The first speakers
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an produce.

Polymer
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speakers, this
midrange unit is
accurate to within 3 dB, even at
60° off axis.

And, to keep all five
HPM-200 drivers in balance
and working together, we've
engineered a massive
crossover network that keeps
all sound waves in phase
over the entire listening area.

But no design
dissertation can fully describe
what the HPM-200 actually
sounds like.

Irving Kolodin wrote
for Saturday Review, after
hearing Berlioz' "Symphonie
Fantastique" over a pair of
HPM-200s "...such towering
presence that one could diagram
the disposition of the Chicago
Symphony just from the repro-
duced sound."

We believe the HPM-200
represents a new standard of
accuracy in loudspeakers. Its
dynamic range, transparency and
overall lifelike impact are without
precedent.

Ask your Pioneer dealer to
play the super amplifier of your
choice through speakers similar
to the ones you're now using.
Then ask him to play it through
HPM-200s.

We assure you, you'll hear
things you've never heard before.

HPM-200
PIONEER
U.S. Pioneer Electronics Corp.
75 Oxford Drive, Moonachie, New Jersey 07074.
Most speakers available today were designed at a time when most of the powerful amplifiers you could buy produced under 100 watts a channel.

Which means if you have invested in one of the new super amplifiers, your speakers could well be keeping you from appreciating the full extent of your investment.

So Pioneer has developed a speaker system that can bring you all the peak levels, all the transients, every last bit of listening enjoyment your super amplifier is capable of giving you.

It's called HPM-200. “HPM” stands for “High Polymer Molecular” film, a material that makes it possible to transform electrical energy into acoustical energy with complete accuracy.

The HPM-200 tweeter and supertweeter are made of this unique material, which produces sound directly at the film surface.

There are no magnets. And no voice coils. So there are no mechanical moving parts to get between the sound your amplifier puts out and the sound you hear.

And High Polymer Molecular film can handle an almost limitless range of power. Without distortion. Without any loss in linear response.

Since High Polymer Molecular film can be made into a 360° cylinder tweeter and supertweeter and produce equal high dispersion over a 200 hertz optim bass. optim bass. cover from: may look more normal drivers. But they're made like conventional speakers. And High Polymer Molecular film can handle an almost limitless range of power. Without distortion. Without any loss in linear response.

The revolutionary High Polymer Molecular film tweeter and supertweeter. They don't look, or work like conventional speakers.
IN THE LAST 24 MONTHS
11 COMPANIES
HAVE INTRODUCED
"SUPER AMPLIFIERS"
THAT YOU CAN'T FULLY
APPRECIATE UNTIL YOU
HEAR THEM THROUGH
THESE SPEAKERS.
Can a speaker be all things to all people?

Say music enthusiasts — "I have to relisten to all my Pink Floyd and Frank Zappa albums because I realize now I never really heard them before. Freaks me right out!" LARRY ROGAK, N.Y.

About accuracy — "Elton John sounds like Elton John and not Wayne Newton with a sinus condition. All kinds of music sound great, from Percy Faith to Led Zeppelin." GRANT HOWES, MICHIGAN

You can play it loud — "I once read it was not possible to have a rock concert in your home, but with the B·I·C Venturi it is possible."

RICHARD KNES, ILLINOIS

Or play it low — "I feel I must write...to thank someone that realizes there are a few of us who don't like our stereo and quad up blasting our eardrums. These Formula 2 are great at any volume." MRS. GAIL McAULOF, CALIFORNIA

From professional users — "I am a disc jockey and work with some of the finest sound equipment available... I purchased a set of your Formula 4's after a year of shopping around... In my opinion none sounded better at any price." DAVID FOOR, FLORIDA

And audio engineers — "I am an audio engineer at (AM, FM, TV broadcast station)... An excellent speaker and a great design concept."

PHIL JONES, SOUTH CAROLINA

Even people who sell audio — "You've really got the product... my recommendation 9 times out of 10 is B·I·C Venturi." DAVID WILLIAMS, TEXAS (DEALER)

And those who've lived with it — "Nearly a year ago I purchased a pair of Formula 6... the performance has substantiated my original beliefs."

JERRY GRETZINGER, MICHIGAN

So join this fellow who says — "I could not be more pleased with the performance of your product, nor with myself for having the good sense to have chosen them!" RONALD BERTHEL, N.Y.

Because you can believe — "I was somewhat skeptical about the claims in your advertisements... I purchased a pair of Formula 6... Your speakers surpass all the claims made... They are fantastic!" RANDOLPH L. KRUMM, N.J.
NEW PRODUCTS
A roundup of the latest in high-fidelity equipment

AUDIO BASICS
Buying a Tape Recorder

TAPE HORIZONS
Measure for Measure

EQUIPMENT TEST REPORTS
Hirsch-Houck Laboratory test results on the Luxman L-100 integrated stereo amplifier, Maracord Model 825 automatic turntable, Frazier Concerto speaker system, and Realistic STA-90 AM/FM stereo receiver

MULTITRACK
There’s a whole new world of tape equipment out there

CHROMIUM DIOXIDE PRO AND CON
Is it better or worse than iron oxide?

OPTIMIZING CASSETTE PERFORMANCE
Even the best of tapes won’t work in a badly constructed housing

TAKE DAVID BOWIE, FOR INSTANCE
If you’re after the Complete Works, take nothing for granted and keep looking

LAST WILL AND TESTAMENT OF A CLASSICAL RECORD COLLECTOR
The job of collecting pales beside that of disposing of it all

THE KINKS: MUSIC AS DISPOSABLE AS THE KOMIX
The reviewer finds their “Schoolboys in Disgrace” not very funny

PEGGY LEE: READY TO BEGIN AGAIN
“a national treasure, an occasion for Bicentennial pride and unceasing celebration”

CABARET: GRETA KELLER
She makes a concert hall sound as intimate as a bistro

THE OSCAR PETERSON DUETS
“a man who can swing in a variety of idioms and usually does”

LEARNING FROM OLD INSTRUMENTS
Proof of how music is conditioned by the instruments for which it is composed

BEST RECORDINGS OF THE MONTH
POPULAR DISCS AND TAPES
CLASSICAL DISCS AND TAPES
CROSSES

As at least half the world must know by now, recordings of classical music do not sell very well in these United States, though their total quantity may be high in comparison with figures for other countries, they amount to a mere 5 per cent or so of all the records sold. Things might be different, however, if this place were run along the lines of Pluto's Republic: the philosopher-authorities would see to it that the music of moral uplift (whatever that might be) would preempt most of the market space, leaving little room for the degraded, fiber-sapping strains of pop. (This system has had a salutary effect on the classical percentage in Russia, though I would hesitate to extend the comparison with Pluto any further.) But Draconian measures may not be necessary; it might pay American classical record producers to investigate, say, how it is that classical music manages to retain an 18 per cent share of the market in Germany, or how it is that France has been able to double classical music's share (to a hefty 20 per cent) over the last decade.

What American classical marketers do instead is to rely on the kindness of the Tooth Fairy to bring them a Magical Crossover Album. It is usually more than a little difficult to spot a crossover album before the fact—which is to say before it has crossed over—for the simple reason that it is not an aesthetic concept (the music could be almost anything, the performances vile) but a marketing one. The necessary conditions are simple: it must be "classical" music (and we all know what that is, don't we?), it must sell like the surprising dickens in places where classical music never sold before (and probably won't again), and it should ideally make the Top Forty charts. You can be sure Columbia didn't know it had one of the all-time champion crossover albums in Walter Carlos' "Switched-On Bach" of several years ago—just as sure as you can be that RCA hoped it had one in Isao Tomita's more recent copy-cat album of Debussy called "Snowflakes Are Dancing." It would appear, however, that these two, like many others, obey the Law of Novelties: one freak is inevitable, and follow-ups never do quite as well.

But what classical music manager does instead is to compose the whole thing. There is to be a "Battle of the Boyne," which seems to be going on still. Could they still be singing "The King of Battle" (which King James II had sung against King James I, who was ousted in 1688 in favor of William and Mary)? It is a little early for the period of Barry Lyndon, which is set in Handel's mid-eighteenth century, but this odd little musical relic reminds us that Catholic James subsequently crossed over to Ireland where, in 1690, he met the Protestant armies of William in the Battle of the Boyne. It is a fine place to begin, and this may have been the album reviewed in this issue.

They also do Lilliburlero, a late-seventeenth-century protest song sometimes attributed to Purcell and thought to have been influential in uniting public opinion against King James II, who was ousted in 1688 in favor of William and Mary. It is a little early for the period of Barry Lyndon, which is set in Handel's mid-eighteenth century, but this odd little musical relic reminds us that Catholic James subsequently crossed over to Ireland where, in 1690, he met the Protestant armies of William in the Battle of the Boyne, which seems to be going on still. Could they still be singing Lilliburlero too?
Is it live, or is it Memorex?

We proved it in our latest television commercial with Ella Fitzgerald. Whatever Ella can do, Memorex with MRX2 Oxide can do. Even shatter a glass!

MEMOREX Recording Tape.
Is it live, or is it Memorex?

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MARCH 1976
LETTERS TO THE EDITOR

Avant-Garde

I'd like to correct a few statements Jack Somer made in his article on avant-garde music (January). The only recordings in the Vox Productions catalog of American contemporary music that were "subsidized" were those that came out under a Ford grant two or three years ago. We are presently applying to the Ford Foundation for a partial subsidy (partial because according to the new Ford Foundation rules they will not subsidize any technical expenses).

Also, the examples mentioned among the "Survey" series are totally erroneous. The recordings of the Kohon Quartet with the exception of the Mennin quartet were financed by Vox Productions entirely. As far as the Concord Quartet is concerned, there was no request for a subsidy (and none was received) for Crumb's Black Angels. 80 per cent of the three-record set being financed by Vox. And there is not a single record in our catalog which was paid for either by the composer or the performer.

GEORGE H. DE MENDELSSOHN-BARTHOLDY
President, Vox Productions
New York, N.Y.

Music Editor James Goodfriend replies: I take upon myself the responsibility of replying, as Jack Somer, at this moment, is apparently somewhere in the South Seas. Mr. Mendelssohn-Bartholdy certainly knows better than I who paid for his records, and we are pleased to convey his statements to our readers. Still, there seem to be a few inconsistencies in what he says. For example, he points out that the only subsidized recordings of contemporary American music in his catalog derived from a Ford grant. But he also admits that recordings by the Kohon Quartet were not entirely financed by Vox and that the Concord Quartet set was 80 per cent financed by Vox. Assuming the remaining costs were not covered by the Ford grant (for he does not say they were), some sort of other subsidy is obviously involved here, whether it be foundation, publisher, performer, composer, or private individual. At any rate, no foundation but Ford was mentioned in connection with Vox in Mr. Somer's article.

Mr. Mendelssohn-Bartholdy also says that the new Ford grants will not cover any technical expenses. But Mr. Somer never said they would. He said only that Vox had "drawn well from the Ford program," and that does not imply that Vox had received benefits not also available to other companies. His comment about Vox's "balancing subsidy and self-support in very selective quantities" was meant to be an admiring one, and certainly no one in the record business can feel less than admiration (and perhaps envy) for the way Vox/Turnabout is able to record and market quantities of interesting and relatively unfamiliar music (both contemporary and old) so successfully. The fact that subsidies, in whatever form (minimum recording fees, for example), may be involved in this does not in any way impinge upon the quality of the recordings or the importance of the accomplishment.

I thoroughly enjoyed Jack Somer's survey of the avant-garde on LP and will make use of some of his information. However, there was one mistake in the article which really rubbed salt in a wound of mine. The Elliott Carter Piano Concerto does not remain "one of the few modern works recorded but not (yet) deleted by RCA." It was, in fact, deleted over a year ago. I make my living selling deleted LP records, but this is one item I would most happily forgo my sales on, and I pray for its eventual reappearance—perhaps on CRI.

LESLIE GERRER
Phoenicia, N.Y.

I would like to question two aspects of Jack Somer's "modest proposal" concerning the recording and dissemination of avant-garde music (January). The first concerns the possibility of the large record companies establishing a cash pool for use by the smaller firms "without restrictions." Mr. Somer may have some insight into this which I lack, but wouldn't the very concern for profits on the part of the big companies about which he complains on several occasions tend to preclude the feasible expectation of such an act of generosity?

The second deals with the matter of distribution. The fact that RCA or Columbia might help distribute the new-music discs of a smaller label certainly does not mean that retailers must carry the line. Decca/London's inability to persuade a number of retail outlets to stock its Headline series of new music is a case in point. Likewise, there are many stores that now refuse to carry Louisville, CRI, Decca, or Orion discs, not to mention Opus One or Chatham Square. Thus, the nonprofit distribution of such records by the large company hardly guarantees their success.

In the meantime, I, for one, welcome the all-too-few ventures into new music on the part of Columbia, Angel, DG, London/Argo, et al., for they offer us—if admittedly for a limited time only—recordings of works we would otherwise not have. Realities being what they are, that is better than nothing.

CHRIS ROUSE
Ithaca, N.Y.

Being a contemporary and avant-garde music enthusiast for about five years, I enjoyed Jack Somer's January article on avant-garde recording labels and completely agree with his discussions about the plight faced by many of these companies—that is, if Foss won't sell, Funk will. However, I can't help but scold many recording companies about the way they get their product out in the open market. I've searched in Houston and Dallas for many contemporary recordings only to find out that the stores will almost refuse to order records I choose because they appear on labels that seemingly never ship or supply the professional distributor and salesmen upon their demand. I would particularly like to throw my scowling eye on Decca and Gold Crest. They have many things I would like to get hold of but can't due to some hang-up in their business methods and distribution. I don't know how much money Louisville is making, but at least they have a clear-cut procedure for how to obtain their product.

C. D. RUSCIANO
Denton, Tex.

Hearing the Specs

Thank you for Mitchell Cotter's outstanding article, "Can You Really Hear Those Hi-Fi Specs?" (January). Mr. Cotter's approach to studying hearing seems to offer more benefit than simply comparing technical specifications of audio products. The question "Am I getting more real audio value with increasing technical specifications, and dollar outlay?" is difficult to answer, but without an understanding of that final transducer, the human ear/brain system, it is completely unanswerable. To pursue this further, I'd like to see a bibliography on the subject.

HARRY R. MCKEETY
Southampton, Mass.

A bibliography on acoustics and psychoacoustics can be obtained by sending a stamped, self-addressed envelope to STEREO REVIEW, Dept. MC, 1 Park Avenue, New York, N.Y. 10016.

Junior Readers

Like reader Wayne Brown, I too belong to that small portion of STEREO REVIEW's readers who are under eighteen (January). I became an audiophile at age thirteen in the fall of 1973. I like your magazine so much that I have extended my subscription to May of 1979.

JONATHAN LEVY
Bronx, N.Y.

I am thirteen years old, but I was interested in audio equipment before that and was thrilled to find a magazine on that subject exclusively (I bought my first issue of STEREO REVIEW in May 1973). I became an audiophile at age thirteen in the fall of 1973. I like your magazine so much that I have extended my subscription to May of 1979.

JONATHAN LEVY
Bronx, N.Y.

(Continued on page 8)
KENWOOD Cassettes
...when quality is your priority

KENWOOD Cassettes are quality-engineered for superb reproduction, professional recording results, smooth and easy operation, and exceptional dependability. The precision drive systems keep wow and flutter at new lows (less than 0.09% for the KX-620). A one-micron head gap brings frequency response to new highs (30-16k Hz for the KX-910 and KX-710). And a host of automatic features and well-designed controls make each unit virtually 'mistake-proof.' For cassette performance at its impressive best, you can depend on KENWOOD—the name synonymous with quality in stereo components throughout the world.

For complete information, visit your nearest KENWOOD Dealer, or write...

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*Dolby is the trademark of Dolby Laboratories, Inc.

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In Canada: Magnasonic Canada Ltd.
tronics, which has fascinated me for as long as I can remember) probably developed when I was about twelve and a half. I helped pay for a $250 Panasonic compact that I received Christmas 1972.

STEVE PROCTOR
New Holland, Pa.

- I read in Stereo Review about fourteen-year-old Wayne Brown (January). Well, I was eleven years old, and I have been getting Stereo Review for a few months, and I really like it.

BRIAN JOHNSTON
Hampton Bays, N.Y.

Hall of Fame

- How can one resist answering the concluding question put by William Anderson in his "Hall of Fame" editorial (January)?

Tops in my musical pantheon? No contest at all: the slow movement of the Bach Concerto for Two Violins. It is, quite simply, a dialogue between angels. In vocal music, I find the Abseitslief from Mahler's Das Lied von der Erde does for the profane what Bach does for the sacred. I find each to be the ultimate of its kind: earthly weariness, divine rest; ultimate sadness, ultimate joy.

LEONARD MALLECK
Huntington, N.Y.

- The Editor's column "Hall of Fame" (January) has inspired me to offer a personal commentary:

I well remember the day in 1949, at the ripe old age of sixteen, when I entered Schirmer's and a clerk who knew I collected vocal records asked me if I had heard the two recordings of tenor Aksel Schnitz. "Comfort ye" and "Every valley... He sent me to the listening room (oh, the happy days of listening rooms!), and I was stunned! "Comfort ye" was great, but "Every valley... was a revelation. I purchased the 78 then and there. My collection now has over 6,300 titles of vocal records, many of them on original 78's, and listening to them has helped sharpen and mold my critical standards.

First, perhaps the greatest vocal artist on record: a voice of the first rank, a technical skill that frequently beggars belief, and an interpretative art that ranks with the best are the technical skill displayed in "Il mio tesoro" (how well I remember when HMV released the 78 of that aria coupled with "II mio tesoro". I bought twenty copies on the spot and distributed them free to my friends, fanatics and exansions to spread their gospel, and McCormack was, and is, mine), the beautiful legato and breath-control of "Oh sleep..." the rare interpretative power of In Waldesinsenamkeit, the magical ending to Macushla or "Per river vicino a Maria" — the list is lengthy.

And there are others. One is left amazed after hearing Louisa Tetrazzini's rendition of AH non giunge. Schipa's "Ah non credevi tu" is a thing of matchless beauty. Jussi Björling was, perhaps, the most consistently thrilling tenor on record. A list of just his most memorable records would fill the rest of the page.

My favorite among sopranos is Muzio; among lieder singers, Schumann and Fischer-Dieskau (though, for all his marvelous interpretative skill, he has not the sheer vocal opulence of a Kipnis or a Schlusnus); among basses, Pinza and Kipnis; Ferrier is superb, and her singing of If Will Walk with My Love is great; John Charles Thomas' rendition of Lord Randall still terrifies me; Caruso's unreleased 1905 version of "Di quella pira" is incredible — again, the list is almost endless.

NEIL P. O'DOHERTY
Forest Hills, N.Y.

- The concluding question in William Anderson's January editorial, "What is tops in yours?" is simply too challenging to be left unanswered.

I collect just about everything classical, shying away from the "Moderns" particularly those composers whose music is completely atonal, often sounding like what the Germans call "Ketenmusik" (music of cats, probably during the mating season).

I'm fond of Jussi Björling, too, but at present I'm suffering from having too many performances of "Che gelida manina" as I have most Camden records and just about every tenor does that one. I am also quite fond of Aksel Schiøtz, and one of my treasured possessions is "The Art of Aksel Schiøtz" on Victor, L.M. 6168, as well as his Die Schöne Müllerin on Setaram 610148.

PAUL W. SAMUEL
Dobbs Ferry, N.Y.

Performers I Hate

- Although most of the artists selected in "Ten Performers I Hate" (December) are overpublicized and do lack talent, it's too bad the staff at Stereo Review is hung up on comparing every performer to a well-established superstar. Please tell me this article was published just to increase circulation!

MARK ROSNER
East Lansing, Mich.

Yes-of the blood.

- "Ten Performers I Hate" (December) was a rare treat indeed. Chris Albertson's succinct dismissal of Sammy Davis and Peter Reilly's even more concise and devastating put-down of Tony Orlando alone establish the December issue as a collector's item. However, I was a bit disappointed by the seemingly inexplicable omission of two of my own favorite non-talents: Connie Francis and Neil Sedaka. The mere thought of encountering the shrill, steely twang of Ms. Francis is enough to strike terror in the hearts of even the most courageous music lovers. And Neil Sedaka and his ilk were responsible for the decline and fall of the American popular song.

JIM WILKINS
Binghamton, N.Y.

- I and many of my friends were amused by some of the critics' choices in "Ten Performers I Hate" (December). In particular, the fact that Emerson, Lake and Palmer (whom I consider to be one of the most innovative and talented bands in rock today) were included in this list. And I was somewhat disappointed to find such large-scale criticism of jazz-rock. But I found consolation in one selection by Noel Coppage. Though I rarely agree with Mr. Coppage's reviews, I couldn't agree more with his explosion of the Elton John myth. I'm sure you will receive many more letters in defense of Elton John than those praising Mr. Coppage for his honesty and taste. I therefore nominate Noel Coppage for the "Most Courageous Reviewer of the Year Award."

JIM JORDAN
Endwell, N.Y.
How (and how not) to buy a loudspeaker.

Every year thousands of high fidelity customers are put through a variety of "demonstration" rituals on their way to choosing loudspeakers. It's enough to make a tire-kicker blush.
We're going to tell you how to buy a loudspeaker. We're not going to tell you which one, because loudspeakers are very personal. One man's nice is another man's noise. Still, there are some common sense (and not-so-common-sense) things you should know. For instance:

**Enjoy yourself.**
You're not getting tetanus shots. You're searching for love. Enjoy.

**Bring your own music.**
Bring a favorite record or tape; something you know by heart. There's no quicker, simpler way to tell the difference between speakers. If you've been listening in black and white you'll know it when you hear Technicolor.

Also, don't evaluate any speaker by listening to radio—AM or FM. By the time a radio signal comes out of a speaker, it's been strained through generations of electronics and the signal has been clipped on both ends. It's just not a test of high fidelity sound.

**Listen to the speakers through the kind of electronic system you plan to have at home.**
No point listening through $5,000 worth of pre-amp, amp and turntable at the store unless that's what your speakers are going to live with, right? Right.

**Turn it up!**
Way up. Loud loud. Kid-next-door loud.

You don't have to live with loud music, but you ought to visit there. Loudness magnifies the imperfections that will scar your subconscious at regular listening levels.

Do you like the sound? Is it clean? Is it clear? Does it hum? Does it splatter?

Loudness tells you what time will do to your ears, your head, your disposition. So, turn it up!
Turn it down!
Right to the edge of silence.
Are all the textures and details and harmonics of the music still there or does only the melody linger on?

No one wants to live with a loudspeaker that can't make its point unless it yells. So, turn it down.

Don't stand right in front of it. You're not taking batting practice.
One way to spot a not-so-good loudspeaker is to listen to the way it handles high frequency sound. If the sound narrows as the tones go higher, if there's a peashooter effect that requires you stand right in front of the speaker to hear the highs, that's not so good.

A good loudspeaker will disperse the sound throughout the room.
So, stand to one side, then the other. If you don't get all the music, move on.

One demonstration isn't a demonstration.
Expect to listen to three, four, five different pairs of speakers. Be critical. Be opinionated. A little honesty never hurt a courtship.

Last point: Most of how is who.
One of the more expensive bits of nonsense is that all great products sell themselves. That's just not true with loudspeakers.

You're going to be better off if you can find someone to help you take a speaker through its paces.
And you just can't do any better than an authorized JBL dealer. He's one of the nicest know-it-alls you'll ever meet.
Now that you've gotten the word, try the number.

Call (800) 243-6100 for the JBL dealer nearest you.
In Connecticut, call (800) 882-6500

James B. Lansing Sound, Inc./3249 Casitas Avenue/Los Angeles 90039
BASF sound is so clear, it's like the musicians are right there.

What you experience with BASF tape is simply this: the music. Pure and clear.

Why this extraordinary clarity? BASF polishes the tape. Literally. Getting rid of most of the thousands of tiny surface bumps that can cause background noise. (Get rid of most of them, you get rid of most of the noise.)

So what you're left with is sound so rich and clear, you don't just hear it. The music happens.

Which really isn't that surprising. After all, BASF invented audio tape in the first place.

BASF We sound like the original because we are the original.
Marantz Model 5420 Stereo Cassette Deck

The new line of cassette decks from Marantz is now available, headed by the Model 5420, which features built-in Dolby-B noise reduction for cassettes and straight-through Dolby-dynodes FM decoding, plus mixing controls (including pan pots) for two pairs of line and microphone inputs. Correct bias and equalization settings for "standard," chromium-dioxide, and Ferri-chrome tapes are provided, each selectable by means of a single pushbutton. Frequency responses for the three tape types are 30 to 17,000 Hz (Ferri-chrome), 30 to 16,000 Hz (chromium dioxide), and 45 to 14,000 Hz (standard), all ±3 dB. Signal-to-noise ratios are typically 60 dB with Dolby noise reduction and 52 dB without. Wow and flutter are 0.07 per cent (NAB weighted).

The Model 5420 employs a servo-controlled d.c. motor with complete disengagement of the tape-drive mechanism at the end of the cassette. There are five slider-type recording-level controls in total. Four of these (two for each channel) can be switched between microphone and line inputs. The fifth control is a master level adjustment that affects the other four in unison to set overall recording levels. Two of the input channels have pan pots associated with them, so that their signals can be distributed between the stereo channels laid down on the tape according to the desires of the operator. All these facilities can be used for recording cassettes with the 5420, and are available as a mixer to feed some external component.

Other special functions of the 5420 include a switchable peak-limiter circuit that prevents excessively high recording levels from reaching the tape and peak-indicator lights that augment the recording-level meters, which have VU characteristics. A memory-rewind feature works in conjunction with the three-digit index counter. The microphone jacks have an input impedance of 10,000 ohms and a sensitivity of 0.23 millivolt. The stereo-headphone jack is intended for flat phones. In their FM-decoding mode, the Dolby circuits introduce equalization to match the 25-microsecond pre-emphasis used in Dolby-dynode FM broadcasts. Dimensions of the deck are approximately 17¼ x 12¾ x 6½ inches. A special integral stand tilts the front panel 20 degrees forward to accommodate a seated operator. Price of the 5420: $399.95. The same machine without Dolby circuits is available as the Model 5400 for $349.95. Circle 115 on reader service card

Pioneer RT-2022 Open-reel Tape Deck

The new RT-2022 is Pioneer's most advanced tape deck, featuring replaceable head assemblies (half-track stereo, quarter-track stereo, or, with an optional second set of electronics, quarter-track four-channel). Other features include track synchronization on all channels and recording bias and equalization fully adjustable at the front panel. The basic transport is three-head, three-motor, two-speed (15 and 7½ ips) design with half-track stereo heads provided as standard equipment. Reel sizes up to 10½ inches are accommodated. Transport functions are solenoid switched through light-touch pushbuttons; there is also a lever-operated pause control and a cueing system that permits the tape to be heard as the reels are rotated by hand (to locate editing spots). Alignment adjustments for the record and playback heads are located right on the head cover. Just below are the bias and equalization adjustments plus a test-tone generator that provides a choice of 1,000- or 10,000-Hz frequencies, and knobs that adjust the level of the test tone in up to four channels. A clear plastic plate protects these controls from unauthorized handling.

The electronics of the RT-2022 are in a separate module that clamps to the bottom of the transport. The module has two large recording-level meters (calibrated from −40 to +6 dB), separate recording-level controls for left and right microphone and line inputs, and concentric output-level controls for the two channels. Front-panel phone jacks accept the microphone inputs, and the rear-panel line inputs and outputs are also duplicated on the front panel. Pushbuttons for the two channels reduce the sensitivity of the microphone inputs by 20 dB to prevent overload with loud input signals. Recording-mode switches have positions for recording, playback, and playback via the recording-head gap for track synchronization.

With standard tape, frequency response of the RT-2022 is 30 to 22,000 Hz ±3 dB at 15 ips, and 40 to 20,000 Hz ±3 dB at 7½ ips. The signal-to-noise ratio exceeds 57 dB, and wow and flutter are under 0.04 and 0.08 per cent (weighted rms) for the two speeds. Distortion is under 1 per cent for a 0 dB recording level at 1,000 Hz. The microphone inputs will accept microphone impedances ranging from 600 to 50,000 ohms. The headphone jack is designed for phones with impedances of 4 to 16 ohms. The transport section of the RT-2022 has dimensions of about 18⅞ x 16¼ x 8¼ inches. The electronics section measures about 18⅞ x 5⅞ x 8¼ inches.

Price of the ensemble, with half-track stereo heads: approximately $1,250. An optional quarter-track head assembly for two- or four-channel operation costs approximately $125. An additional electronics module for four-channel operation is approximately $250, and a remote-control unit duplicating the transport controls is approximately $75.

Circle 116 on reader service card

3M CTR-3 Eight-track Cartridge Deck

A truly de luxe stereo eight-track cartridge record/playback deck is now available from the CTR division of the 3M Company. Designated the CTR-3, the machine has solenoid-switched transport controls with mode-indicator lights on all the light-touch push keys. Dolby-B noise-reduction circuits can process recording and playback signals, decode "straight-through" Dolby-dynode FM broadcasts, or record and decode such broadcasts simultaneously. Bias and equalization of the CTR-3 is adjustable for both standard eight-track cartridges and the Scotch "Classic" high-performance cartridge; a tape-select switch chooses the right characteristics for each. Other features include a cueing function that rapidly locates the beginning of a cartridge and a REPEAT switch that can be set so as to repeat one or all programs on a cartridge indefinitely. A switchable peak limiter sets the recording levels reaching the tape to values below what would cause severe overload. The built-in tape counter reads out in minutes and seconds.

The CTR-3's transport has a fast-forward that is five times the normal 3½ ips playing speed. Wow and flutter are 0.1 per cent (weighted rms). An automatic shut-off acts to disengage the tape fully from the transport in both recording and playback at the end of a cartridge. There are separate recording-level controls for each channel and two large recording-level meters. Frequency response is 30 to 15,000 Hz with Scotch Classic tape (30 to 12,000 Hz with "standard" tape), and playback distortion is under 1 per cent for a recording level of 0 dB. The signal-to-noise ratio exceeds 60 dB with the Dolby circuits, 50 dB without. Microphone inputs have an impedance of 5,000 ohms and a sensitivity of 0.25 millivolt. The stereo headphone jack will drive either high- or low-impedance phones.

(Continued on page 18)
With an Empire wide response cartridge.

A lot of people have started "trackin’" with Empire cartridges for more or less the same reasons.

**More separation:** "Separation, measured between right and left channels at a frequency of 1 kHz, did indeed measure 35 dB (rather remarkable for any cartridge)." *FM Guide, The Feldman Lab Report.*

**Less distortion:** "...the Empire 4000D/III produced the flattest overall response yet measured from a CD-4 cartridge—with within ±2 dB from 1,000 to 50,000 Hz." *Stereo Review.*

**More versatile:** "Not only does the 4000D/III provide excellent sound in both stereo and quadriphonic reproduction, but we had no difficulty whatever getting satisfactory quad playback through any demodulator or with any turntable of appropriate quality at our disposal!" *High Fidelity.*

**Less tracking force:** "The Empire 4000D/III has a surprisingly low tracking force in the $\frac{1}{4}$ gram to $\frac{1}{4}$ gram region. This is surprising because other cartridges, and I mean 4 channel types, seem to hover around the 2 gram class." *Modern Hi Fi & Stereo Guide.*

For the complete test reviews from these major audio magazines and a free catalogue, write: Empire Scientific Corp., Garden City, N.Y. 11530. Mfd. U.S.A.

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### Choose the Cartridge Designed to Play Best in Your System

<table>
<thead>
<tr>
<th>Plays 4 Channel Discrete (CD4)</th>
<th>Plays 2 Channel Stereo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plays All 4 Channel Matrix Systems (SQ, QS, RM)</td>
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</tbody>
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</tr>
</thead>
<tbody>
<tr>
<td>Frequency Response in Hz</td>
<td>5-50,000</td>
<td>5-45,000</td>
<td>10-40,000</td>
<td>5-35,000</td>
<td>6-35,000</td>
<td>8-32,000</td>
<td>10-30,000</td>
</tr>
<tr>
<td>Output Voltage per Channel at 3.54 cm/sec groove velocity</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Channel Separation</td>
<td>more than 35dB</td>
<td>more than 35dB</td>
<td>35dB</td>
<td>35dB</td>
<td>35dB</td>
<td>30dB</td>
<td>30dB</td>
</tr>
<tr>
<td>Tracking Force in Grams</td>
<td>1/4 to 1 1/4</td>
<td>1/4 to 1 1/2</td>
<td>3/4 to 1 1/2</td>
<td>1/2 to 1 1/2</td>
<td>3/4 to 1 1/2</td>
<td>1 to 1 1/4</td>
<td>1 to 3</td>
</tr>
<tr>
<td>Stylus Tip</td>
<td>miniature nude diamond with 1 mil tracing radius</td>
<td>miniature nude diamond with 1 mil tracing radius</td>
<td>miniature nude diamond with 1 mil tracing radius</td>
<td>nude elliptical diamond 2 x 7 mil</td>
<td>nude elliptical diamond 2 x 7 mil</td>
<td>nude elliptical diamond 2 x 7 mil</td>
<td>elliptical diamond 3 x 7 mil</td>
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<tr>
<td>For Use In</td>
<td>turntable only</td>
<td>turntable only</td>
<td>turntable or changer</td>
<td>turntable or changer</td>
<td>turntable or changer</td>
<td>turntable or changer</td>
<td>turntable or changer</td>
</tr>
</tbody>
</table>

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CIRCLE NO. 21 ON READER SERVICE CARD
The attitude is consistent.

High fidelity engineering, to justify its name, has one goal: to reproduce music in the listening room with unqualified accuracy. Undistorted. Undiminished.

At Harman Kardon, we explore new technical directions not solely for their inherent challenge, but as methods of predicting and improving music quality.

Specifications are supposed to serve the function of predicting performance. Yet two competitive instruments with exactly the same set of conventional specifications often sound vastly different. Obviously, the reasons for this difference lie elsewhere. Conventional specifications are necessary. Necessary, but not sufficient.

Our 730 receiver meets specifications equaling or surpassing those of the finest individual component units. Yet it achieves a quality of transcendent realism which these specifications alone cannot explain.

To predict musical accuracy, we have found it necessary to go beyond conventional specifications. We test, rigidly, for square wave response. We monitor, strictly, slew rate and rise time. These tests account for the sound quality of the 730—not in place of conventional specifications, but beyond them.

The 730 goes beyond the conventional in other ways. It is driven by two complete, discretely separate power supplies, one for each channel. Even when music is extraordinarily dynamic, the energy drawn by one channel will in no way affect the other. The music surges full. Unconstrained.

Any fine tuner measures signal strength. The 730 incorporates a patented system which measures not strength, but signal-to-noise ratio. As a result, it can be tuned to the precise point where the signal is purest for listening or recording.

Equally important, the twin-powered 730 has all the basic design elements that identify it as a Harman Kardon instrument: wide bandwidth, phase linearity, ease of operation and a wide range of input and output elections.

All of this suggests further discussion. If you are interested in such an exploration, please write us (directly, since we imagine you are impatient with coupons and "reader service" cards, and so are we). We'll certainly write back, enclosing a brochure also unconventional in its detail.

Just address: The 730 People, Harman Kardon, 55 Ames Court, Plainview, New York 11803.
The expression is new.

