLATTI:** Piano Sonatas. Dutritescu. Electrecord ST ECE 02721.

**SCHRIABIN:** Symphony No. 1. Philadelphia Orchestra, Muti. Angel EMV 38 2820.

**SIBELIUS:** Lemminkainen Suite. Gothenburg Symphony Orchestra, Järvi. Bis 294.

**SIBELIUS:** Orchestral Songs. Häggander, Hynningen; Gothenburg Symphony Orchestra, Panula. Bis 270.

**Multidiscs**

**BACH:** Cello Suites (6). Schiff. Angel EMV 270077.

**BERIO:** Sinfonia. Orchestre National de France, Boulez. RCA Erato NUM 75 198.

**COATES:** Music on Open Strings. Bavarian Radio Symphony Orchestra, Howarth. Pro Viva ISPY 128.

**DUTRITESCU:** Auodie Miretca. Grilla, Ppin. Electrecord.

**GLASS:** Satyagraha. Glass Ensemble, members of the New York City Opera Orchestra and Chorus, Keene. CBS Masterworks ISM 39672.


**HOLLER:** Archus. Ensemble Intercontemporain, Boulez. Erato NUM 71 5556.


**KIRCHNER:** Bildnisse. Hessian State Orches-

tra, Kohler. Wergo 60193.

**KNUSSON:** Where the Wild Things Are. London Sinfonietta, Knussen. Arabesque 6355.

**MAXWELL DAVIES:** Into the Labyrinth. Scottish Chamber Orchestra, Maxwell Davies. Unicorn-Kanchana DKP 9038.

**MAXWELL DAVIES:** Symphony No. 3. BBC Symphony Orchestra, Downes. BBC REGI 560.

**REICH:** The Desert Music. Reich Ensemble, Brooklyn Philharmonic Orchestra and Chorus, Thomas, Nonesuch 79101-1.

**SCHNEEBERG:** Diapason. South West German Radio Symphony Orchestra, Bour. Wergo 60108.

**VON BOSE:** Die Nacht aus Bla. South West German Radio Symphony Orchestra, Bambert. Wergo 60109.

opera for Teldec, featuring Peter Schreier, Yvonne Kenny, and Mali Salmiinen with the Chorus and Orchestra of the Zurich Opera, stand out from the rest of an exceptionally strong field. And it was impossible to deny Deutsche Grammophon an award for its superb recording of Emil Gilels playing Bee-

thoven: The Russian's strikingly masculine, bold, and weighty accounts of the Piano Sonatas Op. 2, No. 2, and Op. 7 project these early works through the lens of the late sona-
tas, and the playing, marked by breathtaking command of articulation and dynamics, leaves no doubts of the mastery Gilels had achieved during the course of a distin-
guished career.

There was strong support for several other recordings well into the final voting; as the field narrowed, it became apparent to all that 1986 had been a stellar year for opera and for the piano. In the former category, Claudio Abbado’s delightful account of Rossini’s celebratory Il viaggio a Reims on Deut-
sche Grammophon stood high. An all-star cast, exquisite playing from the Chamber Orchestra of Europe, and a fine, live recording made it a favorite of many jurors. Ano-
other contender was Pathé Marconi’s recording of Offenbach’s La belle Hélène (released on Angel EMI), with Jesse Norman in the title role and the Orchestre du Capitole de Toulouse conducted by Michel Plasson. John Eliot Gardiner’s remarkable interpretation of Handel’s festive oratorio Solomon (a Philip set), featuring the English Baroque Soloists and the Monteverdi Choir, with Carolyn Watkinson, Anthony Rolfe Johnson, and Barbara Hendricks among the soloists, also made a strong impression.

When it came to pianists, there was really only one to stand alongside Gilels; Murray Perahia. Two of his efforts were in the running right to the end. One brought together his deftly played performances of Beethoven’s Piano Concertos Nos. 3 and 4 (the first release in a projected cycle on CBS Master-
works), made all the more impressive by the magnificent accompaniments of the Concentreovbouw Orchestra under Bernard Haitink. And with friend and colleague Radu Lupu, he could be heard in glowing accounts of Mozart’s Sonata in D for Two Pianos, K. 448, and Schubert’s Fantasie in F minor for Piano, Four Hands, D 940. This latter release, also from CBS Masterworks, fell just one vote shy of an award.

Other entries of note in the final judging were EMI Electrola’s beautifully recorded two-disc set of Bach’s Suites for Unaccom-
nied Cello, impressively played by the gifted Austrian Heinrich Schiff, on Angel EMI; an extraordinary issue from Bis collecting the complete orchestral songs of Sibelius, fea-
turing soloists Jorma Hynninen and Mari-

Anne Häggander with the Gothenburg Sym-
phony Orchestra conducted by Jorma Pianella; and a much-needed traversal of Frank Martin’s complete works for piano and orchestra (Concertos Nos. 1 and 2; plus the *Ballade*), in fine performances by Fran-

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Because of the strong field, the IRA judging proved difficult, but it was a piece of cake compared with the deliberations over the KIRA. The situation was the same as that two years ago in Granada: A major work by a distinguished living composer could not be overlooked, yet the panel also felt a strong attraction to several very fine works by less-well-known figures. The solution was also the same as in Granada: The award was split.

The work that could not be overlooked this year was Witold Lutoslawski’s stunning Symphony No. 3, recorded for CBS Masterworks by the Los Angeles Philharmonic Orchestra with Esa-Pekka Salonen conducting. A brilliant, challenging composition, masterful in its structure and scoring, it won the solid backing of most members of the panel.

But the feeling that the Koussevitzky award should also be used to bring attention to unheralded talent was strong in several members, and we voted an equal share of the prize to the Soviet-born Israeli composer Mark Kopytman for his haunting, evocative score for soprano and orchestra, Memory.

Harry Halbreich had, as usual, made the discovery and was Kopytman’s champion from the beginning. Based on a Yenite folk melody that is first sung, then pondered by the orchestra, then brought back in the vocal part at a wonderfully effective climax, Memory appealed to us on many levels. Much to our delight, Kopytman was able to come to New York to accept the award in person. He brought the good news that on the night of our final ceremony, Zubin Mehta was to lead the Israel Philharmonic in a performance of Lutoslawski’s Third in Jerusalem. We applauded the coincidence, feeling that it would be a coup if the maestro were also to program Kopytman’s fine work with one of his orchestras.

Having successfully discharged its responsibilities, the jury returned to New York City for the formalities. The Musicians Club of New York greeted us with a cocktail party in the Central Park West apartment of Theodote Johnson, the club’s indefatigable vice president. Our final day, July 7, began with an outdoor rehearsal and—because of a record temperature of 97 degrees—an indoor press luncheon at Lincoln Center marking the kickoff of the 20th annual Mostly Mozart Festival. We attended the evening’s gala opening concert at Avery Fisher Hall and afterward made our way upstairs to the Helen Huntington Hall Room for supper and the final awards ceremony. Many of the movers and shakers on New York’s classical recording scene joined us, among them Christine Reed, vice president of A&R at CBS Masterworks; Tony Caronia, vice president for East Coast operations of Angel; Otto Quimet, president of Qualiton Imports; Susan Elliott, manager of public affairs for RCA; and Nancy Zanni, vice president of Philips. Zanni brought along an unexpected guest, the Danish recorder player Michala Petri, whose birthday it was. During the dinner, I slipped away from the head table for a moment and asked Floyd Meurrier of Restaurant Associates to produce a cake and candies, coached the serving staff for a performance of the appropriate tune, and nonchalantly returned to await the fun. On cue, out came the staff, with cake aloft and candles blazing, and to Petri’s utter embarrassment, there ensued a lossy and supremely musical rendition of “Happy Birthday.”

Reed accepted the Koussevitzky award on behalf of Lutoslawski; Kopytman then stepped up to receive his award from Halbreich. Harden made the presentation to Deutsche Grammophon for the Gilels recording, which André Schmitz, a cultural affairs officer at the New York consulate of the Federal Republic of Germany, accepted—DG’s New York vice president having decided not to attend the ceremony. Joseph Pasternak, representing German News Company, importers of Teldec in New York, received the award for Harmonie’s Einleitung from juror Pierre Michot, and Bill Klme, sales representative of Harmonia Mundi, U.S.A., took the plaque for Xerox following a presentation by Fantapié.