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Output</strong></td>
<td>40 Watts Min. RMS per channel both channels driven into 8 ohms from 20Hz to 20kHz, with &lt;0.1% THD.</td>
</tr>
<tr>
<td><strong>Power Bandwidth</strong></td>
<td>From 10Hz to 10kHz at &lt;0.1% THD. 8 ohms. 1 kHz to 20kHz, both channels driven simultaneously into 8 ohms.</td>
</tr>
<tr>
<td><strong>Frequency Response</strong></td>
<td>20-20kHz ±0.5 dB</td>
</tr>
<tr>
<td><strong>System Rise Time</strong></td>
<td>1.5sec</td>
</tr>
<tr>
<td><strong>System Square Wave Tilt</strong></td>
<td>&lt;5%</td>
</tr>
<tr>
<td><strong>Total Harmonic Distortion</strong></td>
<td>&lt;0.12% from 250 mV to 40 watts RMS, both channels driven simultaneously into 8 ohms. 20Hz to 20kHz.</td>
</tr>
<tr>
<td><strong>Intermodulation Distortion</strong> (40 watts—SIMPE)</td>
<td>&lt;0.15% from 250 mV to 40 watts RMS, both channels driven simultaneously into 8 ohms. 20Hz to 20kHz.</td>
</tr>
<tr>
<td><strong>System Hum and Noise</strong></td>
<td>Better than 80 dB below rated output (unweighted)</td>
</tr>
<tr>
<td><strong>Damping Factor (1kHz @ 1 watt)</strong></td>
<td>1.2V</td>
</tr>
<tr>
<td><strong>Power Amplifier Input Sensitivity</strong></td>
<td>33 kilohms</td>
</tr>
<tr>
<td><strong>Power Amplifier Input Impedance</strong></td>
<td>1.5V</td>
</tr>
<tr>
<td><strong>Power Amplifier S/N (40 watts)</strong></td>
<td>&gt;90 dB</td>
</tr>
<tr>
<td><strong>Power Amplifier Square Wave Rise Time</strong></td>
<td>1.5sec</td>
</tr>
<tr>
<td><strong>Preamp Input Sensitivity</strong> a. Aux</td>
<td>&gt;150 mV</td>
</tr>
<tr>
<td></td>
<td>&gt;150 mV</td>
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<tr>
<td></td>
<td>&gt;25 mV</td>
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<tr>
<td><strong>Preamp Input Impedance</strong> a. Aux</td>
<td>30 kilohms</td>
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<tr>
<td></td>
<td>30 kilohms</td>
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<tr>
<td></td>
<td>47 kilohms</td>
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<tr>
<td><strong>Preamp Input S/N</strong> a. Aux</td>
<td>&gt;-75 dB</td>
</tr>
<tr>
<td></td>
<td>&gt;-75 dB</td>
</tr>
<tr>
<td></td>
<td>&gt;-67 dB</td>
</tr>
<tr>
<td><strong>Preamp Harmonic Distortion</strong></td>
<td>&lt;0.15%</td>
</tr>
<tr>
<td><strong>Crosstalk</strong> a. Aux</td>
<td>&lt;47 dB</td>
</tr>
<tr>
<td></td>
<td>&lt;47 dB</td>
</tr>
<tr>
<td></td>
<td>&lt;37 dB</td>
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</tbody>
</table>

| Preamp Output Impedance                          | 600 ohms                                                               |
| RIAA Equalization                                | ±1.0 dB                                                                |
| Tone Control Action                              | ±12 dB                                                                 |
| b. 1kHz                                         | ±12 dB                                                                 |
| Contour Effect (50Hz)                            | ±10 dB                                                                 |
| High Cut Filter (10kHz)                          | ±10 dB                                                                 |
| Low Cut Filter (50Hz)                            | ±6 dB                                                                  |
| FM Sensitivity a. RFI                            | 1.9µV                                                                  |
| b. 50µV                                         | 3.5V                                                                   |
| c. 50 µV (stereo)                               | 3.5V                                                                   |
| Ultimate S/N                                     | ±70 dB                                                                 |
| Capture Ratio                                    | 2 dB                                                                   |
| Image Rejection                                  | ±60 dB                                                                 |
| Spurious Responses Rejection                     | ±80 dB                                                                 |
| IF Rejection                                     | ±90 dB                                                                 |
| AM Rejection                                     | ±60 dB                                                                 |
| Alternate Channel Selectivity                    | ±60 dB                                                                 |
| Multiplex Separation (1kHz)                      | ±40 dB                                                                 |
| FM Harmonic Distortion (1kHz)                    | ±0.4%                                                                  |
| a. Mono                                         | ±0.4%                                                                  |
| b. Stereo                                       | ±0.4%                                                                  |
| Pilot Suppression                                | ±58 dB                                                                 |
| De-Emphasis                                      | 75%sec                                                                |
| Mute Level                                       | Variable                                                              |
| Mute Suppression                                 | -65 dB                                                                 |
| Stereo Indicator Threshold (in dB相对于电平) | 3%                                                                     |
| AM Sensitivity                                   | ±350µV/µm                                                              |
| AM Signal for 1 watt Output                      | ±150µV/µm                                                              |
| AM Selectivity                                   | ±35 dB                                                                 |
| Alternate Channel Selectivity                    | ±55 dB                                                                 |
| Image Reaction                                   | ±75 dB                                                                 |
| IF Rejection                                     | ±60 dB                                                                 |
| Hum                                             | -40 dB                                                                 |
JVC Model CD-1669-2 Stereo Cassette Deck

The CD-1669 cassette deck from JVC has been updated to incorporate the company's recently developed "Sen-Alloy" record-playback head. The Sen-Alloy (or Sendust Alloy) material is said to virtually equal the hardness and wear resistance of the better types of ferrite and to exceed permalloy in most important magnetic characteristics.

The CD-1669-2 is a two-motor machine employing a d.c. motor for tape spooling and a synchronous unit for the capstan. Other features include JVC's ANRS noise reduction system (similar in principle and effect to the Dolby B-Type system) and recording-level meters augmented by peak-indicating lights for the two channels. The transport is solenoid switched by means of non-latching light-touch pushbuttons. Tape bias and equalization switches have positions for chromium-dioxide, high-performance, and "standard" tapes. The more prominent controls include slider adjustments for recording and playback levels, full calibration facilities for the ANRS, and a memory-rewind feature working in conjunction with the three-digit index counter. The machine has a pause control and a stereo headphone jack.

Frequency response is 30 to 16,000 Hz ± 3 dB for chromium-dioxide tape, with a signal-to-noise ratio of 54 dB without ANRS. The ANRS improves the signal-to-noise ratio by as much as 10 dB above 5,000 Hz. Wow and flutter are 0.07 per cent (7½ ips) and 0.1 per cent (3½ ips). Harmonic distortion is less than 1 per cent for a level corresponding to 0 VU on the recording-level meters. The meters have standard VU characteristics. The microphone jacks are suitable for microphones with impedances ranging from 600 to 10,000 ohms. The stereo headphone jacks are intended for 8-ohm phones. Overall, the A-2300SD measures about 17¼ x 15¼ x 8¼ inches, including its walnut side panels. Weight is 39½ pounds. Price: less than $750.

Harman/Kardon HK2000 Stereo Cassette Deck

The HK2000 cassette deck from Harman/Kardon incorporates the excellent electronics of the company's previous Model 1000 in a new transport with wow and flutter of 0.07 per cent or less. The transport also has a memory-rewind feature that works in conjunction with the three-digit index counter. The pushbutton transport controls are conventionally set up, and they include a pause function. Signal levels are adjusted by sliders for recording and playback, with separate knob controls for the microphone inputs (which may be mixed with other inputs).

The HK2000 has built-in Dolby B-type noise-reduction circuits that may be calibrated from the front panel with the aid of recording and playback calibration controls and a built-in Dolby-level test tone. The recording-level meters are peak-indicating devices augmented by an LED overload-warning light. A single switch changes bias and equalization from "standard" to chromium-dioxide settings while another switch disables the multiplex filter when the deck is not recording from stereo FM sources.

Frequency response is 30 to 17,000 Hz with chromium-dioxide tape (40 to 12,500 Hz ± 2 dB with low-noise iron-oxide tape), and the signal-to-noise ratio is 58 dB with the Dolby circuits operating. Harmonic distortion is under 1.5 per cent for recording levels of -2 dB on the machine's meters. The deck's output level is approximately 1.3 volts for a 0-dB recorded level. The auxiliary input will accommodate high- and low-level signals, and it presents input impedances of 50,000 and 30,000 ohms, respectively. The headphone jack on the control panel is designed to drive 8-ohm phones. The size of the HK2000 is 15¼ x 10¼ x 5¼ inches. Price: $399.95.
They're only 3 3/4 inches thin. They range from only $129 to $499. And they're the only true 360° omnidirectional speakers you can buy; you hear the same wide-response, distortion-free stereo sound wherever you sit.

That means anywhere. Horizontally, vertically or diagonally. In back, in front, to the sides, above or below them.

Furthermore, these are speakers without enclosures, without baffles, without cones. And without equal.

It appears that Prof. Jose Bertagni's 22 new U.S. and foreign patents have created a rather dramatic new technology.

Like everyone else, you probably won't believe it when you see them. So hear them.

The New B.E.S. Geostatic™ Speakers
Hear them. The excitement is growing.

Bertagni Electroacoustic Systems
345 Fischer Street, Costa Mesa, California 92626
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Don’t envy the man with skills in electronics... become one!

If you had to drop everything and go off to school to learn new skills in electronics, there’s a chance you might not do it. But now the programs you follow at home offer the same educational quality and content as if you had taken them at any of our eight resident schools!

So why not do it at home? You’ll have the satisfaction of knowing you’re getting the best Bell & Howell Schools has to offer—without giving up your job, your paycheck, and your way of life! And this is just part of our major breakthrough in learning electronics at home.

Just look at what Bell & Howell Schools can offer you now.

First, you’ll master the Fundamentals through a program that includes a fascinating series of experiments you perform yourself. Not until then are you asked to pick your electronics specialty. And what a choice you’ll have!

You might decide to get right into Communications Electronics and explore the compelling area of two-way radio. Or perhaps you’ll choose the far-reaching field of Digital/Industrial Electronics. On the other hand, if you prefer to learn Home Entertainment Electronics first, you’ll have your pick of two exciting programs to tackle!

I. AUDIO ELECTRONICS

The first self-instruction program including 4-channel technology! Explore this totally unique sound of the 70’s as you experiment with testing equipment and learn with a sound center featuring Bell & Howell’s superb quadraphonic equipment!†

Learn about 4-channel sound—without a doubt the most impressive technical advancement in sound realism in years. A development by which separately recorded channels literally wrap a room in sound.

And now, for the first time, you can also discover this latest achievement in audio electronics with a fascinating self-instruction program that explores the whole area of audio technology including 4-channel sound reproduction! A program that could lead you in exciting new directions with professional skills and technical know-how.

You actually experiment with Bell & Howell’s high-performance 4-channel audio center... including amplifier and FM/FM-Stereo tuner.

Understanding today’s audio technology requires practical experience with high-caliber equipment. And with the Bell & Howell amplifier and tuner, you’ve got the technological tools you need to develop occupational skills and know-how.

The 4-channel amp gives you the circuitry you need to signal-trace low-level circuits, troubleshoot high-power amplifier stages, check the operation of tone control circuits, and investigate full logic, 4-channel decoding and front-to-back separation.

The tuner you build has both superior performance specs and state-of-the-art features such as all solid state, FET front end for superior sensitivity, crystal IF filters for wide bandwidth, and a superior stereo multiplex circuit for excellent stereo separation.

†Cabins and speakers available at extra cost.
You cover the full range of audio electronic principles.

When you finish, you’ll have the ability to work on the full range of audio equipment such as tape recorders, cassette players, FM antennas, and commercial sound systems.

Get complete information on this exciting new program by mailing the card — today!

II. TV ELECTRONICS

Gain new skills in Home Entertainment Electronics in an annual self-instruction program.

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We try to give more personal attention than any other self-instruction program.

Should you ever have a question, we’ll be there to help. While many schools make you mail in your questions, we have a Toll-Free Phone-In Assistance Service for questions at various times through school.

I want all the facts on the Bell & Howell Schools’ learn-at-home program in electronics. Please send me full information.

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*Sennheiser Metropolitan Corporation

10 West 37th Street, New York 10018 (212) 239-0190

Manufacturing Plant: Bensdorf/Handau, West Germany
CIRCLE NO. 40 ON READER SERVICE CARD

BUYING A TAPE RECORDER

Tape recorders are the most complex components likely to be found in a home audio system, but there is nothing very complex about buying one once you have decided what you want it for. There are three formats to choose from: open-reel, eight-track cartridge, and cassette. The cassette's popularity dominates for the ordinary dubbing (copying off the air, from a disc, or from another tape) and playback activities of the casual recordist. Its convenience is undeniable, and through a technical tour de force on the part of many machine and tape manufacturers it has been turned into a medium of astonishingly high quality.

Today, open-reel is usually thought of as the format for serious live recording. True, there are some who insist that a good cassette deck is fully up to this kind of service, and they even have some live-performance tapes to back them up. But it is still a Procrustean fit at best, and for the type of recording discussed in John Woram's feature article this month, as well as after-the-fact tape editing, the cassette is hopelessly unsuited.

Certainly there is nothing to prevent a non-live-recording from choosing an open-reel machine, and if he does he will get the bonus of being able to play the very high-quality prerecorded stereo and four-channel tapes offered by such small outfits as Sonar and Quadratrak. But he will find the pickings in other prerecorded material very slim, and soon the bother of tape threading and handling that an open-reel deck entails is likely to discourage him from using it much.

Eight-track can be adequate for playback use, but it is an awkward format for recording, the ingenuity of several innovations on eight-track recorders notwithstanding. The tape cannot be rewound, the fast-forward mode is not very fast, and the periodic interruptions as tracks are switched can be very frustrating. Those who have existing libraries of eight-track tapes, or who want to record material for their car's tape player, might check out eight-track. Also, it's worth noting that this format boasts the widest selection of prerecorded four-channel material.

The specifications for tape machines will not be unfamiliar to those who have researched record players and other audio components. However, there are a few points that might be highlighted:

A tape recorder really has two frequency responses—a record-playback response and a playback-only response. The playback-only response (rarely specified by manufacturers) reflects the machine's compatibility with tapes made on other machines. However, since most of these tapes are commercially prerecorded products notoriously mediocre in frequency response to begin with, precision in playback response is not of overriding importance to most users. Record-playback response is, but the specification is meaningless unless it is referred to a specific brand and type of tape. And the recording level used should also be indicated or implied.

Signal-to-noise ratios must also be referred to a specific tape type. Furthermore, the distortion imposed on the signal during the noise measurement should be noted. What good is an excellent signal-to-noise ratio if the signal has been intolerably distorted by a too-high recording level?

There is no need to put up with audible wow (low-rate speed variations) and flutter (high-rate variations) in a modern tape machine; even most cassette decks have flutter figures close to 0.1 per cent or below, and this is perfectly acceptable to most listeners. (Incidentally, slow piano music, recorded and played back, provides a fine listening test for flutter.) Wow should never be heard from a tape deck. In the case of eight-track tape machines, some of which "wow" terribly, the ailment is usually traceable to the cartridge itself. If you detect any wow and the cause is not trivial, it's best to beware of the model concerned.

Stereo Review
While everyone is still trying to make V-FETS at any price, we now make them at a lower price.

When Sony introduced the first amplifiers with vertical field-effect transistors last year, the reactions were nothing short of incredible. Consumers wrote in asking where they could hear the equipment. Audiophiles demanded to know where they could buy it. And our competitors wanted to know how they could make it.

In fact, the only problem was that more people couldn't afford the $1300 price.

So, we at Sony decided to do something about it. And what we've come up with is our new $400 V-FET integrated amplifier, the TA-4650. The TA-4650 is quite an advanced little piece of equipment. Because the V-FET isn't just another combination of gadgets, or a souped-up version of the same old thing. It's a completely new device that combines the good points of both bi-polar transistors and triode vacuum tubes. Without suffering the drawbacks of either. Because it's made with V-FETS, the TA-4650 gives you a new level of highly defined triode sound; along with the efficiency and stability found only in solid state devices. The TA-4650 delivers 30 watts per channel, minimum RMS at 8 ohms, 20Hz-20kHz with no more than 0.1% total harmonic distortion.

It has a direct coupled power amplifier stage. As well as direct coupled FET amplifiers in the tone control and buffer stages.

Its bass and treble controls have a turnover frequency selector that starts at 250Hz/500Hz for bass and 2.5kHz/5kHz for treble.

Its volume control is equipped with a switch for 20dB muting. And it has a level control memory device so volume can be set at any predetermined point.

But as good as our new V-FET amplifier is, we're just as proud of the components we make to go along with it.

Our ST-4950 AM/FM stereo tuner, for example, has a MOS FET front end, uni-phase solid state filters and IC's in IF stages. This allows an FM capture ratio of only 1.0dB, selectivity of 80dB and an S/N ratio of 70dB. The ST-4950 also has a phase-locked loop (PLL) MPX section. Which means you get excellent stereo separation and low distortion.

Of course, if you're going around looking for a turntable, by all means take a look at our PS-4750 (cartridge sold separately). It has a direct drive servo motor with a wow and flutter rating of only .03%.

Its base and platter are made from molded compound instead of metal, so resonance has been greatly reduced. It also has air-damped cushions, which compensate for warpness in records (again reducing resonance). The end result is a much cleaner sound.

It's no accident that Sony makes the world's first commercially available V-FET equipment. Or that we have matching components good enough to complete your system.

You see, we've got more solid state audio experience than anyone else. We've been at it for twenty years. For proof just stop by your Sony dealer. And use your ears.

SONY

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The Dual tonearm.
Some of the ways that “precision makes the difference.”

The essential beauty of a tonearm is not in its appearance, but in the performance of its critical role in the interaction of stylus and record. The conversion of groove modulations into music—as well as the life of one’s records—is significantly influenced by every aspect of tonearm design: geometry, balance, mass, resonance, bearing friction and the application of stylus pressure and anti-skating.

Serious music lovers know this. And some who are now Dual owners tell us they wish they had understood more about tonearms hundreds of dollars in ruined records earlier.

If you are uncertain about the quality of your present tonearm, here are some guidelines to consider. They are the design principles that allow every Dual tonearm—even on Dual’s least expensive model—to produce optimum performance from today’s finest cartridges and maximum longevity from all records.

Why a straight line is the preferred shape

The effective length of any tonearm is the distance between the pivot and the stylus tip. A straight line—the shortest distance between these two points—achieves maximum rigidity and lowest mass. Both highly desirable characteristics.

Tonearms whose shape deviates from the straight and narrow may appear interesting, but their unnecessary mass and hence increased resonance can only detract from the quality of music reproduction.

Why stylus force must be applied perpendicular to record.

Stylus force should be applied in such a way that there is equal pressure on each groove wall. This balanced pressure should then be maintained throughout play, independent of groove velocity, location, or turntable leveling. Further, tracking force should be constant even under (all-too-frequent) record-warp conditions.

All these requirements are met by Dual’s technique for applying stylus force: a long coiled spring centered around the vertical pivot. With this system, the tonearm tracks flawlessly even under such extreme conditions as the chassis being tilted 45° or more.

Unique counterbalance of Dual CS701 houses two separately tuned anti-resonance filters which absorb resonant energy in the frequency ranges of the tonearm/cartridge system and the chassis to minimize acoustical feedback.
Tonearm of Dual 1249 pivots in four-point gyroscopic gimbal, suspended within a rigid frame. Each gimbal is hand-assembled, and special gauges assure that each will conform to Dual's stringent specifications. Other Dual models with gimbal-mounted tonearms: 1228, 510, 601 and 701.

Dual's anti-skating system also contributes significantly to maintaining equal stylus pressure on both groove walls. In addition to the three separate precise calibrations for conical, elliptical and CD-4 styli, there is automatic adjustment during play for the inherent change in skating force that occurs as the stylus moves toward the record center.

Why bearing friction should be both low and consistent.

Dual uses the best (and most costly) way to manufacture precision low-friction bearings. The metal is first hardened, then honed; a process which produces microscopically smooth surfaces. All pivots are hand-assembled and individually checked with gauges specially designed by Dual. The extremely low bearing friction thus achieved is compatible with the finest cartridges, which are usually designed for ultra-light tracking. Further, the high standards of production consistency in unit after unit assure highly accurate stylus pressure and anti-skating calibrations.

Dual owners who know the difference

These are a few of the reasons why serious music lovers—record reviewers, hi-fi magazine editors and their readers—own more Duals than any other turntable. This may be all you need to know in order to select a Dual. But which Dual?

Until recently, all Dual turntables were fully automatic and could be used in both single-play and multi-play. There are now four such models. Three other Duals are single-play only (two fully automatic, one semi-automatic). Dual also employs all three types of drive systems: belt, rim, or direct.

There's no need to decide on a specific Dual model right now. The best time and place for that is when you're at your United Audio dealer, where you can have demonstrated all the differences that Dual precision does indeed make.

The Dual 1225.
Fully automatic, single-play/multi-play. Viscous damped cue-control, pitch-control 10% platter, less than $140.00, less base. Dual 1226, with cast platter, rotating single-play spindle, less than $170.00. Dual 1228 with gimballted tonearm, synchronous motor, illuminated strobe, variable tracking angle, less than $200.00.

The Dual 1249.
Fully automatic, single-play/multi-play. Belt-drive, 12" dynamically-balanced platter, less than $280.00, less base. Full-size belt-drive models include: Dual 510, semi-automatic, less than $200.00. Dual 601, fully-automatic, less than $250.00. (Dual CS601, with base and cover, less than $270.00)

The Dual CS701.
Fully automatic start and stop, single-play. D.C. brushless, electronic direct drive motor, tuned anti-resonance filters. Electronic pitch-control (8%) for each speed (33 1/3 and 45 rpm) with illuminated strobe, less than $400, including base and cover.

United Audio Products, 120 So. Columbus Ave., Mt. Vernon, N.Y. 10553
Exclusive U.S. Distributor Agency for Dual

CIRCLE NO. 50 ON READER SERVICE CARD
MEASURE FOR MEASURE

By CRAIG STARK

Good editing (on paper, not tape) has, from time to time, saved this writer (and others) from all manner of verbal follies, but once in a while the editing/type-setting process works in the opposite direction. I must correct, then, an error that appeared in an earlier column devoted to the problems of evaluating cassettes. In warning against the temptation to rely exclusively on meter readings as compared with what we actually hear when recording and playing back music, I discussed the case of two tapes, one of which had very high intermodulation distortion while the other measured far lower. What I wrote at the time was that "Listening to music recorded on the tapes may not show up even that dramatic difference..." which was quite true. Somewhere in the editorial processing my cautious "may not" unfortunately became "certainly did not," which is not quite true. The degree of audibility in music of what shows up as 1M distortion on test tones is a matter I still have under investigation.

This leads naturally, however, to the subject of the role of ears and instruments in testing generally. One persistent school of thought denounces the significance of objective measurements altogether, boldly proclaiming that the ear alone is both the necessary and the sufficient tool of discernment. The simplicity of this claim is appealing: ears come free, for one thing, while both a lot of money and "establishment" type learning go into a laboratory test facility. Moreover, in the end, it is unquestionably our ears, not our instrumentation, that must be satisfied with the recording and reproduction of music. Considering the reproduction quality that most people seem to be satisfied with, one might judge that nature uses a goodly amount of tin in the making of some of her ears—except, of course, in the case of Guru X's ears, for he can clearly perceive differences between the Thingummy MK VI and Whatstik Z-2500A when lab tests say the measured performance of one is just like that of the other.

Now, since I operate an independent test lab professionally, my natural home is in the other camp—the meter men, you might call us. For one thing, I happen to find a generally good correlation between what I hear and what I measure—at least up to the point where instruments become far more discriminating than even the best of human ears. (No one, I suspect, would ever claim to be able to hear the difference between 0.001% and 0.005% second harmonic distortion, for example.) But, like the eye, the ear can be fooled; in a broad way, that's what the science of psychoacoustics is all about. On the other hand, I'm quite prepared to believe that the Golden Ear may sometimes be right and be hearing a real, albeit subtle, difference. Our measurements have not yet been able to quantify or even identify, provided only that more than one person claims to hear the fault. What I'm convinced of, however, is that we must learn how to measure "it" before we're likely to discover how to fix "it." Indeed, it's probable that it has only become audible now because engineers have been shipping away at previously known, repeatedly measurable imperfections that formerly masked it. Tape modulation noise is a greater problem today than in years past not because tapes have gotten worse, but because other sources of tape noise have gotten better, largely through the efforts of the "meter men." Most consumers don't have a lab, however, and particularly where tape is concerned, much of what is measureable—and audible—depends on machine-tape interaction and on internal adjustments you can't control. In that circumstance, you must experiment and be guided by ear. All I can prophesy is that if you select from among the products that test well objectively, the probability of your finding satisfaction is greater. But if you must have certainty, you'll have to find a Guru. And (to quote Mr. Dylan) it ain't me, babe.
You make a tape with time and thought. Carefully chosen selections recorded in the sequence that most pleases you. The musical coherence and perception is yours, a personal expression. And when the time is right to share that experience with someone you care for, having to stop and turn the tape over can break the mood you worked to create. Interruptions like that don't happen with the A-4300. You can enjoy continuous music on both sides of a tape with the automatic reverse function. And with automatic repeat, a favorite tape will play as long as you like. Whether you want the music up front or in the background, the A-4300 can give you solid music for the better part of an evening.

when you don't want the music to stop

TEAC A-4300
You don’t need to be a physicist to appreciate the difference between all other loudspeakers and the new ESS Heil air-motion transformer bookshelf speaker system.

There are many bookshelf speaker systems in the market today and it’s often difficult to tell them apart. Grille covers or cabinets may differ, but underneath the differences are very few—merely cosmetic. No matter what type of speaker is used, they all move air in the same old way. Some systems even share the same components, making the differences even fewer.

Not the ESS amt 1a bookshelf. Take off the grille. You can see the difference. Listen to the speaker. You can hear the difference. The difference is the Heil air-motion transformer. Instead of merely pushing air, the Heil air-motion transformer actually accelerates it by squeezing it, thus effecting the most efficient conversion of an electrical signal to air motion of any device known. Five times faster. Result: superior sound reproduction.

But hearing is believing. Listen to the ESS amt 1a bookshelf. Compare this new Heil air-motion transformer system to any conventional loudspeaker.

Your ears will appreciate the difference. Call toll free for the ESS dealer nearest you.

(800) 447-4700
(In Illinois call 800-322-4400)
A DECADE OF TAPE PROGRESS:
Given the regular announcements of new developments in tapes and recorders, it is not always easy to attain a proper long-term perspective on the rapidly changing tape scene. To see where we are and where we have come from, I stepped back a bit (temporally speaking) and examined my test files on the tape recorders I reviewed a decade ago. In 1966 there were no stereo cassette recorders (the monophonic Philips Carry-Corder had only recently made its appearance) and no one dreamed that the cassette medium would ever even come close to attaining high-fidelity status. That year, I tested about a dozen open-reel machines, ranging from a $125 battery-operated portable (distinctly "lo-fi") to the $500 semi-pro Revox G-36. All of these machines have long since been supplanted, although most of the brand names are still with us.

When I tabulated the key performance measurements of these machines, several things became apparent. Most of them, like today's recorders, had very little wow (0.02 to 0.03 per cent), and their flutter measurements were between 0.04 and 0.11 per cent (averaging about 0.08 per cent). Unfortunately, in those days our signal-to-noise (S/N) measurements were referred only to the individual recorder's 0-dB meter readings instead of the level corresponding to 3 per cent playback distortion, but the readings averaged 46 to 47 dB, with little difference in performance between operation at 3½ and 7½ ips. Most of the recorders had a reasonably flat frequency response from 35 to 17,000 Hz at 7½ ips, and at 3½ ips the frequency response was about 40 to 11,500 Hz.

Apparently, most of these machines were capable of very adequate home recording performance. This is especially interesting in view of the fact that most of them were adjusted for the "standard" tape of that time, Scotch 111. A couple required improved tapes, such as the Scotch 203 for which the Revox G-36 was biased.

From our 1976 vantage point, it is plain that neither the demise of the open-reel tape recorder, predicted by some, nor its complete dominance, predicted by others, has come to pass. True, cassette machines dominate the home tape equipment market today, and there are a host of cassette recorders which can rival, or surpass, a good home open-reel deck of ten years ago in practically every aspect of their performance. Nevertheless, open-reel decks have moved up to a secure and unchallenged position for the serious recordist who cannot or will not make the compromises inherent in cassette recording.

A growing number of today's open-reel machines are four-channel types capable of making and playing four-channel recordings. However, this does not signify a resurgence of interest in quadraphonic taping, if ever such an interest existed. The major application for these recorders is for "building up" a stereo tape by successively recording one or two tracks at a time, in synchronism. To make this a relatively simple process, many of the four-channel decks are designed for synchronous recording, a portion of the recording head being used to play back a previously recorded track while one or more of the other sections of the same head are in the record mode.

Today's open-reel machines are quite expensive, in comparison with those of 1966. In those days one could buy a rather good single-motor, two-head recorder for $150 to $250 and a three-head machine for $300 to $400. The deluxe semipro machines, which had three motors and three heads, usually cost $500 to $600. In 1976, one can expect to pay almost $600 for the least expensive stereo recorder whose quality substantially surpasses that of a good cassette recorder, and prices of $1,000 to $2,000 or more are not uncommon for more advanced machines.

Although inflation is responsible for the major part of that price increase, substantial performance advances have affected costs as well. The best recorders of today do not have specifications strikingly better than their counterparts of yesteryear, but the average performance level has improved noticeably.

Today it is the rule, rather than the exception, for an open-reel tape recorder's frequency response at 3½ ips to closely approach, or even exceed, 20,000 Hz. Machines with a 25,000- to 30,000-Hz frequency response at 7½ ips are not at all uncommon, and a few are nudging the 50,000-Hz mark. Contrast this with the old maxim of "1,000 cps (now Hz) per inch per second of tape speed," which was universally accepted as a "natural law" in the late 1940's and early 1950's. (To translate: you could expect a top of 7,500 Hz at 7½ ips. 15,000 Hz at 15 ips.)

These dramatic improvements in tape-recorder frequency response and dynamic range are due largely to parallel developments of new tape heads and new tape formulations. Although these are completely separate items, usually designed by different people, they are functionally inseparable. A modern tape head, with its microscopically narrow gap, extreme hardness, and efficient magnetic structure, would be of little help if it were to be used with the old 111 tape formulation. To derive the max-
mum benefit from today's heads, the tape should have the improved homogeneity (which translates into low noise and fewer "drop-outs") and magnetic properties of the premium tapes available from a number of manufacturers. On the other hand, the use of one of today's top tapes would be of little help to someone trying to prod an older machine into a magnetic equivalent of the "sow's ear to silk purse" conversion. If the machine were rebiased and re-equalized, it might be improved, but not to the performance level of newer models.

When the tape and recorder are properly matched, the full impact of the decade's technical developments can be appreciated. The S/N of any good modern open-reel recorder is likely to be near 60 dBA (without a Dolby or other noise-reduction system) instead of the 45 dB typical of 1966's machines. Part of this result comes from advances in solid-state electronics, but the major credit belongs to the magnetic specialists who created the tape and the heads.

As I and others have stated on numerous occasions, the interdependence of tape and machine is almost total in the cassette medium. The open-reel enthusiast can experiment with different tapes and perhaps find worthwhile differences, but reasonable success is assured with most good-quality tapes. Not so with cassettes—some of the best tapes will deliver mediocre (or worse) performance in the best machines if the recorder's bias (and equalization, in some cases) are not matched to the tape's recording or playback requirements.

What about the next ten years? It would be foolhardy indeed to predict the nature of magnetic recording in the home in 1986. After all, literally no one in 1966 foresaw the impact of the cassette, even though it was already on the scene. There are, however, some very interesting possibilities, even if the odds on their becoming real are slim. The incredible advances in digital microcircuitry (especially in the calculator, watch, and computer fields) suggest that digital tape recording may become a commercial reality in time. It is a present-day reality, in fact, but not in a form suitable for use directly by the consumer. A digital recording offers, at least in principle, the possibility of reducing distortion and noise to predictable and negligible levels. It is, at present, extremely expensive by consumer product standards, but I recall that the first electronic calculators, bulky and crude compared with those sold today for as little as $10, cost $300 and more only five years ago. At the same time, digital watches were introduced for many hundreds of dollars, yet today one can be bought for under $50. Why not, then, a home digital tape recorder with fantastic (by current standards) performance at a price comparable to that of the better open-reel decks of 1976?

Digital recording requires more bandwidth than analog recording. The performance of some open-reel recorders is not too far from what would be required, but a quantum jump in cassette bandwidth would be needed to make high-quality digital recordings. Nothing is impossible, but I would be very much surprised to see this become a reality in the next few years. Remind me to re-read these words, and perhaps eat them, in 1986!

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**EQUIPMENT TEST REPORTS**

By Hirsch-Houck Laboratories

**Luxman L-100 Integrated Stereo Amplifier**

- The Lux audio components, long familiar to Japanese audiophiles, are now available in this country, and we have had the opportunity to evaluate their Model L-100 integrated stereo amplifier. The Luxman L-100 is rated to deliver 110 watts per channel into 8 ohms from 20 to 20,000 Hz, with no more than 0.05 per cent total harmonic distortion (THD).

- As befits one of the most expensive integrated amplifiers on the market, the L-100 combines exceptional flexibility with distinctive and tasteful styling. Across the center of the satint-finish front panel is a row of seven three-position lever switches. In normal operation, all are aligned horizontally in their center positions. The first switch (at the left) bypasses the tone-control circuits, which are inserted in the signal path when the switch is either up or down. When up, the switch inserts a fixed low-frequency boost (not to be confused with loudness compensation).

- The next two switches control the low- and high-cut filters, providing a choice of roll-offs at 10 or 70 Hz and 7,000 or 12,000 Hz, respectively. The switches that follow are mode selectors; the first feeds either left or right inputs to both speakers, and the other reverses the channels or parallels them for mono listening. The remaining switches control the tape-recording functions of the L-100. The first interconnects two tape decks for dubbing from either one to the other, while the other provides tape monitoring or playback from either recorder.

- The bass and treble tone controls, located to the left of the switch group, are detented to give ten positions of boost and ten of cut, with a definite center "flat" setting. Below each tone-control knob is a three-position turnover selector switch whose setting determines the frequency above (or below) which the tone-control effect begins. The bass turnover frequencies are 150, 300, and 600 Hz, while the treble frequencies are 1.5, 3, and 6 kHz. Depending on the choice of tone-control and turnover settings, and whether the low-frequency boost is used, several thousand different frequency-response curves are available (not including the effect of the filters).

- To the right of the switches is a continuously adjustable ATTENUATOR (a level control with a limited range). Concentric with it is a center-detented rotating lever that operates the BALANCE function. The two large knobs at opposite ends of the panel are the INPUT SELECTOR (on the left) and the VOLUME control.

- The available inputs include three high-level SOURCES (two AUX and a TUNER) and two magnetic PHONO inputs. The volume control, somewhat larger than the others, operates a step switch that changes volume in 2-dB steps over the uppermost 34-dB range, with larger steps of 3, 5, and ultimately 8 dB at the lower settings, and a final OFF position. Since the volume control is most effective in the range (Continued on page 36)
This is what happens every time you play a record.

Photographed at 200X magnification with 1.5 grams tracking force on an Empire 598 III turntable.

This is what happens after you apply Sound Guard.

Photographed at 200X magnification with 1.5 grams tracking force on an Empire 598 III turntable.
Introducing Sound Guard.

The first product ever that protects records against wear, without resulting loss in frequency response or fidelity.

Every time you play a record you destroy some of its sound. The culprit is friction. An inevitable result of a hard, diamond stylus tracking soft, vinyl grooves.

Under 200X magnification you can see the damage occur. Tiny shavings of vinyl curl off the record like metal off a lathe. You literally see sound being worn away. After repeated playings your ears begin to confirm what your eyes have seen.

Until now, no product could protect records against wear without interfering with sound fidelity.

An answer from outer space

From Ball Corporation research into dry lubricants for NASA's Orbiting Solar Observatories came a breakthrough in micro-coatings that can function for long periods under extreme conditions.

One derivative of this new technology is a microscopically thin, dry film that molecularly binds itself to vinyl. Developed into a record preservative this product is now known as Sound Guard.*

How Sound Guard works

Just spray Sound Guard on (it has a non-aerosol pump sprayer). Then buff it with the soft, durable velvet buffing pad provided in the kit.

Sound Guard puts an ultra-thin, dry film on the groove surfaces to substantially reduce wear. (It's self-limiting and may be applied repeatedly without buildup. The film thickness is less than 0.000005".) One bottle will protect about 20 LP's.

Sound Guard is dry—not wet and sticky like silicone-type products—so dust or dirt won’t accumulate on the stylus or in the grooves. And since it has an anti-stat built in, Sound Guard actually prevents records from attracting dust.

But does Sound Guard adversely affect frequency response or fidelity? For conclusive proof, we asked the most respected of the independent audio laboratories for an exhaustive evaluation. Their results were astounding!

Test results

1. The application of Sound Guard to a stereophonic or CD-4 quadraphonic disc does not in any way degrade audible frequency response.
2. Sound Guard increases the life of the records by significantly reducing record wear.
3. Sound Guard significantly retards increases in random noise content (surface noise) and total harmonic distortion caused by repeated playing.
4. Records treated with Sound Guard do not attract dust as readily as untreated discs.

Like it or your money back

We're understandably excited over this new product. Along with audio experts who've tested it, we believe Sound Guard is the long-awaited breakthrough in sound fidelity protection.

As of now, the only way you can buy Sound Guard is by ordering direct. Just fill in the coupon (or write: Sound Guard, P.O. Box 3300, Muncie, IN 47302) and enclose your check or money order payable to Sound Guard.

$5.99 for one Sound Guard kit plus $1.00 for postage and handling.

For two or more kits, pay $5.99 each and we'll pay postage and handling. If not satisfied return the unused portion and we'll refund your money or replace the product at your option.

Sound Guard keeps your good sounds sounding good.

Sound Guard
P.O. Box 3300, Muncie, IN 47302

Yes, I'm interested in Sound Guard.

☐ Please send me one Sound Guard kit. I am enclosing a check or money order for $6.99 ($5.99 plus $1.00 for postage and handling).

☐ Please send me ___ Sound Guard kits. I am enclosing a check or money order for _________ ($5.99 each kit-postage and handling free). Make check or money order payable to Sound Guard.

Name: ____________________________
Address: __________________________
City: ___________________________ State: ______ Zip: _________

(please print clearly)

*Sound Guard is Ball Corporation's trademark for its record preservative. Copyright ©Ball Corporation, 1976.
of its 2-dB steps, the attenuator is used to adjust the program level accordingly.

What appears to be a decorative rubber ring around the volume-control knob is actually an insulator dividing it into two electrically isolated sections. When the flat face of the knob is touched lightly, the audio level instantly drops by 20 dB for temporary listening interruptions. A second touch, on the round rim of the knob, restores normal volume. An adjacent indicator glows when the "Touch-Mute" function is activated. The circuit can be disabled, if desired, by a switch in the rear of the amplifier.

The lower portion of the panel contains several controls, some so inconspicuous that they might be overlooked on casual inspection. A front-panel screwdriver adjustment varies the phone gain over a ±5-dB range about its detented center setting. Another selects a PHONO input impedance of 30 k (30,000), 50 k, or 100 k ohms (PHONO 2 is fixed at 50 k ohms). Two small pushbuttons energize the two sets of speaker outputs individually.

A larger black button is the power switch, and next to it is the headphone jack. The intermodulation distortion (IM) was not detectable with the phono cartridge inductance. The LINEAR EQUALIZER knob at the lower left of the rear panel protect the power transistors. Note the push-clamp speaker connectors and (lower right) preamp-out/main-amp-in jacks with jumpers.

The square covers centered in the L-100's rear panel protect the power transistors. The "pivot point," producing a rather subtle alteration in the audible sound balance. It operates in addition to, and independently of, all other controls and filters, but can be used only on the phone inputs.

In the rear of the L-100 there are jacks for pre-amplifier outputs/main-amplifier inputs, joined by jumpers, and all the necessary input and output connectors. A small knob controls the sensitivity of the tuner input, and a DIN connector duplicates one set of tape-recording input/output jacks. Insulated spring connectors are used for the speaker outputs, and one of the a.c. outlets is switched. Most of the rear apron is devoted to the massive output-transistor heat sinks. The protective fuses for the speaker and power line are recessed into the bottom of the amplifier.

The Luxman L-100 comes in a handsome rosewood-veneer cabinet. Its overall dimensions are approximately 19 inches wide, 13¾ inches deep, and 7 inches high; it weighs 42 pounds. Price: $995.

**Laboratory Measurements.** Following a one-hour preconditioning at one-third rated power and five minutes at full power, the power output at clipping of the L-100 was measured at 136 watts per channel into 8 ohms. It was 185 watts with 4-ohm loads and 86 watts into 16 ohms. The harmonic distortion (THD) at 1,000 Hz and 10 watts output was 0.0087 per cent, and it remained at that figure for power outputs up to the rated 110 watts, increasing to 0.018 per cent at 120 watts. With less than 10 watts output, the distortion could not be measured since it was below the (inaudible) noise level of the amplifier. The intermodulation distortion (IM) was 0.016 per cent at 1 watt, rising smoothly to 0.072 per cent at 110 watts and 0.1 per cent at 140 watts. At very low outputs (a few milliwatts) the IM never exceeded 0.15 per cent, indicating the relative absence of crossover-distortion components. At full rated power, the THD was 0.02 per cent at 20 Hz, dropping to less than 0.01 per cent from 40 to 1,500 Hz and increasing smoothly to 0.06 per cent at 20,000 Hz. The distortion went no higher at powers down to one-tenth of rated output.

Through the high-level inputs, with the attenuator control set for maximum gain, a 48-millivolt (mV) signal drove the amplifier to a reference output of 10 watts with an 80-dB signal-to-noise ratio. The measured range of the attenuator was 19 dB. The phono sensitivity (in the middle of its adjustment range) was 0.84 mV, with a signal-to-noise ratio (S/N) of 73 dB. Phono overload occurred at an impressively high 450-mV input. If this for some reason is not enough (!), setting the phono sensitivity to -5 dB with the front-panel adjustment increases the overload point to 770 mV, while sensitivity is still a very good 1.5 mV.

Our measurements of the tone-control response curves confirmed the indicated turnover frequencies. The maximum control range was typically about ±10 dB at the frequency extremes. When the tone controls are switched between the circuit, the overall gain drops by 2.5 dB. In the low boost mode, the response begins to rise below 200 Hz, to +1.5 dB at 100 Hz and +4.5 dB at 20 Hz. The low- and high-cut filters had desirable 12-db-per-octave slopes, with the -3-dB response frequencies being 85, 6,000, and 11,000 Hz. The 10-Hz filter reduced the response by 1 dB at our lower measurement limit of 20 Hz.

The RIAA phono equalization was as accurate as we have ever measured—within 0.5 dB of the ideal response from 20 to 20,000 Hz. There was no detectable interaction with phono-cartridge inductance. The LINEAR EQUALIZER produced approximately the stated effect, with its action hinged at 1,500 Hz. The effect was that of a "shelved" response, with a maximum range of ±1.5 dB between 50 and 700 Hz and ±1.5 dB above 3,000 Hz.

**Comment.** Obviously the performance and operating characteristics of the Luxman L-100 require the use of superlatives for an adequate description. Everything worked exactly as intended, and there was a remarkable smoothness and positive action on all the controls. The "tactile" characteristics of this amplifier set a mark for others to aim at.

The high price of the L-100 (and other Lux components, including their $3,000 power amplifier)
The Beogram® 4002.
A turntable unequalled in concept, performance, and design.

As you and your audio system gain in sophistication, you begin to define high performance far more critically. You also become sensitive to the many details which separate the good products from those considered exceptional. It is at this point that Bang & Olufsen becomes more important, and components such as the Beogram 4002 turntable are worth your careful evaluation.

Exceptional resistance to vibration. A leaf spring pendulum suspension system (patented) actually transforms horizontal shock into vertical motion, damped by the entire chassis assembly.

Electronically controlled tangential tracking. A sophisticated system operated by its own DC motor. It eliminates the problems of angular distortion, skating force, horizontal and vertical friction.

Complete stylus protection. The raising and lowering of the tone arm is automatically controlled by a pneumatically damped, solenoid operated system which functions via independent electronic circuits.

CD-4 capability. An optional CD-4 demodulator/phono preamplifier can be installed in the turntable housing, the optimum location for CD-4 reproduction.

Stable, accurate drive system. A high torque DC motor with integrated electronic speed control drives only the turntable platter via a precision ground, flat rubber belt.

Elimination of warp wow. An extremely short, low mass tone arm, which weighs only 8.4 grams with cartridge, eliminates the distortion caused by warped records.

An extraordinary cartridge. The Beogram 4002 comes with the MMC 6000 cartridge, Bang & Olufsen's finest. It features an effective tip mass of only 22 mg., tracks at one gram, and has received critical acclaim throughout the world.

One touch music. A finely engineered control panel allows fully automatic operation (cuing cycle: 2 seconds) by depressing a single micro switch. Power assisted manual operation permits you to scan the entire record in either direction at fast or slow speed.

Bang & Olufsen
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From Bach to Bernstein—an exciting way to experience and appreciate three centuries of great music

Discover the secret of enjoying great music through this absorbing TIME-LIFE RECORDS series of outstanding musical works—complete with illustrated booklets of historical background, specially written program notes, and a lifetime collection of superb recordings.

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You’ll hear acclaimed orchestras such as The Royal Philharmonic, the Moscow Chamber Orchestra, and the Vienna Philharmonic, directed by such superb conductors as Otto Klemperer, Pierre Boulez, and Sir Thomas Beecham. You’ll thrill to virtuoso performances by great artists like Yehudi Menuhin, Elisabeth Schwarzkopf, and Maria Callas. And you’ll discover a depth of enjoyment in music that many people never find.

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To embark on this extraordinary musical adventure, simply mail the coupon. We will send you, for a free 10-day audition in your home, The Baroque Era, the album on a momentous period in musical history.

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As an introduction to THE STORY OF GREAT MUSIC Audition “The Baroque Era” free for 10 days

THIS INTRODUCTORY ALBUM CONTAINS

A. Four LP records of music representative of the era.
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THE STORY OF GREAT MUSIC

The Baroque Era

Print Name __________________________
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City ________________________________
State _______ Zip ______________

Yes, I would like to examine The Baroque Era. Please send it to me for 10 days' free examination and enter my subscription to THE STORY OF GREAT MUSIC. If I decide to keep The Baroque Era, I will pay $15.95 plus shipping and handling. I then will receive future albums in THE STORY OF GREAT MUSIC series, shipped as an album at a time approximately every other month. Each is $15.95 plus shipping and handling and comes on a 10-day free-examination basis. There is no minimum number of albums that I must buy, and I may cancel my subscription at any time simply by notifying you.

If I do not choose to keep The Baroque Era, I will return the album within 10 days, my subscription for future albums will be canceled, and I will not be under any further obligation.
The Miracord Model 825 automatic turntable operates at 33⅓ and 45 rpm, with a vernier speed adjustment (concentric with the speed-change lever) providing a nominal control range of 5 per cent about each speed. The speed-change lever also sets the tone-arm index to either a 12-inch or a 7-inch disc or with a stack. When the retained in the Model 825, and they can be according to the manual) can be loaded of stroboscope markings near its outer diameter in place, the next record is dropped and pressed, the arm returns to its rest and the tone-arm cueing lever next to the arm operates with a damped motion in both directions of arm movement. The arm itself is a slim aluminum-alloy tube with a threaded counterweight for balance. A small dial on the pivot axis, with calibrations at 0.25-gram intervals, adjusts the tracking force between 0 and 4 grams. Another dial on the motorboard with a similar calibration range (separate scales for conical or elliptical and CD-4 styli) applies anti-skating correction. The cartridge mount slides into the end of the arm and has a mark on its edge for setting the correct stylus overhang.

The catalog specifications for the Miracord 825 include a combined wow and flutter of less than 0.11 per cent, a DIN-B weighted rumble of -58 dB, and the ability to operate with cartridges tracking as low as 0.8 gram. The two-piece stamped platter, which is driven from the four-pole induction motor through a rubber idler wheel, is 10⅞ inches in diameter and weighs about 2½ pounds. The overall dimensions of the Model 825, mounted on its optional molded plastic base with the dust cover lowered, are 17 inches wide x 13¾ inches deep x 8¼ inches high, and it weighs 14½ pounds. The easily removed dust cover is supported positively at any angle by an arm which is centered at 12 Hz, although it was quite steep. Happily, there were no unpleasant surprises in our extensive use and testing of the L-100. It never gave any audible indication of its presence unless we chose to use its very fine filters and tone controls. Anyone who appreciates subtle response corrections should especially enjoy using the L-100. The “Touch-Mute” proved to be a practical, if unconventional, audio-muting device, and not at all in the “gimmick” category. The linear equalizer, about which we had some initial theoretical reservations, made a definite if unobtrusive alteration in the tonal balance from phonograph records. We do wish that it could be used on all input sources, however.

We have not discussed the circuit design of the Luxman L-100, which is described in some detail in the manufacturer’s brochure. It appears that the same attention to detail that we observed in its internal characteristics was lavished on its internal circuits and construction. Externally, internally, and in respect to performance, the Luxman L-100 integrated amplifier must be considered a simply beautiful product.

Circle 105 on reader service card

Miracord Model 825 Automatic Turntable

$129.95. A molded plastic base is $16.95 and a wood base is $20.95. Two types of dust cover are available, both priced at $16.95.

Laboratory Measurements. The Miracord 825 supplied to us for testing was equipped with an Empire MC-1E cartridge. The actual tracking force, after the arm had been balanced according to instructions, was slightly higher than the dial indications. At the recommended 1.5-gram setting, which we used for our tests, the true force was 1.9 grams, and this increased by an insignificant 0.05 gram at the top of a stack of records. The anti-skating was optimum when set at 2 grams, corresponding closely to the actual tracking force if not to the dial setting of the force adjustment. The arm had a low tracking error of less than 0.4 degree per inch of radius, typically between 0.2 and 0.3 degree per inch. The cueing action was smooth and well damped, with no sign of lateral drift during the arm descent.

The unweighted rumble was about -33 dB.

Although no specifications were available for the Empire MC-1E cartridge, it appears to be typical of today’s lower-price magnetic stereo cartridges in its tracking requirements and compliance. The low-frequency arm/cartridge resonance was measured and found to be centered at 12 Hz, although it was quite broad and produced an increase in output of 3 to 5 dB between 10 and 20 Hz. The output dropped very rapidly below 8 to 10 Hz. We believe that most comparably priced cartridges would give similar results in this arm.

Comment. Although the Miracord 825 might be considered a relatively inexpensive record changer in today’s market, it has many of the qualities that have characterized the

(Continued on page 44)
If you're looking for a great front loader, check out our PC5060 and PC6030. There's nothing to load or switch or fiddle with on top. So you can squeeze our front loaders between two shelves. But it's what's inside that makes these machines really special. Features like DC Servo motors that cut down on wow and flutter. And, of course, Dolby noise reduction.

You'll also find a host of features that make recording not only more professional. But more fun.

Like the auto counter button on the PC6030. Press it at a section you want to hear again. And, at the end of the cassette, the tape will automatically return to that section. No more jockeying back and forth to find it.

But most important it comes with specifications that one trade paper called the "best anyone had seen."

If you want to buy a great top loader without paying top dollar there's Toshiba's PC4030. It's got features found on machines costing twice as much. Like a cassette compartment that can open a full 90° for easier access to the head for cleaning.

It also has a DC Servo motor. Nonalip control surfaces. Ideally located switches. Two VU meters built at an angle for easy checking. Discreet lighting from the light emitting diodes. And, of course, built in Dolby.

So, if you're in the market for cassette decks that play great music, see your Toshiba dealer soon. He's got just what you want. Standing up or lying down.
more expensive players from Miracord and others. Perhaps the most obvious concession to price was in the mechanical “feel” and quietness of the mechanism. The pushbuttons, like those of the other Miracord models, operated with a light pressure, though not quite as smoothly as we remember from earlier tests. However, the mechanical noises associated with the cycling of the mechanism were plainly audible, in contrast to the quietness and overall smoothness of operation of Miracord’s higher-price record players.

The difference between our rumble measurement of -50 dB and the Miracord rating of -38 dB is explained by the different weighting systems employed. The DIN-B weighting always gives lower (better) rumble readings than the ARLL weighting, since it attenuates low frequencies further. The one-piece molded-plastic base supplied with our test sample had several resonant modes when excited by external vibration, making it quite sensitive to acoustic feedback, particularly at frequencies in the vicinity of 100 and 300 Hz (in addition to the low frequencies from 65 Hz down). To avoid problems from this source, the record player should be well isolated physically from the loudspeakers. Although we did not test the wood base, we suspect it would be better in this regard.

All in all, though, the Miracord 825 does its job—playing records with good fidelity and handling both records and pickup gently—in a very satisfactory manner. Its controls are easy to operate, and the measured performance was equal to (or better than) its ratings as well as to those of many competing models. Circle 106 on reader service card

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Frazier Concerto Speaker System

- The Frazier Concerto three-way, floor-standing speaker system is so proportioned that it can be used as an end table, or in close proximity to an end table, without causing any aesthetic problems. Its cabinet dimensions are 16 inches square by 21½ inches high, including a black recessed base section that raises the bottom of the walnut veneered cabinet about 3 inches from the floor. The system weighs about 50 pounds.

The Frazier Concerto is a bass reflex system with a 10-inch woofer crossing over at 2,000 Hz to a compression-horn tweeter with a 2- by 6-inch rectangular mouth. At 4,000 Hz there is a second crossover to a horn-loaded ceramic piezoelectric tweeter. The piezoelectric tweeter needs no external crossover elements, since it cannot be damaged by low-frequency signals; it operates in conjunction with the compression tweeter over most of the higher audio-frequency range. A continuously variable high-frequency level control is located on the front of the speaker just below the piezoelectric tweeter. The plastic-foam sculptured grille is held in place by Velcro fasteners.

The Frazier Concerto is a nominal 8-ohm system, and it is rated to handle 30 watts continuous input. This, combined with its relatively high efficiency (rated to produce a sound-pressure level of 93 dB at a distance of 1 meter when driven by 1 watt of pink noise), enables the concert to play very loudly when required. Price: $250.

Laboratory Measurements. We measured the integrated output of the Frazier Concerto in a “live” room with the high-frequency level control at maximum. The bass output was measured separately, with the microphone placed near the woofer cone and the port in turn. After proper adjustments the two curves were combined to obtain the total bass response, which was then joined to the higher-frequency curve to derive a composite frequency response.

The overall response was ±5 dB from 37 to 16,000 Hz. Depending on one’s point of reference, the speaker could be considered to have a depressed mid-range response (between 500 and 2,000 Hz) or a broadly peaked output at low and high frequencies, with the peaks centered at 90 and 6,000 Hz. Our experience, confirmed by listening tests, shows that such a response shape is heard as a bass and treble emphasis, since the ear accepts the mid-range emphasis as the reference norm. Below 60 Hz, the bass radiation from the port was dominant, and it accounted for essentially all the output at frequencies below 40 Hz. The low-bass output of the speaker was maintained all the way down to our 20-Hz lower measurement limit, where it was only 3 dB below the mid-range level (but some 12 dB below the output maximum that occurred at 90 Hz). Since low-frequency output is strongly influenced by room dimensions and speaker placement, this measured response would not necessarily agree with the speaker’s performance in any specific room.

The bass distortion could not be measured unambiguously, since the cone and port have separate and different characteristics. However, at 40 Hz, where the port contributes virtually all the output, distortion was only 3 per cent at 1 watt, 5 per cent at 10-watt input. At 30 Hz, respective distortion percentages were 5 and 10.

(Continued on page 46)
"A dream come true."

In just 18 months, B·I·C Multiple Play Manual Turntables have become the sensation of the high-fidelity industry. Today, they're fast becoming the best-selling turntables in America.

Recently, we received a letter from Peabody, Mass. which explains the B·I·C phenomenon better than we ourselves ever could.

"As an audio salesman (our correspondent writes) I have the opportunity to compare very closely many different makes of equipment.

Also, I have the opportunity to get a 'feel' for the attitude of the company towards its customers.

It is B·I·C's total excellence in both these areas that has prompted this letter of congratulations on a fine product and your ability to achieve such quality inexpensively, compared to other manufacturers.

Your turntable is like a dream come true; all the superior characteristics of a fine manual, but which, if the occasion arises, a party for instance, can also be used as an automatic. It is in my opinion and the opinion of most of my colleagues, the best all-around turntable available today."

Need we say more?

*This letter is in our files. In the interest of privacy, the writer's name has been omitted. B·I·C 960, about $160. B·I·C 980, about $200. B·I·C 940, about $110. For literature, write: B·I·C INDUSTRIES CO., WESTBURY, N.Y. 11590—a division of AVNET INC. ©1975.
The high-frequency level control was able to turn off the tweeters completely, affecting frequencies above 1,000 Hz. The system impedance reached its minimum of 7 ohms at 150 Hz and averaged about 8 ohms below the bass resonance of 80 Hz, where it was 25 ohms. At higher frequencies, the impedance rose smoothly to 50 ohms at 1,800 Hz and then decreased to 7 ohms between 10,000 and 20,000 Hz. The tone-burst response was excellent, with the burst shapes from the three drivers (at 100, 1,000, and 5,000 Hz) being as good as we have ever seen from a dynamic speaker. Our efficiency measurements, made with an octave of random noise centered at 1,000 Hz, closely confirmed Frazier's ratings. An input of 1 watt produced a 93.5-dB sound-pressure level at 1-meter distance.

**Comment.** In the simulated live-vs.-recorded test the extreme high-end response of the Frazier Concerto was slightly down. We sensed a slightly constricted quality (or a lack of "openness") in the upper mid-range, where the speaker had an elevated response, as well as some "boickness" in the upper bass, corresponding to the output rise in the 90- to 100-Hz region. The best overall audible balance in our test room was obtained with the high-frequency level-control setting reduced about 25 per cent from its maximum. Other rooms, of course, require different settings.

When we listened to FM and disc recorded programs of various types, the same general colorations were heard, but usually to a lesser degree. For example, a deep male voice acquired a "boomy" quality, but higher-pitched male and female voices were reproduced with a satisfactorily natural quality. With most recorded and broadcast material, we never sensed any lack of highs, since this effect, as we heard it in the live-vs.-recorded comparison, was limited to frequencies above about 12,000 Hz. Piano music, in particular, was reproduced with a sense of realism that was unmistakable. Obviously it's best to keep in mind that all speakers have response aberrations of some kind and that the ultimate reaction of the listener is heavily influenced by the listening environment and program material in addition to whatever innate properties a loudspeaker may possess.

The high efficiency of the Frazier Concerto is indisputable. Switching from almost any other speaker to the Concerto caused such a volume increase that it was difficult to credit the difference to an efficiency advantage of only 4 or 5 dB. We suspect that the pop and rock listener will find this speaker much to his liking. Its styling, also, contrasts markedly with that of the many long, thin speakers that have appeared in recent years. The square, almost cubical Concerto can provide substantial sound in a room without necessarily dominating the decor.

Circle 107 on reader service card

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**Realistic STA-90 AM/Stereo FM Receiver**

- **The Realistic STA-90**, distributed through Radio Shack stores, is a full-featured AM/stereo FM receiver with a power rating of 44 watts per channel from 20 to 20,000 Hz into 8-ohm loads, with less than 0.5 per cent harmonic distortion. In its other specifications, the STA-90 is also comparable to most receivers selling for somewhat higher prices.

- The front-panel styling of the STA-90 is conventional, with a "black-out" dial area containing the FM and AM tuning scales and two tuning meters (channel-center tuning for FM and relative signal strength for both FM and AM). The FM dial calibrations are linearly spaced at intervals of 0.5 MHz. The plastic dial pointer is lit in yellow when receiving AM or mono FM signals, and it changes to red during stereo FM reception.

- At the lower left of the satin-gold panel, below the dial area, are the pushbutton power switch and the SPEAKERS selector. This latter can activate two pairs of speakers, individually or in combination, or shut them off for headphone listening via the front-panel jack. It also has a "Quatrovox" position in which the second pair of speakers (which should be located in the rear of the room for this purpose) are driven with an L - R (difference) signal to synthesize a four-channel effect from conventional stereo program material.

- The input-selector switch has positions for AUX, PHONO, AM, FM, and FM MUTE (interstation-noise muting). Two TAPE MONITOR buttons can control a pair of tape recorders, monitoring the output from either one when its button is pressed. There is also a front-panel DUB OUT jack for recording onto a third tape machine which must be connected to the AUX inputs for playback.

- Pushbuttons control the LO and HI audio filters, MONO mode selection, and LOUDNESS compensation. The BASS and TREBLE tone controls and the BALANCE control are lightly detented at their center settings. A VOLUME knob completes the front-panel controls.

- On the rear apron of the receiver, in addition to the normal inputs and outputs, there is a second pair of speaker "A" outputs using phono jacks. The regular speaker-output terminals are binding posts. The antenna terminals provide for 75- or 300-ohm FM antennas, and a wire AM antenna can be connected in addition to the hinged ferrite-rod AM antenna. On the line cord there is a capacitive coupler that can be connected to the FM antenna terminal, which provides for reception of local stations without a separate antenna. One of the two a.c. outlets is switched. The Realistic STA-90 is supplied in an oiled walnut wooden cabinet; it measures 19¾ inches wide, 13¼ inches deep, and 5¾ inches high. The receiver weighs approximately 26 pounds. Price: $359.95.

- Laboratory Measurements. When we drove the audio amplifiers of the Realistic STA-90 at 1,000 Hz, the power output at clipping was 51.5 watts per channel into 8 ohms, 52.6 watts into 4 ohms, and 36.3 watts into 16 ohms. The total harmonic distortion (THD) was less than 0.025 per cent from under 1 watt to 50 watts output, reaching 0.46 per cent at 55 watts. The intermodulation distortion (IM) was about the same—0.02 per cent or less up to 50 watts and 0.065 per cent at 55 watts. It did not increase significantly at very low power levels (less than 0.2 per cent at 1.4 milliwatts), indicating the relative absence of crossover distortion. The manufacturer's IM rating is 1 per cent (typically 0.2 per cent).

- At the rated 44 watts output, the THD was

(Continued on page 48)

The rear panel of the STA-90 displays four sets of tape-monitoring jacks in addition to the conventional source inputs. One set of screw-type speaker terminals is paralleled by jacks that take a phono plug; a second set of speakers may be connected to provide a synthesized rear channel.

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The rear panel of the STA-90 displays four sets of tape-monitoring jacks in addition to the conventional source inputs. One set of screw-type speaker terminals is paralleled by jacks that take a phono plug; a second set of speakers may be connected to provide a synthesized rear channel.
It's all here! The power, the precision, the purity. One look at that heat sink will convince you that no one puts your money where it counts, like Dynaco, into the guts of the Stereo 400. And what comes out is perfection.

Every wanted feature, plus these optional accessories:
- Ultra high power mono conversion kit.
- Meters to watch the music.
- A fan to play it: really cool.
- Rack mounts to keep it in suspense.

Loaded with protection circuits, so the power is only where you want it, including the unique Dynaguard™ speaker saver. One reviewer said, "excellent...a similar device should be a part of any high power amplifier." Join the thousands who have built this kit in 3 or 4 evenings, and save over $200.

To see how easy it really is, send $2.50 for detailed manual and performance data. It's a small investment in Dynakits—the leader in the world of sound value.

power play

Write Dynaco, Box 88, Blackwood, N.J. 08012 for free literature.
about 0.02 per cent from 20 to 1,000 Hz, increasing gradually to 0.065 per cent at 10,000 Hz and 0.13 per cent at 20,000 Hz. At lower power levels, the distortion was very nearly the same as at full power.

The amplifier could be driven to a reference power output of 10 watts by 88 millivolts (mV) at the aux inputs or 1.3 mV at the phono inputs. The respective noise levels were -80 and -69 dB, referred to 10 watts (significantly better than the rated figures of -69 and -54 dB, respectively). The phono inputs overloaded at 160 mV—a very high level considering the amplifier's high sensitivity.

The tone controls had conventional characteristics, with a sliding bass turnover frequency and a treble response hinged at about 2,000 Hz. The loudness compensation boosted both low and high frequencies, and the filters had 6-db-per-octave slopes and -3-db points of 110 and 5,000 Hz. The RIAA equalization was accurate within ±1 dB from 42 to 20,000 Hz, falling off at lower frequencies to -6 dB at 20 Hz (as measured at the tape-recording outputs). The equalization accuracy was not significantly affected by cartridge inductance.

The FM tuner section had a usable sensitivity (mono) of 13.2 dB or 2.5 microvolts (µV); 50-db quieting was reached at 21 dB (6.2 µV) with 0.45 per cent THD. The ultimate quieting and distortion levels at 65 dB (1,000 µV) were 68 dB and 0.15 per cent in mono (rated 65 dB and 0.6 per cent). In stereo, they were 64.5 dB and 0.62 per cent, respectively.

The stereo FM frequency response was +1.5 dB from 80 to 15,000 Hz, falling to -7 dB at 30 Hz. The channel separation was 30 to 32.5 dB between 200 and 15,000 Hz (rated 35 dB at 1,000 Hz), and 24.5 dB at 30 Hz. The capture ratio was 2.7 dB at 45 dB (100 µV) and 1.5 dB at 65 dB; AM rejection was a good 60 dB. The image rejection of 60 dB and the alternate-channel selectivity of 65 dB both surpassed the ratings of 50 and 60 dB. The FM muting threshold, like the stereo threshold, was at 26 dBf (11 µV). The 19-kHz pilot carrier leakage into the audio outputs was 52.5 dB below the 100 per cent modulation level. The AM tuner frequency response was down 6 dB at 130 and 5,500 Hz.

Comment. The Realistic STA-90, as our laboratory tests show, is well suited to almost any home music system, and the audio section is rated with commendable conservatism. Overall, its audio performance is on a par with that of any under-$500 receiver we have seen, and it has enough power to drive low-efficiency speakers to more than adequate volume in any room of reasonable size.

Similarly, the FM tuner section, if not quite "state of the art" in its design, will certainly provide performance good enough for most requirements. With strong signals (especially those of 65 dB or higher strength) it is excellent, but at lower input levels some background hiss may become audible. The STA-90 would seem to be very well suited to urban and suburban listening areas (its overall interference-rejection performance is above average), but perhaps not so nearly ideal for fringe areas or rural listeners.

In respect to overall smoothness of operation and quality of construction, the STA-90 leaves nothing to be desired. The FM dial calibration is as accurate as the 0.5-MHz intervals and pointer width will allow. All controls have a positive "feel," tuning is non-critical, and the muting circuit is first rate, with just enough softness to avoid any transient thumps and without any perceptible time lag in its operation.

Circle 108 on reader service card
For a winning deck, pick a Sansui.

With the development of the Sansui cassette decks, the cassette can truly be called a high fidelity medium. Only with the technical accuracy and near perfection of these Sansui models can the musical recording and reproduction do full justice to the capabilities of the cassette being used.

The new Sansui vertical front-load series has achieved extremely low wow and flutter by isolating the capstan drive from the reel drive. This is accomplished by a slip-free drive belt coupled to a mirror finish, extra large flywheel. Our new decks incorporate the newest Dolby* IC chip technology to give you a full 10 dB improvement in signal-to-noise ratio. All mechanical controls are inter-locked so you can go directly from any mode to any other without going through stop, to prevent damaging valuable tape.

The SC-3000 and SC-3003, top-of-the-line models with 0.09% (WRMS) wow and flutter are stacked with attractive features: front-access tape compartment positioned right-side up, fully automatic stop-shut/off, a reliable and easy-to-read 3-digit tape index counter with a very useful Memory Rewind Section, highly accurate VU meters, peak level indicator, extremely hard Permalloy record/playback head for long life and outstanding performance.

All four models in this Sansui series, from under $290.00** to under $370.00,** share many of the same outstanding features for true high fidelity performance at attractive prices.

The Sansui SC-636 at under $280.00,** a leading all-around deck, delivers fine quality sound without costly frills. As with the higher priced models, the SC-636 offers fully automatic shut/off, illuminated VU meters, built-in Dolby* Type B Noise Reduction System, low wow and flutter and an excellent signal-to-noise ratio.

Sansui has stacked its decks. Stop in at your nearest franchised Sansui dealer today and buy one of these outstanding new Sansui series to stack yours.

* Dolby is a trademark of Dolby Laboratories Inc.
** The value shown is for informational purposes only. The actual resale price will be set by the individual Sansui dealer at his option.
† Simulated walnut grain
THE OPERA FILE
By WILLIAM LIVINGSTONE

MAGIC NIGHTS

A completely satisfying operatic performance is rare because such a complex art form provides so many opportunities for something to go wrong. Once in a great while, however, a particular combination of singers and conductor, orchestra, stage presence, barometric pressure, astrological aspects, and I don't know what all results in a performance so thrilling that any flaws are negligible. Everything falls into place, the singers strike a barometric pressure, astrological aspects, and for something to go wrong. Once in a great while, a particular combination of singers and conductor, orchestra, stage presence, barometric pressure, astrological aspects, and I don't know what all results in a performance so thrilling that any flaws are negligible. Everything falls into place, the singers strike sparks from each other, and the waves of communication between the musicians and the audience are almost palpable.

Such a performance took place at the Metropolitan Opera House on January 30, 1974, when Erich Leinsdorf conducted Tristan und Isolde with Birgit Nilsson and Jon Vickers. That night I heard things in the score I'd never heard before, and when the lovers died, I felt a tremendous sense of loss. The audience went wild, and part of the exhilaration of one of these extraordinary performances comes from being surrounded by people who are getting the same thrill from it that you are.

Tristan is a long opera—four hours, five discs—but that night it didn't seem so. A friend commented to me at midnight that if the singers would start over, he'd go right back into the theater and sit through it again. He said, "I haven't heard such a magical performance since Inge Borkh did that Elektra in San Francisco twenty years ago."

Fortunately, in between these epoch-making evenings, we get smaller doses of magic and even different kinds of magic at other performances. Something to keep us going. It is possible to derive considerable pleasure from a thoroughly routine performance, and sometimes one or two especially effective scenes or a particularly striking interpretation by only one member of the cast can make an otherwise ordinary evening memorable.

Singers who turn in exciting performances with any frequency attract fans who will travel long distances to see and hear them do it. When Renata Scotto sang Leonora in Il Trovatore in San Francisco last November, fans came from all over the country. I talked with one man who had flown from London for the occasion, and I'm told that two others flew from Sydney, Australia, attended the Saturday matinee, and flew home—seventeen hours each way. And the prospect of Scotto's Leonora was what made me decide to forgo an autumn vacation in Europe and spend the time on the West Coast.

The San Francisco season had opened with Trovatore, sung by Joan Sutherland, Luciano Pavarotti, Elena Obraztsova, and Ingvar Wixell, conducted by Richard Bonynge. At the end of the season a second cast took over: Scotto, Juan Lloveras, Bianca Berini, and Danica Mastilovic, Astrid Varnay, and Leo-

Renata Scotto: a sensational Leonora

Louis Quilico. Not only were the singers different, but conductor Kurt Herbert Adler used a slightly different edition of the opera, notably principally for its longer final scene, the so-called Paris ending, which I had never heard before (I liked it).

In the second cast Bianca Berini as Azucena was in some ways more exciting than Obraztsova had been, but the principal dispenser of magic was Mme. Scotto. In these pages I have written enthusiastically about her recent Columbia recordings (her verismo album was included among our Record of the Year Awards), stressing the excitement inher-

ent in her voice and her expert use of it to convey emotion. Her live performances, of course, have the added visual dimension and an uncommon sense of immediacy.

Although Scotto's movements on stage are limited more or less to the Italian vocabulary of stock operatic postures and gestures, she uses them with total conviction to make you know at every moment what the character she portrays is feeling. This must come in part from her sensitivity to the words. Whether the audience understands them or not (her diction is excellent), she feels them and can convey those feelings to the audience through gesture and song, and I think this ability is the essential component of the thrills that keep her fans coming back for more. Her Leonora in Trovatore was sensational.

Additional excitement was provided in San Francisco by Placido Domingo and Cornell MacNeil, who were excellent in Andrea Chenier with the very promising Italian soprano Josella Ligi. The sets (by Wolfram Schlicki) were handsome, and the trial scene was especially well directed. I've never seen a better performance of Puccini's Il Tabarro than the one with tenor Roberto Merolla and baritone Guillermo Sarabia. The Gianni Schicchi with which it was paired was not exceptionally well sung, but the ensemble acting was high spirited and Jean-Pierre Ponnelle's beautiful setting a delight. Although the cast was a ravishing Pamina in San Francisco's Magic Flute, that production otherwise lacked the essential magic. Still, to get three hits out of four operas is an incredibly high average.

When I returned to New York, the consensus among the regulars in the Met audience was that two things must not be missed: Carmen with Régine Crespin and Elektra with Danica Mastilovic, Astrid Varnay, and Leonie Rysanek. I concur. A second view of Crespin's Carmen reinforced my opinion that hers is the best I've seen, and I found in Elektra another of those magic nights when the whole is something more than the sum of its parts.

Danica Mastilovic, a Yugoslav soprano with a special affinity for the role of Elektra, looks and sounds like Birgit Nilsson. Mastilovic, Rysanek (Chrysothemis), and conductor Heinrich Hollreiser spurred each other to great heights in an unrestrained performance. The orchestra was loud and the two sopranos let out their big voices louder. Incredible in the way she could leap about the treacherously tilted platforms, Rysanek would take a high-lying phrase at what one thought her full volume and then for accent would sing certain words even louder. The performance was totally gripping.

Marvelous as commercial recordings are—and my life wouldn't be the same without them—it is rare that they have this kind of spontaneous excitement. We listen to them for their many other virtues. Occasionally, though, even in the recording studio, that magical something happens and there is a special rapport among the singers or between the singers and the conductor, and the excitement later pours forth from your speakers. Of the many new opera records I've heard in recent months the best from this point of view is the new Angel recording of Verdi's Un Ballo in Maschera conducted by Riccardo Muti. It is reviewed in the Best of the Month section of this issue; it certainly belongs there any month, and I heartily recommend it.