A few photographs later, the 1986 High Fidelity/International Record Critics Awards became history, and thoughts turned to next year’s meeting. Pleijel had already informed us that we had the green light for a July meeting in Finland, in conjunction with the Helsinki, and Savonlinna festivals. Tyman, who had come to know and like the jurors for all their quirks and who had won their admiration and respect in return, announced that he would go to Finland to join us next summer, and the jury voted to invite an Italian, Enzo Restagno of the Stampa Seria in Turin, into our midst on a provisional basis. In the back of everyone’s mind, of course, was the thought of how pleasant it would be to hold the 1988 IRA meeting in Venice…

**NOMINATING COMMITTEE**

**BELGIUM**
Harry Halbreich, Compact, Le Monde de la Musique, Belgian Radio
 Serge Martin, Dishon-Harmonie, Avant-Scène, Belgian Radio
 Albert de Sutter, Gazete van Antwerpen

**BULGARIA**
Dimitar Zemenov, Bulgarska muzika

**CANADA**
Thomas Hathaway, High Fidelity, Queen’s Quarterly
 Rick MacMillan, Music, Music Scene

**FINLAND**
Jukka Isopuisto, Helsingin Sanomat, Hufi

**FRANCE**
Alain Fantapié, Opéra International

**GREAT BRITAIN**
Edward Greenfield, The Guardian, Gramophone
 Robert Layton, Gramophone

**ITALY**
Luigi Bellingardi, StereoPlay, Suono, Nuova Rivista Musicale Italiana, Il Mondo della Musica
 Mario de Langi, Musica e Dischi

**JAPAN**
Toshio Oka, Stereo Sound
 Kenji Tsumori, Ishiki Shimbun

**THE NETHERLANDS**
Jan de Krujff, Hi Fi Video Test

**ROMANIA**
Alfred Hoffman, Muzeul, Romanină Literară

**SPAIN**
José Luis Pérez de Arceaga, Reina, El País, Spanish Radio

**SWEDEN**
Stig Jacobsson, Hifi & Musik
Begej Pleijel, Musikrevy

**SWITZERLAND**
Fernando de Carlo, Carriere del Teatro, Azzure
 Mario Gertets, Tages-Anzeiger Zürich, Luzerner Zeitungen, Schwäbische Nachrichten, Sound
 André Hunziker, Le Courrier, Video & Revue Son, Coopération
 Pierre Michou, Journal de Genève, Gazette de Lausanne
 Eric Pousaz, 24-Heures, Lausanne

**UNITED STATES**
R. D. Darrell, High Fidelity
 Michael Fleming, St. Petersburg Times
 Paul Hertleund, San Francisco Mercury News
 Theodore W. Libbey, Jr., High Fidelity
 Tim Smith, Fort Lauderdale News, Sun-Sentinel
 David Patrick Stearns, USA Today
 Hünnelt Türcüni, San Francisco Chronicle
 James Wierzbicki, St. Louis Post-Dispatch
 Bill Zakariasen, New York Daily News

**WEST GERMANY**
Ingo Harden, Frankfurter Allgemeine Zeitung
 Presse der deutschen Schallplattenkritik
 Ekkehart Kroher, Der Musikmarkt
 Hartmut Lück, Presse der deutschen Schallplattenkritik, Radio Bremen
 Stefan Mikorey, Fono Forum
 Ulrich Schreiber, StereoPlay
 Wolfgang Seifert, Musikmarkt, Musikforum, W. German Radio, N. German Radio, German Music Council
 Gerhard Winkler, Fono Forum, Presse der deutschen Schallplattenkritik, S. German Radio
MOZART PIANO CONCERTOS NOS. 18, 19
MALCOLM BILSON, JOHN ELIOT GARDINER, AND THE ENGLISH BAROQUE SOLOISTS

The English Baroque Soloists have spent the last several years recording the first four installments in a projected traversal of the complete Mozart piano concertos. Their approach is rather different from the norm: Bilson plays a modern copy of Mozart's own fortepiano, and Gardiner's band performs on original instruments. Yet the present release—coupling two works from 1784, K. 456 and K. 459—demonstrates that their efforts, far from producing mere curiosities, have resulted in some of the most satisfying Mozart concerto performances available.

The fortepiano and the original orchestral instruments present definite advantages in these works. The fortepiano tone decays very quickly, resulting in an unprecedented clarity of texture. The lightness of articulation possible with original instruments complements the fortepiano's liquid sound and enables the instrumentalists to etch their lines with crystalline precision.

Neither Bilson nor Gardiner, however, takes a dogmatic view of original-instrument performance; their approach is flexible and expressive, and together they display a rare unity of vision. Bilson is a poetic performer who enlivens phrases with dramatic hesitations in tempo and broad shadings of dynamics. The virtuoso passages are technically assured but supremely musical; the embellishments are personal and stylish. Bilson plays during the tutti sections, as historical precedent demands, tastefully reissuing the bass line in the manner of a continuo instrument.

Gardiner has always been a gentler leader than Christopher Hogwood, and his refined interpretive sense allows for surprising freedom in tempo and a varied dynamic range, all without sacrificing timbral quality. The result is more expressive, more lyrical Mozart than we are used to hearing from the original-instrument bands. Not only does this bode well for the remainder of this series, but it indicates a maturation of the entire school of "authentic" music-making. Playing time: 55:19. (Archiv 415 111-2.) K.R.S.

SCHUBERT "WINTERREISE":
SCHRERER, RICHTER

This is a superb restatement of the cycle, bringing together the ever-maturing tenor Peter Schreier and pianist Sviatoslav Richter. Their combined artistry and the sense of occasion conveyed by the performance (recorded live as part of the festive reopening of Dresden's Semper Opera House) add interest and effect to this account, which is different but no less satisfying than the Dietrich Fischer-Dieskau/Gerald Moore version of some years past. Two CDs, lively and compelling. Playing time: 116:32. (Philips 416 298-2.) I.K.

HOLST "PLANETS":
LONDON PHILHARMONIC, SOLTI

Among the recent additions to London's ADRM (Analog Digital Remastering) series is a performance of Holst's The Planets, Op. 32, recorded in 1979 by Sir Georg Solti with the London Philharmonic Orchestra and the Women of the London Philharmonic Choir. John Alladi directs. This is not one of Solti's best performances, but a hasty, unmagical traversal of the cosmos, almost totally devoid of mysticism. The sound is typical of much of London's engineering from a half-dozen years ago: rather boxy and unresonant, with surprisingly little impact. In spite of the ADRM process, the SPARS coding on this release is AAD, meaning that it is an original analog recording that has had analog (instead of digital) remastering. Perhaps digital remastering would have improved the sonic quality of this release.

The CD catalog could use a really good Planets. Herbert von Karajan's Deutsche Grammophon performance is hard in sound and insensitive in interpretation; Sir Alexander Gibson's, with the Scottish National Orchestra, on Chandos, has fine sonics but unistinguished orchestral playing; Lorin Maazel's, with the French National Orchestra, on CBS, is a bit too Gallic. Andrew Davis's new Angel Toronto Symphony version is totally out of the running, leaving the field solely to Andrés Previn's London Symphony Angel analog reissue, which is surprisingly good in all respects. Playing time: 48:10. (London 414 567-2.) R.E.B.

SCHOENBERG "TRANSFIGURED NIGHT"

One of the treasures from Deutsche Grammophon's 1974 four-LP set of orchestral music of the Second Viennese School, featuring Herbert von Karajan and the Berlin Philharmonic, was this radiant, committed performance of Schoenberg's Transfigured Night, Op. 4. One of Karajan's most magical recordings, it possesses a unique combination of strength and power, contrasted with delicacy and tenderness. Now digitally remastered, it sounds better than ever, and the silence of the CD medium permits every exquisite nuance to be heard unspoiled by extraneous sounds. The coupling on this CD is another recording from the same set, of Schoenberg's Variations for Orchestra, Op. 31. This atonal work was written between 1926 and 1928, a quarter of a century after Transfigured Night, and is far removed from the romanticism of the earlier work. A better choice might have been to pair Transfigured Night with the symphonic poem Pelléas et Mélisande, Op. 5, also recorded by Karajan and the Berliners. Then, the collector would have one on CD the major works (excepting Gurrelieder) of Schoenberg's early, post-Romantic period. Playing time: 52:14. (Deutsche Grammophon 415 326-2.) R.E.B.

HANDEL "ATALANTA";
FARKAS, BARTFAY-BARTA

The combination of predominantly Hungarian-trained singers and a Cambridge- and Oxford-conditioned conductor (Nicholas McGegan, leading the Capella Savaria, on authentic instruments) that has recorded this version of Atalanta has more than just a mixture of differing viewpoints to contend with. There is, in addition, Handel's rather formal approach to operatic scene structure, which builds slowly from ceremonious introductions to climactic terminations of variety and fulfillment. The vocal aptitudes are arresting, especially those of József Gregor, who also made a notable contribution to Hungaroton's recent recording of Antonio Salieri's Falstaff. Playing time: 140:00. (Hungaroton HCD 12612/14. Distributed by Qualiton Imports.) I.K.
BRUCKNER SEVENTH: BLOMSTEDT, CHAILLY


BIZET “CARMEN”: CALLAS, GEDDA, PRÈTRE

IN ADDITION TO BEING THE ONLY COMPLETE OPERA IN FRENCHRecorded by Maria Callas at the top of her form, this Carmen may well be the outstanding example of non-Italian literature created by this superb singer in conditions wholly to her benefit. Not only was the subject to her advantage, but in this recording made under the leadership of Georges Prêtre—who began his conducting career at the Opéra Comique in 1946 (as the work itself did about 75 years before)—she was brought together with probably the best Don José of her time, Nicola Gedda.

The concept of producing a classic was thus at the heart of the matter even before the first sound was recorded. Callas brought an uncommon sensitivity to the drama, suggesting a character who finds herself magnetized by the unsalted attractions of the soldier, vic-à-vis the glamour of the toreador. Gedda, too, was in top form, and his facility in French is one of the major assets of the account. There was excellent singing from the likes of Andréa Guiart, a fine Micaela for all her lack of reputation here, and Robert Massard, who had every right to make a grab at it. And the supporting roles were also in good hands, right down to the vital Zamora of Jacques Mars. The playing of the Paris Opéra Orchestra and Prêtre’s perceptive conducting (undoubtedly influenced by the grand spaces of the Opéra) both proved perfectly well gauged to the Salle Wagram, where everything was in place to capture the finest recorded sound that is transparently evident on these three CDs. Playing time: 3:24:44. (ANGEL EMI CDC 47102.) R.E.B.