STEREO REVIEW
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Going On Record
By James Goodfriend
Music Editor

The Imp of the Perverse

It is always an occasion when Italian pianist Arturo Benedetti Michelangeli releases a new record. To begin with, he simply doesn't make that many records. In an era in which dozens of virtuosos are represented on recordings by four times the number of pieces they actually have in their concert repertoires, most of Michelangeli's specialties, those pieces that audiences around the world have invariably been awestruck to hear him play in recital, have never been committed to disc by him. A Michelangeli record is an occasion for another reason too: there is almost no way to predict what his interpretation will be, other than to assume that it will be unpredictable and, in some unforeseen way, odd.

Michelangeli is one of the greatest pianists I have ever heard, on or off records, and I have admired him extravagantly for many years. But I have never claimed to be any more able than anyone else to predict his musical movements, nor even to understand consistently what he is doing—and why—upon hearing it.

Angel has recently released a recording of him playing Schumann's Carnaval (S-37137). I think it is the worst Michelangeli performance I have ever heard and possibly the worst Carnaval ever put on records by a major pianist—and I am fascinated by it.

One always thinks of alternative explanations: maybe it isn't Michelangeli playing at all. But no, the authority, the evenness of that irritating, thumping left hand is the work of a master of the keyboard; the maintenance of that impossibly slow tempo could be done only by someone who knew precisely how to do it; the clear-cut avoidance of Schumannesque expressivity can be no accident or misunderstanding. If it isn't one Michelangeli who put together this B-19 of a performance, then it is another, for, to paraphrase a remark by Leschetizky on Anton Rubinstein, you have to be a hell of a pianist to louse up the music that way.

There is a proper word for this kind of performance, for this kind of approach to music, and the word is "perverse." Perversity is a real and identifiable interpretive attitude and, if you think about it, its existence is really rather widespread. Michelangeli is basically a perverse interpreter, even at his most successful. So, to a good extent, was Heifetz. Loren Maazel has shown frequent signs of perversity in his conducting, as did Hermann Scherchen in some of his many recordings. Glenn Gould has evolved into a perfect champion of the attitude. But, before the feathers really begin to fly, what is musical perversity?

Well, it takes many specific forms and operates on many levels with many degrees of intensity, but basically it is a combination of the knowledge of how something should be done, coupled with the insistence upon doing it some other way. In specific terms it involves such things as performing works from the wrong editions. Published music, particularly nineteenth-century editions of eighteenth- or seventeenth-century music, has often been edited and modified beyond reason. There is, for example, an edition of Rameau's Gavotte with Variations, done by the aforementioned Leschetizky, which totally excises the majority of Rameau's ornaments. Since the whole eighteenth-century French keyboard style depends upon ornamentation, such an edition

(Continued on page 54)
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Did you know that there are records by 6 members of the Bach family? That 111 of Bach's 215 surviving cantatas are recorded? That there are records by both Mozart and his father? There are two composers named Brown, 3 Jones, 6 Smiths? That "Haydn's Toy Symphony" actually is movements 3, 4, 7 of Leopold Mozart's "Cassatio?" That there are records of music by King Frederick II of Prussia; Wilhelmine Markgräfin von Bayreuth, Louis XIII, Benjamin Franklin? That composer/musician Pablo Casals lived to be 97, Julius Reubke died at 24?

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virtually wrecks the music. One might assume that Leschetizky did what he did out of ignorance, but a decision to actually play that edition today would more likely be a case of pure perversity—allowing, of course, that some pianists still do not know the difference.

Michelangeli, who does not, to my knowledge, play that particular piece, still seems to prefer to originate much of his repertoire from similarly discredited editions, and in at least one instance (Brahms' "Paganini" Variations) has himself turned the music around from the way the composer wrote it. Many conductors too, particularly of an older generation, prefer to disregard modern scholarship and perform music from old, familiar, but unreliable editions. Some may not know that anything better is available, but others are just being perverse.

Perversity is most obviously evident in such performance practices as choosing to play legato passages staccato (Gould specializes in this), taking Allegros as if they were Prestos (almost a Heifetz patent) or, conversely, rendering Adagios in the manner of that most famous John Cage tempo marking, "Almost stationary," playing loud passages soft and soft passages loud, bringing out the accompaniment and letting the melody go hanging, eliminating rubato where it is necessary and laying it on with a trowel where it isn't, miniaturizing a big piece or puffing up a small one, and, in general, rejecting whatever tradition and the score together seem to say is proper, correct, and effective.

Once again, we must allow that a certain proportion of such goings on is owing to ignorance; mechanistic—and even musical—talent has no necessary correlation with brains, and certainly not with intellectual curiosity. But much of the practice is due to perversity, and we can probably tell the difference (given no other clues) by the very consistency with which the the perverse interpreter rides his wayward horse.

Why do they do it? I think they do it largely to reaffirm, to their audiences or to themselves, just how good they are. It takes a very secure personality to be sure, at once, of his own talent and of its proper appreciation by others, to consciously avoid calling attention to himself through little (or big) quirks of performance. Such personalities are probably not all that common among performing musicians, a calling that is concerned with ego and not with serenity.

But it is an interesting point that those most enamored of musical perversity are among the most talented performers of our time. "Listen," they seem to say, "I know how everybody else has played this piece. I know what the music is supposed to be. I know which are the correct editions of it and which are not, and I know the proper performance practice. But I'm going to play it completely differently and I'm going to do it so well that you're going to go cars-over-elbows listening to it." And they do. So many, many times they accomplish just that feat. They turn the piece on its head and they still make it work, and it is a tightrope performance that you remember forever. What is wrong with Michelangeli's Carnaval, then (and with Gould's Mozart sonatas, Heifetz's Mozart concertos, Maazel's Bach and Berlioz, and others of their type), is not that it is perverse, but that this time the trick didn't come off. The imp of the perverse giveth, but the imp of the perverse also taketh away.
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CAN WOMEN ROCK?

Some months back I had some unkind things to say about a little Feminist Apologia for the Rolling Stones that ran in Ms. magazine, drawing a fair amount of reader flak—largely, I think, because the satirical nature of the piece was misunderstood. In response I promised to do a slightly more wide-ranging and serious discussion of the issues I skirted (I initially—namely, Can Women Rock? or, more to the point, should they?).

Part of the problem is that nobody really knows just what rock-and-roll is any more, so trying to get at women's (or anyone's) relationship to it is a bit tricky. To start with, the whole argument about whether or not rock is dismally male chauvinist and insulting to women—the "cock rock" school of criticism that flourished early in the Seventies, and which lately seems to have revived in certain articles I've read about Bruce Springsteen—is at best a cul-de-sac, at worst criminally dumb. Of course rock is male supremacist; that's exactly what makes it exciting, its rooster arrogance. Who would bother to listen otherwise?

Second, rock is and always has been specifically aimed at women. You don't think it was the Beatles' musicianship that initially had girls wetting their pants, or that fourteen-year-olds are buying Donny Osmond records, do you? If that situation changes—as well it may, at some point—then we won't be dealing with rock any more, but something altogether different. The feminist arguments, then, strike me as totally unrealistic, since to ask rock to be other than what it is is to deprive acts of real violence) actually seem to respond to it are female, they want to see men up on the stage.

But could there be a great role reversal? Could we have women rockers capable of projecting images other than the ones commonly associated with "chick" singers—the honky-tonk angels, the doomed romantic losers, the Janis Joplins? I suspect so. Grace Slick comes to mind immediately. Certainly, she's never taken any guff from men (or anybody else, for that matter), and she's always gotten the male portion of her audience good and hot. The Starship's appeal clearly has as much to do with Gracie's sexual zotz as anything else. And Patti Smith, as I have already noted in these pages, strikes me as being the first woman to have the potential to be as big as Elvis or Dylan, and without compromising her femininity one whit.

And could we have the ultimate extrapolation of that sort of thing—the all-girl Rolling Stones? I hope so; it's hardly likely just yet, but it could happen. There are women who understand how rock operates, although they're few and far between at the moment (and they aren't in the feminist movement, that's for sure). If Patti makes it, I'm convinced we'll see lots of women who can beat men at their own game without turning into bull-dyke parodies like Suzi Quatro, pathetic would-be sex symbols like Fanny, who are simply an un-date of Ina Ray Hutton and Her All Girl Orchestra, or opportunists like Isis, who continue to blame the failure of their determinedly mediocre music on the male-dominated structure of the music business.

Every so often, I get letters accusing me of being a reactionary old fogey, desperately hung up on the Stones, and, as one reader put it, "heavy rock in general." Well, just to clear the air a bit, I'd like to mention that I am absolutely nuts right now over two current records I didn't get a chance to review—namely, Pink Floyd's "Wish You Were Here" and Mike Oldfield's "Ommadawn." The Floyd album is really quite remarkable, a deeply moving treatise on the responsibility they feel toward the founder and (I'm sorry) for all intents, a martyr to the lifestyle they all once shared) as well as a wry look at the effects of their recent and surprising commercial success. Musically, it is very close to brilliant, with dazzling instrumental textures, honest-to-God melodies, and a production and sound that, for me anyway, almost rival the grandeur of "Abbey Road."

The Oldfield album is simply a masterpiece, one of the few records I've heard in years that truly deserves the appellation "progressive" in the Sixties sense of the word. It's hardly rock; in fact, it's close to unclassifiable, though my colleague Eric Salzman's coinage "Anglo-pop-Mahler" fits rather handily. But it is quite ethereally beautiful and, incidentally, a far more successful example of the collage techniques displayed on Oldfield's previouis "Tubular Bells" and "Index, An Ridge"—the transitions are almost seamless. I would also note that the little children's song about horseback riding that closes the record, with its irresistible mixture of Irish pipes and space-age instrumentation, is one of the most delightful musical experiences I've had in ages. Anyone who thinks that Keith Emerson, Rick Wakeman, or even cosmic jazz cats like John McLaughlin are composers owes it to himself to listen to this stuff. It's the real goods.

Finally, I would like to add two concert notes. First, the Who, caught in Philadelphia in December, are playing even better than ever. Whatever tension exists in Townshend's mind about the hypocrisy of his elder-statesman status (not to mention reported in-town tensions) has only served to make their playing more whip lash violent and incisive than ever. Second, as an addendum to my Linda Ronstadt review in November, I saw the lady in question recently, and I am now prepared to state unequivocally that she and her musicians are the best bar band in the world—which is not a put-down, it's an un-convincing about her emotional commitment to her material, but she simply sounded so lovely I don't care any more. Here's hoping her knockout live version of That'll Be the Day is the next big single.

Gracie: the zotz to rock

Stereo Review
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AMONG the thousands of people entering audio stores each year to buy tape-recording equipment, there is a growing number that is not content to leave with a cassette deck or a conventional reel-to-reel recorder. These individualists, bent on becoming serious live-music recordists, are members of an underground, operators of a semi-pro extension of the network of professional recording studios that links this country from coast to coast.

Time was when you had to go to New York or Los Angeles to get your musical efforts committed to tape in an acceptably professional way. Now you can find big-time facilities almost anywhere in the forty-eight states from Portland, Maine to Portland, Oregon. This wide dissemination of the recording arts has operated as something of an accidental training school, producing a growing number of musicians and music enthusiasts who are rapidly making themselves at home with the most advanced studio recording techniques. Over the years an enterprising few have learned how to put inexpensive "audiophile" equipment to work performing some studio-level recording services, and now, within the past several years, manufacturers have become aware of their special requirements and of the appreciable market they represent. The result is a significant body of audio products occupying a territory that lies between the areas of fully professional and advanced amateur recording activities. This equipment is presently being used to set up many a small-scale "multitrack" recording studio in American homes, basements, and garages.

Multitracking and Mixing

Most modern pop recordings are created and even conceived in what insiders call a multitrack studio, meaning one that is equipped with a tape machine that has more than two tape tracks available for simultaneous recording and playback. Most consumer tape machines are four-track devices and we also have a cartridge-tape format called "eight-track," but in both these cases only two (or at most four, if we are talking about quadraphonic playback) of the tracks can be utilized at any one time. The control room of a true multitrack studio is likely to house a sixteen, twenty-four, or even a thirty-two (!) track open-reel recorder. All these tracks will typically be used individually and together for the creation of each song on a popular record. The

Akai's Model GX-630DSS four-channel tape deck has a "Quadra-Sync" recording function plus a pitch control and tape speeds of 3/4" and 7 1/2 ips. $995.

Dokorder's Model 1140 four-channel deck has "Multi-Sync" facilities, front-panel access to the bias adjustments, and a memory rewind. $1,200.
a whole new world of tape equipment
By John Woram and Ralph Hodges

operative word here is "creation": the multiple tracks are used to magnetically store the sonic "ingredients" from which a final two- or four-channel recording will ultimately be "mixed down."

Let's look at a hypothetical pop-recording session in a sixteen-track studio. Each musician sits in a semi-cubicle that somewhat isolates him acoustically from his comrades. Each has a close-proximity microphone that is devoted to him alone (some instruments, such as a drum set, may be covered by two or more microphones). Out in the control room the engineer assigns each mike to its own tape track: perhaps track 1 for the electric bass, tracks 2, 3, and 4 for the drums, track 5 for the lead guitar, track 6 for the Hammond organ, and another track or so for the vocals. The balances are adjusted, the tape begins to roll, and the four musicians get their instrumental and vocal virtuosity laid down on seven or more individual tape tracks.

What, then, happens to the left-over tracks up through 16? In the normal course of events, plenty! With this bare-bones miking of a song, the creation of the finished recording has only just begun. Now everyone—producer, musicians, and engineer—sits around listening to what has already been recorded and thinking about what might be added to fill out the cut. A piano or string quartet might eventually go on track 9, a flugelhorn on track 10, or the strategically timed sound of a train wreck on track 13. Certain of the tracks may be used for special effects. For example, if the already recorded guitar on track 5 is transferred to a new track with a bit of electronically created (there's that word again) time delay properly introduced, it will sound like two guitars playing the same thing—a fast and economical way of doubling your number of musicians. If you transfer the contents of track 5 to the new track along with the delayed signal, you can then reuse track 5 for something else, or, if you like, retain it for some other purpose in the ultimate mixdown.

By the time this creative process is over it's likely that all sixteen tracks will be full, and the producer may even be clamoring for more. However, assuming that all the ingredients of the final cut are present, the sixteen-track machine is thrown into its playback mode, the output of each track is adjusted in level and seasoned with equalization and the appropriate amount of artificial reverberation, and the whole
MULTITRACK

business is "mixed down" into (usually) two channels and fed to a two-track tape machine as the basic stereo recording the consumer will ultimately hear. (The sixteen channels of basic ingredients will have to be mixed down differently for a quadraphonic disc, of course.)

The Home Multitrack

Assuming that this kind of creative recording interests you, what keeps you from achieving it with the equipment you've already got? Obstacle 1 is the lack of a tape deck that has more tracks than the number of channels you'll be using for the final recording. Obstacle 2 is the lack of a high-quality three-head tape deck that will permit you to add new tracks that are properly synchronized in time with previously recorded tracks. On three-head machines (using separate recording and playback heads) the recording head precedes the playback head in the tape path by at least an inch. Therefore, should you wish to mix in a piano with an already recorded guitar later, you could have the pianist listen (via headphones) to the playback of the guitar track and add his contribution in perfect rhythm, but when you play the result back, the piano will lag an inch behind the guitar on the tape and thus be off synchronization by at least 1/7 of a second at 7 1/2 ips.

Professionals solve this problem with the flick of a switch that enables the recording-head gaps to function in the playback mode when desired. If the recording-head gaps for tracks 1 through 7 are switched to playback, the pianist can then make his recording on track 12 (which has, of course, been set up to record) and be perfectly synchronized with the material already on the tape. The recording head may not make an ideal playback head, but it is certainly good enough for the pianist to hear, with reasonable fidelity, what is on the tape.

Consumers were not really able to avail themselves of such facilities until the first four-channel audiophile tape machines began appearing on the market. Although originally conceived as quadraphonic machines, the four channels did provide a limited multitrack capability for those recordists intending to mix down to two tracks. Synchronization facilities (called Syncro-Trak, Simul-Sync, Multi-Sync, and other names by various manufacturers) appeared in a number of the more elaborate four-channel designs . . . and the home multitrack recorder was born.

The Mixing Console

A multitrack tape machine by itself can handle a limited number of special tasks, but for real flexibility a mixer of some kind is needed. The basic mixer is a relatively compact device into which several microphones or other signal sources can be plugged to have their outputs combined in controllable proportions. When it grows elaborate enough to have six or more inputs, two or four outputs, plus equalization, "pan pots," and connections for auxiliary signal-processing devices on each input, it becomes a mixing console.

If the multitrack tape machine is the heart of a recording studio, the mixing console is its mind. It is designed to take over all control functions from the tape deck except for the starting and stopping of the tape. (In practice, the professional tape machine usually resides in a corner of the control room, remote controlled, while all the activity takes place around the mixing console.) The console often has meters that duplicate all the recording-level meters of the tape deck, and it has slide controls to supersede the deck's calibrated and set recording-level adjustments. It often has a full complement of tone controls (equalizers) for each input, switches to assign each input to the desired output track, pan pots (which send an input to two or more tracks at a time in the proportions desired), and the means to route signals to external signal processors and back again.

One input/output channel of a basic amateur mixer is illustrated and described in the box (opposite). It includes control facilities that are beginning to approach professional versatility. Along with six of these basic control sections, there is a master fader control that adjusts the overall levels of the output signals going to the monitor amplifier and/or the tape machine that is receiving the two- or four-channel mixdown.

Most professional mixing consoles are desk-like pieces of furniture big enough to sleep on—indeed, one hears of their being used for just that purpose in some late-night operations. But the recent revolution in miniaturized electronics has made some of them—some good ones, too—small enough to be carried around under one arm and set up on a card table or even a typewriter stand. There is little point in discussing the specific functions the various commercial models offer. Each buyer must make his choice, on the basis of hard-won experience, as to which particular features are indispensable to him and which can go, so to speak, by the board. Some recordists will consider all but the most basic mixing controls superfluous; others will insist on a full bank of four-channel pan pots.

The Signal Processors

Within the mixing console there are various switches, level adjustments, and the means to do some basic equalization. The more complex signal processing, although still under the control of the mixing console, is performed by devices that are physically outside it. Every recording studio has an artificial reverberation generator, since most of the sound comes out rather "dry" (with a minimum of natural reverberation) because of close mixing and acoustically "dead" studios. The injection—or restoration—of the appropriate amount of acoustic reverberant "space" is therefore done during mixdown. Some studios enjoy the luxury of a genuine reverberation "chamber"—in effect, a tiled-bathroom type of space in which a loudspeaker plays to a microphone and the microphone picks up lots of reverber along with the direct speaker sound. (One major record company used to send an input to two or more tracks at a time in the proportions desired, and the means to route signals to external signal processors and back again.

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THE MULTITRACK MIXER

The illustration at right shows one input section of a six-input/four-output mixer (the Teac Model 2 shown above) intended for multitrack work. Six such "modules" arranged as part of a mixer will accept up to six microphones or other signal sources simultaneously, mix them down to four channels with whatever signal processing the operator elects, and route them in any combination or arrangement to the recording inputs of a four-channel tape deck. In a second step, the playback outputs of the deck can be returned to the mixer and further reduced to two channels for the creation of a stereo master tape.

1. This switch selects either the microphone or line-input jacks on the back of the mixer. A third position of the switch reduces the sensitivity of the mike input by 20 dB to prevent the microphone output from overloading the microphone preamplifier under loud-signal conditions.

2. The rather basic equalization facilities of this mixer consist of high- and low-frequency 12-dB-per-octave filters, each with a choice of two turnover frequencies (center position is flat).

3. These are the channel-assignment pushbuttons. With them, the signal passing through the input module can be sent to any or all of the four output channels.

4. If more than one of the channel-assignment buttons are pressed, this pan pot is automatically activated. It distributes the signal between the output channels selected in much the same way a balance control on a stereo amplifier distributes a mono signal between its speaker channels.

5. The slide control, called a "fader," is the level control for this input module. Together with the faders on the other five modules, it determines the level balances between all the input signals going into the mix. (A master fader elsewhere adjusts the output levels of all four channels simultaneously.)

These are the basic functions of a multitrack mixer. In more elaborate versions the modules of such a device might offer expanded equalization controls, additional level adjustments for signals sent out to external processors and back again, meters, and of course more input and output channels. Usually, a professional mixing console is built up of optional modules, so that the buyer can select only those control functions he needs.

to give you a bit more flexibility in adjusting tonal balances—at least on two tracks. Other possible signal processors are so numerous as to defy listing, for recording engineers are always devising (and subsequently marketing) some little black box intended to inject the proper spirit into this or that track. Often additional, gimmicked tape machines are used to provide a host of strange effects. And, lest we forget, noise-reduction systems—Dolby or dbx—are universally used on every track in professional studios. For multitrack work especially, they amply repay every cent invested in them.

The Whole Thing

A minimally equipped professional multitrack studio would have a selection of suitable microphones, a multitrack tape machine, a mixing console, noise reduction on all recorder inputs, a channel or two of artificial reverberation, (perhaps) a delay line, and a second tape machine to receive the final mixdown. A well-equipped home studio would boast most of the same components, except that the main tape deck would probably be a four-tracker, the console would be a table-top model, and the signal processors whatever came readily and inexpensively to hand.

Having observed beginners during their first attempts to manage a sixteen-track studio, I would say that the neophyte is better off refining his skills on a simpler setup at first, working to master the basics before he tackles the more complex equipment. Keep in mind that practically anyone can learn, and quickly, what the knobs and switches do, but few can as quickly (some never) evaluate the musical worth of those first laid-down tracks and work creatively to improve rather than to confuse them.

It is only good sense to face up to the fact that you don't need all this gear to make a tape recording; you don't even need it to make a very good tape recording. But if you want to do a fast, efficient job on a production that requires a great deal of after-the-fact tinkering (which may not have been too professional to begin with), the multitrack approach is without peer. For the real expert at multitrack—and you might become one—can usually find ways to make a good recording sound even better, and that's what it's all about, isn't it?

John Woram heads Woram Audio Associates, which offers recording services and consultation on all aspects of studio design. He is writing a book on studio techniques.
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Perhaps someday everyone will have it.

You're looking at the Technics 600 Series, two of the finest cassette decks we've ever made. But equally important, they're also our first examples of "the Specification Guarantee." The only kind of a specification we feel is worth serious consideration.

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But the guarantee isn't the only impressive thing about these specs. The numbers are equally impressive. Even when you compare them with the "unguaranteed" performance figures you usually see. Yet our figures are conservative, understated. Figures that your unit is likely to surpass rather than just meet. And that makes them even more impressive.

The RS-676US. The RS-610US. And "the Specification Guarantee." The concept is simple. The execution is precise. The performance is outstanding. The name is Technics.

<table>
<thead>
<tr>
<th>Specification</th>
<th>RS-676US</th>
<th>RS-610US</th>
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<tbody>
<tr>
<td>Wow &amp; Flutter</td>
<td>0.08% or better</td>
<td>0.15% or better</td>
</tr>
<tr>
<td>Frequency Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal Tape Position</td>
<td>30 Hz - 12 kHz (+2/-4dB) (+2/-3dB)</td>
<td>50 Hz - 12 kHz (+2/-3dB)</td>
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<tr>
<td>C/D Tape Position</td>
<td>40 Hz - 13 kHz (+2/-4dB) (+2/-3dB)</td>
<td>50 Hz - 12 kHz (+2/-3dB)</td>
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<tr>
<td>S/N Ratio (Weighted, Signal level 250 µV/mm)</td>
<td>52dB or better</td>
<td>46dB or better</td>
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<tr>
<td>Without Dolby</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With Dolby (Above 5 kHz)</td>
<td>58dB or better</td>
<td>57dB or better</td>
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<td>THD (0 VU at 1 kHz)</td>
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<tr>
<td>Normal Tape Position</td>
<td>0.0% or better</td>
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<tr>
<td>Speed Accuracy</td>
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<td>Within ±0.0%</td>
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Technics
by Panasonic
ONE doesn't have to be a very close observer of the cassette scene to be aware of the fantastically rapid technical progress that has taken place, both in the tapes and the machines that play them. For several years every new-model deck seemed to outperform the previous year's production substantially. And cassette tape technology has been keeping pace, the laboratories regularly turning out oxide marvels that put to shame all previous efforts.

Finally, however, the rate of progress seems to have slowed enough for us to pause for a moment, take a breath, and look around. There hasn't been a single technical breakthrough in the last fifteen minutes, and so it seems a good time to assess where we are in tape technology, to try to evaluate just one of the controversies precipitated by rapidly advancing developments. We didn't have to seek very far for contestants: Andy Petite of Advent and Tor Sivertsen of Tandberg had for some time been arguing privately over the virtues—or lack of them—of chromium-dioxide tape (also known as Crolyn, CrO₂, and Chrome) and were pleased to be given the opportunity to air their differences publicly. Since neither party to the dispute has a vested interest in chromium-dioxide tape and its future, it appears that we have one of those rare situations where honest men can, in good conscience, disagree. And so, may the best oxide win!

—Larry Klein, Technical Editor

CHROMIUM DIOXIDE

PRO

Andrew G. Petite
Product Manager
Advent Corporation

CON

Tor Sivertsen
Technical Manager
Tandberg of America

THE introduction of chromium-dioxide (CrO₂) tape in 1970 resulted in a quantum jump in tape performance unprecedented in the history of magnetic recording. Before CrO₂, improvements in tape had consisted of refinements that gained a decibel or so here and there—in other words, small evolutionary steps rather than a single revolutionary leap.

Chromium-dioxide tape was so dramatically different that a new playback equalization standard was established resulting (in a properly designed recorder, at least) in a 4- to 6-dB improvement in signal-to-noise ratio. That improvement, coupled with the additional 10 dB provided by the Dolby-B noise-reduction system, reduced noise to 1/40th of what had been previously possible and brought about the era of truly high-performance cassette recording.

(Continued on next page)

When chromium-dioxide (CrO₂) material appeared in cassette tapes in 1970, it improved both the high-frequency response and the signal-to-noise (hiss) ratio compared with the then-available low-noise ferric-oxide tapes. This was achieved by changing the established standard playback-equalization curve from 120 to 70 microseconds, which amounted to trading a bit of CrO₂'s ample high-frequency response for a reduction in high-frequency noise. Also, because CrO₂ requires approximately 3 dB (50 per cent) more bias, the internal recording-calibration adjustment of the cassette machine had to be changed also.

The required change of playback equalization was actually a rather drastic step, considering how determined most organizations (and particularly Philips, the originator of the cassette format) are to protect stan-

(Continued on next page)
**CrO₂/CON**

"... we expect that in three to four years' time there will be very few CrO₂ tapes sold ..."
sition in future cassette recorders and have only a 70-microsecond playback switch for old, previously recorded chrome tapes.

Does the consumer get what he believes he is getting with all these different bias and equalization settings? One thing is for sure: such switches make the unit more expensive. Several years ago thousands of inexpensive reel-to-reel machines were sold with switch settings for normal and low-noise tape. When the customer switched to the low-noise position, recording bias did not change—only the high-frequency record equalization was decreased. The result was that the more expensive low-noise tape (which requires higher bias) was recorded in an underbiased condition, causing increased distortion and decreased signal-to-noise ratio. The presence of the tape-type switch left the consumer with the impression that the machine could handle both types of tape optimally.

Given all the above, we expect that in three to four years time there will be very few CrO₂ tapes sold simply because ferric-oxide tapes are better. —Tor Sivertsen

Mr. Petite replies:

In response to Tandberg's reference to "increased" head wear with chromium dioxide cassette tape: balderdash! We have run two sets of tests on cassette-head wear with the same results: chromium dioxide is no more abrasive than most and is slightly less abrasive than some premium iron-oxide tapes! Furthermore, the nature of the wear on the heads is noticeably different. The heads run with chromium dioxide wear evenly, which extends head life. Iron-oxide wear produces an undulating surface. One of the tests was run on the head used in the Advent Model 201. Since Tandberg uses the same head in their TCD-310, they may find the results of special interest.

If Tandberg or any other deck manufacturer has come up with different results showing substantial head wear from CrO₂, we think that it would be their responsibility to the consumer to say so, to remove CrO₂ capability from their recorders, and to do whatever else is necessary to protect the consumer. We have not run tests on video tape recorder heads, so we cannot attest to that particular use. However, is it interesting to note that the vast majority of video cassettes in use and sold today are chromium dioxide¹.

This is the first time we've seen the switch from ferrite record heads made by several manufacturers (including Tandberg) blamed on CrO₂. Our ferrite-head tests were first made on iron-oxide tapes. Since the saturation problem showed up clearly, we didn't find it necessary to continue the tests with chromium dioxide. Furthermore, it's an oversimplification to say that saturation is the only problem with ferrite record heads. Gap stability and temperature sensitivity are two others I can name offhand.

Our decision from the outset not to use a ferrite record head, even though it seems to have a magical advertising appeal, has undoubtedly cost us lots of sales. But the poorer performance on all types of tape was too great a compromise for potentially longer life. That's a point on which we all ultimately may agree. So as not to confuse the issue, it should be noted that virtually every manufacturer uses ferrite erase heads, which do combine extremely long life and good performance. (Incidentally, I'm not surprised at Tandberg's concern over the cost of replacement heads. Thiers is $56; Advent's is $12 for the same head.)

We find the statements about high-frequency output consistency and uniform particle distribution in the coating astonishing. Output consistency is dependent on particle distribution and CrO₂ is virtually unequalled in its ease of distribution. This is true because CrO₂ particles are almost ideally shaped and entirely free of dendrites (small, irregular "branches" found on almost all iron-oxide particles). With CrO₂ it is therefore relatively easy to disperse the particles uniformly and densely, leading to coatings of exceptional surface smoothness. In addition, a much higher degree of particle orientation can be obtained. It is not surprising, therefore, that magazine reviews of chromium dioxide cassettes show the high-frequency output to be outstandingly consistent.

As to modulation noise, that is also a function of surface smoothness. Although a few other tapes may now have similarly good physical properties, we know of no other tape that is meaningfully better.

The discussion of compatibility is specious. The older, 120-microsecond playback equalization came about because of the limitations of tape performance of ten or so years ago. The 70-microsecond equalization standard came about as a direct result of the later development of a dramatically improved tape (CrO₂). The difference between the two tape-equalization combinations results in a 4 to 6 dB improvement in signal-to-noise ratio. With a state-of-the-art, Dolby-equipped cassette machine that is the difference between making recordings that are about as quiet as non-Dolby open-reel 7½ ips tapes and cassette recordings that are actually quieter. Furthermore, such newer oxide formulations as ferri-chrome and Avilyn require the 70-microsecond equalization. Should the baby be thrown out with the bath water?

—Andrew G. Petite

Mr. Sivertsen replies:

We both agree that the CrO₂ tape, when it was introduced in 1970, resulted in a substantial improvement in tape performance for cassette recording, even at the costs we have mentioned relating to distortion, noise, and consistency. However, it should not matter how long it takes to make improvements in the non-CrO₂ formulations; the only relevant point is what the improvements yield. And with the improvements that have been made in ferric oxide, they presently give better, more consistent and uniform results.

I will mention, however, that the difference between the 70-microsecond emphasize used for CrO₂ and the 120 microseconds used for ferric-oxide tape is closer to 4 dB than to 6 dB in the critical high area.

One very important issue raised by Advent is that it is hard for the user to adjust for improved MOL in a tape. This, of course, has little if anything to do with the tape itself, and is more a matter of recording-equipment design and the acquired skill of the user in operating his machine. This is where we believe a properly designed peak-meter system that also reads recording equalization becomes significant. Tandberg's approach is to incorporate a correctly designed metering system that will permit excellent results to be obtained with any tape by any user.

And finally, we disagree that the consistency and the uniformity of CrO₂ tape are better than those of ferric oxide.

—Tor Sivertsen
Optimizing Cassette Performance
The Problem of Azimuth

By Joseph Kempler

The most popular tape format today is undoubtedly the cassette. This is understandable in view of its convenience, low cost, and generally high quality of performance. A great deal of effort has been expended by cassette manufacturers to bring the cassette tape to its present level of performance; the progress made in extending the high-frequency response in particular has been nothing short of amazing. Yet, the outstanding recording potential of a truly fine cassette tape is not always realized under actual home-use conditions. The reasons for this range from such problems as bias incompatibility and worn heads to insufficient cleaning of the recorder, for all of these faults and omissions have an effect on the cassette's performance, particularly at high frequencies.

These problems, and their solutions too, are fairly well known, but there is another cause of high-frequency output loss that has received very little public attention: azimuth misalignment, or the failure to maintain the tape in proper relationship to the head gap. How even a microscopic azimuth misalignment between tape and head can produce severe high-frequency losses is explained in the accompanying box "Understanding Azimuth." But where does this misalignment come from in the first place? Output losses resulting from azimuth misalignment have only one cause: the recorded track is not exactly parallel to the playback head gap. Perhaps surprisingly, this departure from true parallel can occur even if the machine has a single record/playback head with the same gap(s) serving both purposes. Assuming that the cassette recorder is all right, then any azimuth losses present can be traced primarily to the cassette housing or its parts. A superior tape formulation cannot deliver its peak performance when it is used in an inferior housing.

The best way of determining the effect of the cassette housing on performance is first to establish the tape's ultimate capability outside the cassette. This is done by testing the tape on a laboratory open-reel recorder designed to handle 0.15-inch cassette tape. Such recorders, specially built for cassette tape manufacturers, are constructed with sufficient precision and include enough adjustment possibilities to eliminate nearly all the performance degradation that can occur under less-than-ideal conditions. The pretested tape is then loaded into different cassettes and the same properties are re-measured in several cassette machines designed for consumer use. A careful analysis of such test data can establish the separate effects that the cassette, its internal components, and the recorder have on the azimuth, and can also determine the nature and the extent of any losses.

Figure 1 (see page 70) shows the 10,000-Hz output of a cassette tape under different conditions. Shown at (a) is the output of the tape when tested on a lab recorder; (b) is the output of the same tape in a good cassette housing tested on a cassette machine; and (c) is the output of the tape in a poor cassette housing on the same machine. Note that the three different tape "environments" strongly influence both overall output and uniformity of output.

At Capitol Magnetics' laboratories, we have drawn several conclusions about azimuth problems from such studies:

(1) Loading the tape into a cassette housing never improves its performance; at best, it matches the open-reel test results, but in some cases quality suffers noticeably.
(2) Performance degradation can be caused by any part of the cassette.
(3) Most cassette housings cause some adverse effects due to azimuth misalignment, but they are usually so small that they are not readily audible.
(4) Some inferior cassette housings are bad enough to produce an easily audible degradation.
(5) Generally, a well-designed cassette will perform well on any machine in good adjustment.
(6) Bad cassettes occasionally work adequately on some recorders.

As broad—and as apparently contradictory—as some of these conclusions may seem, they describe a real state of affairs. And they help to explain, at least in part, why some users find that a particular premium cassette has no highs, yet another sample of the same brand and type is fine; or why the same cassette may sound great on one recorder and mediocre on another. Some mysterious test inconsistencies and lack of repeatability with cassette tapes (sometimes commented on in the hi-fi magazines) can be in large measure explained by azimuth variations.

At present the majority of cassette recorders use two magnetic heads; one provides the erase function (which does not figure in the present discussion), and the other is the record/playback head. Although the single record/play head gap design is something of a compromise in terms of overall performance and cannot provide the convenience of tape monitoring, it is superior from the azimuth-alignment point of view. Since the recording and playback are accomplished by the same head, no azimuth loss occurs even if the head is tilted with respect to the tape—provided the tape moves along precisely the same path during playback as it did during the original record pass. This is because the recorded track will remain perfectly parallel to the head gap that laid it down even if it is tilted with respect to the tape edge. As long as the same machine is used for both recording and playback, the head tilt will be harmless. But a cassette recorded with a properly set head—a commercially prerecorded one, for instance—will suffer severe high-frequency loss if played back by a tilted head. And tapes made with a tilted head will suffer similar losses when played on a correctly aligned head.
record-head and the playback-head gaps be in perfect alignment with each other, but the tape must be aligned with both heads—and stay that way.

The three-head configuration is, of course, very common in open-reel recorders, where it normally causes very few azimuth problems even at the cassette speed of 1½ ips. However, open-reel machines do not have to contend with the cassette "package," and this makes all the difference. A few three-head cassette machines resolve this difficulty by including user-adjustable azimuth controls for the record head. When these controls are set for proper high-frequency output from the playback head, both of the heads and the tape will be correctly aligned with one another. For best results with these machines, this azimuth adjustment (or at least a check of it) should be made not just for each cassette but for each side of the cassette. If the adjustment is not performed, or if a machine with three separate heads has no provisions for azimuth adjustment, the high-frequency response of some cassettes can take a real nose dive. This will be true even of some well-known premium cassettes. In Figure 2, the top trace shows the frequency response on side one of a cassette tested on a three-head recorder with user-adjustable azimuth. The lower trace shows the frequency response on side two of the same cassette, on the same recorder, tested under identical conditions except that azimuth has not been realigned. The high-frequency loss caused by azimuth misalignment amounts to 12 dB at 9,000 Hz. If the adjustment had been made, the frequency response would have been the same in both directions. On the other hand, a well-made cassette (from the azimuth point of view) should perform equally well on both sides with no need of adjustment. This is of great importance on machines with three separate heads and no means of adjusting the record-head azimuth. Furthermore, the 12-dB loss in this case is not at all extreme: losses from 3 to 20 dB have been measured on many different cassettes. (Those new machines that have separate record and playback gaps within a single head shell should be relatively immune to the difficulties encountered by the machines with three separate nonadjustable heads. However, there isn't enough data available at the moment to come to any firm conclusions.)

The side one versus side two disparity is caused by nonsymmetry between the two "reference surfaces" (i.e., the

Anatomy of a Cassette
This exploded view of one manufacturer's high-quality cassette shows both the special features of his particular design and the elements common to all cassettes. In general, the tape is sandwiched between the inners, runs over the rollers, and is pressed against the head gap by the pressure pad. Most dimensions are critical.
Azimuth...

![Image 1](Fig. 1. The irregularities in the playback of a steady 10,000-Hz tone under three different conditions (see text for technical details).)

![Image 2](Fig. 2. The difference in record-playback response between the two sides of the same cassette is shown graphically. The major effect takes place in the higher frequencies (above 4,000 Hz).)

![Image 3](Fig. 3. A very small warp in the cassette housing can result in irregularities in response. (A) the record-playback response of a 10-kHz tone; (B) irregularities caused by removing and reinstalling cassette.)

![Image 4](Fig. 4. An analysis of the individual characteristics of irregularities in a cassette’s response can often yield information about their causes.)

two halves of the cassette shell) of a ‘poor’ cassette. Ideally, both halves of the shell should be parallel, they should lie perfectly flat in the interior of the machine, and the tape path should also be perfectly parallel to this plane at all times. Mass producing a cassette that can conform to all this is far easier said than done.

The serious differences between sides on the nonadjustable three-head machines apparently occur because of the distance between record and playback heads. It is a no-man’s land over which tape guidance (which is basically provided by the cassette housing) is difficult to control.

In the open-reel format, the entire tape-guidance system—tape guides, pressure pads, etc.—is part of the machine itself, and good azimuth is relatively independent of the tape or the reel on which the tape is stored. By contrast, while all cassette recorders do have some sort of tape-guide system, the greater burden of maintaining alignment falls on the cassette housing into which most of the format’s guiding elements are built. All of these influence the azimuth alignment and therefore the high-frequency response and output stability.

The basic alignment between the tape and the head depends on the external dimensions and tolerances of the cassette shell or housing. When the cassette is inserted into the recorder, certain parts of the housing are held firmly against the surfaces of the loading slot or cassette well, forming a reference plane for the tape movement. Since the head gap is preset to be precisely perpendicular to this plane, if the cassette surface and housing are not ‘square’ and true, a tape-to-head misalignment will result.

Warping and other housing distortions are among the major reasons for poor alignment, and this warp has several causes:

1. Temperature-related instability, resulting from the use of low-grade plastic material in manufacturing or from accidental exposure to high storage temperatures. Warp can also be caused by incorrect molding conditions that induce internal stresses in the plastic which are subsequently released. (Records warp for the same reasons.)
2. Incorrect settings on the sonic welding equipment frequently used to join the two cassette halves together.
3. Uneven torque used in fastening the two halves of a screw-assembled cassette together; this distorts the housing.
4. Uneven mating of the two cassette halves, which distort when joined together.
5. Abuse by the user, such as twisting or bending.

Figure 3 charts an example of misalignment caused by a small, quite invisible housing warp. Shown at (a) is the level of a 10,000-Hz tone recorded and immediately played back without removing the cassette from the recorder. At (b) is the result when the cassette was removed, reinserted, and again played back. Obviously, the warp prevented the cassette from lining up with the reference plane properly on reinsertion, resulting in a loss of 4 dB and poorer uniformity of output as well. Repeated reinsertion and playback may result in somewhat different outputs each time. Similar effects may be produced by applying finger pressure at various points along the cassette edge while playing back a recorded high-frequency signal.

The guides and rollers within the cassette housing may also bear a share of the blame for misalignment. A large number of cassettes use front-corner plastic rollers that rotate on steel pins inserted into the cassette housing. Until recently this method was considered to be the most reliable—very quiet and contributing very little friction. However, studies made in connection with azimuth reliability reveal that in a surprisingly large number of cassettes the rollers wobble very slightly. This microscopic irregularity is sufficient to cause misalignment and output-level variations. Figure 4 shows an expanded uniformity chart of a 10,000-Hz signal run on such a cassette. The pattern on the chart indicates that two disturbances are present at the same time. The di-

(Continued on page 72)
Understanding Azimuth

(A) The electrical audio signal fed to the record head produces an analogous magnetic pattern on the recording tape, the wavelength varying with frequency. (B) A properly aligned head lays down a magnetic track at right angles to the tape edge; if the tape is skewed during playback (C), high frequencies suffer because of cancellation at the gap.

Figure A (top) shows a low-frequency audio signal followed by one of higher frequency. Directly below are the corresponding magnetic patterns that would be recorded on a tape. The recording signal is plotted against time, with the low frequency logically occupying more time per cycle than the higher frequency. Put another way, low frequencies result in long wavelengths and high frequencies in short wavelengths.

Tape is magnetized by the record head in one of two directions (polarities) in accordance with the polarity (as indicated by the arrows) of the recording current. This produces magnetized regions, each with its own north and south magnetic poles. How long is each wavelength? That depends on the frequency and the tape speed. In cassette recording, the speed is 1/8 ips, with a frequency range of, say, 50 to 15,000 Hz, or a frequency ratio of 300 to 1. The corresponding ratio of longest to shortest wavelengths is likewise 300 to 1. By simple calculation we find that at 1/8 ips the wavelength of a 100-Hz signal is 0.01875 inch. The wavelength of a 10,000-Hz signal is one one-hundredth of that: 0.0001875 inch, or 187 1/2 millionths of an inch. The half wavelength (one magnetized region) of a 10,000-Hz signal is therefore only about 93 millionths of an inch long, or about thirty times smaller than the thickness of an average human hair.

With this as a background, we can now deal with azimuth. As used in tape recording, the term "azimuth" refers to the physical alignment between the head gap and the tape. Proper reproduction of short-wavelength signals requires an exactly parallel alignment between the playback-head gap and the magnetic poles recorded on the tape (Figure B). If the two are misaligned, as shown in exaggerated fashion in Figure C, losses of high-frequency output will result. The reason, in the case shown, is that the misalignment causes the north pole on the upper edge of the tape to cross the gap at the same instant as the south pole at the lower edge. This means that the flux lines induced in the head from the upper edge of the tape are opposite in direction to those induced from the lower edge, and the two cancel each other completely. The resultant output is zero—not 0 dB, just plain 0.

If the angle of misalignment is smaller, so that the gap does not contact both poles simultaneously, the output loss will be smaller. How big does the angle have to be to produce measurable losses? Surprisingly small. A misalignment of only 15 minutes of arc (1/4 of a degree) will produce a 6-dB loss at 10,000 Hz. That is a loss of 50 per cent. Losses from other degrees of misalignment are shown in Figure D.

(D) The high-frequency loss resulting from azimuth misalignment is shown below for four misalignments of increasing severity (15 minutes of arc = 1/4 degree).
Azimuth...

Dimensions of the short-wavelength pattern conform exactly to the circumference of the roller, confirming the origin of the output variation. The longer wavelength dimensions indicate a motion disturbance in the supply pack. The total output variations of nearly 5 dB are of course unacceptable for quality recording.

A dissection of these cassettes showed that the steel pins were not positioned exactly perpendicular to the cassette base, resulting in a once-per-revolution roller wobble. During assembly the steel pins are inserted in the bottom half of the cassette housing, usually by a pin-setting machine, and the top half is then fitted over the protruding pins. Our tests indicate that it is extremely difficult to assemble cassettes with the assurance that the steel pins will always be aligned with the necessary precision.

The pressure pad of a cassette is not designed for tape guiding, and should play no part in guidance if it functions correctly. But, like any other component in a cassette, the pressure pad will occasionally get into the act and misguide the tape. Being in direct contact with the head, the pad is located in a very sensitive area and even minor inadequacies will cause major trouble. Tape misguiding can occur (1) if the pressure pad is not glued in position squarely or is loose, (2) if the spring to which the pad is glued is not properly inserted in the slot, (3) if the spring or pad is bent or twisted, or (4) if foam pressure pads (used instead of a spring) lean in the direction of tape motion because of high tape-to-pad friction.

The liners or "slip sheets" inserted between the inner surfaces of the housing and the wound tape (referred to as the "pack") provide a low-friction surface for pack rotation. In addition to this, slip sheets can also contribute much in obtaining smooth, evenly wound tape packs, especially during fast-forward and rewind. Many liners, however, are not designed to perform this function, and they permit rough "winds" to occur in many cassettes. Winding irregularities ("steps," protruding edges, "cinching") can produce azimuth variations as well as occasional jamming. Alignment suffers because the vertically scattered tape layers on the feed pack unwind at different angles, and these may be too extreme for the roller guide to correct quickly enough to avoid a momentary tape-to-head misalignment. Also, tape layers protruding above and below the pack make it wider, frequently causing the pack to be squeezed in the limited space inside the cassette. This interferes with smooth tape motion, which in turn affects the alignment. (Typical characteristics under these conditions are shown in the tape-pack pattern irregularity of Figure 4.)

Finally, if the tape is allowed to wind and rewind poorly over a period of time, the exposed edges rub continually against the liners and eventually become stretched and wrinkled to the point where the machine's tape-edge guides become ineffective. In severe cases both the alignment and the head contact are affected, leading to very bad dropouts in the damaged areas. Figure 5 shows how the output of a 10,000-Hz recorded signal can be degraded by a stretched edge. With truly inferior cassettes, not only the housing but the tape itself can compound the alignment problem. Tapes that are not slit perfectly straight exhibit skew or "snakiness." A skewed tape moves past the head with a constantly changing angle with respect to the gap, with the inevitable result of distortion.

Shedding of the tape's oxide coating can also upset proper alignment. If the shed material is allowed to build up on the capstan or pressure roller, it can result in the tape's riding up and down between them. In extreme cases there will be a complete loss of signal. A similar problem will occur if the capstan and pressure roller are not properly aligned with each other or if the roller is unevenly worn.

There are still more causes of azimuth misalignment, some of them quite difficult to analyze because of the constantly changing dynamic interface between the machine and the cassette. However, the cassette designer has not been standing still. Performance has been improved in every respect, so that the modern premium cassette, though superficially unchanged in appearance, is a far cry from its predecessors of the late 1960's. In areas specifically affecting alignment, some manufacturers have adopted fixed guide posts (which don't wobble) or moving arms within the cassette to guide the tape (which improves the winding of the tape packs). A few others (Capitol among them) have replaced steel pins with large-diameter plastic pins molded right into the cassette housing. Such pins are permanently aligned and cannot be knocked askew during the assembly process. Capitol has also enlarged the rollers by 50 per cent for more precise tape guidance.

The overall housing has been improved with new high-precision molds and superior warp-resistant plastic materials, while the winding properties of some types of cassette tapes have been enhanced by the application of special back coatings on the rear surface of the base film. One result of our investigations has been a newly designed housing that fastens together with a combination of four screws and two pairs of press-fit "sockets" molded into the shell halves (this greatly improves accuracy and stability of alignment), and ribbed liner sheets that exert a centering force on the tape packs to promote smooth winding. These steps and others seem virtually to have eliminated azimuth misalignment on two-head cassette machines. Although some problems still remain with those three-head machines that lack head-azimuth adjustments, the situation there has also been vastly improved.

Finally, the purchaser of cassettes can do his part to obtain and maintain the best alignment possible:

1. Treat cassettes gently and store them in suitable containers.
2. Ignore advice recommending that you twist cassettes before using, "just to loosen them up a bit."
3. If you open a screw-down cassette for any good reason, reassemble and retighten it with care.
4. Keep your recorder clean and well-maintained.

During the ten years or so that the cassette has been around, it has achieved a remarkable record of performance and almost universal acceptance. Nevertheless, there are still advances taking place in cassette technology. By keeping himself informed, the cassette user can understand the nature of the still-unsolved problems, learn how to avoid them, and appreciate what is being done by the various manufacturers to correct them.
and you'll drop all the others.

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So you think you're a record collector? You went out and bought all of David Bowie's albums and now you've got the complete set? Not a chance. You may think you have it all, but you're a long way from having the complete David Bowie. If you want all of Bowie—or of anyone else—for that matter—you have to search literally all over the world. Since you can't do that personally (at least most of us can't), you have to check all the trade papers and the fan mags regularly to find out what's going on (and what has already gone on), make yourself a pest at record shops specializing in imports, correspond with record suppliers abroad, and plug yourself into the network of like-minded collectors. Sound tough? It is. Take David Bowie, for example, and see what you might already have missed.

A long time ago—I mean a really long time ago, like 1966—David Bowie signed a contract with Pye Records in England. Out of that union an EP (for "extended play," which is not quite as extended as "long play," of course) of four songs resulted. In America two of those songs were released on a Warner Bros. single. In 1976, the "A" side of that single is still in print on a Warner Bros. sampler album (you have to order it direct) called "Days of Wine and Vinyl." In between tracks by John Hartford, Sparks, and Jethro Tull you'll find Bowie's song Can't Help Thinking About Me. Until recently, when it appeared on Sire's "History of British Rock, Volume III," it was not available anywhere else except on bootleg discs.

Later on that same year, Bowie recorded more than an album's worth of songs for Decca Records of England, which resulted in an album for their American subsidiary label Deram. The album was called "David Bowie," and it remained in print for only a few years. Once our hero had made his big success, however, London Records (another American subsidiary of Decca) rereleased most of the songs from those 1966 sessions on a double album called "Images 1966-1967." That makes four sides of Bowie doing his Anthony Newley imitation (well, he was only nineteen and still a blonde). One of the songs he recorded then, The Gospel According to Tony Day, is available only on a London Records single, so to complete your collection you have to search for that little 45.

In 1969 Bowie signed with Mercury Record Productions. He had a new band (featuring Mick Ronson on lead guitar), new producers, new songs, and a new style. Surely, you might think, cataloguing things gets easier when an
artist matures—but no: as always, confusion reigns. The first Mercury album was called “Man of Words/Man of Music” and it yielded the much praised Space Oddity single. This was followed by a second album called “The Man Who Sold the World”—which yielded no single release at all as far as I know. In fact, one of the end results of this album was Bowie’s singular release from his record contract.

So now it’s 1971 and we have little David loaded up with all those songs and nowhere to go. Well, maybe not exactly nowhere. In early 1971, before RCA snatched him from oblivion, one strange single emerged in England on the Mooncrest label. A singer named Arnold Corns released two Bowie songs from sessions produced by David himself, and Arnold Corns (A Corns—get it?) sounded an awful lot like you know who. Which gives us two more songs, Man in the Middle and Hang On to Yourself, available only in their original-release form. There is, of course, another version of Hang On to Yourself on the “Ziggy Stardust” album, with new lyrics and a new arrangement, but a real collector would have to have both.

Now, at last, real success is David’s: RCA signs him and the “Hunky Dory” album is released. It racks up moderate sales and some critical praise. A year later, in 1972, “Ziggy Stardust and the Spiders from Mars’ comes out and catapults D.B. into the number one spot on the unisex chart. To follow up this smash he put out The Jean Genie as a single, but it sold only a handful of copies (RCA didn’t publicize it very well). Collectors are somewhat protected, though, for the song appears again on the “Alladin Sane” album.

Continuing in the tradition (or stereotype, if you prefer) of newly arrived rock stars, Bowie then put out an album designed to pay homage to his roots. “Pin-Ups” contains nothing but David’s old favorites, the songs he used to listen to as a kid. The “A” single from this album was Sorrow. The “B” side was a rendition of Jacques Brel’s Amsterdam—and it’s not, of course, on the album. So springing in between all this were two RCA singles released only in England. The first, John, I’m Only Dancing, topped the BBC charts for weeks. One of Bowie’s best tunes, it is a mystery why RCA hasn’t put it out here (perhaps the chorus “All alone here/All alone here/You know what I mean” gave them pause). The second is Drive-In Saturday, which appeared in “Alladin Sane.” It is worth mentioning that the “B” side is Bowie’s version of Chuck Berry’s Around and Around.

This track is not on any album anywhere. It came out before “Pin-Ups” and just may have been the source of the inspiration for doing a whole album of oldies. It is, of course, a must for the Bowie File.

By 1973 Bowie’s reputation as a major rock star was well established, and RCA bought up the masters of the two Mercury albums to rerelease them with new covers and new titles. All the world (well, maybe only 90 per cent) waited to hear what was to come next. There were rumors of movies in the offing, of stage shows planned, even of retirement. There was an end (temporary) to touring, and a new album was released. The single from “Diamond Dogs” was Rebel Rebel, but the take from the album is not the one on the single (collectors please note: the English 45 differs slightly from the American). Also, in Canada, in England, even in Germany—though not in the United States—another single was released: Diamond Dogs on the “A” side and Holy, Holy, a song recorded during the “Ziggy Stardust” sessions but never before released, on the “B.”

The year 1974 was marked by a U.S. tour and a live double album recorded in Philadelphia. The “A” single from the latter effort was Rock and Roll with Me and the “B” was Panic in Detroit—from the same concert, but not on the album. In fact, RCA kindly put a little note on the label to tell us collectors so, knowing perfectly well we would therefore have to buy both the album and the single. (In England, the “A” side was Knock on Wood, the “B” side the same Panic.)

Come February of 1975, the “Young Americans” album was released and Bowie gave his collectors a little rest: the British and American singles from this point on have been on albums—well, not precisely all, for the two latest Bowie releases are still orphans. In England, as part of an EP they now call them “maxi-singles” for some hucksterish reason) of old songs, a previously unreleased track called Velvet Goldmine has appeared. It’s another of those nuggets from the vaults and dates from around the time of “Hunky Dory.” In the U.S. a new single called Golden Years is out and slated to appear on the forthcoming “Station to Station.”

Are we finished? Not by any means. In 1971 a wonderful (much unpublicized) rock festival took place at Glastonbury in England. Called the Glastonbury Fayre, it was held on the traditional site of King Arthur’s court, the spot where the Holy Grail is said still to be interred. The affair was an artistic success and a financial failure. To help bail out the promoters, such big names as Pete Townshend, Marc Bolan, Hawkwind, the Grateful Dead, and others donated enough unreleased material to make up an album of three discs called “Glastonbury Fayre.” Bowie’s contribution was a live-in-the-studio performance of Superman. The song first appeared in the album “The Man Who Sold the World,” but the latter performance is clearly the definitive one and just as clearly another must for collectors.

Bowie’s musical associations also expand the field for his collectors. He wrote three songs for Mick Ronson’s first solo album “Slaughter on 10th Avenue” and is an uncredited performer on it as well. There is also “All the Young Dudes,” the album he produced and performed on for Mott the Hoople. A similar case is the 1974 Polyster single made by Lulu in England. She sang two Bowie songs, The Man Who Sold the World and Watch That Man, David producing and singing beside her. David (and Mick Ronson) also appears on Dana Gillespie’s first RCA LP. Can any collector resist any of them?

There may possibly be even more. Certainly there are all those bootlegs at least, among them a very good concert recorded at Santa Monica (1972—the first North American Tour), the concert at which Bowie announced his retirement (1973), and the Marquee Club concert broadcast over American television (1974). These items are impossible to document fully, of course, and their availability is very changy.

So much, then, for the Bowie example. The best advice I can give to collectors of this or any other artist is (1) take nothing for granted and (2) keep looking. Get all the listings in record catalogs, announcement sheets, or whatever, and track them all down. You learn tricks and shortcuts as you go, and it does become easier with time. And there will always be those heart-lifting moments of success to spur you on, when you finally lay hands on a mint copy of an English pressing of a long out-of-print mini-single whose “B” side is the unique version of a song the artist himself doubts he ever sang. It is then you know that Eureka! is more than the name of a vacuum cleaner.
The Last Will and Testament of a Classical Record Collector

By Leo Haber

The decedent, being of sound and disposing mind and memory, and considering the uncertainty of this life and the transitory nature of classical recording contracts, does make, publish, and declare this to be his Last Will and Testament, as follows, hereby revoking all other Wills by him at any time made.

First, after the decedent's lawful debts are paid to all but record clubs that have consistently sent incorrect orders, he gives the bulk of his classical record collection to his sons, Howard and Edward, to be divided equally between them.

Since the decedent is anxious to advance sweet concord and brotherly love in this villainous world, and since the decedent is fully cognizant of the acquisitive instincts rampant in all human beings, he has seen fit to set down with an unwavering baton the specific procedures whereby his collection is to be divided.

The decedent early recognized the difficulties in effecting an equitable division of his classical records. At first he contemplated asking his sons to divide the collection by alternately taking one record each, beginning with Adolphe Adam and ending with Jan Zelenka. This did not prove to be feasible since one son would own sides one and twelve of Götterdämmerung, the other son sides two and eleven, and so on. With Wagner, at least, this could be a boon, but it did not seem to augur well for other composers. Break up a boxed set of Beethoven symphonies and each son could very well end up owning half of the second movement of the Eroica.

The next thought was to split the collection down the middle of the alphabet—thirteen letters apiece. Elder son would get A to M and younger N to Z. This idea, too, was discarded in the sacred name of sibling rivalry. The owner of Bach, Beethoven, and Brahms would have it all over the owner of such as Schubert, Schumann, Sibelius, Strauss, Stockhausen, and Stravinsky. In fact, the owner of Mozart might easily have it all over the owner of everything else.

Here are some other proposals that were rejected by the decedent for a variety of reasons:

1. Give number one son all the music performed by Fischer-Dieskau, Barenboim, Bernstein, and Ormandy; the rest to number two son. The division ought to be fairly equal in number of records, if not in quality.

2. Give all the Vox Boxes of "The Complete Music of ..." to the elder, every other performance to the younger. Again, we might have a fairly equal division of discs with similar reservations about the levels of quality.

3. Give all the music performed by artists eighty years of age and above to one son and all performances by the younger striplings to the other. The former would include late Toscanini, Stokowski, Rubinstein, Klemperer, Walter, Monteux, Casals, etc., and would certainly give no quarter in quality. But would a son under thirty value such a collection?

4. Divide the collection ethnically. Give all the German and Italian composers to one son and everyone else to the other. This might also turn out to be an equal division of recordings, but we are again beset by the problem of equalizing aesthetic values. An alternative ethnic procedure would be to give all the performances by Jewish artists to one son and everything else to the other. This proposal almost carried the day until it was realized that one son would be getting all the violin and piano concertos, the other all the trumpet and flute concertos.

5. The decedent's wife came up with the ultimate suggestion. Equality in discs per son should not be the important criterion. More crucial is equality in time, since music is an aural, and therefore temporal, experience. Give, therefore, all the performances conducted by Knappertsbusch, Klemperer, and Furtwängler to the first son, and all the other performances to the second son, and each would be getting equal playing time! But the decedent rejected this outrageous suggestion summarily. Where would he put Hermann Scherchen, who drags one movement and races through the next? Too many insoluble problems.

But the decedent finally solved the puzzle. He did so by acquiring at least two performances of almost every piece of music he owns—in some cases four, six, eight, and ten performances. He therefore instructs his beloved sons to divide performances equally. In the rare event that the collection contains an odd number of performances—
three, five, seven, nine, etc.—the odd performance, or the oddest one, is to be donated to a charitable institution.

Even this inspired procedure is not without its pitfalls. The decedent is consequently obliged to append the following codicils, which are to be carried out in strictest detail:

(a) In the interests of fairness, the son who receives Bach on the harpsichord should also receive orchestral transcriptions of the organ works. The other is to receive the organ performances and the piano versions of the harpsichord works.

(b) Beethoven piano sonatas pose a problem. The son who gets the full Schnabel set must be willing to surrender both Barenboim and Brendel in exchange. And throw in the Arrau for good measure.

(c) The complete Berg in a neat box might pardonably be traded off for the complete Schoenberg in several boxes. Since the latter is somewhat thicker in number of records, the owner of the complete Berg should also get the complete Weberns.

(d) Bruckner symphonies—a simple division. Original versions to one and Novak and other versions to the other. The decedent does not envy either son in this instance.

(e) Mozart piano sonatas: Gieseking complete to elder, Lili Kraus to younger, Glenn Gould to charity.

(f) Mussorgsky’s Pictures at an Exhibition: piano version to elder, orchestral transcription by Ravel to younger, Stokowski transcription to charity, and Emerson, Lake, and Palmer to Saudi Arabia.

(g) Prokofiev’s Piano Concertos Nos. 1, 2, 3, and 5 are to be divided equally. The Fourth, for Left Hand, and Ravel’s Left-Handed Concerto are to be divided. The Ravel Two-Handed Concerto goes in tandem with the lonely Grieg Concerto. Clear?

(h) Stravinsky’s Firebird Suite is not quite so simple. The problem is to be solved thusly: Boulez’s 1910 version to elder, Giulini’s 1919 version to younger, Stravinsky’s 1943 version to Robert Craft.

(i) All the Tchaikovsky 1812 Overtures are to be divided rigorously, with the performances using actual cannon to be returned to the Pentagon. (From the blessed quiet of the grave, the decedent cries “peace.”)

(j) Telemann and Vivaldi are just impossible. Who can count up and manage to separate all the concertos for multiple oboes and violins? So, it would do decedent’s unquiet heart good if one son would settle for all of Telemann and the other for all of Vivaldi. It hardly matters.

(k) Wagner’s Ring: Solti to one, Karajan to the other, Furtwängler to an old-age home.

(l) Finally, let it be said without equivocation that no one can separate C. P. E. Bach from J. C. Bach from W. F. Bach; there are simply too many recordings entitled “The Sons of Bach” that contain snippets from all three. The decedent decrees that all these discs are therefore to be owned in common! Shared ownership of records is not an ideal thing even in socialist societies (communal thumbs will never learn to keep off communal surfaces), but the decedent has decided to overlook this possibly calamitous problem in order to expedite the following: beloved sons Howard and Edward are bidden to assemble once a year on the anniversary of the decedent’s decease to play all the “Sons of Bach” records as incontrovertible evidence of that lack of talent which is God’s punishment visited on sons who disparage their dear fathers.

It may be noted, and to the decedent’s shame, that he has bequeathed not a single record to his dear surviving wife. This is done with love aforethought, since this patient soul has been praying all these years for the glorious day when the records would miraculously leave the glutted apartment. Sic transit tabularium mundi. . . . The decedent therefore appoints his wife Sylvia to be the Executor of this Last Will and Testament, the Happy Distributor of all his LP records, at no mark-up whatsoever.

In Witness Whereof, the decedent hereunto subscribes his name and affixes his seal, a drawing of the ancient lyre, same seal to be found on all his record jackets.

Witnesses:

Signature:

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Schubert's C Major Quintet: a Chamber-Music Performance Spectacularly Close to Perfection

About ten years ago the Alberni Quartet, a London ensemble founded in 1960, made its recording debut on the English budget label Saga with a pair of Haydn quartets; it was a stylish presentation, lacking only the ripeness that would have made it a memorable one. The Albernis subsequently made a stronger case for themselves in their recording of Alan Rawsthorne's three quartets, released in this country on Argo ZRG 536, but no further records appeared until just now. After the passing of a decade and a couple of personnel changes (including the departure of the original first violinist, for whose Western Canadian home town the ensemble is named), and in collaboration with the extraordinary young Hungarian-born cellist Thomas Igloi, the Alberni has turned up on CRD (one of the interesting English and European labels imported by HNH Distributors, P.O. Box 222, Evanston, Illinois 60204) in what strikes me as the most all-round satisfying recording now available of Schubert's magnificent C Major Quintet.

In the last year at least five new versions of this work have been issued on various domestic and import labels, all of them of more than passing interest, and yet each in some way falling short of ideal. The accomplishment of the Albernis and Igloi seems hardly less miraculous than that of Schubert himself—though this observation comes only as an afterthought, for the beauty of their performance is that they realize the music to the fullest without ever getting in its way. That is not to suggest that the interpretation lacks personality, but rather that the personality that informs it is Schubert's own.

Both as to individual playing and in the balances between instruments, the ensemble is impeccable but never antiseptic. These musicians are not reluctant to embrace Schubert's incredible melodies with the warmest of hearts; some innate judgment (or simply feeling) keeps them from tripping into overindulgence. Counter-melodies are brought out with stunning clarity, but without being fussied over. The first movement in particular is music one hopes will never end; here it flows on serenely for more than twenty minutes—almost certainly a record, even with the repeat taken, as it is here—without appearing to dawdle. Nothing is cut, nothing is rushed, nothing is dragged, and dynamic contrasts are effective without being exaggerated. The pizzicati in the slow movement are neither dry nor overproduced, and there is no letdown in the two final movements; the melancholy trio is for once perfectly gauged in relation to the more extrovert scherzo, and the finale is allowed to make its compassionate point without swooping, scooping, or giddiness.

If much of this review seems to be in
Riccardo Muti’s New Ballo for Angel
A Serious Challenge
To Previous Entries

Verdi’s Un Ballo in Maschera has been recorded many times, but never outstandingly well. Recent stereo versions, in fact, have all been spoiled by certain casting weaknesses or ineffective conducting, with the result that I have found it more satisfying to turn to the old Gigli version (Sera- phim 6026) or to the recently reissued Callas-Di Stefano-Gobbi combination (Seralphim 6087) to find not only color and excitement but also true vocal personalities. I am all the more happy to report, therefore, that Angel’s new recording of this opera under the baton of Riccardo Muti not only ranks at the top of the stereo list but offers a serious challenge to its two more venerable predecessors as well.

Muti dominates the opera’s performance as no other conductor has since Toscanini (on RCA 6112, deleted), but, unlike the late Maestro, he does not overwhelm his singers (who happen also to be superior to the Toscanini cast in many respects) but enhances their efforts. At times (as in the closing ensemble of Act 1, Scene 1) he too succumbs to that weakness for fast tempos that plagues his generation of conductors, but even then his brisk pacing never loses sight of vocal expression. His leadership gives the music clear shape and rhythmic vitality and, even more important, an unflagging momen-
tum that drives the action forward and sustains it on a high level of excitement throughout. And there is no undue concentration on the “big numbers” either: with Muti, nothing is slighted, and the smallest orchestral nuances spring to life with surprising freshness.

Placido Domingo and Fiorenza Cossotto are the vocal standouts in the cast. The tenor makes Riccardo a likable, noble figure, enriching the character with his customary blend of ardor and elegance; the mezzo’s rich, well-focused tones and vivid delivery are a delight. Reri Grist repeats her excellent, but there are many notice-
able pre-echoes.

George Jellinek

VERDI: Un Ballo in Maschera. Placido Domingo (tenor), Riccardo; Piero Cappuccilli (baritone), Renato; Martina Arroyo (soprano), Amelia; Fiorenza Cossotto (mezzo- soprano), Ulrica; Reri Grist (soprano), Oscar; Gwynne Howell (bass), Samuel; Richard Van Allan (bass), Tonio; Giorgetti (baritone), Silvano; Kenneth Collins (ten- or), Un Giudice. Chorus of the Royal Opera House, Covent Garden; New Philharmonia Orchestra, Riccardo Muti cond. ANGEL SCLX-3762 three discs $21.94.

Gord’s Gold:
A Rich Lode Assayed
And Refined by the Old Prospector Himself

Everyone who’s interested must know by now that I consider Gordon Lightfoot one of the more important figures ever to take up with popular music, and much of the evidence that’s going to prove I’m right has finally been collected all in one place by Reprise. Not only that, but Lightfoot went back into the studio and rerecorded re- corded one full disc of it—the songs from the top down through Early Morning Rain in the list below, those he’d origi- nally done for United Artists. Lightfoot had his own reasons for doing this, which included recapturing some of the royalties these songs can still earn, but...
the net effect of it is to give the “greatest hits” concept a degree of class it doesn’t usually have.

He hasn’t changed radically as a singer since Early Morning Rain and the others were new (and he still prefers his three-chord, intense way of doing Rain to the four-chord, pretty way that traces back to Ian and Sylvia), but his vocal sound has matured and weathered, and he sings all the older songs a shade better than he used to.

This is, of course, an ideal album for the interested party who doesn’t yet have any Lightfoot albums—and it has something new in it for those who have every Lightfoot album, including an opening in which to second-guess him on song selection. I was surprised to find Affair on 8th Avenue in there, as I tend to overlook it, and the way he runs (“That’s what you get”) For Lovin’ Me/Did She Mention My Name without a pause surprised and delighted me... he lets us hear the third story you get by putting those two stories together. That’s just one of the reasons why “Gord’s Gold” is more golden than other people’s gold. Noel Coppage

GORDON LIGHTFOOT: Gord’s Gold. Gordon Lightfoot (vocals, guitar); Terry Clements (guitar); Red Shea (guitar); Rick Haynes (bass); John Stockish (bass); Jim Gordon (drums); other musicians. I’m Not Sayin’/Ribbon of Darkness; Song for a Winter’s Night; Canadian Railroad Trilogy; Softly: For Lovin’ Me/Did She Mention My Name; Affair on 8th Avenue; Steel Rail Blues; Wherefore and Why; Bitter Greens; Early Morning Rain; Minstrel of the Dawn; Sundown; Beautiful, Summer Side of Life; Rainy Day People; Cotton Jenny; Don Quijote; Circle of Steel; Old Dan’s Records; If You Could Read My Mind; Cold on the Shoulder; Carefree Highway. REPRISE 2RS 2237 two discs $9.98. © JB 2237 $10.97, © JS 2237 $10.97.

Van Dyke Parks: Rather Long Time Between Drinks, but Worth the Wait

A s a friend of mine was saying the other day about the first new release in quite a while by one of the more “serious” balladeers of the early Seventies, “Well, that’s been a long time between drinks.” He pointed out that many of these writer-performers had found early success by pouring out their interior lives in their songs—and, since their lives hadn’t been all that long, chronologically, they were now scraping the bottom of the biographical barrel, not yet mature or professional enough to squeeze meaning out of what’s happening around them, still clinging to what’s happened to them.

Balladeer Van Dyke Parks, one of the most idiosyncratically brilliant recording innovators (“Song Cycle”) of the late Sixties, hasn’t been heard from in eons. His return just now on the new Warner Bros. release Clang of the Yankee Reaper is really more of a personal appearance than a creative effort: he seems only to have posed for the cover photos and sung the songs. The production (splendid) is by Trevor Lawrence and Andrew Wickham, the songs are by a variety of people, and the arrangements (superb) are by the same Trevor Lawrence. I have no idea how spent, bored, blocked, or just playin’ possum Parks is creatively, but I can tell you that this is one of the most rambunctiously enjoyable albums in months, that as a performer he is pure delight.

The musical accent is a mixture of calypso filtered through Scott Joplin, filtered through a Seventies sensibility. Parks sings his way through such things as the title song (the only one on which he collaborated), Soul Train, and You’re a Real Sweetheart with all the audacious glee of a ham actor in a Dion Boucicault melodrama. The orchestrations are just plain ravishing — until you’ve heard the steel-drum workout on what is here called Pachelbel’s Canon in D you haven’t really savored Tropic Madness. I should, however, point out (1) that Pachelbel’s kind of canon is spelled with one “n,” and (2) that this tune isn’t Pachelbel’s Canon at all, but the chorale Ein Feste Burg (A Mighty Fortress Is Our God) composed by Martin Luther. Bit of a credibility gap there. Shame!

The engineering of the disc is beautifully forward, so that you have a definite “presentation” feel, as if you were watching a proscenium production. The whole damned album is a glorious mixture of romanticism, put-on, and dynamite musicianship. Parks may or may not be sending us more heartfelt messages in the future; for the moment I’ll settle for gorgeous entertainments such as this one. More, please.

Peter Reilly
BACKSTREET CRAWLER: The Band Plays On. Backstreet Crawler (vocals and instruments). Hoo Doo Woman; New York, New York; Stealing My Way; Survivor; It's a Long Way Down from the Top; and five others. ATCO SD 36-125 $6.98, @ TP 36-125 $7.98, ¤ CS36-125 $7.98.

Performance: Competent me-tooism
Recording: Very good

Here's another troop of reinforcements in the holding action rock is fighting now, another average band with a sheaf of average tunes. The economy, presumably, can support a certain number of these at a given time, even during these lulls in the activity of vital signs. Back Street Crawler lets you down by not sounding as mean as its name, but it pairs keyboards and guitar better than some. Essential is playing the game someone else made up; it's another of the bands, not a new force that's likely to devastate the spreading ennui—more like a symptom of it.