PAGANINI CAPRICES: PERLMAN


Today, in our age of mechanical virtuosities, the caprices have lost none of their appeal. They remain unplayable for all but the few who can overcome the technical demands yet still imbue the music with musical meaning. Itzhak Perlman is one of those elite few. In this 1972 analog recording, his miraculous technique meets every challenge effortlessly. Perlman gives much beyond mere technique, adding an infinite number of dynamic, timbral, and rhythmic touches. His robust tone is captured in a warm and flattering (if a bit echo-ridden) manner, and his bold sweep and supreme confidence ennoble even the occasional trivial moments. Playing time: 86:35. (ANGEL EMI CDC 47117.) K.R.S.

RACHMANNINOFF AND PROKOFIEV PIANO WORKS

FOR THOSE AWARE OF THE FACT THAT AT TIMES IN THEIR CAREERS AS COMPOSER-PIANISTS BOTH RACHMANNINOFF AND PROKOFIEV WERE MUCH MORE CLOSER TO AMERICAN CONCERT HALLS THAN TO THE PLACES OF THEIR BIRTHS IN RUSSIA, THE AMERICAN INVOLVEMENT IN THIS RECORDING OF RACHMANNINOFF’S RHAPSODY ON A THEME OF PAGANINI AND PROKOFIEV’S THIRD PIANO CONCERTO WILL NOT SEEM ODD. TECHNICALLY SPEAKING, PIANIST TED JOSELSON DISTINGUISHES HIMSELF, BUT HE KEEPS A RELATIVELY LOW PROFILE IN HIS CHARACTERIZATION OF THE MUSIC. ON THE OTHER HAND, THERE IS A STRONG SENSE OF NATIONALITY IN THE PLAYING OF THE PHILHARMONIA HUNGARICA (AN ORCHESTRA OF HUNGARIAN EMIGRES BASED IN VIENNA) AND IN ZOLTAN ROZSNAKY’S DIRECTION. PLAYING TIME: 53:35. (PERPETUA PR 70006. P.O. BOX 9599, MARINA DEL REY, CALIF. 90292.) I.K.

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COMPACT DISCS ON THE MARCH

A preview of the new season's releases

THE COMPACT DISC CONTINUES TO GAIN IN POPULARITY WITH CLASSICAL MUSIC listeners, having pulled even with the LP in net sales at the time of this writing. And as this listing of more than 930 discs shows, the CD has finally surpassed the LP in the total number of expected new issues (for the LP outlook, see "Vinyl Survives," September). For those who have invested in the medium and those who are thinking of doing so, we present our annual compilation of releases planned by more than 60 companies for the forthcoming year. As always, every effort has been made to ensure the accuracy of the entries.

Please note the following use of abbreviations, alone or in combination. For performing forces: Ac (Academy), C (Chamber), Ch (Choir, Chorus), E (Ensemble), F (Festival), O (Orchestra), Op (Opera), P (Philharmonic), Qn (Quintet), Qr (Quartet), R (Radio), S (Symphony), and St (State), or their foreign-language equivalents. For production and packaging: Where known, the number of CDs in multitrack discs is given in parentheses at the end of a listing; other parenthetical symbols are d (digital), h (historical), I (live), m (mono), and r (dramatic reissue). Initials and first names appear only as needed.

ABBREY
(distributed by Harmonia Mundi, U.S.A.)

Jasquin Desprez: Missa pange lingua; Missa la sol-la-so-mi. Tallis Scholars.
Christmas Carols. Tallis Scholars.

ACCENT
(distributed by Audio Source)

Boehm: Mozart: Quantum for Piano and Winds. Immersel.
Rossini: Petite messe solennelle. Immersel, Netherlands CCh.

AMON RA
(distributed by Quatet Imports)

Schubert: Piano Sonatas, D 784, 894. Shelley (fortepiano).

ANGEL EMI

Bach: Solo Cello Suites (6). Schiff (d).
Bolocking: Romeo et Juliette. Norman, Aler, Estes; Philadelphia O. Miti (d).
Gershwin: Songs. Te Kanawa, McGinn.
Porcelli: Ode to St. Cecilia. Day: Taverner Consort, Parrott (d).
Ravel: Orchestral Works. Royal PO, Previn (d).
Tchaikovsky: The Nutcracker. Royal PO, Previn (d).
Vivaldi: Gloria. Domingo, Ricciarelly, Diaz; La Scala, Mazzel (2, 4).
Verdi: Otello. Domingo, Ricciarelly, Diaz; La Scala, Mazzel (2, 4).
Verna, City of My Dreams. Domingo; English CO, Rudolf.
Angel Records, 1750 N. Vine St., Hollywood, Calif. 90028.

ARABESQUE

Brahms: Piano Quartet. Cantilliana Piano Qr.
Elgar: Introduction and Allegro; Serenade; Chanson de Nuit. English CO, Memmish.
Ferlini: Chansonnette: Eastman-Dryden O. Hunsberger.
Gilbert and Sullivan: H.M.S. Pinafore. D'Oyly Carte, Sargent (h).
Hummel: Piano Sonatas (complete). Hobson.
Christmas Eve. Robert DeCormier Singers and E. DeCormier.
Arabesque Recordings, 1993 Broadway, New York, N.Y. 10023.

ARGO

See London.

A & V
(distributed by Harmonia Mundi, U.S.A.)
Sibelius: Kullervo Symphony, Mattila, Hynninen; Lahti Ystävät Male Ch., Gothenburg SO, Järvi.

AUDIO LAB
(distributed by Audio Source)
The Dialog.

AUDIO SOURCE

See Accent, Audio Lab, Caig, Lyrinx, René Gailli. Audio Source, 1185 Chess Dr., Foster City, Calif. 94404.

BIS
(distributed by Quatet Imports)
Sibelius: Kullervo Symphony, Mattila, Hynninen; Lahti Ystävät Male Ch., Gothenburg SO, Järvi.

COLUMBIA
(distributed by Quatet Imports)

Sibelius: Pohjola's Daughter; Rakastava; Tapio: Impromptu. Gothenburg SO, Järvi.
The Baroque Trombone: Music by Brahms, Sorensen, Bernsten, Chopen, Pöninteen, and Others. Lindberg, Pöninen.
Flute and Harp: Music by Doppel, Badings, Nederman/ Tabu, Maszetl Aukin, Goodman.
The Magnificent Organ of St. Lambertius Church, Hol- land: Old Spanish and French Organ. Oost- merssen.
Piano Music by Satter. Pöninen.
Swedish Radio Symphony Orchestra—50 Years: Recordings from 1926-1979.

PREVIEW 1987

O C T O B E R  1 9 8 6  1 0 9
**BLUESPELL**
(distributed by German News)

Altvoni: Symphonies No. 4
Swedish RSO, Westerber

Schubert/Reinecke: Beethoven Works for Flute

Tchaikovsky: Souvenir de Florence. Wolf: Italian Serenade

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**BRIDGE**


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Bridge Records, G.P.O. Box 1684, New York, N.Y. 10016.

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Rossini: Wind Quintets No. 1-5. Members of the Resident Qt.


Vivas: Violin Duos of the 18th and 19th Centuries. Munich Violin Duo.


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**CALIFORNE**
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Bach: Toccata (1); Fantasia (2).

Boehm: String Quintets Nos. 1, 2, 4. Tallch Qt.

Boehm: String Quartets Nos. 3, 5, 6. Tallch Qt.

Boehm: String Quartets Nos. 7, 8. Tallch Qt.

Boehm: String Quartets Nos. 9, 12. Tallch Qt.

Brahms: String Quartets Nos. 10. P. Tallch Qt.

Brahms: String Quartets Nos. 11, 13. Tallch Qt.

Brahms: String Quartets Nos. 14, 16. Tallch Qt.

Borrow: Tchaikovsky: String Quintets. Tallch Qt.

Bruck: Clarinet Sonatas. Dangain.


Dvorak: String Quintets. Serauds for Strings. Tallch Qt.

Janacek: String Quartets. Tallch Qt.

Mozart: Clarinet Quintet. Tallch Qt.

Mozart: Sonatas for Violin and Piano.

Beethoven: Sonatas for Cello and Piano.


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Brahms:

Erfte deutscher, Region. Haggander, Lu.

Leipizg RSO&Ch. (d).

Mozart:

Eder: Shiran, Hill (d).


Schenber: Streicher.

Schumann: The violin Milliken. Protschka, Deutsch (d).

Schubert: Schwanengasa. Protschka, Sheider (d).


Schumann:

Symphonies Nos. 3. 4. Stuttgart RSO, Marriner (d).

Schubert:

Symphonies No. 5. Schreier: Capella Fidelia. Grissi, S (d).

Vivaldi:


Corso della Cancion and Organ of the Dresden Court Church. Güttler, Kirchel (d).

Galen: Abend allen herren. Hermann Pern Sings Favorite Folk Songs (d).

Pousson: J ochen Wokel’s, Counterpoints (d).

Peter Schoer: German Folk Songs. Schreier, Ra.


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**CBS**

**M A S T E R W O R K S**


Beethoven: Piano Concertos Nos. 1, 2. Perahia; Concertgebouw, O. Hanfink.