N.C.

RON CARTER: Anything Goes. Ron Carter (bass); vocal and instrumental accompaniment. De Samba; Baretta's Theme (Keep Your Eye on the Sparrow); Big Fro; and three others. KU2-SS1 $6.98, ¤ KU8-25 $7.98, @ KUC-25 $7.98.

Performance: Not for dancers only
Recording: Excellent

Ron Carter, whose albums have been appearing on the CTI label, has moved to Kudu, CTI's more commercially oriented subsidiary. Why? Because Ron Carter, one of the finest jazz bassists around, has gone disco—at least for this round. It's not really surprising when one considers the fact that Carter also is one of the busiest studio musicians on the scene and, as such, has participated in many an awful hit. It bores me when good jazz people become bad pop people, but that does not happen to be the case here; if jazz is your bag, you may not like what you hear on this album, but as a pop item, aimed at the finger-snapping crowd, it is very good. Most commercial are Big Fro, a Carter original (but not very), complete with a doo-doo-doo vocal trio, and Cole Porter's Anything Goes, which, being a stone disco item, comes out sounding not unlike Brazil, Baby Face, or other hits from Tin Pan Alley's attic that have recently been dusted off for disconsumption. The rest of the album, though clearly aimed at your feet, has—thanks to Hubert Laws, Eric Gale, Randy Brecker, and others from the CTI stable—something for the head, too. So this is not an altogether worthless album from a jazz standpoint, and it is an excellent tool for reducing the ranks of the wallflowers. Still, I hope Ron Carter has not permanently strayed from the path he strode so well.

C.A.

VASSAR CLEMENTS: Superbowl. Vassar Clements (violin); Jim Murphy (steel guitar, saxophone); Jim Colvard (guitar); Sandy Ford (guitar); Rick Brown (drums); Mike McBride (bass); other musicians. Yakety Bow; Vassar's Boogie/One O'Clock Jump; Black Mountain Rag; Friday the 13th; Orange Blossom Special; and four others. MERCURY SRM-1-1058 $6.98, © MC8-1-1058 $7.98.

Performance: Dry
Recording: Very Good

Of Vassar's just about lost me with this one, the way some of your low-energy jazz loses me. That's fitting, since it's actually a jazz album. Clements arrives at that state by bending country swing at giddy angles. He does some fancy playing here, but it doesn't have much juice in it compared to what he's shown before. It comes down to whether you want to be dazzled by technique, and it's hard to see where Clements, coming from country music, thinks he sees an audience wanting that. Most of us, I suspect, don't have to have him prove anything and would simply like to have our souls titillated. Instead, we're expected to sift through the technique to find some tunes we've already heard too many times.

N.C.

DR. JOHN: Hollywood Be Thy Name. Dr. John (vocals, keyboards), instrumental and vocal accompaniment. New Island Soiree; Reggae Doctor; The Way You Do the Things You Do; Swanee River Boogie; Yesterday; and five others. UNITED ARTISTS UA LA-552-G $6.98, © EA-552-H $7.98, © CA-552-H $7.98.

Performance: Spotty
Recording: Good

This album contains about equal amounts of kernels and chaff. The "live" sections were recorded during a one-night stand at a sleazy L.A. joint called Willie Purple's. The proceedings begin well with two originals by Dr. John (ie Mac Rebennac), followed by his girl trio of back-up singers doing a nice job with a joshing Smokey Robinson tune. Rebennac's piano style is treasurable Americana, and we get to hear it in Swanee River Boogie, a showpiece of variations on the public-domain Steffen Foster tune (Fats Domino, in his only complete piano solo, cut it as Swanee River Rock in 1956). The first side ends with an unfortunate version of Yesterday.

The first two tracks on side two are studio affairs: Babylon is one of Rebennac's sensual evocations of the bizarre culture of New Orleans; Back by the River is simply bland. We now return to the live sessions, with Rebennac introducing guest artists who tear into a bewildering medley of It's All Right with Me/Blue Skies/Will the Circle Be Unbroken. I would much rather have heard Rebennac do them. One more dash into studio climes: the title tune consists of echo-chambered back-up singers funk up The Lord's Prayer while Rebennac talks about what a freaky place "Hollywood" is. Man bites dog.

Back (really) to live proceedings: I Wanna Rock is a slapdash tune, which, judging by the writing credits, dates from the Fifties, when several small labels recorded New Orleans talent and things had to be made up on the spot. The men responsible, Otis "Bumps" Blackwell and John Marascalco, are also credited with writing most of the classic Little Richard catalogue.

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STEREO REVIEW
Once upon a time there were two brothers. PYE 12121 $6.98.
cals); instrumental accompaniment. Patiently; PHIL EVERLY:
great days of classic "hot jazz" in Chicago experience in New Orleans was—like the
good LP; his early and determining musical
pointing overall but has some fine moments.
Perhaps he is incapable of making a uniformly
good LP; his early and determining musical
perhaps his raison d'etre, the group is led by
songs, and, when in performance—doubt, opts
for a hard, driving beat. Otherwise, your
guess is as good as mine as to the worth of
what's going on here.

PHIL EVERLY: Mystic Line. Phil Everly (vo-
cials); instrumental accompaniment. Patiently; Lion and the Lamb; Mystic Line; January
Beverly; You and I Are a Song; and five oth-
ers. Pre 12121 $6.98.

Performance: Disarming and versatile
Recording: Excellent

Once upon a time there were two brothers
named Phil and Don Everly. Times got hard in
the record business and their "professional partnership" dissolved in 1974. Now Phil has
made another of his own records, and for
those who miss the sound of the Everly
Brothers he has overdubbed his own voice in
some of the songs so that "you'd swear it was
Don and Phil reunited." This should come as
good news to their fans. I don't know what
else to tell you about "Mystic Line" except
that Phil Everly has a surprisingly gentle,
easy-to-like way with a song even when it's
hard rock such as Lion and the Lamb, and
that his range extends from a reggae treat-
ment of When Will I Be Loved?, one of the
brothers' early hits, through such pretty bal-
lads as You and I Are a Song all the way to
period pieces such as Back When the Bands
Played in Ragtime. The program's pace is
cleverly varied, and the orchestral backing
throughout is exceptionally sonorous and spa-
"Mystic Mr.

TERRY GARTHWAITE: Terry. Terry Garth-
waite (vocals and guitar); orchestra. Slender
Thread, You Send Me, Pass On By, What
More; Robin's Nest; and five others. ARISTA
AL 4055 $6.98, © 8301-4055 H $7.98.

Performance: You tell me. . .
Recording: Fast-paced

It's extremely hard to tell precisely how good
or how bad Terry Garthwaite is as a singer, al-
though I'm sure she could make a living as a
ventriloquist any time she chose to. In Chang-
ing Colors, for instance, she puts on a vocal
display that would do credit to a female Rich
Little: accurate impersonations of Streisand,
Sarah Vaughan, Billie Holiday, and even, so
help me, Blossom Dearie jostle each other
through that one performance. By the end of
the album, when it seems as though you've
heard an intonation or a phrase that reminds
you of just about everyone else performing
publicly today with the possible exception
of Nicolai Ghiaurov, it has become a
come-out-come-out-wherever-you-are-situation.
This uncanny ability (illeg.) to sound
like twenty other people within the space of a
few minutes runs rampant and unselfcon-
sciously throughout Terry Garthwaite's work.
The only things to be said for sure are that she
plays excellent guitar, writes rather mopey
songs, and, when in performance—doubt, opts
for a hard, driving beat. Otherwise, your
guess is as good as mine as to the worth of
what's going on here.

ANDREW GOLD. Andrew Gold (vocals, gui-
tar, bass, piano, percussion); Mike Botts
(drums); Kenny Edwards (bass); other mu-
sicians. That's Why I Love You; Heartaches in
Heartaches; Love Hurts; A Note from You;
Resting in Your Arms; I'm a Gambler; and
four others. ASYLUM 7E-1047 $6.98.

Performance: Dry
Recording: Very good

There's a difference, as Writer's Digest likes
to tell beginning writers, between having
something to say and having to say some-

ARETHA FRANKLIN: You. Aretha Franklin
(vocals); orchestra. Mr. D.J.; Walk Softly;
You Make My Life; Without You; You Got
All the Aces; and five others. ATLANTIC SD
18151 $6.98. © TP 18151 $7.98, © CS 18151
$7.98.

Performance: Bloated
Recording: Outsize

Aretha's ego trip takes on all the signs of
being terminal. She's never sounded worse:
rough, jagged, and coarse. Her phrasing has
become a series of declamations almost un-
related to each other, and only her innate mu-
icianship saves this album from being totally
outlandish. There are moments—only mo-
ments, alas—in You Got All the Aces where
vestiges of what she once was shine through.
where the poignant vitality, the innocent sex-
uality, and the melting sincerity that were so
uniquely hers surface briefly. The rest of the
album is only another depressing example of a
thoroughbred who is apparently much more
content as some sort of circus horse. Sic
transit Aretha. . . .
P.R.

THE FOUR SEASONS: Who Loves You. The
Four Seasons (vocals and instrumentals):
Street Hoo Lovers; Harmony, Perfect Harmon-
y, Emily's (Salle de Danse); Mystic Mr.
Sum; and four others. WARNER BROS. BS
2900 $6.98.

Performance: Past tense
Recording: Lotsa echo-chamber, kids!

Although Frankie Valli's voice is the best-
known thing about the Four Seasons, and
perhaps their raison d'etre, the group is led by
Bob Gaudio, producer and provider of their
material. This attempt to modernize the Sea-
sions' sound, basically by not letting Mr. Valli
deliver himself of his unique pinched screech,
results only in their sounding like various oth-
er vocal groups from the Sixties who were not
half as successful as the Seasons in their prime—the Tokens, the Happenings, the
Vogues, and the Belmonts, to name four. It
should also be noted that Mr. Valli has a sepa-
rate, solo recording contract with another la-
bel in which he sings the same sort of glop
that made him famous in days of yore. He re-
cently had a hit with My Eyes Adored You,
not much different in style and substance
from Can't Take My Eyes Off of You of 1967.
Basta, basta!

PHIL EVERLY
A surprisingly gentle, easy-to-like way with a song
thing. Andrew Gold, who can sing pretty well and play several instruments, calls attention to that difference with this recording, since his writing in this case amounts to the most mundane handling of routine, time-honored song themes. If there's any passion to communicate any personal truth, I can't find it—his writing reminds me of another Digest, namely Reader's. He hasn't made it seem at all important that a singular, unique individual may have experienced anything beyond a dull, grinding study of how people write songs. His singing has a similar kind of neutrality about it, but it is straightforward and unassuming, and I think it would sound considerably less mechanical on a song with some natural juices in it.

N.C.

EDDIE HARRIS: Bad Luck Is All I Have. Eddie Harris (trumpet, saxophones, keyboards, string synthesizer, vocals); other musicians. Get On Up and Dance; Why Must We Part; It's a ghostly evocation of a brief and brilliant career.

EDDIE HARRIS: Midnight Lightning. Jimi Hendrix (guitar, vocals); instrumental and vocal accompaniment (overdubbed). Trash Man; Midnight Lightning; Hear My Train; Gypsy Boy; and four others. Reissue MS 2229 $6.98, © M8 2229 $7.98, © M5 2229 $7.98.

Performance: Ghoulish
Recording: Good

This is the second in a series of albums devised from doctored tapes concocted from various hit-or-miss Jimi Hendrix sessions done during his brief and brilliant career. It was announced a year ago that a wealth of Hendrix material had been discovered, that it would be lovingly culled and edited, that it would present him with due respect for his talent and memory, and that it would negate the shabby, substandard dregs previously released to cash in on his name.

I was not impressed with—the artistic merits of the first album in this series (STEREO REVIEW, July 1975), and the second is not any better. The tracks here are "ghost" sessions—Hendrix's voice and guitar, on a separate tape, were played over and over until posthumous hired-help musicians got up suitable backing. Even though the hired help is skilful and the "ghost" session idea is not new (Buddy Holly's living-room performances on a cheapo tape recorder were padded with backing from the Fireballs, a New Mexico group), it is still false and far from honorable. It calls to mind the grisly story of the undertaker who devised a mechanism so that the corpse could sit up in the coffin and wave to the messenger delivers a million tax-free dollars to his/her family on the way to the cold, cold corpse could sit up in the coffin and wave to the cold, cold ground.

There is nothing in this album to prove or disprove that Hendrix was, with the single exception of Eric Clapton, the primary guitarist of his generation. It proves only that the commercial necrophilia about Hendrix is of the most relentless and nauseating type, and that the producers of this jerk-puppet series are perhaps of the family Frankenstein. The public should boycott such body-snatching. Hendrix has the right to rest in peace. J.V.
Most people seem to take for granted the smooth, effortless way in which a Revox works. And that is as it should be.

For a great deal of time, effort and sophisticated engineering have gone into translating extremely complex function into lightning quick, responsive operation.

For example, when you press the play button of a Revox, you set in motion a sequence of events that take place with the precision of a rocket launching.

It begins with a gold plated contact strip that moves to close two sections of the transport control circuit board.

Instantaneously, the logic is checked for permissibility. If acceptable, a relay is activated.

Within 15 milliseconds, power is supplied to the pinch roller solenoid, the brake solenoid, the back tension motor, a second relay and, at the same time, the photocell is checked for the presence of tape. If present, Relay One self-holds.

Elapsed time, 25 milliseconds.

At 30 milliseconds, Relay Two closes and puts accelerating tension on the take-up motor.

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From 30 milliseconds to 300 milliseconds, mechanical inertia is being overcome and the motors and solenoids are settling down.

By 300 milliseconds, the brakes have been released, the pinch roller is in contact with the capstan shaft, the tape lifter retracted, the playback muting removed and the motors have come up to operating speed.

At 350 milliseconds power is cut off from Relay Two, which changes over to another set of contacts, releasing the accelerating tension on the take-up motor and completing a circuit through Relay One that, in turn, restores normal tension to the take-up motor.

Total elapsed time, 400 milliseconds. The Revox is now in the play mode.

And it's all happened in a fraction of the time it takes to read this sentence.

The 400 millisecond miracle.

More proof that Revox delivers what all the rest only promise.

This morose, monotone-voiced, former Rhodes scholar is one of the pop stars most often cited as a "poet." His lyrics are sometimes literate and clever, but his works in toto amount to no more than two and a half songs with endless slight variations. Kristofferson is the John Denver of manic depression. I say it's spinach.

GORDON LIGHTFOOT: Gord's Gold (see Best of the Month, page 80)

The FRANKIE MILLER BAND: The Rock. Frankie Miller Band (vocals and instrumentals), A Fool in Love; The Heartbreak; The Rock; I Know Why the Sun Don't Shine; Hard on the Levee; Ain't Got No Money; and four others. CHRYSALIS CHR 1088 $6.98.

Performance: Poor

Recording: Hazy

The music is okay, being based on the white Memphis style of the late Sixties (the Memphis Horns lend their customary valuable aid), but Frankie Miller is another of those fellows who write trite songs about how individual they are and how The World Is Out to Get Them. The title tune should be enough to keep you away. Filled with righteous-twerp sentiment, it tells of Miller's visit to Alcatraz where "those who can't conform to society" were held. (Alcatraz has not been used as a prison for some years, but the song is dedicated to prisoners everywhere.) He shivers when he looks at the—you guessed it—"cold grey walls," and he is overwhelmed by the thought that it could be him in the slams. (Why? Has he stolen a car, murdered somebody, molested a child, robbed a bank?) He scornfully concludes that America is not the land of the free. Well, if anyone wants to form a committee to get bad songwriting and whiny-pup vocals on the books as misdemeanors, I will happily serve (unpaid) as general secretary. J.V.

STEPHANIE MILLS: For the First Time. Stephanie Mills (vocals): orchestra. Living on Plastic; Please Let Go; This Empty Place; If You Can Learn How to Cry; All the Way to Paradise; and five others. MOTOWN M6-8591 $6.98.

Performance: Often charming

Recording: Good

Stephanie Mills is a bright, pretty young thing—fresh voiced, sincere, and oozing with ingenuous vitality. Just why the powers that be at Motown found it necessary to package her as if she were a siren in her late thirties, with the been-around, had-and-been-had sophistication of Hal David and Burt Bacharach, who produced and wrote all the songs in this album, is something of a mystery. To hear her grapple with the sour suavities of Loneliness Remembers What Happiness Forgot or the chrome and glass chic of Living on Plastic is like watching Tatum O'Neal take a full-dress whack at the role of Mother Goddam (you know—that kid just might). When the material allows it, as in All the Way to Paradise, Mills is charming, winsome, sensitive, and touching. I'd be interested in hearing her once they get rid of the musical eyelashes, falseys, and sequin cape. As for you, Bacharach and David, tsk. tsk.

MICHAEL MURPHY: Swans Against the Sun. Michael Murphy (vocals, guitar); vocal and instrumental accompaniment. Swans Against the Sun; Renegade; Rhythm of the Road; Pink Lady; Mansion on the Hill; Dancing in the Meadow; and five others. FRIC PE 33851 $6.98, © PEA 33851 $7.98, © PET 33851 $7.98.

Performance: Exeunt swans, enter blurbie-bird

Recording: Clean

Here's yet another example of fancy sidemen and guest stars trying to prop up a front man who can't cut it. Charlie Daniels, John Denver, James Guercio, Tracy Nelson, Earl Palmer (he was the drummer on the original Little Richard sessions), and others toss their expertise on the table as though they were leaving a tip for an incompetent waiter on whom they had taken pity. The material, with the single exception of Hank Williams' Mansion on the Hill, is all by Murphy, and it is all consistently feeble and fey. The album was recorded at Caribou Ranch; Murphy's delivery suggests he feared waking the snoozing caribou.

NEKTAR: Recycled. Nektar (vocals and instrumentals). Recycle; Cybernetic Consumption; The Time Machine Countdown; Automation Horoscope; Sao Paulo Song; Do the Bic; and five others. PASSPORT PS 9811 $6.98.

Performance: Printed-circuit rock

Recording: Very good

Here's just what the world needed: another sound-effects record. It sounds as if it involved a cast of thousands (an international one—it was conceived in Germany, recorded in France, mixed in England) and ran up the kind of electric bill familiar to Yes and Kraftwerk and the New Orleans Superdome. I can't catch enough of the lyrics to find out what, if anything, Nektar wants to recycle, but apparently it's some combination of cosmic observations and Rick Wakeman's key- board technique. The album flashes on a melody now and then, but most of the time is taken up with electronic vamping and vocals straining with adolescent urgency, which seems to be a standard item with such groups. The best thing about it is the sound, on side one, of something gigantic falling and falling and finally hitting bottom with a great, prolonged, electronically simulated crunch. That's useful; you can turn the whole thing sideways in your mind and imagine a cosmic home run and the subsequent routine explosion of the modern scoreboard . . . and that, if you've been keeping up with the world, should get you to thinking about Astronaut. That's the kind of grass I think these boys have been smoking.

OLIVIA NEWTON-JOHN: Clearly Love. Olivia Newton-John (vocals); orchestra. Lovers; He's My Rock; Let It Shine; Clearly Love; Just a Lot of Folk; and six others. MCA MCA-2148 $6.98, © MCAT-2148 $7.98, © MCAC-2148 $7.98.

Performance: Nice

Recording: Nice

Olivia Newton-John sounds like a nice girl singing nice songs. A lot of nice people seem to enjoy her work, and certainly she makes one of the prettiest pictures ever to flash across your TV screen. As to how well she sings, I really don't think I could tell you, for she seems to come gift-wrapped in such an attractive package of winning ways that I can't
help but like her. She wends her way prettily through such things as Clearly Love or He Ain't Heavy . . . He's My Brother (although the thought does occur during this last song that perhaps prettiness and charm aren't exactly what the writers of it had in mind).

Anyway, Olivia is in the tradition of the Janet Gaynors, the June Allynors, and another Olivia—de Havilland—all of them ingenues who radiated a genuine niceness along with a certain blankness. As to who and what they really are—well, it wouldn't be nice to ask that, now would it?

P.R.

RECORDING OF SPECIAL MERIT

THE NIGHTHAWKS: Rock 'n' Roll. Mark Wenner (harmonica, vocals); Jan Zukowski (bass, vocals); Pete Rugus (drums, vocals); Jim Thackery (guitar, vocals). Red Hot Mama; Can't Get Next to You; Keep Cool; Ain't Heavy. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama. In between there are such de-sturdy recreations of Elmore James in Red Hot Mama.

The Nighthawks are a local band operating out of Washington, D.C., and playing points fairly close by—a dash to Baltimore, a weekend in the Carolinas, a two-night stand in Virginia. What makes the Nighthawks notable is their tightness, confidence, good solo work, and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing. They do casually what such groups as J. Geils can no longer do and solid ensemble playing.

The best of the Top Forty groups and the (yes) artistic production of their records reveals a craftsmanship that anyone from Richard Strauss to Leonard Bernstein might understand. Top Forty music is meant to please and entertain; it isn't meant to be. But the best of it is done with consummate skill.

Tony Orlando, a twenty-year veteran of the music business in all its delights and disappointments, began his career as a wavy-haired bleater of teen love songs in the late Fifties and early Sixties. With the release of Bless You, he also got the nickname of "The Grey Ghost" because his records were being played on both black and white radio stations. Only he and the Righteous Brothers ever crossed that tricky bridge.

Orlando was doing all right, and he might have done better except that the English Invasion took place and he, like most American solo singers, was nudged into the shadows. So ended one career. Because of his experience (Continued on page 90)
MORE than most rock groups, the Kinks have relied for their musical identity and direction on the talents, whims, and fetishes of one individual. Were it not for Ray Davies' singular songwriting and vocals (which is not to slight brother Dave's unique guitar work), the band would sound like a dozen others, competent but unremarkable. It is no surprise, then, that the credits for their new album, "Schoolboys in Disgrace," state that it was "written, arranged and produced by Master Raymond Douglas Davies." It's fair to assume that he was responsible for the choice of subject as well, however, and that, frankly, is a matter for surprise.

Looking through my recently completed (thanks to K-Mart cut-out bins) collection of the group's early Reprise albums, I was struck by how very many Kinks songs deal with the wish to be somewhere, sometime, someone, or even something else (King Kong is a good example). Long before it became fashionable in rock, Ray Davies was a master at creating a nostalgic mood ("I'm a twentieth-century man, but I don't want to be here" and "Take me back to those Black Hills that I have never seen"—you can't get much more nostalgic than that, surely). And, now that it's once again out of vogue (for which mercy God be praised), Ray has returned to this genre, if indeed he ever left it. Even given all that, the last thing in the world I expected now was an album full of yearning which mercy God be praised), Ray has returned to this genre, if indeed he ever left it. Even given all that, the last thing in the world I expected now was an album full of yearning, a little sentimentality, a real rocker, and it's hilarious despite its lyrical moralizing. Of course, it may only seem that good because the rest of side one is so dead, especially a seven-minute ditty called Education that sounds like a meeting between Apeman and Harry Nilsson on an off day for them both. Ray is so fond of it he feels compelled to bring it back for a last chorus to end the album—"even aborigines need education" indeed.

The Kinks: Music as Disposable as The Komix

Oddly enough, the best track here has a thoroughly contemporary, even trendy, arrangement, and it is titled No More Looking Back. The entire piece is played and sung to perfection and demonstrates once again with what ease Ray Davies could become one of our best schlock writers, cranking out hit singles at the drop of a hat. Perhaps he should.

On the one hand, this is no "Lola," and I suspect it will date very quickly, but then if Elton John is right, and music is or should be "disposable," that would be all to the good, wouldn't it? I devoutly hope not, but I'm beginning to wonder. —Linda J. Frederick

THE KINKS: The Kinks Present Schoolboys in Disgrace. The Kinks (vocals and instruments); J. Beacham (trombone); A. Holmes, N. Newell (saxophones). Schooldays; Jack the Idiot Dance; Education; The First Time We Fell in Love; I'm in Disgrace; Headmaster; The Hard Way; The Last Assembly; No More Looking Back; Finale. RCA LPL-15102 $6.98, © LPKI-5102 $6.98, © LPS1-5102 $7.98, © LPK1-5102 $7.98.
The AR turntable was introduced in 1961. It created a revolution by virtue of its unprecedented combination of professional standards of performance, simplicity of operation, and low cost. Hirsch-Houck Laboratories reported on it as follows in Stereo Review for August, 1967:

The AR manual-play turntable has been, for some years, an outstanding example of professional-caliber performance at a modest price.

The wow and flutter were extremely low—0.035 and 0.03 per cent, respectively, at 33 1/3 rpm. The unweighted rumble (NAB standard) was -38 db including vertical and lateral components, and -42 db with vertical components cancelled out. Not only is the rumble figure at the level of the best we have ever measured, but since the basic rumble frequency is about 5 Hz, it is way down in the subsonic, sub-audible region.

As a frame of reference, these performance figures are slightly better than those we measured on one of our AR turntables several years ago. The speed of the AR XA turntable was exact, and was not affected by line-voltage variation over a far wider range than would ever be encountered in practice (even in countries with poor line-voltage stability).

The AR XA turntable, complete with its oiled walnut base, plastic dust cover, stylus-force and overload gauges, and attached power and signal cables, whose performance is unsurpassed and is, at best, equalled by only two or three much higher-priced record players.

The incredible thing is that AR has achieved this level of performance and sophistication with apparently the simplest of techniques—plus the soundest possible precision engineering. It has been said about the AR-XB that it leaves you wondering if perhaps some other manufacturers have been getting too complicated. We wonder too after testing this unit. At the price, it's got to be a bargain, yet still a bargain that can be stacked up against the best of them.

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It has everything, even built-in speaker and handy carrying case. For those interested in specs, the CR-210 raises the technological standards for cassette recorders with wow and flutter characteristics found only in some larger machines. It takes tape recording out of the dark ages.

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and contacts in the music business, he became general professional manager of a music publishing company and was content to stay there until the day in 1970 when Hank Medress, formerly of the Tokens, made equally obsolete by the triumphant English, came and asked him to do the vocal on a demonstration record called Candida. The tune had been deliberately crafted so that it sounded like an amalgam of the Drifters, a great black Fifties group, and the white whine of the Four Seasons. Orlando, not anxious to compromise his job, said no, but Medress was persistent, and—after clearing it with his boss at the publishing concern—Orlando went in and did the vocal. He wasn't impressed with the tune, but it sold a million-plus copies.

Two other hits followed, the second of them—'Tie a Yellow Ribbon 'Round the Old Oak Tree—so colossal that Orlando gambled and accepted the urgings of his advisors that he go on the road with two back-up lady singers. Not the least of the pressures to tour again was the existence of several pirate groups claiming to be Dawn who were pulling in dough, disappointing audiences, and killing the value of the group name.

Orlando slogged through various tours to put the pirates out of business. Whatever money left over after what was spent on lawsuits was ploughed back into the undertaking. Eventually, and much to their surprise, the group landed in Hollywood and got a shot at a TV series: they are now in clover.

May they stay there forever. Orlando is a good vocalist. Bing Crosby, whose background in blues and jazz was similar to Orlando's in soul and rock, often sang material that was beneath him, and he had no control over the arrangements framing his essays for what the producers considered to be "hit songs." This locked-in position imposes a discipline that compels a singer to fight the mediocrity to a standstill or surpass it. An unprejudiced listening to Orlando will show that, whether he fights a battle to a draw or a victory, he graces his material with talent, taste, and—most precious—experience. J.V.

OZARK MOUNTAIN DAREDEVILS: The Car over the Lake Album. Buddy Brayfield (keyboards, oboe); Steve Cash (harmonica); Randle Chowning (guitars, mandolin, harmonica); John Dillon (guitars, mandolin, harmonica); Mike Granada (bass); Larry Lee (drums, guitar, synthesizer). Keep on Churnin': If I Only Knew; Leatherwood; Cobblestone Mountain; Mr. Powell; Gypsy Forest; and five others. A&M SP-4549 $6.98.

Performance: Terrific

Recording: Clean

I love the first side of this album, for reasons both abstract and suspect. I'm sure it's blind infatuation. But I find Keep on Churnin' to be a funny and good-natured send-up of all those tunes ever written that urge us to be Natural (pronounced "nat'cherl" or "nat'char'l"). Its antecedents go back to vaudeville pastries like I Wanna Count Sheep Till the Cows Come Home or cabaret items such as (Woof, Woof) It's the Animal in Me. Best of all is the closing track on side one, Gypsy Forest, with a yah-choo, heel-stomping beat to make the floor shake and lyrics that are the best agreement between poetry and pop we are likely to get this or any other year. The tune brings dreams—what better test can it pass?

Side two shows the Daredevils to be an accomplished urban-country-folk band without, alas, the glow that makes the first side gleam. But stars shine only at night. So welcome the night, and this remarkable, one-sided album.

VAN DYKE PARKS: Clang of the Yankee Reaper (see Best of the Month, page 81)

Doctor Love Power; Love Played a Game; and six others. Hi SHL 32091 $6.98.

Performance: Fair
Recording: Good

Ann Peebles' smoldering good looks unfortunately aren't much of a help here unless you plan to frame the gorgeous cover photo of her and then switch on Tina Turner, say, or Lena Horne. Ms. Peebles sounds forced, strained, and, at times, simply amateurish. Producer-arranger Willie Mitchell, who is responsible for several of the songs, seems to be pushing what is still an embryonic talent well beyond its limits, fraying badly whatever was there in the first place. The result is discomfort for performer and listener alike.

P.R.

PINK FLOYD: Wish You Were Here (see The Simels Report, page 56)

QUICKSILVER MESSENGER SERVICE: Solid Silver. Gary Duncan (vocals, guitar); Dino Valenti (vocals, guitar); John Cipollina (vocals, guitar, steel guitar); David Freiberg (bass, vocals); Greg Elmore (drums); Nicky Hopkins (piano); other musicians. Gypsy Lights; Hebeie Jeebies; Cowboy on the Run; I Heard You Singing; Worryin' Shoes: The Letter: and four others. CAPITOL. ST-11462 $6.98,

Performance: Very good
Recording: Excellent

Just look. Just look at it. Pop music has reformations coming out its ears. There was Dylan getting hack into the swing, then Dylan and Baez touring together again; the Burrito Brothers have regrouped as best they can; Crosby, Stills, Nash, and Young are keeping in touch; Sandy Denny is back with Fairport Convention; Marty Balin returned to the Jefferson Starship, née Airplane; and now Quicksilver has put itself together again. Clearly, the Golden Age is missed. Unfortunately, it's not the kind of thing that "getting back together" can reproduce. One of the fly-by-night operators who stepped in between The Passing and this attempted re-creation—I believe it was David Bowie, although I honestly tried not to keep track of all that—may have hit the nail on the head when he said, "Time can change me/But I can't change time."

There are good enough albums coming out of this surge, especially from Fairport and the Starship, but it just isn't the same. An era passes because that's what eras do. This reformation doesn't go badly in strictly technical terms—in fact, in isolated cuts such as They Don't Know, it shows a versatility that might be enough to vault—that make that ooze—Quicksilver out of this futile eras-building business and into whatever would seem to go with the immediate future, and it has a couple of pleasant cuts that hark back to the old days (in Cowboy on the Run and Flumes) without going out of style. But much of it seems to be a competent rehashing of riffs and runs endemic to an old form that just isn't slick enough for the luxury-mongering that is understandably going on in these harder times. I liked 1969 better too, fellows, but we have to live in whatever time we've got, and something about this one doesn't go with these catch-as-catch-can bandisger vocals, or the screaming through simple blues-based progressions of the electric guitar, or any of several other elements of the old way. N.C.

(Continued overleaf)
ROXY MUSIC: Siren. Roxy Music (vocals and instrumentals). Love Is the Drug; End of the Line; She Sells; Nightingale; Just Another High; and four others. ATCO SD 36-127 $6.98. £ TP 36-127 $7.98. © CS 36-127 $7.98.

Performance: Fair
Recording: Stuff and nonsense

Bryan Ferry, the mainspring of this group, must have had a lot of control-room fun with this one. Too bad it isn’t contagious. For a while it’s mildly amusing, but after several bands (all Ferry compositions) of electronic shouts, murmurs, wheezes, and gasps, and only sporadic bursts of real music, the head aches, the patience wanes, and the mind begins to bend in boredom. Ferry continues to shout, murmurs, wheezes, and gasps, and this one. Too bad it isn’t contagious. For a must have had a lot of control-room fun with Bryan Ferry, the mainspring of this group, C) TP 36-127 $7.98. (c) CS 36-127 $7.98.

High; bands (all Ferry compositions) of electronic

sense? A time waster for him and us.

Somehow it reminds me of my boyhood and

my prayer that it will be granted, and he will have my congratulations when it is. J.V.

Joe South must have a commanding way about him—he’s not only accompanied by his own guitar and various vocal and instrumental assistants but has even managed to ring in the Atlanta Symphony on his recording sessions. He says it takes him anywhere from fifteen minutes up to “several hours” to write one of his songs. Complete texts furnished. P.K.

SPANKY & OUR GANG: Change. Spanky & Our Gang (vocals and instrumentals); orchestra. Standing Room Only; L.A. Freeway; National Stardom; Dues; and four others. Epic PE 33580 $6.98.

Performance: Astounding!
Recording: Ditto!

The above evaluation is my homage to chutzpah. Jim Charne, in his very good liner notes, predicts that those words will be this magazine’s verdict on this new Spanky & Our Gang release. Well, if the album were as witty and as well done as Charne’s notes, then—who knows?—perhaps I could squeeze out more than the “Performance: Mild/Recording: Stuffly” that I feel. Spanky McFarlane and Nigel Pickering are the only original returning members of the group that had a great deal of success in the Sixties. The new additions are Jim Moon, Marc McClure, and Bill Plummer. Yeah, it’s a nice enough sound—California c- & w, and Spanky still has that clean, high, floating Mama Cass-ish style in the lead vocals—and the songs are all pleasant enough, but (yawn) somehow I don’t care very much. Two bands here, I Wish We’d All Been Ready and National Stardom, are really dreary, pompous stuff. so over-arranged and stuffily produced (with the oily profundity accentuated only by the addition of the San Francisco Symphony String Ensemble) that I roused myself from my torpor just long enough to be actively bored. P.R.

SLY STONE: High on You. Sly Stone (vocals, keyboards, arrangements); instrumental and vocal accompaniment. I Get High on You; Crossword Puzzle; That’s Loven’ You; Who Do You Love?; Green Eyed Monster Girl; and five others. Epic PE 33835 $6.98.

Performance: Heartening
Recording: Very good

After his enormous success of the late Sixties and early Seventies, Sly Stone went into an artistic decline from which he is still trying to recover. Where once his music had been zestful and assertive, it became furtive and morbid. Sly has been rebuilding himself slowly; in this album he comes the closest he has in years to being the great Sly of old. Nearly all the material here is upbeat, and the arrangements have the same elfin quality that his great ones of the Sixties did. The band sounds happy and loose, though it lacks the pristine punch of his Sixties group. The material is lighthearted, but there are some uncomfortable moments when Sly tries to second-guess himself: Le Lo Li, for instance, is a pale rewrite of Sing a Simple Song.

Although this is an enjoyable album—and entirely free of the hammy theatrics and racial cant that unfortunately characterizes so much black music today—it is so sad to realize that Sly is trying to pay off a mortgage on his future with a lien on his past. Still, he’s in there pitching, and at this point, that’s what counts.

J.V.

(Continued on page 94)
The meter is from the Bose Syncom™ speaker testing computer. This meter can indicate differences in frequency response between speakers as small as 5 hundredths (.05) of a dB. Surprisingly, this degree of precision is necessary to measure speakers accurately to our typical tolerances of ±1.5 dB.

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DIONNE WARWICK: Track of the Cat.

Also available in Canada.
PETER YARROW AND WIFE MARY BETH

An earnest, engaging album

collection of his own songs here, performed with the warmth and ease that have become Withers' trademarks. Even She's Lonely, a ballad in the Eleanor Rigby genre, is filled with an affectionate sympathy that lifts it out of soap opera. Life through the Withers viewing lens certainly has a rosy glow about it. If for nothing else but that—and that is quite a bit these days—I recommend it.

P.R.

PETER YARROW: Love Songs. Peter Yarrow (vocals and guitar); orchestra. Such Is Love; Love Among People; Blue Sky Promise; Ms. Rheingold; and five others. WARNER BROS. BS 2891 $6.98, ® M9 2891 $7.98, © MS 2891 $7.98.

Performance: Good
Recording: Excellent

Here's another earnest, mild-mannered and, most of the time, very engaging album by Peter Yarrow. This time out he's using background voices, the most pleasing of which belongs to Mary McGregor, and the effect, while not as mesmerizing as the olden, golden days with Paul and Mary, is a vast improvement over his last few solo albums. He's at his easy best drifting along gently with songs such as How Can You Mend a Broken Heart and Blue Sky Promise, where his naive lyric style and unaffected voice create a comfortable, lulling mood. Humor, it becomes obvious, is definitely not one of his strong points. Ms. Rheingold, a supposedly snappy little number in the manner of The Most Beautiful Girl in the World ("Isn't Garbo Isn't Dietrich . . .") falls flatter than dinner-party conversation at Ms. Haversham's. The production work, by Barry Beckett and Yarrow, is silken and unobtrusive. It's not an exciting album, but it's easily the best Yarrow has done since the split and an awfully pleasant one most of the time.

P.R.

RECORDING OF SPECIAL MERIT

NEIL YOUNG: Zuma. Neil Young (vocals, guitar); Crazy Horse (instrumental, backing vocals); Steve Stills (bass); other musicians. Don't Cry No Tears; Danger Bird; Pardon My Heart; Lookin' for a Love; Barstool Blues; (Continued on page 98)

More bang than a Wallbanger, more fire than a Sunrise.

The power behind Swampwater is Green Chartreuse, 110 proof. It has no mercy; that's why it's called Green Fire.

To sample this powerful drink, (legal in all 50 states) ask any bartender to fix a batch. He may say, "What's Swampwater?" Give him the recipe!

To each 1½ ounces of Green Chartreuse, add 6 ounces pineapple juice, ¼ lime and ice. Stir.

Note: For do-it-yourselfers, one bottle of Green Chartreuse makes one gallon of Swampwater.
"When my teeth are at rest in a glass by my bed/And my hair lies somewhere in a drawer/Then the world doesn't seem like a very nice place/Not a very nice place anymore." It's Peggy Lee singing those singularly unbeguiling words, in her 3 a.m. pitch-dark side-of-the-morning voice, from Ready to Begin Again, the opening song on her new album "Mirrors." By the song's end, newly bathed, hair and teeth retrieved and in place ("I'm ready to begin again/Looking fresh and bright/Trust/Ready to begin again/As everybody—must"), one of the great survivors has given you a lesson in the fine art of survival. It's strong, mordant stuff, and, needless to say, it is superbly interpreted by Lee.

The consistent level of quality this finest of all our popular singers has maintained over two and a half decades in the entertainment firmament is unique, I think, in the annals of American music, for Peggy Lee does not merely survive—she triumphs. "Mirrors." By the song's end, newly bathed, hair and teeth retrieved and in place ("I'm ready to begin again/Looking fresh and bright/Trust/Ready to begin again/As everybody—must"), one of the great survivors has given you a lesson in the fine art of survival. It's strong, mordant stuff, and, needless to say, it is superbly interpreted by Lee.

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"Mirrors" is a rather special album. Its ten songs were written by Jerry Lieber and Mike Stoller (they did her classic Is That All There Is?, as you may recall), lavishly and idiosyncratically arranged and conducted by Johnny Mandel, and engineered (mostly by Hank Cicalo) to give Lee the kind of precision that is the audio equivalent of the justly famed lighting cues that so ably conjure up a whole spectrum of moods in her live performances. This is the same Lieber and Stoller, by the way, who gave us Jailhouse Rock, Poison Ivy, and other random goodies of early and middle-period rock. The difference between those little efforts and what they have done here for Lee is the difference between button mushrooms and truffles. For instance, there is a little six-line gem titled I Remember ("I remember/When you loved me/I lie on my bed/Hands under my head/And remember when you loved me"). pensively and coolly performed by Lee, that simply leaves no doubt that they are all grown up now.

Ready to Begin Again, admirable as it is, is perhaps a bit too rough on the sensitivities of those who might best identify with it ever to gain wide popularity. The Case of M. J. ("How old were you when your father went away?") another strong idea that ticks remorselessly away like a small jeweled timebomb, may be a better candidate. The ambiance throughout is determinedly theatrical and not of our own—or, indeed, of any real—time. It is of the theater and the film image of the Weimar Republic, a glittering depravity set to the seductive undercurrent of a Teutonic jazz waltz. Even when the songs lapse into gaudy, overblown Weill-Brecht pastiche (as in Professor Hauptmann's Performing Dogs, A Little White Ship), the effect, heightened by Mandel's Peter Kreuder-like arrangements, is one of dreamy exoticism. Their very unreality paradoxically justifies Lee's only performing fault: a habit of perfection that sometimes threatens to seal us all—singer, song, and audience—in a drop of polyvinyl amber.

Three other songs, the sinuous and sexy Some Cats Know, the Cole Porterish Say It ("You are not my Galahad/Not your Guinevere/I am not in love with you/You are not my Galahad/my dear"). and the ragtimey I've Got Them Feelin' Too Good Today Blues are, on the other hand, superbly crafted, just-right pieces of special material, ravishingly performed by Lee in that inimitably drawly, mush-mouthed, pelvis-swinging style that reminds us she's still one of the best jazz singers around.

Love letters tend to be more effective when kept brief, so I'll only add that it is a matter of great personal comfort to me to know that Peggy Lee is always Ready to Begin Again, as experimental albums such as this one so happily prove. She is a national treasure, an occasion for Bicentennial pride and unceasing celebration.

—Peter Reilly

PEGGY LEE: Mirrors. Peggy Lee (vocals); orchestra, Johnny Mandel arr. and cond. Ready to Begin Again; Some Cats Know; I've Got Them Feelin' Too Good Today Blues; A Little White Ship; Tango; Professor Hauptmann's Performing Dogs; The Case of M. J.: I Remember; Say It; Longings for a Simpler Time. A&M SP-4547 $6.98, 8 4547 $7.98, © 4547 $7.98.
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CIRCLE NO. 27 ON READER SERVICE CARD

MARCH 1976
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M8 2242 $7.98, © MS 2242 $7.98.

Performance: Straightforward
Recording: Very good

Neil Young's most devoted fans are young
women. I have asked several (well, two or
three) young women about this, and they say
they don't want to sound unliberated, but Neil
is so vulnerable, so helpless. He seems to
make each one feel he needs her, and perhaps
he does; something is always happening to
him. One of the later things was the removal
of "an object" from his vocal cords, after
he'd been reduced to answering the telephone
by whistling. He is not a good singer or a very
fantastic guitarist but a stylist, and this new
album seems to represent more accurately the
kind of style he has—in addition to being just
plain better—than his last several. It has the
best production of any since "Harvest," and
it is more typical of Young's self-image and
viewpoint than the easygoing "Harvest"
was. I still like the other Crazy Horse album
better, but this does have something that has
been missing lately. It has flaws, too, but they
are pretty well confined to Stupid Girl, which
says, less elegantly, what kicking the coffee
table would say, and Cortez the Killer, where
the social moralizing is hackneyed, the per-
sonal connection is confusing, and the instru-
mental parts are long and tedious. The rest of
it is rock, technically, basic and unadorned rock—but it has Young seeming off to the side
of rock, or of any technical category, where
there's just you and him and his fear and anx-
xiety and hope and vulnerability. Don't Cry No
Tears is about as positive as he ever becomes.
Crosby, Stills, and Nash make a brief and
gentle appearance in Through My Sails,
which is a bonus but seems tacked on. Gener-
ally, Young makes a good, honest effort to
connect with his listener one-to-one, and
that's the impression that lasts.

N.C.

RECORDING OF SPECIAL MERIT
ZAPPA-BEEFHEART-MOTHERS: Bongo
Fury. Frank Zappa (guitar, vocals); Captain
Beefheart (vocals, harmonica); George Duke
(keyboards, vocals); Napoleon Murphy
Brock (saxophone, vocals); Bruce Fowler
(trombone); Tom Fowler (bass); Denny Wall-
ey (slide guitar, vocals); Terry Bozzio
(drums); Chester Thompson (drums). Debra
Kadabra; Carolina Hard-Core Ecstasy; Sam
with the Showing Scalp Flat Top; Poofter's
Froth Wyoming Plans Ahead; 200 Years Old;

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Tape by Capitol CrO2.
Frank Zappa's career is based on the old rule of successful preachers and comedians: expose the idiocies and corruptions of society without ever telling the audience, who agrees with you, that you are talking about them. Zappa appears to be convinced, with some justification, that the human race is a bunch of damnfools, the proof being that he has been succkerming them all these years by letting them think that he is referring to some other race.

Musically, Zappa is an accomplished connoisseur of well-planned chaos, of which this album is a perfect example—perhaps the zenith of his anti-talents. The arrangements are carefully disruptive and meticulously confusing. It may even be art. If it is, then great credit must be given to Zappa's old friend and sometime enemy, Captain Beefheart. The wondrous Captain, of whom I am a devoted fan, has seldom been more overpowering. His vocals and recitations of his wayward poems propel the album through a display of anarchistic fireworks. The Captain's definition (if he has one) of anarchy is, I suspect, different from Zappa's. The Captain would probably see it as the ultimate color interplay of oils on the waters of freedom; Zappa would have it as a tidal wave that drowns all those damnfools. The difference between Zappa and Beefheart is clearly heard in the album. "Bongo Fury" is some kind of musical event.

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“She casts a midnight magic over everything”

Cabaret: Greta Keller

THERE’s a little of Dietrich in her, a little of Hildegard, a lot of Lotte Lenya. Yet Greta Keller stands all alone, her smoky voice transforming ordinary love songs into exalting experiences. Though she has been compared to caviar, she is really incomparable. She casts a midnight magic over everything she undertakes. She is ageless, and her appeal seems to be universal, captivating audiences in every country, on every continent. At the end of her recital, she speaks of herself as being “blessed with lovely friends all over the world.” Coming from another singer, that might sound like boasting; from Greta, it is only a simple statement of truth. If there were no such thing as a night club, it probably would be necessary to construct one in order to house her remarkable personality. A cabaret is her natural habitat. But she has also sung in concert halls, and in her latest album, Stanyan’s “Greta Keller in Concert,” she makes the New York concert hall sound as intimate as a bistro. For once, the applause of admirers does not seem excessive; it is part of the rite of hearing her.

A song is fortunate to have itself chosen for a Greta Keller program. She is introduced by Rod McKuen (it’s his record company, after all), and then immediately makes his woollyworded I’ll Catch the Sun sound like more than it is. Listen to what she does with them when she dusts off such ballads as Easy Come, Easy Go, These Foolish Things, and Thanks for the Memory. The tired old lyrics and tunes suddenly sound remarkable, fresh, touching in ways they never were before. She takes a medley of Cole Porter songs, or songs from Cabaret (she was in the movie, and it seemed so natural for her to appear in that Berlin setting you almost took it for granted that she was there), or a forgotten Noel Coward song like Never Again and moves you to tears with the way she treats it. Even a Stephen Sondheim song sounds like real music when she undertakes it; Delancey Street glitters like Fifth Avenue at Christmas when she sings Manhattan. And then there are the little surprises—the sleepy charm of Lazy Afternoon from The Golden Apple, ballads in German by Walter Jurmann, a song called The Other Woman with its wry, bitter little ending. But enough. The record itself is there waiting to be savored, and it is one of her best. Which means it is a very good record indeed.

GRETAKELLEN: In Concert. Greta Keller (vocals); Walter Grimm (piano). Spoken introduction by Rod McKuen. I’ll Catch the Sun; Manhattan; Easy Come, Easy Go; I Think of You; Lazy Afternoon; Losing My Mind; These Foolish Things; Never Again; Married; Maybe This Time; The Other Woman; Walter Jurmann Medley; Cole Porter Medley; The Party’s Over Now; Thanks for the Memory. STANYAN 10041 $6.98.

Paul Kresh

FOLK

THE CHIEFTAINS: 5. Paddy Moloney (uileann pipes, tin whistle); Sean Potts (tin whistle); Michael Tubridy (flute, concertina, tin whistle); Sean Keane (fiddle); Martin Fay (fiddle); Derek Bell (harps, oboe, tinpan); Peadar Mercier (bodhran, bones); Ronnie McShane (bones). The Timpan Reel; Tabhair dom do Lamb; Three Kerry Polkas; Ceol Bhríotáinach; The Chieftains Knock at the Door; and five others. ISLAND ILPS 9334 $6.98.

Performance: The pipes, the pipes . . . .

Recording: Very good

Cody Sandifer “wanted to swing too much,” he was fired. Miller knew exactly what he wanted and got it every time around—music made by expert players; bland band music coifed up like a mannikin; vocalists like Ray Eberle and Marion Hutton who stood up, delivered a poker-faced, unstrained run-through of a lyric, and got out of the way; trumpets that never pierced; treatments of tunes by Debussey (My Reverie) and Ravel (The Lamp Is Low) that removed all the little kinks and just let the melody drone away like a musical tranquilizer. Miller’s version of Stairway to the Stars, for instance, is carefully carpeted over in blue velvet. This music still conjures up young couples of the Forties dreamily dancing away the night at Glen Island Casino, everyone groomed to a fare-thee-well, nobody raising a voice or getting drunk in the ugly way of a John O’Hara character. It all sounds so irretrievably agreeable now—you’d never suspect how violent the world was growing in the days when Glenn Miller’s orchestra was soothing us to sleep to the sweet sound of Moonlight Serenade.

P. K.
STANLEY CLARKE: Journey to Love. Stanley Clarke (vocals, organ, gong, bass, piccolo bass, synthesizer, hand bells, tubular bells); instrumental accompaniment. Silly Putty; Journey to Love; Hello Jeff; Song to John (Parts I and II); Concerto for Jazz/Rock Orchestra. NEMPEROR NE 433 $6.98, TP 433 $7.98, CS 433 $7.98.

Performance: Stupifying
Recording: Clean and clear

There come to the experienced reviewer certain moments of dread when he reads the liner credits before playing an album. This is especially true of jazz records, where the most mediocre ideas are often stretched out to the most indulgent lengths. Permit me to share my apprehension about this one with you: I see something ominously titled Concerto for Jazz/Rock Orchestra, running nearly fifteen minutes, plus a tribute (the hundredth, surely) to the late John Coltrane that runs nearly ten. There is also a salutation that reads: "Thanks to L. Ron Hubbard for his never-ending inspiration." Mr. Hubbard is, of course, the founder of Scientology. A spark of hope is lit when I see Jeff Beck listed as a sideman, but the spark is extinguished when I also see the name of Mahavishnu John McLaughlin. Well, so much for the album cover. I've made out my will, and I am now going to play the record.

Morning! The album is over, and I am alive! (Must remember to fill out application for reviewer's veteran's benefits.) J.V.

BILLY COBHAM: A Funky Thide of Sings. Billy Cobham (drums, synthesizers); instrumental accompaniment. Panhandler, Sorcery, A Funky Thide of Sings, Thinking of You, and four others. ATLANTIC SD 18149 $6.98, TP 18149 $7.98, CS 18149 $7.98.

Performance: Wayward
Recording: Flashy

Billy Cobham is a forceful and creative jazz drummer. He was a member of Dreams, a 1970 group that could have been the best jazz/rock organization ever, but the band ran into difficulties and disappeared. Some of the other personnel from Dreams are on this album, notably Randy (trumpet) and Michael (saxophone). Although talent is present, what spoils the proceedings is the same thing that spoiled Dreams—the talent can't decide where to go and how to do it. To quote the old line: "The hero jumped on his horse and galloped off furiously in all directions." Everybody plays like mad, and all sorts of special effects are thrown in, but the end result is wasted energy. Pity. J.V.

URSZULA DUDZIAK: Urszula. Urszula Dudziaik (vocals, percussion, synthesizers); instrumental accompaniment. Papaya, Sno King;
CIRCLE NO. 43 ON READER SERVICE CARD

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RECORDING OF SPECIAL MERIT
PAUL HORN: Paul Horn + Nexus. Paul Horn (alto saxophone, clarinet, piccolo, flutes); Nexus (percussion). Sound was okay the first time around, but it has become a terrible bore. C.A.

RECORDING OF SPECIAL MERIT
KEITH JARRETT: Back Hand. Keith Jarrett (piano, wood flute, oyster drum); Dewey Redman (tenor saxophone, musette, maracas); Charlie Haden (bass); Paul Motian, Guilherme Franca (percussion). Impulse ASH-9305 $6.98, © 8027-9305 H $7.98.

DAVID MATTHEWS: Big Band Recorded Live at Five Spot. David Matthews (piano); orchestra. Pianiste. 'Round Midnight; Nardis; Penny Arcade; and three others. Muse MR 5073 $6.98.

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Performance: A scream
Recording: Very good

Michal Urbaniak is on this album. That's only fair; Urszula Dudaźik is usually howling on his. Besides, they are husband and wife, and if you have heard any of their Columbia albums, you know what this one is like. The sound was okay the first time around, but it has become a terrible bore. C.A.

Performance: Eloquent
Recording: Excellent

Paul Horn, a veteran of the Sauter-Finegan Orchestra and the Chico Hamilton Quintet, revealed his penchant for the unusual when he caressed our ears with his flute solos echoing from inside the Taj Mahal a few albums back. Now he has surrounded himself with six percussionists—collectively called Nexus—and produced an album that is, again, both unusual and excellent. The ten selections run from two to six minutes each, and Horn's lyrical flute and reed improvisations complement a skillful, diversified rhythmic background provided by Nexus, which draws its inspiration from the music of Africa and India. Using a variety of instruments gathered from around the world, the Toronto-based percussion group has a great deal to do with the success of this album, but, although Horn plus Nexus equals a most palatable listening experience, I doubt that further collaborations would be fruitful. This album says it all, I think, and it says it eloquently. C.A.

Performance: Mostly excellent
Recording: Dull

These albums represent two diverse sides of Keith Jarrett, the young pianist whose solo albums on ECM have stirred some critics into affording him Messianic status. That may be a case of a bit too much too soon, but Jarrett is unquestionably an artist of formidable talent, and his recent solo performances have revealed not only an admirable technique but also a very fertile musical mind, unhampered by tradition yet ever mindful of it. The "Kölner Concert" set, featuring more of what we heard in the highly acclaimed "Solo Concerts Bremen/Lausanne" three-record album (ECM 3-1035/37), is performed with equal intensity and brilliance and recorded with characteristic ECM crispness—what a sound Manfred Eicher (the producer) gets out of a piano! It's a great set, which is something I regret not being able to say about the Impulse "Back Hand" album, although that does have its laudable moments. Teaming up with his old gang, Dewey Redman, Charlie Haden, and Paul Motian, Jarrett first stumps through a funky introduction to Inflight, then takes off beautifully with more than a little help from his friends. By contrast, Kuum, which ends side one, is a tedious, eleven-and-a-half-minute excursion through a percussion-filled jungle in which Jarrett plays the wood flute in a most unimpressive manner. Side two is uniformly good, with the lyrical Jarrett piano highlighted by Valpalla and Jarrett the cooker sparking on Backhand as Redman's tenor soars and Haden's bass walks. As is Impulse's wont of late, the album is mastered for "compatible" quadraphonic play, employing the QS matrix system, but, as usual, there is no audible four-way separation, and the sound is acoustic to ECM's electric—if you know what I mean. C.A.

CHUCK MANGIONE: Bellavia. Chuck Mangione (flugelhorn, keyboards); instrumental accompaniment. Bellavia: Dance of the Wind-up Toy; Terrance: Come Take a Ride with Me; Listen to the Wind; Carousel. A&M SP-4557 $6.98, © 4557 $7.98, ® 4557 $7.98.

Performance: Fair
Recording: Excellent

A good-natured album of mediocre jazz, "Bellavia" would make a predictable soundtrack for a public television documentary about underprivileged children learning to express themselves by painting in water-colors. I am all for jazz trying to reach an audience, but the doings here are a little too airy and cute. J.V.

Performance: Spirited
Recording: Good remote

Dave Matthews has arranged for a variety of performers from James Brown to Idrees Mohammed, but this is his first recording as a leader. The band, consisting of twelve young New York musicians, plays with the enthusiasm that so often is lacking in the big bands nowadays, and there are some very fine, spirited solos, the sources of which are not identified on the jacket. There are rough spots in this set, recorded at New York's Five Spot on a couple of Monday nights in mid-1975, but the result is refreshingly human when measured against the rigid stuff we so often are offered in the big-band area. C.A.

RALPH TOWNER: Solstice. Ralph Towner (piano, guitars); Jan Garbarek (soprano and tenor saxophones, flute); Eberhard Weber (tuba, cello); Jon Christensen (drums, percussion). Winter Solstice; Visitation; Nimbus; Sand; Drifting Petals; and three others. ECM ECM-1060 $6.98.

Performance: Impeccable
Recording: Excellent

If you have heard guitarist Ralph Towner with Weather Report (the "1 Sing the Body Elec-
Randy Weston spent the better part of the Sixties in Africa, an experience that has clearly influenced his work, particularly his compositions. Once the writer of such jazz hits as ‘Merry-Go-Round’ and ‘Carnival in Checkered’ (the ‘Be-bop’ album), the (Paul) Winter Consort, or Oregon—a group of which he is a regular member—you already know that he is a musician of impressive talent and impeccable taste. Those two qualities also apply to Jan Garbarek, Eberhard Weber, and Jon Christensen, his three cohorts on this date, and, indeed, to ECM, the label responsible for this fine album. Lately—with some justification—criticism has been leveled at ECM for not having more black artists on its roster. But let us consider the changing times: for years, Europe could boast but one truly original jazz musician (Django Reinhardt), whereas today some of the new music’s finest exponents come from the Continent (England has not done too well), and we are aware of their artistry largely through the efforts of ECM, which also has opened its doors to many neglected American musicians. Some of the best work by such black artists as Bennie Maupin and Herbie Hancock, not to mention Keith Jarrett, has been on ECM, and we can only hope that men like McCoy Tyner and Ornette Coleman will one day find a place there too.

Towner is an American, but his classically oriented style on the twelve-string acoustic guitar is eminently compatible with the music of his European colleagues, an often fragile, introverted sort of music that makes the John McLaughlin/Herbie Hancock kind of electrified output seem rather like an aural by-the-numbers painting. Ralph Towner also plays the piano here, but he does so sparingly, and that is, I think, wise. This is Towner’s first American release as a leader, and it should go far to establish him as an important artist. I think, wise. This is Towner’s first American release as a leader, and it should go far to establish him as an important artist. I hope it will also encourage American ECM to bring out his solo album, “Diary.”

C.A.

RECORDING OF SPECIAL MERIT

RANDY WESTON: Blues to Africa. Randy Weston (piano). African Village Bedford Stuyvesant; Uhuru Kwanza; Tangier Bay; Kicheza Blues; and four others. ARISTA AL 1014 $6.98.

Performance: Superb
Recording: Good

Randy Weston was one of the “new faces” at the 1958 Newport Jazz Festival, and he is probably still unknown to many Americans because much of his time in recent years has been spent in Tangier—where he operated his own club—and because he simply never received the wide recognition that should have been his. Weston is a technically facile pianist whose playing reflects the past as well as the present. An expert creator of moods, he will stroke your ears with tender lyricism, gently splashing Monkish ripples against rock-steady bass figures, or shock you to the marrow with fiercely pounding waves of sound. But whether the influence is Monk or Morocco, the music is distinctly Weston.

Weston spent the better part of the Sixties in Africa, an experience that has clearly influenced his work, particularly his compositions. Once the writer of such jazz hits as ‘Hi-Go and Little Niles, Weston’s writing has in recent years been less commercially oriented and more on the serious side—impressionistic pieces evoked by his face-to-face meeting with a rich African ancestry and a resulting deep social consciousness. The recording quality of this album, which is Weston’s first solo effort, leaves something to be desired, but the music—all Weston originals—makes it a $6.98 well spent.

C.A.
I have derived enormous pleasure from listening to Oscar Peterson since the late Forties when his Master's Voice in Denmark issued his now thirty-year-old Canadian Victors. Then—and later as "Tank Butternut" on the Norgran label—he was playing boogie-woogie versions of such numbers as The Sheik of Araby, giving few hints of what was to come. Excellent though he was, he never quite elevated himself into the class of Teddy Wilson, the ultimate swing pianist, or Art Tatum, for whom he obviously still has a great deal of admiration. Nor has he ever achieved the individuality of, say, Bud Powell or Keith Jarrett. However, Peterson made enormous forward strides (no pun intended) after 1950, when Norman Granz took his career in tow, and to list all the records he has since made this a series of trumpet/piano duets teaming with Peterson—both as leader and sideman—would be to fill several pages of this magazine.

Granz has already issued several albums with Peterson—both as leader and sideman—on his new Pablo label, and now we can add to this a series of trumpet/piano duets teaming Peterson with five excellent musicians, one album with each. I'm not sure that Granz isn't doing Peterson a disservice by such saturation: his albums are competing with each other at a time when the economy forces record buyers to be more selective, and one must also question whether Oscar Peterson's talent really merits all this attention.

The idea of recording a trumpet and piano duet is not new; it goes back at least as far as 1928, when Louis Armstrong and Earl Hines—both in their prime—cut Weatherbird and turned it into the ultimate study in improvisational rapport. None of these Peterson duets approaches the brilliance of that classic collaboration, but, judging by current standards—as, in all fairness, we must—there are some unarguably fine tracks in these albums. There was a time, in the late Thirties, when a young Dizzy Gillespie emulated Roy Eldridge's style to the point where it was hard to tell the two players apart. Gillespie, of course, went on to develop his own, highly individual style, help pioneer a jazz idiom called bebop, and inspire new generations of trumpet players. That he is still a source of inspiration is nowhere more evident than in the playing of twenty-one-year-old Jon Faddis. Interestingly enough, Faddis first caught the attention of Thad Jones and Mel Lewis—who subsequently hired him to lead the trumpet section of their big band—when they heard him on a Lionel Hampton session playing in a Gillespie style; some thirty-three years earlier, Gillespie had recorded with Hampton playing in the Eldridge style.

There is no clear Faddis style as yet—his playing is for the most part pure Gillespiana—but there are also times, as on Things Ain't What They Used to Be, when he sounds remarkably like the current Eldridge. He is unusually traditional for a performer of his age, but the Peterson duets are not the contexts in which to hear them at their best.

Finally, there's Oscar Peterson himself: technically facile, Tatum-esque, able to boogie, stride, or get down home with the blues, a man who can swing in a variety of idioms and usually does. I still enjoy his playing, but there is something missing, and that something is called originality. —Chris Albertson

OSCAR PETERSON/ROY ELDREDGE: Oscar Peterson and Roy Eldridge. Roy Eldridge (trumpet); Oscar Peterson (piano and organ). Sunday; Bad Hat Blues; Blues for Chu; She's Funny That Way; and three others. Pablo 2310-739 $7.98, © S 10739 $7.98.

OSCAR PETERSON/DIZZY GILLESPIE: Oscar Peterson and Dizzy Gillespie. Dizzy Gillespie (trumpet); Oscar Peterson (piano). Mozambique; Alone Together; Autumn Leaves; Con Alma; and four others. Pablo 2310-740 $7.98, © S 10740 $7.98.

OSCAR PETERSON/HARRY EDISON: Oscar Peterson and Harry Edison. Harry Edison (trumpet); Oscar Peterson (piano). Mean to Me; Easy Living; Bessie; Willow Weep for Me; Squirrel; and four others. Pablo 2310-741 $7.98, © S 10741 $7.98.

OSCAR PETERSON/CLARK TERRY: Oscar Peterson and Clark Terry. Clark Terry (trumpet); Oscar Peterson (piano). But Beautiful; On a Slow Boat to China; Mack the Knife; Satin Doll; and four others. Pablo 2310-742 $7.98, © S 10742 $7.98.

OSCAR PETERSON/JON FADDIS: Oscar Peterson and Jon Faddis. Jon Faddis (trumpet); Oscar Peterson (piano). Things Ain't What They Used to Be; Blues for Barks; Lester Leaps In; and three others. Pablo 2310-743 $7.98, © S 10743 $7.98.
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CHOOSING SIDES

By IRVING KOLODIN

COPLAND (AND OTHERS) ON COPLAND

Aaron Copland's seventy-fifth birthday this past year produced in America an expectable quantity of tributes, but it also produced two unexpected expressions of esteem from overseas which probably pleased him even more. These are a pair of recordings of his music, made and manufactured in England, which give Copland the distinction of joining William Walton and Benjamin Britten as living composers whose works have crossed the Atlantic and gotten into the commercial recorded currents of each other's countries. The circle of happy circumstances is closed by the fact that the British performances of the two works in question are well rounded and finely phrased.

Copland's Piano Fantasy (1957) finds a responsive, lyrically minded interpreter in Anthony Peebles (Unicorn RHS 323), whose record also contains Bartók's Three Studies, Op. 18, and Dallapiccola's Musical Exercises for Annalibera. Peebles would appear, like Roger Woodward of Australia, to be one of those new pianists who take a world view of the keyboard literature, and Copland has entered his repertoire, one would guess, not because he is an American composer but because he is an interesting composer.

As for the second disc, it records the fact that Copland's Clarinet Concerto has finally come into the hands of Gervase de Peyer, who brings to it qualities of artistry and musicianship not possessed by any of his prior interpreters. With Bernard Jacob as conductor of the London Mozart Players (Unicorn RHS 314), the outcome has been to maximize the merits of the score and make one regret only that the performance did not last longer—always the sign of a good piece. The work's record partner is a Grand Concerto by Bernhard Henrik Crusell, a Finnish clarinetist-composer of the early nineteenth century, and it is a work that provides pleasure for the listener as well as the performer.

Among the American tributes (a "celebration," as the cover copy has it) is a three-disc set from Columbia (DSM 33720) that brings together, in order of their appearance on the records, the Fanfare for the Common Man, A Lincoln Portrait, the suites from Appalachian Spring and Billy the Kid, the Four Dance Episodes from Rodeo, Our Town (the concert sequence), El Salon México, and Dance Panels. Though all of these have been available before on various single discs, it is good to have them collected in one package. But Columbia offers an additional single disc (M 33586) of newly recorded material, made up of such addenda as The Red Pony Suite, John Henry, Letter from Home, Music for Movies, and Down a Country Lane. All of these works—the three-record set and the single disc—are conducted by Copland, who is well on his way to equaling the late Igor Stravinsky's achievement of himself recording virtually all his major, as well as many of his minor, works. (Columbia will now take a double bow, please.)

As did Stravinsky, Copland disagrees in many subtle details with the conceptions of his best-known interpreters. But, unlike the case of Stravinsky, for whom marginal differences were often productive of improvement, the results here are not always to the advantage of Copland's creations. As an instance, El Salon México, as directed by Copland, strikes me as slower in tempo, the first clarinet-trumpet interchange less raucous and not so suggestive of a crowded dance hall, the folk tune that follows less earthy and more genteel than in many other versions.

"Well," the reader may ask, "if that is the way Copland wants it, isn't that the way it should be heard?" Not necessarily. It is possible that the conductor-composer adds something mentally to what he hears in a playback, fulfilling and fleshing out for himself the sound that is actually there. That sound alone may still leave the listener bereft of an element that an objective and non-composer conductor may provide: a feeling of performance, of interpretive fire that brings the essence to a boil rather than a mere reheating. The difference may amount, paradoxically, to that between a restatement (by the composer) and a re-creation (by a conductor).

But any outside assistance may help. As an instance, the Lincoln Portrait here becomes the kind of performance that El Salon México is not because of the participation of Henry Fonda as narrator. Fortunately, Fonda has put aside both his Clarence Darrow drawl and his GIANT huckstering manner to do a straightforward job of elocution, one with just enough theatrical emphasis to give the words the sense of "occasion" they require. In a long line of narrators, the best on records have been actors rather than politicians, men (such as Melvyn Douglas, Gregory Peck, and Fonda, but not Charlton Heston) who have learned to use their voices as another instrument in the ensemble. The one exception I would cite is Carl Sandburg, who evoked, out of his poetic talents and a deep knowledge of the subject, the illusion that this is the way Lincoln himself might have sounded.

In his recapitulation of the singular sequence of achievements that brought about, within a dozen years, a new attitude of response and hospitality among American com-
era The Second Hurricane (in contrast to the more extensive, but less credible, The Tender Land), the Piano Variations—especially in the composer's own recording—and the Twelve Poems of Emily Dickinson, as sung by Adele Addison with Copland at the piano (Columbia M-30375).

These are, for the most part, musical expressions in what the composer refers to as his "easy" style (he avoids the word "popular," perhaps on the premise that popularity is a by-product of response rather than a product of intent). That being the case, I suppose that the works I admire less, relish least, and have mixed anticipations about rehearing—those with such titles as Statements, Fanfare, Connotations, Solemn Prelude, Inscap, and Symphony (Short, Dance, and No. 3)—are all products of his "uneasy" style. They are, for the most part, also products of a drive to be impressive rather than expressive—the later works directed toward maintaining a vested place in the avant-garde that has been his, through the force of the early works, since the Twenties and Thirties—to be intellectual as well as down to earth.

Some associate this dichotomy of purpose with events of the late Thirties and early Forties, when the series of works for which Copland became generally famous struck some of his erstwhile devotees as a deviation from "principle," as hedging his musical bets, and so on. But the fact is that many of the elements of both later Coplands are contained in such works as Music for the Theater, the Piano Concerto, and the Symphony for Organ and Orchestra of the Twenties. Rather than going forward in the search for a single, integrated style, he found it possible to channel one series of inclinations in one direction (film scores, ballet music, songs, etc.) and the other in a different direction (the orchestral works, including the orchestrally reworked Piano Variations).

There are some arts that accommodate a segmentation of impulse, a conscious control of style to achieve a predetermined end with no loss in productivity: writing easiest of all, graphic arts perhaps next. Among the arts are four or five about which I am not sufficiently versed to have a firm conviction. But about music I most certainly do have one. "Reading," wrote Bacon, "maketh a Full man." My adaptation of this would be: "It is the Full man who maketh music." I have, for my part, two further convictions derived from a certain amount of attentive listening: "The man who liveth by the big drum shall perish by the big drum"; and, finally, "There is little music in the snare drum." Too much of both percussion instruments corrupts for me what had initially been a favorable impression of the Symphony No. 3. On the other hand, the absence of such compositional rhetoric from the Twelve Poems of Emily Dickinson, and the presence of the real Copland's guiding taste and secure aesthetic have clarified for me what was originally a dim view of them (derived from a performance not by Miss Addison).

Well, even Sibelius didn't win them all, despite the contentions during his lifetime that attached importance to mannerism rather than meaning. Fortunately, the Copland repertoire is sizable enough for one to have his preferences and his prejudices too. If I like his creative statement of I Bought Me a Cat (a three-minute song) better than the whole of Dance Panels, can the composer of both hate me for that?

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ARRIAGA: Three Quartets. No. 1, in D Minor; No. 2, in A Major; No. 3, in E-flat Major. Chilingirian Quartet. CRD RECORDS LTD. CRD 1012/3 two discs $15.96 (from HNH Distributors, P.O. Box 222, Evanston, Ill. 60204).

Performance: Gutless
Recording: Excellent

Juan Cristostomo Arriaga y Balzola was born in Bilbao, Spain in 1806. Fearfully productive during his short life span (he wrote two operas before he was thirteen), he is called, and not without reason, the Spanish Mozart. All evidence suggests that, had he lived, he would not have needed such a comparative in his maturity. As it was, he died at twenty in Paris, victim, as Grove’s so quaintly has it, “of decline” (probably tuberculosis).

Very little recorded Arriaga is available in this country (there may be more in Spain, the mother of prodigies)—a nonet, a symphony, the results have rubbed off onto one or two quartets. But try the Chilingirian anyway; they are not the Guilet’s, but they are well ahead of the rather coarse Phoenix, and you need to know Arriaga. William Anderson

J. S. BACH: Sonata No. 6 in G Major (see BU-SONI)

J. S. BACH: Violin Concerto in D Minor (BWV 1052); Violin Concerto in A Minor (BWV 1041); Violin and Oboe Concerto in E Major (BWV 1042). Ruggiero Ricci (violin); City of London Ensemble, Ruggiero Ricci cond. UNICORN UNS 202 $6.98.

J. S. BACH: Violin Concerto in D Minor (BWV 1052); Violin Concerto in A Minor (BWV 1041); Violin and Oboe Concerto in D Minor (BWV 1006). Itzhak Perlman (violin); Neil Black (oboe); English Chamber Orchestra, Daniel Barenboim cond. ANGEL S-37076 $6.98.

Performances: Excellent
Recordings: Excellent

Both Messrs. Ricci and Perlman are superb violinists whose meat and drink are drawn from the passionate outpourings of the nineteenth century. In these two records they have addressed themselves to the powerful Baroque architecture of J. S. Bach. When two first-rate artists perform indestructible music, the results are bound to be excellent, but there are significant stylistic differences that reveal varying approaches to the problem of authentic performance practice.