Mozart:


**G L A S S I**

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Mahofo: Symphony No. 1. Vienna M. Maar.

Mahofo: Symphony No. 3. Balsa; Vienna P. Maar.

Mozart:

Mozart: Salzburg and Vienna Flute and Keyboard.

Rodgers and Hammermost: South Pacific. Te Kanawa, Carreras, Patinak, Ambrosi.


Puccini:

Puccini: Manon. Italian SO, R. Patané.


Tchaikovsky:

The Nutcracker. Rival PO, Thomas (d).


Glenn Could Plays Bach: The Toccata: Two and Three Post Inventions (2).

Liberace:


Rudolf Serkin Plays Brahms: Piano Concerto No. 1. O. Ormandy, Bernstein.

Rudolf Serkin Plays Beethoven: Piano Concerto No. 4. O. Ormandy, Bernstein.


Mabo: Konzertstück for Piano and Orchestra. Szcz.

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**CENTAUR**
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Deutsch: String Quartets. Opp. 51. 10. New World Quart.

Schubert: Piano Sonata in D: Impromptu. Steiger.

Schubert: String Quartets Nos. 4, 17. Manhattan Qt.

Stokowski: String Quartets Nos. 4, 17. Manhattan Qt.

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BEETHOVEN: String Quartets (complete). Oxford Qt 08, 09.

Brahms: Sonatas for Clarinet and Piano, Op. 120.

Schumann: Fantasiestucke, Shifrin, Rosenberger (d).


PROKOFIEV: Romeo and Juliet, Suites No. 1, 2. Seattle SO, Schiavo (d).


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DENON

Bach: Overture in French: Dutoit (4). Dufresne (d).

Bach: Sonatas for Violin and Harpsichord. Stok, Rucklade (d).

Beethoven: Triple Concerto. Rosanne in D Figuwarz, Kantorow, Rouvier; Netherlands CO (d).

Franck: Sinfonie in D Minor: Tourney, Ikonos Metropolitan SO (d).

Mahler: Symphony No. 3, Inbal, Frankfurt RSO (d).

Mahler: Symphony No. 6, Inbal, Frankfurt RSO (2).

Reinecke: Piano Sonata No. 2; Étude-tableaux. Op. 73 Graunheit (d).


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DEUTSCHE GRAMMOPHON


Bach: Harpsichord Concerto, BWV 1052-4. English Concert, Pinnock.


Bartok: Piano Concerto No. 1, 2. Billim, Chicago SO, Abbado.


Beethoven: Late Piano Sonatas. Polini.

Beethoven: Late String Quartets. Melos Quart (3, 4).

Beethoven: Missa solemnus. Cabrera, Schmidt, Gole, Van Dam; Vienna Singverein, Berlin PO. Karajan (2, 4).

BEETHOVEN

Piano Concertos. Nov. 1, 2. Argerich; Philharmonia O, Simpoh (d).

Beethoven: Piano Concerto No. 1; Sonata No. 1. Michelangeli, Vienna SO, Guldim.


Beethoven: Piano Sonata No. 9, 10, 19, 20. Gilels (d).


Bernstein: Symphonies No. 1, 2. Ludwig, Foss; Israel PO, Bernstein (d).


Brahms: Symphonies No. 5. Berlin P, Karajan.


Copland: Symphony No. 1. Quartet City, New York P, Bernstein (d).


Franck: Symphonies. Orphéeu.

Dobbsy: Ravol: Pianos for an infinite duration. Philharmonia O, Guldim (d).

Franck: Symphonies. Orphéeu.


Mahler: Symphony No. 2. Fauré (2, 4). Yarn, sef, Fauré as, Fauré, E. Franck, Schumann.


Mozart: Symphony No. 41. Argerich, Oviedo, Berlin (2, 4, 1).

Mozart: Symphony No. 41. Argerich, Oviedo, Berlin (2, 4).}

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Mosart: La bretta liberata. Munteanu, Lazzarini.

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Schmitt: Works for Piano. Le Corbeau.}

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Faure: The Complete Solo Piano Music, Vol. 3: Preludes; (4); Thirteen Variations; Impromptu (5); Crosses (4).

Faure: The Complete Solo Piano Music, Vol. 4: Caprices; Romances 13; Ballade and Misaecia. Crossley.

Faure: Piano Quintet, Opp. 15, 18. Nash E.

Mozart: String Quartets, K. 199, 575, 589, 590, Chittamang Qu.


Vivaldi: The Complete Cello Sonatas. L'Ecole d'Or.


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DYNAMIC

Kodaly: Dúas for Violin and Cello
Ravel: Sonata for Violin and Cello
Verdi: String Quartet

ERATO

(Broadcast by RCA)

Bach: Preludes and Fugues, Alain (d)
Berlioz: L’Enfance du Christ, Vaqiu Otter, Rolfe-Johnson, Bastin, Van Dam; Monte Verdi Ch., Lyons Opto, Gardiner (2, d)
Berlioz: (arr. last): Harold in Italy, Causée, Du-echable (d)

CHALLIKOVSOKY: Opéra Jana: Vish- vinskaya: O National de France, Rostropovich (d)
Charpentier: De profundis: Cecilia grao et musix. Mutter, Johnson, Bastin, Van Dam; Monte Verdi Ch., Lyons Opto, Gardiner (2, d)

Debussy: Khoma: Jazz: Le Martyre de Saint-Sebastien: Rotterdam PO, Conlon (d)
Enescu: Symphony Concertante for Cello and Orchestra (premier: Suite No. 3: Ormandy, Monte-Carlo PO, Conlon (d)
Fallet: Night: in the Gardens of Spain: Albéniz:terra Argerich: O de Paris, Barenboim (d)
Freu: Prelude: Norman, Vanza, Taillon; Monte Carlo P., Dustin (d)
Franck: Bagatelles: The Brum, Berlé, Feufs, Randel, Chat: de R France, O de Paris, Jordan (d)

Giegulip: The Fall of: Islam: (premier): Zampieri, Schmieder: Rigaux, Elalade, I Solisti Veneti, Scimone (2, d)
Gossati: Required: Ghent Madrigal Ch, Musica Polu- phonica, Duveo (d)

Handel: Ixol in Egyp: The Rise of: Ziva May: Monte Verdi Ch., Gardiner
Handel: Tamerlano Ragi, Robb, Argenta, Chance, English Baroque Solists, Gardiner (3, d)

LeClair: Sevilla et Cauca: Yakub, Brown, Crowk, Meritt, Monte Carlo Ch, English Baroque Solists, Gardiner (d)

LiSST: Christus: Valerius: Lipovský, Krause, Lin- dros: Bratislava PCs, Rotterdam PO, Conlon (3, d)

LiSST: Organ Works: Alain (d)

LiSST: La Pléiades: Meggy: Devin: Procession No- turne: Rotterdam PO, Conlon (d)

Mognordi: Quartet (premier): Via Nova Qu (d)

Mendelssohn: Damon: Kenn, Ballves, Schaefer, Koch: de Lissun Galbenick Foundation, Corbor (3, d)

Miklowit: Jacob: In: Le Chantour de: Rosier: Tr de Paris, Sobists of R France (d)
Pandorichen: Cello Concerto (premier): Rostropo- vich: Philharmonia O, Penderedec (d)

Prokofiev: Symphony No. 1: Op 95: National de France, Rostropovich (d)

Prokofiev: Symphony No. 5: National de France, Rostropovich (d)

Ravel: Guitar: and Piano: Vishvinskaya, Miller, Prkov, Ghiusev, Fedina, Rana: Chat de France, O National de France, Rostropovich (4, d)

Ravel: (l.): With Piano: Aris: With String Quartet: Ameling, Jansen, Vos (d)

Ravel: Daphnis et Chloé, Rapado: Daphnis espagnole: La Toun- beaux de Grenou: O de la Suisse Romande, Jor- dan (d)

Ravel: L’Enfant et les sortiléges: Alina-Lagar, Ra- phael, Michael, Hulten, Carissimi, Sénac: Chat de la Suisse Romande, Jordan (d)

Revel: l’Heure espagnole: Don Quichotte a Dulcinea: Novelle: P, Jordan (d)
Revel: Piano Concertos 1: Zavaglia, Skhirazade Amoral, Durable, yak: O de la Suisse Ro- mande, Jordan (d)

Rossini: Semiramide (premier): Garda, Zimmer- mann, Palazzo: Monte Carlo PO, Scimone (3, d)

Rossini: I Talismani: Hagen: Aker, Kibble, Battle; Rossini: Veneti, Prague CO, Scimone (3, d)

Rosselli: Barbaresco: Schwert, Buch: de France, Dutoit (d)

Rosselli: Symphonies No. 1, 2: O National de France, Dutoit (d)

Saint-Saëns: Quatuors No. 1, 2: Premières: Violin Qu (d)
Schubert: Sonata in B flat: Improntas: 2: Pires (d)

Schumann: Kreisleriana: Fantasia, Blumenstiele, Dalberto (d)

Stravinsky: Symphonies in Three Movements: feu de carres: Rotterdam PO, Conlon (d)

Tchaikovsky: Recordare: Symphonies; Dvořák (d)

Vivaldi: Il Città in Utero: Gasdia, Palacio, Zim- mermann, I Solisti Veneti, Scimone (2, d)

Vivaldi: Orlando fuori: Horne, De los Angeles; I Solisti Veneti, Scimone (3, d)

FANFAR

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Haydn: Cello Concerto: Harmon: Toronto CO, Rob- inston

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Brahms: An Evening with Maurine Forrest and Andrew Davis

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Boehmova Piano Concerto No. 4; Sonata, Op. 13; Rosenolf Wind Quintet Vienna S. Wallberg.
Boehmova Piano Concerto No. 5; Sonata, Op. 57; Brendel; Vienna S. Mehta.
Bostrom Piano Quartets; Op. 51, No. 1; 67 Tokyo Qt (d).
Bruchhuis Paganini Variations; Etudes; Simon (d).
Gershwin An American in Paris; Catfish Row; Promenade; I Got Rhythm Variations; Siegel, St. Louis SD, Slask.
Hendel Water Music; Suite, for the Royal Fireworks; Minnesota O, Skrowaczewski.
Hendel (arr. Helmsman) Passacaglia; Sarabande con variazioni; Hendel (arr. Veresti) Chevron; Pfeiffer-Dutsch (12); Patterson (d).
Hindemith Symphonies Vol. 2; Bournemount Simfonietta, Farberman (d).
Holett The Planets; St. Louis SO, Susskind.
Hommelbewert Piano Sonatas Vol. 4; Baltimore SO, Comissiona.
Mozart Duo in G, K. 123; Kalliwoda Duos, Op. 208, Nos. 1, 2; Patterson Duo (d).
Rachmaninoff Piano Concerto No. 2; Rhapsody on a Theme of Paganini; Simon, St. Louis SO, Slatin.
Rachmaninoff Symphonies Vol. 2; St. Louis SD, Slatin.
Rimsky-Korsakov Scheherazade; Mussorgsky Khovanschchina (excerpts); St. Louis SO, Slatin.
Rolinski Overture; Cincinnati SO, Schippers.
Rolinski Studet Music; May PCh, Cincinnati SO, Skrowaczewski.
Strauss Death and Transfiguration; Metamorphosen; Cincinnati SO, Glied (d).
Stravinsky Firebird (suite); Bartok; Overture for Orchestral Works; Hindemith Minnesota H, Skrowaczewski.
Tchaikovsky Manfred Utah SO, Abrahanel.
Wagner Preludes and overtures; Minnesota O, Skrowaczewski.
Wagner Scandale: Music of Carrell, Pancheli, Vivaldi, Telemann, Marcela, Handel, and Bach.
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MUSICAL ARTS PROGRAMS OF AMERICA

Boehmova Piano Concerto No. 5; Sonata, Op. 111; Badura-Skoda; North German RO, Knappertsbusch.
Bruchms Piano Trio No. 1; 2; Fischer-Schneider-Marnatti Trio.
Bruckner Symphony No. 7; Vienna P, Knappertsbusch (1949).
Bruckner Symphony No. 9; Berlin P, Knappertsbusch (1950).
Mozart Symphony No. 40; Bruckner Symphony No. 2; Berlin P, Walter (1950).
Clara Hashik: Recital from Beaux Arts (works of Mozart); Behr, Schneider, Schumann.
Igor Kupiec: 4 Treasures of Hungarian Favorites.
Music and Arts Programs of America, Inc., P.O. Box 771, Berkeley, Calif., 94701.

MUSICAL HERITAGE SOCIETY

Bruchms Symphonies (4); Tragic Overture; Academic Festival Overture; Chicago SO, Solti (4).
Elgar Overtures; Scottish National O, Gibbon.
Hendel Fireworks Music; Water Music (suite); Amariel (suite); Royal P, Menhuin.
Smetanoffs, Miniatures O, Skrowaczewski.
Sibelius Symphonies Vol. 1; 2; Finlandia; Romance.

Schumann Carnaval, Fantasie, Boles (d).
Schubert Piano Sonatas Nos. 1, 4, 6; Piren, Op. 51, Ashkenazy (d).
Schlesingh Cello Concerto No. 2; Bloch; Schelomo; Harrell; Concergebouw O, Haitink (d).
Schlotevskiy Piano Quintet; Seven Poems; Etger; Piano: Nederzinn, Ashkenazy, Fitzwilliam Qt (d).
Schlevinsky Etude; Firebird; Works, Scherzo fantastique Montreal SO, Dutoit (d).
Schlevinsky L’histoire du soldat; Renard; London Symphony O, Dutil (d).
Schlevinsky Rim of Spring; Four Norwegian Woods; Cleveland O, Chailly (d).
Schlevinsky Symphony No. 1; Scherzo fantastique; Detroit SO, Dutil (d).
Tchaikovsky Eugene Onegin: Kuscia, Wekil; Solti (2, a).
Tchaikovsky; Orchestral Works; Chicago SO, Solti (d).
Tchaikovsky Orchestral Works; Montreal SO, Dutoit (d).
Tchaikovsky Piano Concerto No. 1; Dehmei; Visions on a Nursery Tyme; Schall; Chicago SO, Solti (a).
Tippett Concerto for String Orchestra; As of St. Mar.; Marinier (a).
Verdi Adi Chiara, Pavarotti, Dimitrova, Nucci, Burchuladze; La Scala O&K, Maaezl (5, d).
Verdi; I Musicares; Solista, Cavallari, Malvezzi (2, a).
Verdi Nubara, Sullist, Gibbi (2, a).
Verdi Il matrimonio; Pavarotti, Horne (2, a).
Villa-Lobos Etudes; Preludes; Cimarosan Sonata; Fernandez (d).
Vivaldisi Concerto; Opera; 8; Ar of ancien Music; Hogwood (a).
Wagner Der Meistersinger; Kollo, Weikl, Moll; Venna P, Solti (4, a).
Zemlinsky De Szymanowski Taxi; 1 Berlin RSO, Chailly (d).
Baroque Horn Concerto; Tuckwell; As of St. Martin.
Jorg Bolet Encores: Works by Chopin, Debussy, by Schlzer, Godowsky, Mendelssohn, and Maschowsky.
Kung Wha Chung, Violin: Virtuosa Violin, Moll, piano (d).
Phyly Jones Ensembles; Grand Marches (d).
Modly Mozart, Vol. 5; Mozart; Hanied, Bach (arr. Buon.
De Larrocha (d).
Pavarotti in Concert (d).

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and Guitar. Fisk, Robihon.

Mozart: La notte di Figaro (arr. for wind). Amadeus E.

Telemann: Variations on a Theme of Handel. Ayles F (2).

Paul Whiteman at Aeolian Hall Rehearsal. Peress, Hyman, Davis (2).


MUSICMASTERS

See Musical Heritage Society.

NEW ALBION RECORDS


Subotnick: The Key to Songs; Return. California EAR Unit, Subotnick.

New Albion Records, 584 Castro St., No. 463, San Francisco, Calif. 94114.

NOMUS

Boehm: Piano Sonatas (complete—first five volumes to be issued in 1986–87). Roberts (d).

Boehm: Piano Sonatas, Opp. 110, 111. Guller (a).


Chopin: Scherzo. Deyanova.

Mendelssohn: Complete Piano Works. Jones (5 CDS), to be issued separately (d).

Mendelssohn: Symphonies Nos. 4, 5. Scottish CO, Laredo (d).


A Brass Spectacular. Wallace, Thompson (d).


Roy Budd: Film Spectacular, Vol. 2 (music from action/ adventure films). London SO, Budd (d).

Shura Cherkassky: Chopin Ravel (d).

Shura Cherkassky in Recital: Works of Liszt, Stravinsky (d).

Shura Cherkassky in Recital: Works of Schumann, Chopin, Strauss-Godowsky, Schubert (d).

Shura Gehman: Songs of Couch, Faher, Mussorgsky. Gehman, Walker.

Nimbus Digital Sampler, 1986 (d).


NONESUCH

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Beach: Harpsichord Music. Gobbons (d).

Beach: Bohemian; Mozart: Piano Music. Horszowski (d).

Boehm: Sonatas for Piano and Cello. Yblsma, Boson (fortepiano) (d).


Rechts: Sextet; Six Marimbas; New York Counterpoint. Steve Reich and Musicians (d).

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Chopin Recital. R. Laredo (d).


World Saxophone Quartet: Original Compositions. World Saxophone Quartet Plays Duke Ellington (d).

Stratas Sings Well: Is It Him, or Is It She?; Stratas; Y Chamber O, Schwarz (2, d).


Nonesuch, 75 Rockefeller Plaza, New York, N.Y. 10019.

NORTHEASTERN


Chadwick: Piano Quartet; String Quartets Nos. 1–5. V. Eskin, Portland Qt (d).

Footes: Chamber Works with Flute. Smith, Boston CO. Music Society.

Gringari: Handel in the Strand; Scandinavian Suite; other Chamber Works. Smirnoff, Moerschel, Drury.

Herbst: Mirabas Songs; Variations. Felty, Satz, R. Harbison, Oppens; Gollage New Music E.


Palmet Chamber Works. Silverstein, J. Eskin, V. Eskin.

CAETANO VELOSO

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Beethoven: Piano Concerto No. 4, 12 Variations, Wo. 80, Arrau; Dresden SO, Davis (d).

Beethoven: Symphony No. 6, Consecration of the House Overture, Ac de St. Martin, Mrinner (2).

Berlioz: La Damnation de Faust. Gedda, Bastin, Veysses, Van Allan, Night; London SO, Davis (2).

Berlioz: Harold in Italy; Les Troyens (prelude); Marche funebre; Imai; London SO, Davis.

Berlioz: Les Troyens. Veysses, Veysses, Lindholm, Glossop, Begg, Sover; Royal Op, Ch, Davis (4).

Chevrollier: Deux; Saint-Saëns: Glitter; Horn Concertos. Baumann; Gewandhaus O. Masur (d).

Gershwin: Songs, Hendricks, Laquebus.

Gliick: Opou de tourne, Montague, Alet, Allen, Mann; Monternvierd, Ch, Lyon Op, O, Gardiner (2, d).

Haydn: Noveyelled. Hendricks, Lipovecky, Araiza, Meven; Bavarian RSO, Davis (d).

Haydn: The Organ Concertos. Koopman; Amsterdam Baroque O (2).

Haydn: Die Schopfung. Mathis, Baldwin, Fischer-Dieskau, Denyi; Ac de St. Martin, Mrinner (2).

Harty: The Hungarian Rhapsodies, Diesbour (2).

Lutoslawski: Symphony No. 3; Les Espaces de sommeil. Fischer-Dieskau; Berlin PO, Lutoslawski (d).

Lutoslawski: Symphony No. 5. Concertgebouw O. Haim-

Makhlif: Symphonies No. 5. Concertgebouw O. Hai-

Massenet: Werther. Carerras, Von Stade, Allen, Buchanan, Lloyd; Royal Op, Davis (2).

Mondelasio: Symphonies No. 2. Price, Burgess, Jerusalem; London PO, Chailly.

Mozart: Casi fan tutte. Caballé, Baker, Cotrubas, Gedda, Gutierrez, Van Allan; Royal Op, Davis (3).

Mozart: Symphonies Nos. 31, 35 by 18th Century, Briggens (d).

Puccini: La Bohème. Carerras, Ricciarelli, Putnam, Wixell, Lloyd; Royal Op, Davis (2).


Schubert: Winterreise; Fischer-Dieskau, Brendel (d).

Silkeholm: The Symphonies; Finlandia; Tapsala; Season of Flowers. Boston SO, Davis (4).

Sovet: Stars and Stripes Forever. Eastman Wind E. Fennell.

Stropp: Der letzte Donzel. Shirai, Lipovec, Prostchka, Holle; Sudtklang Ch, Stuttgarter RSO, Kühnp (d).

Streisand: Love Theme from "Norman, Parsons (d).

Stravinsky: The Rite of Spring; Petrouchka; Concertgebouw O. Davis.

Verdi: Il corsaro. Carreras, Norman, Caballe', Grant; New PO, Gardelli (2).

Vivaldi: Four Seasons, V. T. Prun AvEc q (d).

Wagner: Wesendonk Lieder. Barlottis; Les Nuits d'Hale; Baltsa; London SO, Tate (d).

Bernstein by Boston, Boston Pops, Williams (d).


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Merritt: Song with Your Heart. A Remembrance of the American Concert Song. Howard (d).


**PRO ARTÉ**

**PRO ARTÉ (distributed by Intermedium)**

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Beethoven: Piano Concerto No. 5. Sherman; Czech PO, Neumann (d).

Beethoven: Piano Concerto No. 9; Hammerklavier. P. Serkin (on modern piano) (d).

Brass: Piano Concerto No. 1. P. Serkin; Atlanta SO, Shaw (d).

Brass: Piano Concerto No. 2. P. Serkin; Atlantic SO, Shaw (d).

Brass: Violin Concerto; Leaderme; Festive Overture; Silverstein; Utah S (d).

Chopin: Nocturnes; Ballades; Fantasies. Sherman; O/P St. Luke's, Schuller (d).

Grieg: Greater: Lieutenant; Lallady, Puccini; Chreustiant: Phil Arte Q (d).

Liszt: Sonata in B minor; Don Giovanni Fantasies. Sherman (d).

Mozart: Clarinet Quintet; Weber; Introduction, Theme and Variations. Gigliotti, Phil Arte Q (d).


Mozart: Sonata No. 2; Quintet; Rondo. P. Serkin (d).

Mozart: Violin Concerto No. 5; Piano Concerto No. 19; Rondo in A P. Serkin; Silverstein; Rochester PO, Davis (d).

Schumann: Symphonies (4). Houston SO, Comission (d).

Tschebkinsky: String Quartet (complete). Cleveland Q (2, d).

Tschebkinsky: Violin Concerto; Serenade for Strings, Serenade for Wind Instruments, Utah SO, Silverstein (d).

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Gershwin: Concerto in C. Bernstein: Three Preludes; Stevenon: Three Impressions; Intraord. Waxmian Charm Brarkelet; Park (d).

Copland: Down a Country Lane; John Henry; Diamond: Album for the Young. Perschorlik: Four Arabesques; Paradis; Op. 57. Rimsy: Memorial Schelischer Liptnik; Sigmolster; American Kaleidoscope; Stevenon: Impressions; Toronto Park (d).


Friedhofer: In Love and War; Herrmann: Kertovsky; Dan the Sea in Ship. Waxmian Summer at Campobello. National PO, Choscan Sangers, P. Steiner (Glasse American Film Scores).


mann: Strong Quartet No. 3. Preamble Q (d).

Thompson, R.t Strong Quartet No. 1. Herrmann: Echoes; Preamble Q (d).

Simon: Kalon Silent Film Music. Parkin (d).

**PROTEO**

**PROTEO (distributed by Complete Preludes for Piano.)

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BY PAMELA BLOOM

Gilberto Gil, Fellow Man

MIDNIGHT IN BAHIA.
Brazil: The cabdriver didn't want to bring me here, and then he didn't want to leave me. Descending, like Black Orpheus, down a tortuous set of stone steps flanked by shanties, I arrive at a religious service in a tiny apartment teeming with black faces, the congo drums already hot with the blessings of candomblé. Five women dressed in white hooded skirts and reams of necklaces start dancing a kind of two-step shuffle, hobbling their heads. Suddenly, one, then two, then all of them begin to quiver and holler; their arms jerk wildly, their eyes roll backward. The congregation, once subdued, chants and claps furiously, urging the dancers on with prayers of petition and praise, inviting the African gods in. As tension mounts and floorboards shake, the dilapidated room becomes a pulsating temple of faith.

A thousand miles away in a tent-like theater in Rio de Janeiro, Gilberto Gil—one of Bahia's most famous native sons—bounds on stage with a cheerful blast from his band. His flat-topped Afro is rimmed with a bright yellow headband, his body swathed in colorful gypsy rags (complete with matching pink guitar), he looks like an African tribal king lost on Carnaby Street. But somehow he looks great, and backed by the tightest nine-piece band in Brazil, he also sounds great, charging fearlessly through reggae, rock 'n' roll, ju-ju, pop-funk, and electric samba. Alternately exhorting, cavorting, and reporting, Gil reminds me of a snake-oil salesman I saw in Bahia; but this Gil, famous for his bitter political diatribes, is exposing fraud, not selling it. When he segues into "Pessoa Nefasto" ("Evil Person"), a song supporting the recent direct democratic elections: a cheer explodes and fists are raised. As a master of call-and-response, Gil expects his fans to finish his phrases, and they always do; his Portuguese version of Bob Marley's "No Woman No Cry" gets everyone involved. But the show is not simply Gil's. Behind him, his percussionist, a wild, shirtless creature with flying dreadlocks, boomerangs between conga, cuica, triangle, and what-not. And then there is the brass section: three big white
guys with knobby knees who hip-hop down to the microphone for a fast riff, then scurry back on tiptoe. For the wind-up, Gil, half serious, pulls out a water jug and sprinkles blessings on his audience. Then he takes a big, irrelevant gulp for himself.

"I LIKE TO MAKE THINGS BURST AND SPROUT," Gil told me one day last April in his chic Ipanema office in Rio. "I've always been interested in that provocative character of life—the game that sometimes surprises you, enlightens you, bangs you on the head, or lifts you to a spiritual bliss." For years one of the most provocative artists in Brazil, Gil—bohemian, proselitizer, mystic poet, and punster—has modernized Brazilian culture not only by introducing rock 'n' roll and other international beats but also by exploring social issues once considered taboo. On stage he's a breezy balance between luau and lucid, but in person he's simply sweet, utterly Brazilian, and always seemingly on the verge of bursting into song.

The roots of his art can be found in the state of Bahia in eastern Brazil, where Catholic and cult influences come together in a joyful celebration of song and dance. As the son of a doctor, Gil grew up decidedly middle-class, but most of the black population there had adapted uniquely to the dominant white society. "From the beginning of slavery," Gil explains, "the Baiano blacks mixed Catholic values with their own tribal rituals, so that everything became dancing and chanting and beating." He absorbed as well other colors from the region: the nasal cries of street singers, the tria elétrica blaring from the backs of trucks, the baio rhythms of accordionist Luiz Gonzaga (a kind of tropical polka). By the time he was a teenager, however, Gil had also discovered American swing, Cuban mambos and rumbas, Mexican boleros, and Italian folk music. But it wasn't until he heard the first important bossa nova song, João Gilberto's "Chega de Saudade" ("Enough with Longing"), that he discovered the guitar and a new, soft way of singing. In contrast to the populist, raumbunc-

tious samba, bossa was slow and sexy, cool and detached, a perfect aural vehicle for a rising class of young bourgeois hedonists.

"Listening to [Antonio Carlos] Jobim and the lyrics of Vinicius de Moraes," Gil recalls, "I was touched by the possibility of putting words onto feelings. The bossa nova was a new mood, romantic and lyrical, and the first song I wrote was about a neighborhood girl, whom I was platonicall in love with." But that kind of writing was "very naive," Gil admits, for he also belonged to a generation that was growing up through politics. During the Sixties, the government tried to anchor its economy in a succession of military regimes. With his country torn by hunger and social repression, reality for Gil became a question of "verification," not idealization. One of his first recorded songs, "Processão" ("Procession"), employed his native baiao rhythm laced with religious chant to attack traditional mores.

"When I was a kid in my country village, there was nothing but two main streets, a thousand people, the church, and the priests. I used to love to watch the religious parades, with the women singing Ave Marias and the guys holding up the images of the saints, as the congregation wound its way through the streets back to the church. But later, at university, I read Marx and became concerned with the social struggle. So Processão was a criticism of the noxious influence that religion has, especially on simple people, who take care for God and the eternal life and ignore the essentials of providing nourishment—those people who transfer their real life energy into the imaginative life."

During his university years, Gil met Caetano Veloso, the white Baiano musician with whom he would make a friendship as legendary in Brazil as that of Heloïse and Abelard. They "tuned" immediately, Gil recalls, "because we had similar existential life projects." The more intellectual Veloso pulled Gil along, introducing him to other revolutionary artists who "gently criticized" his work and gave him books to read. But Gil's concerns were ultimately musical, and his search for an aural aesthetic that would represent an organic yet dynamic Brazilian culture led to a new movement that would change the face of música popular brasileira (MPB). "Viscera, unconsciously, I felt something had to be done. I had started to listen to the Beatles, the Rolling Stones, and Bob Dylan, and at the same time, I went to the countryside and felt the strength of primitive cultural values alive in the music there. I felt we had to mix everything."

If Western rock attracted Gil with its novelty, three of its most arresting personas—the Beatles, the Stones, and Dylan—also articulated three fragments of his personality: the darling, the devil, and the drifter. Tropicália emerged as a wild synthesis of seemingly disparate parts, but its traditional Brazilian folk, bossa nova, and rock 'n' roll elements were logical pieces of Gil's past. The tropicalistas, who included singers Gal Costa and Maria Bethania (Veloso's sister), lyricist Torquato Neto, and composer Rogério Duprat, wielded electric guitars next to berimbau and subscribed to what Veloso has described as a "neo-cultural cannibalism," a deliberate adaptation of Western musical elements to the needs of the moment. Gil's "Gêlêa Geral" ("A General Jelly"), with text by Neto, offended conservatives because it juxtaposed traditional and modern images. The song's ironic tone is accentuated by Duprat's orchestration, which mixes fragments of Western hits over Gil's basic folk tune.

The bell-bottom pants, freewheeling lifestyles, and unsuppressed creativity of these artists made the military government paranoid; one day, Gil and Veloso were arrested without explanation. During three months of solitary confinement, Gil studied Eastern religions and, after reading about John and Yoko's bed-ins, took up macrobiotics and Zen meditation. When the government could uncover nothing, it turned its attention to the part of the so-called dissidents, the two were simply "requested" to leave Brazil.

Ensnoned for three years in a quaint news in Lappa Grove, London, the exiled Gil developed a passion for Traffic, Pink Floyd, and more Beatles and Stones—all the British rock bands. "I was so excited I bought an electric guitar and taught myself how to play, just as I had with the acoustic guitar years before." The albums Gil recorded after he and Veloso quietly returned to Brazil display not only an ever increasing mastery of poetic and musical form but also a knack for being primal, contemporary, and futuristic all at the same time. Expressão 2222 (1972) rediscovered the origins of MPB, synthesized the influence of Anglo-jazz-rock, and consolidated his conception of the world according to Oriental philosophy; in the contemplative "Oriente," he nearly turns his guitar into a sitar. Refavela (1977), replete with African rhythms inspired by a trip to the Nigerian Music Festival, paid homage to his black origins. The cheerful
pop-funk arrangements of Realde (1979) highlighted Gil’s particular vocal gifts: fast, pinpoint articulation and amusically inspired yelps and howlers. Extra (1983), marred by middle-of-the-road arrangements, lost commercial and artistic steam, but Gil returned triumphantly a year later with Raio Humania (see September 1985 review), a scaring critique of world social issues couched in angry rock ‘n’ roll.

If Gil’s slightly ragged, short-of-breath voice doesn’t always sound best on long-line ballads, he has nevertheless written some of his most beautiful though complex songs in that mode. In contrast to its romantic melody, the lyrics of “Se Eu Quiser Falar com Deus” (“If I Want to Talk with God”) actually suggest the negation of self, a tall order for a performer with such an explosive personality: “If I want to talk with God/I Have to shut my voice/Become a dog/Be very ugly/ Say goodbye and go away, to nothing... nothing we can think of.” The inspiration for such severity, Gil recalls, was actually a moment of vibrant connection to the universe. It was a sunny summer day, my children playing in the garden. The most beautiful life in all its balance: my home, the sun, the shade, the sky, the belly after a good meal, that quiet fullness of life. Then I started to think about God, and suddenly—there was that contrast with the emptiness of life.

Gil’s impulsive search to understand has also found expression in songs that explore sexuality. In “Pai e Mãe” (“Father and Mother”), he outlines the “future man” who could learn to kiss another man as his own father. “Super-Homem, a Canção” ("Superman, the Song"), inspired by the American film, is a doo-wop ballad that affirms Gil’s “feminine portion” as his creative force—a daring statement in a culture dominated by machismo. “Remember,” he explains, acting out the scene, “when Lois Lane dies? The train goes off the rails, and suddenly Superman feels the despair of losing her, so he makes a promise and resolves and resurfaces having that moment, he becomes ‘super’ when he realizes he is not only man but man and woman together. He’s man-kind!”

The current album, Din Dorim, A View from, reads like a history of all the meters and moods Gil has mastered in his 20-year career: piedad off or passionate, sassy or sad, masculine or feminine. Listening to it, you can bump a shoulder to bossa, swing the hips to samba, do a reggae shuffle, or jerk around to rock ‘n’ roll. “It’s light music with heavy causes,” Gil explains; indeed, he describes the songs alternately as “lampoon,” “apology,” “reflection,” and “autocriticism.” Opening with the innocent chanting of children, the album goes straight into a rollicking attack on governmental stupidity that pins a drum machine against a samba riff and whistle. Laying back an upbeat bass, the dry-iced “Febri” (“Fever”) takes an ironic look at the capriciousness of popular appeal. “Toque Pas de Mon But” chugs along in a cheeky reggae, looking for that point of commonality not Obscured by indi- viduality. “Don’t touch my pal,” Gil sings in French, “[because] the being that lives in him is the same that lives in you.” More inflammatories, “Oração pela Libertação da África do Sul” (“Prayer for the Liberation of South Africa”), banned recently on Rio TV for its juxtaposition of Jesus with African gods, blatantly places blame on hypocritical white Christians: “I know if the Pope asked for forgiveness/It would sweep the map of slavery.” Yet the closing “Duas Luas” (“Two Moons”), with its openhearted samba by Jorge Mautner, reaffirms Gil’s Carnevalo philosophy: Live and let live.

If Gil feels like a “wanderer” these days (as expressed in the I Ching hexagram on the cover of Din Dorim), it might be because the new wave of Brazilian rockers, 20 years younger than he, make little or no reference to the rich native traditions that have always enlivened his music. Their aggressive but derivative rock brasilero ignores the natural resource of folkloric rhythms. “I look at those kids and think it’s like we went on a picnic together and, because I knew the way, I was the guide. But then they say, ‘Hey, we’ve walked enough to know we want to drift.’

“Suddenly, I’m alone and have to sort it out. Pursuing aloveness is selfish. Ever since I first went on stage, I never meant to be myself; I meant our selves. I represent the Brazil that is not an exotic, isolated tropical paradise, where the big shots come to have pleasure... No, we are international.” “We are the world,” he starts to sing, “People who like my music absorb my vibe, not as if I am a Brazilian, but as if I am a neighbor, a fellow man. That’s what it’s all about: being friends with the neighbors.”

Selected Discography

A Arte de Gilberto Gil


Realde.


A Gente Precisa Ver o Luar.

WEA Brazil BR 91.050; 1981. Distributed by International Book and Record.

Extra.

WEA Brazil BR 36.198; 1983. Distributed by Musicrama.

Raio Humania.

WEA Brazil BR 1505; 1985. Distributed by Musicrama.

Din Dorim, A View from.

WEA Brazil BR 36.207; 1985. Distributed by Musicrama.
**RINGING DOWN THE YEARS**

**SANDY DENNY:**

Who Knows Where the Time Goes?

Trevor Lucas and Joe Boyd, prods. Hannibal HNX 5301 (4). (Distributed by Carthage, Box 667, Rocky Hill, N.J. 08553.)

Sandy Denny had some success as both a songwriter and a singer before her accidental death in 1978 but barely the recognition she deserved. As a songwriter, she’s best known for “Who Knows Where the Time Goes?,” popularized in the late Sixties by Judy Collins. With a graceful melody and lyrics touching on love’s mystical and family’s undercurrent, the song captured the spirit of that time in a timeless fashion. It felt like a singer’s standard and soon became one. But Denny made her greatest contribution to popular music as an interpreter of traditional songs and contemporary lyrics by other writers. So it’s appropriate that the boxed compilation Who Knows Where the Time Goes? should include her own version of the title track alongside songs by Bob Dylan, Richard Farina, and Richard Thompson.

In the mid-Sixties, Denny was a regular on the tiny English pub circuit, and for a short time she sang and recorded with the Strawbs (whose leader, David Cousins, has since memorialized her in “Ringing Down the Years,” which he now performs with the newly reformed group). In 1969, she was recruited by Fairport Convention, a fledging band of rock ’n’ rollers looking for a definably English sound. Denny brought her ex-
performed with Fairport—and others of simple delicacy, like her own—"The Music Weaver," and those songs, create the album’s standouts: "Gezep Days," with Fortheringay, and "Tan Tan," from Fairport’s Large and Luf, are especially evocative and as exciting today as when they were first recorded. But undistinguished versions of well-known tunes like "Walking the Floor Over You" and "Knockin' on Heaven's Door" space that would have been better used for more traditions or Denny originals, either of which would have been more representative of her unique style.

With 43 cuts on four LPs, Who Knows Where the Time Goes? is a loving tribute that serves as both a retrospective for Denny’s fans and an introduction for new listeners. From a historical perspective, the inclusion of nearly an album’s worth of Seventies pop tunes may have been considered worthwhile, particularly in light of the project’s major flaw: a lack of detailed biographical liner notes that might otherwise have linked together Denny’s disparate works. But these songs limit Lutter-day Denny to being just another pretty female voice. Ultimately, the compilation reveals that Sandy Denny, a singer of exceptional talent, never did get to make her definitive statement.

Leslie Berman

ANDY M. STEWART/PHIL CUNNINGHAM/ MANUS LUNNY

Fire in the Glen.

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lords, newkeds sail away on a honeymoon boat that crashes on the rocks in Dublin Bay, and Irishmen escape their homeland's brutal potato famine and flee to America, only to be drafted into the Union Army and lose leg in a Civil War battle. Not the kind of songs one hears heartily sung in pubs throughout the UK, but that consideration doesn't seem to affect Stewart much. Even the cover painting of *Fire in the Glen*, a graphic visualization of the title song, is in line with this philosophy. Against a dreamy Scottish Highlands landscape, a couple flees their burning cottage while holding their nude child, victims of the landlord who has scorched their farm to speed up an eviction. Nasty stuff indeed.

In late 1983, when Silly Wizard decided to take a sabbatical to pursue "outside projects" and some such, the band left behind four often brilliant albums of Scottish folk that huse Stewart's stern, brooding brogue with instrumentation both traditional (acordion, fiddle) and not so traditional (synthesizers). *Fire in the Glen*, which reunites Stewart with the band's other principal member, acoustic guitarist/keyboarist Phil Cunningham, is the closest thing to a Silly Wizard studio album since the breakup, right down to its mix of ballads, jigs, and reels. One listens to its standout track, "The Gold Claddagh Ring," shows the two haven't lost their touch. The music is stirring and rugged, framed by Manus Lunny's acoustic guitar and bazouki and Cunningham's electric keyboards. Stewart uses the symbolism of the title ring—a ring given to lovers showing a heart encircled by a pair of hands—to tell the tale of a man who gives one to the object of his affection; in turn, the uninterested woman takes it and puts it in her jewerly box "with all the rest." "Why is it that women are smarter than men?" the narrator wonders, and as it to stress the contemporaray sentiments, Cunningham swoops in with a trumpeting synthesizer solo.

"The Gold Claddagh Ring" may be the only track to leap off the turntable here, but that's not surprising. After all, the watchword on *Fire in the Glen* is "downbeat." The title track and "I Mourn for the Highlands," a song about displaced families (shades of gentrification), may be "protest songs," but they're resigned and ultimately fatalistic, like much Celtic folk music: even the closing, hymnlike "Ferry Me Over," about the elation of returning home after a long voyage, sounds pretty sad. In this context, Cunningham and Lunny's two reed melodies are well executed but almost incidental, and Lunny's "Nil Si Mini" ("She's Not in Love"), sung in Gaelic, is an airy ballad that sounds uncomfortable close to the bland, commercial folk rock of Clamadog. Compared with Stewart's "The Gold Claddagh Ring," or his antwary "Young Jimmies in Flanders," it can't help but come off as slight.

As much as I admire the music of the Pogues—young men just slightly older than Stewart playing traditional music with a rock "n' roll fervor—Pogues lead singer Shane MacGowan's coarse vocals can't match the beauty and wisdomed nature of Stewart's. Yet the Pogues get the attention of the hip rock critics, land gigs at the big-name rock clubs, and have a major-label contract, while Stewart, Cunningham, and Lunny come to America only to play collegehouses and see their albums released on indies like Shanachie. You'd probably be resigned, too.

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**RICKY SKAGGS:**

**Live in London.**

Ricky Skaggs, prod. Rounder CD 0151. \*CD\*

Ricky Skaggs did not arrive at the top of the heap by accident. His country roots—growing up in a Kentucky "holter" and learning mandolin from his father at the age of five—nourish a devotion to tradition that Nashville couldn't shake. He started young—playing with the Stanley Brothers as a teen—and then with the Country Gentlemen. When bluegrass wouldn't sell, he played with Linda Ronstadt, Lowell George, and Emmylou Harris, but they moved in his direction, not vice versa.

*Family and Friends*, recorded in 1981, represents the best of all that's traditional in bluegrass. No one plays it better than Skaggs, and the family setting adds a homey touch that comes off as quite genuine in flavor. No frills are needed: Skaggs probably represents the pinnacle of technical performance on a whole wall of bluegrass instruments.

*Live in London* illustrates how Skaggs overcame the tension between his love of traditional music and the demands of modern life in show biz, country style. He just blew the audience away. A drummer and some electric instruments are gotten into the act, but it all homegrown and perfect—almost too perfect. And this flawless hour comes complete with a fiddler (North Carolina's Bobby Hicks, also appearing on *Family and Friends*) who would have felt right at home in the British Isles 200 years ago. Music this clean can survive all sorts of swings in the market.

Speaking of keeping it clean, Ricky really does. While he hasn't (yet) had the impact of a Hank Williams, he'll never wind up drunk in Tooste's or wiped out in the back seat of a Cadillac. A big label went out on a limb with this unreconstructed country box, and he made good.

The secret ingredient is sheer talent. There could hardly be a sure, faster set of fingers or a purer country croon. But Skaggs is so smooth that we have to rely on Elvis Costello to provide the ragged edge, in a quick cameo during the encore on *Live in London*. With Ricky Skaggs, Success Story, that edge will always have to come from someone else, someone a bit more familiar with failure: failed love, failed anything that supplies such a constant sense of realism to country music.

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**JAZZ**

**BILL FRISSELL AND VERNON REID:**

Smash and Scattering.

David Breskin, prod. Ryadoc RCD 10006 (distributed by Rounder). \*CD\*

At its best, the music on *This Compact Disc* is like a brilliant conversation with colorful, full and of surprises. It's clever but unpretentious, and it repeatedly falls into what Wallace Stevens called "sudden rightnesses," moments when individual lines come together with unexpected felicity.

Bill Frissell and Vernon Reid play acoustic and electric guitars and double on a variety of instruments, Frissell on Roland 300 guitar synthesizer and Electro-Luminary, Reid on Roland and Korg synthesizers, banjo, and DX drum. (Reid replaces these drums according to the sound of the composition. They are "techno-triibl" on "Dark Skin," "doom-oriented" on "Black Light," and, my favorite, "revisiionist DX drums" on "Laniscapes in Alternative History.") The pair can handle rock licks, and on "Dark Skin" they move with something of the swagger of Weather Report. But they do other things as well, offering hip versions of country music, of a clever kind of funk, and even, on "Last Nights of Paris," of a particularly insellosounding nightclub musical.

Written by Reid, "Last Nights" begins with him calling out, "Ready, Mr. Bill?" Reid then states the almost foolishly perky melody on banjo over Frissell's accompaniment on guitar; they exchange roles in the middle, bring the volume way down, play some goods interchanges, and end on two surprising chords, "Laniscapes in Alternative History," starts with a snappy, preset drum track, over which Frissell and Reid produce a succession of shimmering electronic sounds that introduce Frissell's electric guitar solo. Frissell plays the weeps line of "Amarillo Barbados" (Merle Haggard would like the melody), and Reid's bomp predominates on "Size 10 & Sneaks," which reminds me of Delirium, despite the definitely urban comments of Frissell's electric guitar.

Most of the tracks are overdubbed. The exceptions are Frissell's and Reid's solo pieces, on which each manages to create, through electronics, the sound of a myriad of instruments. But neither solo is successful. It's as if Frissell and Reid, absorbed in the possibilities that their gadgets offer, forgot that music has to have rhythm and shape as well as texture. There are no such lapes in the duets, which are bright and lively.

Originally recorded on analog tape and remastered digitally, this CD sounds exceptionally clear and accurate. Stereo separation, however, is exaggerated, resulting in an artificial sound that could only be produced in the studio.

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Christopher Manon

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