In recent years musicologists have made tremendous strides in uncovering the performance conventions of the Baroque era. Although most well-known performers have probably not consciously studied these findings, the results have rubbed off onto some of them and passed others by. Ricci has returned to the Baroque convention of conducting his own ensemble, but his approach is heavily Romantic. He is always the virtuoso soloist with accompanying strings. His tone is rich and vibrant, and the long-line legato is always present. The City of London Ensemble plays in a similar fashion, thus creating a unified partnership, but the result lacks clarity of articulation, and any rhythmic thrust is Bach’s doing.

Perlman, in contrast, plays under the direction of the extremely talented and versatile Daniel Barenboim. The fiddling is, as we have come to expect, flawless, but the solo passages grow from the tutti and there is no flaunting of virtuoso technique over the accompanying group. Also, Mr. Perlman’s tone is so focused that it is heard because of its cut-through, not its pressured volume. The essential long line is there, but also present is a clear articulation that lets us hear the space between Bach’s tightly wrought motives. Now, space between notes and groupings of notes is, in eighteenth-century music, as important as the notes themselves. Spacing, or articulation, breathes life and vigor into a performance of this music. As a result of its clear articulation, then, the Perlman-Barenboim reading not only retains Bach’s rhythmic drive but adds to it.

One specific passage that demonstrates Perlman’s and Barenboim’s affinity for the Baroque is in the use of the harpsichord toward the end of the final movement of the D Minor Concerto. Both artists play the cadenza for violin beautifully according to their own lights, but how much more effective it is when the harpsichord joins Perlman to support his final cadence, an event lacking in the Ricci version. A choice between these two albums, then, boils down to a question of preference in performance practice. Each approach is consistent and perfectly executed.

S.L.

BEETHOVEN: Sonata for Violin and Piano No. 5, in F Major, Op. 24 (see BRAHMS)


Explanation of symbols:
- = reel-to-reel stereo tape
- = eight-track stereo cartridge
= stereo cassette
= quadraphonic disc
= reel-to-reel quadraphonic tape
= eight-track quadraphonic tape

Monophonic recordings are indicated by the symbol ⊙.

The first listing is the one reviewed; other formats, if available, follow it.
Brahms Third. Wanda Wilkomirska and An-
tonio Barbosa make a perfectly matched
team, and the levels of musicality and ex-
pressivity put forth here are consistently high.
The give and take between the violin and pi-
ano—an essential but often difficult element
of this equal rights music—is particularly well
carried off. I also like the recorded sound
(re-viewed from advance pressings), with its
combination of resonance and clarity. There
is an odd little repeated buzz on the Beetho-
ven side that is faint but puzzling—seemingly
on the recording itself. Beyond that, though,
no reservations.

98; Academic Festival Overture, Op. 80. New
Philharmonia Orchestra, Leopold Stokowski
cond. RCA ARLI-0719 $6.98; © ARDI-0719
$7.98; ® ARK1-0719 $7.95; © ART1-0719
$8.98.

Performance: Intriguing
Recording: Pretty good

My recollection of Stokowski's two earlier re-
cordings of the Fourth are too hazy to be reli-
able, but my impression is that they were less
characterized by sheer drive than this one
(taped, by the way, in June 1974, two months
after Stokowski turned ninety-two). As in
many of Stokowski's recent recordings, the
pacing is on the brisk side. The finale is one of
the fastest on records, and so is the scherzo,
but neither movement sounds headlong or
breathless, and details are brought out beauti-
fully everywhere; many will find this con-
trolled exuberance refreshing. And the Ac-
cademic Festival, no mere make-weight, is abso-
lutely and incontrovertibly glorious.

The sound is a little tubby—certainly not on
the level of RCA's recent Philadelphia pro-
ductions—but quadraphonics will be happy
to have a disc of Brahms' orchestral music at
last. I cannot recommend the cassette, the
flimsy cardboard box (some of whose three
blank edges might have been used for label-
ing) contains not a word of annotation, the
hiss level is high, and there is an unacceptable
break in the scherzo in order to make the two
sides come out even.

R.F.

82. New York Philharmonic Orchestra,
Mstislav Rostropovich cond. RCA ARB
50075 $6.98; ARB50076 $7.95; ARBRG-075
$6.98; ARBRG-076 $7.95; ART50075 $8.98.

Performance: Exceedingly good
Recording: Excellent

While there is no way of knowing how
much of this recording is a result of the
Rostropovich/Mehta collaboration (taped,
between the seasons, of course) and how
much is simply a result of the superb
Philharmonic Orchestra, this recording is
perhaps the best (though not as grand as
Kubelik's) we have heard of the solo con-
certo. The sound is rich and resonant
throughout, with no loss of clarity except
in the worst possible direction. The per-
fusion of sound is consistently of the
highest order, and the overall result is a
brilliant performance full of color and
drama, but modulated to perfection.

N.B.

Beethoven: Symphony No. 7, in A Major,
80. New Philharmonia Orchestra, Leopold
Stokowski cond. RCA ARLI-0719 $6.98; ©
ARDI-0719 $7.98; ® ARK1-0719 $7.95; ©
ART1-0719 $8.98.

Performance: Laid-back
Recording: Excellent

There is a predictable contrast between Zubin
Mehta's finely honed, hard-edged L.A. Free-
tono Barbosa make a perfectly matched
combination of resonance and clarity. There
is a odd little repeated buzz on the Beetho-
ven side that is faint but puzzling—seemingly
on the recording itself. Beyond that, though,
no reservations.

Casals and the Marlboro Festival Orchestra, Pablo
Casals cond. COLUMBIA M 33788 $6.98.

Beethoven: Symphony No. 3, in E Minor,
Op. 93; No. 4, in B Flat, Op. 60. New
Philharmonia Orchestra, Leopold Stokowski
cond. RCA ARLI-0719 $6.98; © ARDI-0719
$7.98; ® ARK1-0719 $7.95; © ART1-0719
$8.98.

Performance: Quick-step
Recording: Good

My recollection of Stokowski's two earlier re-
cordings of the Fourth are too hazy to be reli-
able, but my impression is that they were less
characterized by sheer drive than this one
(taped, by the way, in June 1974, two months
after Stokowski turned ninety-two). As in
many of Stokowski's recent recordings, the
pacing is on the brisk side. The finale is one of
the fastest on records, and so is the scherzo,
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breathless, and details are brought out beauti-
fully everywhere; many will find this con-
trolled exuberance refreshing. And the Ac-
cademic Festival, no mere make-weight, is abso-
lutely and incontrovertibly glorious.

The sound is a little tubby—certainly not on
the level of RCA's recent Philadelphia pro-
ductions—but quadraphonics will be happy
to have a disc of Brahms' orchestral music at
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flimsy cardboard box (some of whose three
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ing) contains not a word of annotation, the
hiss level is high, and there is an unacceptable
break in the scherzo in order to make the two
sides come out even.

R.F.

This recording is rather charmingly entitled
"Bach Busoni (unhyphenated)," although
"Bach Busoni" would be a little more pre-
cise. Side one has a terrific, true-grit perform-
ance of a fine violin-and-piano sonata by
Ferruccio Busoni—one of those late-Roman-
tic, neo-Classic, I-embrace-it-all works that is
well deserving of its revival and excellently
served by Sergiu Luca and David Golub.

For his Bach side, Luca has not only made
the obvious move from piano accompanist to
harpischord (with the excellent Albert Fuller
as his partner) but also slightly altered his
Bergonzi violin (gut strings, lower tuning,
soundpost moved away from the bridge), and
he plays it on a Baroque bow. The whole
effect is rich and resonant in tone and expo-
site in feeling. Both Luca and Fuller capture
that wonderful, expressive Baroque swing
that is the essence of great Bach perform-
ance. Beyond the traditional association of
Busoni and Bach, the pairing makes a certain
kind of sense, and the music as well as the
sensitively recorded performances are emi-
nently worthy of your attention.

E.S.

Canteloube (arr.): Songs of the Auvergne,
Album 2. La Pastourelle, L'Anroux; La
Pâstrouletta e lou chibalie; Lo Calhe; Lou
boussu; Malurous qu'o uno fenno; O aby:
Pour l'enfant; Pastorale; Lou couc; and five
others. Victoria de los Angeles (so-
prano), Lamoureux Concert Orchestra, Jean-
Pierre Jacquillat cond. ANGEL S-36898
$6.98.

Performance: Very charming
Recording: Reverberant

This is a follow-up release to the Spanish di-

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va's first group of these enchanting Canteloube settings, which appeared in 1973. While the first disc contained the most irresistible Auvergne songs (Bailer, L'Ao de rats, La Fiolaire), the fifteen entries on the current disc offer the same beguiling mixture of pastoral charm and earthy humor, and the inspired orchestrations provide the perfect framework for the glowing vocal lines.

The singing calls for a comfortable tessitura most of the time, and here Victoria de los Angeles offers a lovely tone quality. There is a certain strain in the area of the register break (around E), which results in a whiter (unvibrated) tone and unclear enunciation, but on the whole she delivers the music with verve and humor. She is still about the most naturally charming interpreter imaginable. The orchestral accompaniments are radiant, and the engineers surround the soprano with the kind of protective halo they seem to bestow on singers who have become "institutions" (Tebaldi and Callas come to mind). The intentions are noble, but not really beneficial to music that calls for spontaneity and natural impact.

G.J.

COPLAND: Piano Fantasy; Clarinet Concerto; Twelve Poems of Emily Dickinson; Orchestral Music (see Choosing Sides, page 106)

DVORÁK: Symphony From the New World (see The Basic Repertoire, page 58)

GLINKA: Russian and Ludmilla, Overture (see MUSSORGSKY)


Performance: Dull
Recording: Good

RECORDING OF SPECIAL MERIT


Performance: Grating
Recording: Good

Perhaps no one would think of putting Leslie Jones' name on a short list of the world's great conductors, but his recordings are invariably satisfying and not infrequently, as in the present case, distinguished. The explanation, I think, is simply enthusiasm on an exceptional level. Jones apparently never bothers with music that doesn't draw a deep response from him, and the understanding that accompanies that response is anything but casual. This collection, labeled "Scandinavian String Music," is a long way from the Haydn most of us associate with this conductor, but his grasp is no less idiomatic, the sense of joyous involvement no less evident, in this repertoire than in that. Jones' way with the Holberg Suite strikes me as the most persuasive on records since Boyd Neel's old London ten-incher, and the Elegiac Melodies are set off in a frame of greater intimacy, if less grandeur, than usual. Nielsen's Little Suite, not otherwise available at present, could hardly sound more ingratiating, and the Sibelius rarity is beautifully realized, with no attempt to expand its exquisite proportions. The sound is not especially rich.

(Continued on page 112)

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CIRCLE NO. 2 ON READER SERVICE CARD


The performances here are fully up to the intense and brilliant quality of Baudo's earlier recordings, though I would have liked somewhat more orchestral presence in the Fourth Symphony (Ernest Ansermet's 1969 London recording is better in this department). Honegger is still best known as the composer of Symphony No. 4, The Delights of Basel. His imaginative handling of the Tchaikovsky never lets the music get off the ground, and the Grieg, too, though he fusses over it more, fails to come to life till the last of its five movements. The string playing is excellent and the sound is good, but the disc is just not in the running.

HANDEL (arr. Bream): Concerto in B-flat Major for Two Lutes and Strings, Op. 4, No. 6 (see VIVALDI)

HONEGGER: Symphony No. 1: Symphony No. 4 ("Delicieux Basiliens"). Czech Philharmonic Orchestra, Serge Baudo cond. SUPRAPHON 1 10 1536 $6.98.

Performance: Excellent
Recording: Good

It was not until 1973, when the record under review here was released in Czechoslovakia, that Serge Baudo completed the Honegger symphony cycle and in so doing gave us a first recording of the Symphony No. 1, a work commissioned by Serge Koussevitzky for the fiftieth-anniversary season of the Boston Symphony Orchestra.

The First Symphony's musical language partakes of both the fashionable style mécanique of some of Honegger's works of the mid-Twenties and the linear lyricism/dissolution of his later works. There are also touches of jazz coloration.

The most readily likable of all the Honegger symphonies is No. 4, The Delights of Basel. The composer's characteristic nervousness is very much present in the end movements, but it is tempered by touches of his early post-impressionist manner (as in the Pastorale d'Été). He also brings a striking bit of local color into the finale by having piccolos and percussion parade through with the ancient Basler Morgenstreich carnival tune. As does the First Symphony, the Fourth ends on a note of idyllic serenity.

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D. H. JANÁČEK: In the Mist; Sonata, 1 October 1905 ("Street Scene"); On an Overgrown Path, Series I; Concertino for Piano, Two Violins, Viola, Violin, Clarinet, Horn, and Bassoon; Capriccio for Piano Left Hand, Flute, Two Trumpets, Three Trombones, and Tuba. Josef Paleček (piano), Czech Philharmonic Wind Instruments Ensemble. SUPRAPHON 1 11 1481/2 two discs $13.96.

Performance: Strong
Recording: Close-up

This release is especially timely, since Rudolf Firkusny's similar package (Deutsche Grammophon) was reviewed here was released in Czechoslovakia, that Serge Baudo completed the Honegger symphony cycle and in so doing gave us a first recording of the Symphony No. 1, a work commissioned by Serge Koussevitzky for the fiftieth-anniversary season of the Boston Symphony Orchestra.

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Recording: Close-up

This release is especially timely, since Rudolf Firkusny's similar package (Deutsche Grammophon) was reviewed...
Erich Wolfgang Korngold's Die Tote Stadt is an opera about an obsession: Paul lives an imitation of life unable to come to terms with the death of his wife, Marie. He meets an alluring dancer, Marietta, in whom he sees Marie reincarnated. Torn between past and present, he experiences a traumatic nightmare. In the end, he loses the living Marietta, but, released from the stranglehold of the dead Marie, appears to find motivation for starting a new life. With the beautiful and exciting Maria Jeritza in the dual role of Marietta/Marie, the opera was a phenomenal success in the Vienna of 1921. In the decades that followed, it became something of a legend, eagerly sustained by Viennese of long memories and a new generation raised on the elders' recollections. It is not surprising that Vienna-born Julius Rudel of the New York City Opera was responsible for the opera's American revival. The work was rather well received by the public, and quite patronizingly by the New York critics, who seem unable to forgive Korngold for his many years of Hollywood success.

Freed of the effective but controversial stage techniques that tended to deflect attention from the music, the opera we discover is highly eclectic-Korngold knew his Richard Strauss, his Debussy, and his Puccini-as an atmospheric, eminently listenable, well-constructed, admirably professional creation. It is highly eclectic-Korngold knew his Richard Strauss, his Debussy, and his Puccini—but not without a certain individual profile. The vocal writing is effective, but it is so taxing for the two leads that it virtually asks for trouble. The orchestration, on the other hand, is sumptuous and brilliant: A Straussian orchestra is employed with a mastery not at all unworthy of such an association. There are inconsistencies, but altogether this is still one of the few operas written after Der Rosenkavalier worthy of frequent revivals.

RCA's release, a joint production with the Bavarian Radio Orchestra on DG, while the other instruments are more in the picture in Supraphon's close-up treatment. The performance is first-rate, with Erich Leinsdorf cond. RCA ARL3-1199 three discs $20.94.

Performance: Good Recording: Good, with reservations Erich Leinsdorf conducted Korngold's Die Tote Stadt at the New York City Opera in 1970. It was a triumph, and it is a triumph in this recording as well.
The real prize of this disc is Ohlsson's reading of the heroic elegy *Funérailles*. Unlike most of the other recorded performances I have heard, this one is set forth on the broadest possible rhetorical framework, and it comes off magnificently—not only because Ohlsson has the requisite power, virtuosity, and sense of drama, but also because he knows how to use the pedal in the interest of clarifying line and dynamic impact rather than of creating amorphous thunder. Except for some splattering of overtones in the tolling pedal C's that open *Funérailles*, the piano sound throughout is excellent.

D.H.

**MAHLER: Symphony No. 5, in C-sharp Minor; Kindertotenlieder; Christa Ludwig (mez.-soprano); Berlin Philharmonic Orchestra, Herbert von Karajan cond. DEUTSCHE GRAMMOPHON 2707 081 two discs $15.96.**

Performance: Supercharged
Recording: Superb

The release of Mahler's Fifth, the first excursion into the Mahler repertoire by Herbert von Karajan, was planned well over a year ago, but release was postponed in order to include the freshly recorded and piercingly eloquent *Kindertotenlieder* with Christa Ludwig. And in my opinion, this "filler" is the real prize in the package: the interpretation is fully equal in poignant eloquence to the justly praised older versions by Janet Baker, Dietrich Fischer-Dieskau, and Kathleen Ferrier.

For his first Mahler symphony recording, Karajan has taken on what is to my mind the most difficult of all to project effectively on both the technical and expressive levels. For the first three movements, this is the most exciting performance of the Fifth I have heard thus far, either on or off records, and it is the most highly charged reading of anything I have heard from Karajan since his early post-war recordings of Tchaikovsky, Beethoven, and the Brahms German Requiem. Here, as in those earlier recordings, there is no inhibition in order to achieve mere niceties of control—simply an almost overpowering urgency of communication.

The spirit of Karajan's reading seems to me much akin to Leonard Bernstein's, and, like Bernstein, Karajan does make rather too much of the famous Adagietto, turning an essentially intimate lyric utterance into a huge virtuoso piece. Unlike Bernstein, however, Karajan has not captured the humor that threads its way through the super-complex finale. Instead, Karajan's finale becomes an immensely brilliant "transcendental etude" for orchestra, more like Solti's reading for London.

The playing of the Berlin Philharmonic here calls to my mind the blinding virtuosity and tonal intensity of the Boston Symphony of the Koussevitzky era when this work was very much in its active repertoire. It is a pleasure, too, to hear a Berlin Philharmonic recording without the "churchy" acoustic that has tended, in previous recordings, to dilute the string tone. There is plenty of presence in the strings here, as there is all through the orchestral spectrum, from the highest upper partials to the lowest reaches of the bass drum.

D.H.

**RECORDING OF SPECIAL MERIT**

**LISZT: Piano Concerto No. 2, in A Major. Garrick Ohlsson (piano); New Philharmonia Orchestra, Moshe Atzmon cond. ANGEL S-37125 $6.98.**

Performance: The best is superb
Recording: Good

A good many months ago I reviewed a Garrick Ohlsson Chopin recording and found myself not altogether convinced by his realization. But I must say that his Liszt performances are something else again. Ohlsson has the knack of getting to the lyrical essence of Liszt's musical utterances without in any way diluting the rhetoric. As a matter of fact, his careful nurturing of the music's lyrical values and meticulous attention to details of passage-work and *fioriture* serve to make the overall rhetoric all the more convincing. It's pretty hard to miss with the flashy and sure-fire E-flat Concerto, but he brings off the A Major even more convincingly, and obviously there are no terrors for him anywhere in the Lisztian virtuosic challenge. He has the further advantage of unusually sympathetic orchestral backing from Moshe Atzmon and the New Philharmonia, who make the transitions from fire-and-brimstone to melting sentiment with flawless musicality and expertise. In four-channel playback, the sound has a splendid semi-surround ambiance in the orchestral department; the piano is well front-and-center, but there is no loss of orchestral detail.

The solo disc has unusual points of interest in terms of repertoire. Whether one finds the lengthy *Bénédiction de Dieu dans la Solitude* akin to late Beethoven or merely a superbly crafted pianistic essay in saccharine religiosité is a matter of aesthetic judgment. The music has not exactly been over-recorded, and Ohlsson's excellent performance makes for fascinating comparison with that of Claudio Arrau on Philips. Of even greater rarity on records are the first two *Liebesträume*, which, like the famous No. 3, stem from vocal originals. The Tristanesque chromatics of No. 2, in E Major, are of the greatest interest, and all three works stand high among Liszt's purely lyrical essays. The familiar Mephisto Waltz gets a rousing reading, but I like an even more sulphuric atmosphere than is achieved here. On the other hand, Ohlsson does wonders with developmental details that are all too often passed over by virtuosos mainly intent on wowing the audience.

MUNSTERBERG: *Vesperiæ Mariae Virginis; Magnificat 1/II; Missa, In illo tempore*. Paul Esswood, Kevin Smith (falseit); Ian Par. (Continued on page 118)

STEREO REVIEW
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If you want to hear what you really sound like, check out the Interface:A. You can put a lot of drums in this little box. $450 the pair, including equalizer slightly higher in the West.

The performances are as splendid as the music. The choral sound is unusual in that each part has a distinct timbre of its own that enables us to hear the inner parts, but at the same time the blend and overall sound is rich and lush. It would be difficult to single out one soloist in particular; each is a fine singer in his own right and can toss off Monteverdi's stylistically difficult coloratura with ease and not be embarrassed by the notorious "goat bleat." But, more important, their ensemble is superb. The many instrumentalists, playing a variety of ancient instruments, are also a fine lot of musicians, and for the most part one is put at ease concerning intonation. There is, in fact, a minimum of cringing to be done in the difficult Sonata sopra "Sancta Maria."

In short, this is a superb recording of a religious masterpiece that will always be a great favorite. If you do not own the work, the recording is a must. If you do, it may still be a must because of the unbridged contents and brilliant performance.

S.I.


Performance: Russian music
Recording: Sensational

What the record world needs now is an album of Russian music played by a German orchestra under a Hungarian conductor on an English label. Right? The shortage of available recordings of Night on Bald Mountain and those heady overtures to Prince Igor and Russian and Ludmilla, not to mention the incidental music from Khovantschina, has caused alarm throughout the industry. What if London should suddenly lose its entire inventory of Stokowski discs? Where would we all be? Famished for Russiana! Fortunately, London has taken measures to forestall such a disaster. Here is the entire program one more time. And it must be admitted that Solti is the right chef to cook up such a Slavic musical meal. His Night on Bald Mountain is as harrowing as any in the catalog, if not more so. The flamboyant overtures to the Russian operas resound with verve to spare under the Hungarian's energetic ministrations. The "Dawn" and Persian Dance from Khovantschina, as colored in by Rimsky-Korsakov, emerge with all tints intact. The Berlin Philharmonic remains unrivaled, and the recorded sound is the last word in amplitude. If somehow you never got around to adding this basic Russian program to your collection, the album can certainly be recommended.

P.K.

MOZART: Fantasy in C Minor (K. 475); Sonata No. 14, in C Minor (K. 457); Sonata No. 16, in B-Flat Major (K. 570); Sonata No. 17, in D Major (K. 576). Glenn Gould (piano). COLUMBIA M 33515 $6.98.

Performance: Perverse
Recording: Somewhat tubby

When Mozart committed his music to paper, not only could he indicate the pitches and rhythms he wanted but he also had at his disposal a system of markings that precisely reflected his thoughts concerning dynamics, accentuation, articulation, and phrasing, and some less exact markings for tempo.

For me, transient response is crucial. That's why I chose the Interface:A. I needed a speaker/playback system that would accurately reproduce drum tracks, exactly the way I put them down. Interface:A sounds just like me.

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In short, this is a superb recording of a religious masterpiece that will always be a great favorite. If you do not own the work, the recording is a must. If you do, it may still be a must because of the unbridged contents and brilliant performance.

S.I.
Mozart composed, he employed ALL of the materials (not just notes and bar lines) to express his thoughts and to bring logic to his forms and structures.

Glenn Gould, for reasons known only to himself, has observed Mozart's wishes about pitch and rhythm but completely ignored everything else on the page. The carefully placed accents that bring harmonic direction to the smoldering opening of the C Minor Fugue (BWV 542) are largely marked legato and Alberti basses that should be held in order to sound like animated harmony are also played staccato. Moreover, Gould's tempos are erratic and frequently distort the music. The Adagio of the C Minor Sonata is so painfully slow that boredom sets in after the refrain. On the other hand, the Adagio of the B-flat Sonata is taken so quickly that the music becomes trivial. The pianist also has a way of breaking a chord, sometimes even turning it into a perceptible figuration that detracts from the music. Add to this a persistent, unmusical humming, and one can readily understand why this record, as far as Mozart's incredibly sensitive piano writing is concerned, must be chalked up as a disaster.

Despite Mr. Gould's many mannerisms, he has always had the ability to bring clarity and sparkle to contrapuntal writing. This is apparent in the outer movements of the D Major Sonata, which, with certain reservations about the articulation, I enjoy listening to. But the ability to bring off a canonic passage, a rarity in Mozart anyway, is certainly not enough to bring off an entire sonata. Let alone an album of them, again let alone a projected "Complete Mozart Piano Sonatas," of which this is Volume Five.

MOZART: Piano Sonata in A Minor (K. 310); Piano Sonata in C Minor (K. 457); Piano Sonata in C Major (K. 545). Christoph Eschenbach (piano). DEUTSCHE GRAMMOPHON 2530 234 $7.98.

Performance: Crisp Recording: Hard

Christoph Eschenbach brings a clean technique, a crisp touch, and rhythmic vigor to these three wonderful sonatas. This approach is excellent for the fast movements and brings out the drive and austerity of Mozart's only two sonatas written in a minor key. The slow movements, however, suffer from a lack of warmth here because the essential vocal quality of the writing is lost through the pianist's neither breathing between phrases nor allowing time for melodic subleties and cadences.

Still, Eschenbach deserves credit for his courageously in taking all of the repeats. Repeats for Mozart are not the result of a printer's convention but are carefully placed, and hearing them enables one to comprehend the full scope of the music and Mozart's sense of proportion. And Eschenbach's tempos are well chosen. The slow one taken for the rondo of the C Major Sonata may surprise you, but the movement is, after all, marked allegretto (slower than allegro), and it is a pleasure to hear an easy bounce rather than a frantic rush.

NIELSEN: Little Suite, Op. 1 (see GRIEG)

OCKEGHEM: The Maria Motets. Salve Regina; 1 and II; Intemerata Dei Mater; Gaude Maria Virgo; Alma Redemptoris Mater; Ave Maria; Ut heremita solus. Prager Madrigalis-

ten, Miroslav Venhoda cond. TELEFUNKEN 6.41878 AW $6.98.

Performance: Lush Recording: Sumptuous

Johannes Ockeghem, the most renowned composer of the last half of the fifteenth century, was not only revered as a creator during his life (as attested by the many laments written on the occasion of his death), but was also the teacher of such composers as Loyset Compere, Pierre de la Rue, and Josquin Des Prez. Because of his preference for almost endlessly long lines that defy any perceptible musical organization and thick textures that rarely cadence, his music is extremely difficult for the average listener to penetrate. The Prager Madrigalisten, supported by a host of ancient instruments, has courageously tackled seven of the spacious and grandly conceived motets written in honor of the Virgin Mary.

Although the jacket notes state that Renaissance paintings prove the music was originally performed by a "small but very efficient choir of soloists," supported by instruments, recent iconological research is coming around to the conclusion that most fifteenth-century religious music was sung by solo singers with no instrumental support. The Prager Madrigalisten have not only taken the first concept as their ideal but have blown it up to a choir of some thirty singers supported by about ten instrumentalists each of whom plays a mind-boggling variety of ancient instruments. It must be admitted, however, that the result is...
I20
STEREO REVIEW


Performance: Good
Recording: Could stand more body

I would give André Previn’s new disc of the Rachmaninoff First a slight edge over Ormandy’s nearly decade-old Columbia disc (my preferred version) in terms of sonic richness in the lower register and revelation of inner detail in the middle movements, especially in quadruphonic playback. But, over all, the dramatic urgency of the Ormandy reading makes for the more compelling final result, and it is backed up by one of Columbia’s finest recording jobs with the Philadelphia's.

I had hoped for a similar outcome from Ormandy’s new version of the Second Symphony in its uncut form, as much as I found Previn and the London Symphony a bit tame in their treatment of the original version. Unfortunately, though this performance is a good one judged by ordinary standards, the task of communicating this music is no ordinary one, and I feel that Previn has a very slight edge in the architectural department. What I miss in the Ormandy reading is the dramatic urgency he brought to the First Symphony, as well as the rich and well-focussed sound of that Columbia disc. In short, I can’t escape the feeling that the comparatively scrawny string sound that comes from both the RCA disc and cassette is partly to blame for the final result. Ormandy is somewhat freer in his use of rubato, as one should be in the uncut version of the score; but I sense precious little urgency in the dynamics. Perhaps it will take a Bernstein or a Maazel, recorded under ideal conditions, to achieve something approaching a definitive reading of this problematic score.


Performance: Good
Recording: Very good

At sixty-five, Jean Martinon is just hitting his stride as one of the really important conductors of our time. I am delighted that Angel is following up on his recent Debussy series with a similar survey of the works of Ravel (under whom he performed as an orchestral violinist more than four decades ago), and I am especially pleased to find the previously unrecorded Shéhérazade Overture on the first of his Ravel discs. This was Ravel’s first work for orchestra, introduced unsuccessfully in 1899 and then written off except as a source of some of the material in the song cycle of the same title. No one would guess this music was Ravel’s: it might be taken for Balakirev, or even now and then for Scriabin. (Pierre Lalo likened it to Balakirev, Rimsky, and Grieg in his devastating review of the première.) It is a worthwhile discovery, though, and a not unattractive piece of Orientalism à la russe, if the 1899 performance had been half as brilliant as Martinon’s, perhaps both Ravel and the audience would have thought better of it.

There have been several fine recordings of La Valse recently; the one I have enjoyed most is Skrowaczewski’s, which may be the finest single performance in his splendid Ravel set (Vox □ OSVBX-513, also on Turnabout □ QTV-S.3493). Martinon’s is from a similar mold, perhaps a bit more sumptuous overall and not quite as cleanly recorded in the climaxes. The new Rapsodie Espagnole is more expansively voluptuous than Martinon’s Chicago Symphony version, and it is surely one of the two or three finest current recordings of this work. The Boléro, too, is noticeably less hurried than the one Martinon did in Chicago, but still a little breathless; this work seems to appeal to him less than the others—there is more conviction in Ormandy’s finely detailed RCA remake (ARL1-0451) and several other versions. But the Boléro is a piece one is resigned to duplicating, anyway; the first-rate performances of the other three items—one of them an “exclusive”—this is really a stunning package, despite sloppy annotation and labeling.

RAVEL: Boléro; Shéhérazade—Ouverture de Pelleas; Rapsodie Espagnole; La Valse. Orchestre de Paris, Jean Martinon cond. ANGEL □ S-37122 $6.98, © 8XS-37122 $7.98, © 4XS-37122 $7.98.

Performance: Gallic
Recording: Excellent

The music of Saint-Saëns is frequently patronized nowadays as slick, superficial stuff, yet I wonder how many of us turn (with a certain sheepish guilt, perhaps) to pieces like the C Minor Symphony when we seek a few musical thrills at the close of a tiring day. Whether Saint-Saëns’ Third is truly a symphony or more in the nature of a rhapsody for orchestra, as some disparaging critics have called it, it is never, throughout its two long movements, less than grand. This work, too, is one judged by ordinary standards, the task of communicating this music is no ordinary one, and I feel that Previn has a very slight edge in the architectural department. What I miss in the Ormandy reading is the dramatic urgency he brought to the First Symphony, as well as the rich and well-focussed sound of that Columbia disc. In short, I can’t escape the feeling that the comparatively scrawny string sound that comes from both the RCA disc and cassette is partly to blame for the final result. Ormandy is somewhat freer in his use of rubato, as some disparaging critics have called it, it is never, throughout its two long movements, less than grand. This work, too, is one judged by ordinary standards, the task of communicating this music is no ordinary one, and I feel that Previn has a very slight edge in the architectural department. What I miss in the Ormandy reading is the dramatic urgency he brought to the First Symphony, as well as the rich and well-focussed sound of that Columbia disc. In short, I can’t escape the feeling that the comparatively scrawny string sound that comes from both the RCA disc and cassette is partly to blame for the final result. Ormandy is somewhat freer in his use of rubato, as one should be in the uncut version of the score; but I sense precious little urgency in the dynamics. Perhaps it will take a Bernstein or a Maazel, recorded under ideal conditions, to achieve something approaching a definitive reading of this problematic score.

D.H.

RECORDING OF SPECIAL MERIT


Performance: Gallic
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RECORDING OF SPECIAL MERIT

RAVEL: Boléro; Shéhérazade—Ouverture de Pelleas; Rapsodie Espagnole; La Valse. Orchestre de Paris, Jean Martinon cond. ANGEL □ S-37147 $6.98, © 8XS-37147 $7.98, © 4XS-37147 $7.98.

Performance: Brilliant
Recording: Very good

At sixty-five, Jean Martinon is just hitting his stride as one of the really important conduc-
formance has all the requisite excitement, to which Bernard Gavoty, presiding over the great organ at the Église Saint-Louis des Invalides in Paris, contributes in no small measure, especially toward the end.


Performance: Glittery, hard
Recording: Good

Who would have believed that sets of Schoenberg's complete piano music would become a gilt on the market? Hard on the heels of Paul Jacobs' set on Nonesuch comes a more surprising combination: Maurizio Pollini on Deutsche Grammophon. Pollini is really brilliant in this music, I doubt that it has ever rung out with such hard luster and clarity. Everything sounds, and pianistically everything works. But there is, so to speak, no redeeming social value at all. All the Expressionist Angst is gone, all the traces of Brahms and Wagner and early Kandinsky and World War I and the fall of the Austro-Hungarian Empire and personal anguish and mystery. With the emotional guts removed, we are faced with a monumentally ugly outer shell. We are long past the stage where purely historical or architectural considerations are going to hold us! Technically speaking, I cannot praise these performances too highly, but I cannot recommend them very enthusiastically either.

E.S.

SCHUBERT: Quintet in C Major, Op. 163 (see Best of the Month, page 79)


Performance: Mostly excellent
Recording: Very good

This is Fischer-Dieskau's second recording of Schumann's Opus 24—the first version, issued on Deutsche Grammophon some eight years ago, is still in the catalog. There are no radical differences between the two, for these relatively subdued songs find an ideal interpreter here in top form. In fact, Fischer-Dieskau gauges the dynamics in these songs with a sensitive mastery that has not been quite so consistent in his other recent recordings. His singing tone here has a mellow and warm ring matched with an expressiveness that often borders on the magical (Schöne Wiegenlieder is a good example).

Myrthen (a collection of thirty-six songs) is something of a grab bag among Schumann's song cycles, for its poets range from Goethe to Ruckert, from Burns to Byron, and its moods run from the gay to the playful to the poignant Widmung. Myrthen (a collection of thirty-six songs) is something of a grab bag among Schumann's song cycles, for its poets range from Goethe to Ruckert, from Burns to Byron, and its moods run from the gay to the playful to the 

siness of detail and sudden shifts of emphasis intrude on the serene smoothness of the vocal line.

By all standards, however, these are masterly interpretations captured with clarity and sharp detail. In his first collaboration with Fischer-Dieskau, Christoph Eschenbach combines poetry and virtuosity: his rendering of the challenging piano part of Warte, warte, wilder Schiffsman is but one of the many keyboard delights.

G.J.


Performance: Tidy
Recording: Very good

It was a fine idea to get the Boston Symphony Orchestra, with its outstanding Sibelius tradition, for Colin Davis' first recording of that composer's music, and Philips has done a very good job, if not quite its best, in its first Symphony Hall sessions. But the spirit of Serge Koussevitzky is not evoked here, and neither, to my ear, is that of Sibelius. There is nothing radical or outlandish in Davis' approach; his tempos in both works are almost ideal, and the orchestra seems to be giving him everything he wants. What I miss is the mystique, the aura, the lift—whatever an individual devotee might choose to call that special quality one listens for in Sibelius. Lorin Maazel's similar coupling with the Vienna Philharmonic demonstrates readily enough what is missing here. For No. 5 my preference is Bernstein, with a marvelous Pohjola's Daughter (Columbia MS 6749). For No. 7 I would take either Maazel (London CS-6488) or Beecham (Angel S 354-488); the latter disc shows its age, but it is generously filled out with the Pelléas et Mélisande music and a magical Oceaniades.

R.F.

RECORDING OF SPECIAL MERIT


Performance: Fluent
Recording: Realistic

There has been something like a very slow developing ground swell of interest in Szymanowski's music during the last few years, and some of us hoped it would lead to recordings of many of his major works. Since two American recording orchestras are now in the hands of Polish conductors, we might continue to hope, but in the meantime so pivotal a work as the First Violin Concerto has disappeared from our catalogs. The one area in which activity seems to be continuing is the piano music, which has caught the imagination of some highly capable—if not internationally celebrated—young performers with no ethnic link to the composer; this very welcome release from MHS, taken together with Vladimir Pleshakov's recording of the Second Sonata (Orion ORS 73111), gives us a complete survey of Szymanowski's three keyboard sonatas. The First and Third Sonatas, composed in 1904 and 1917, respectively, rep-
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recent extreme contrasts in style: the First is a four-movement Romantic virtuoso work more or less in the language of Chopin and with an abundance of both drama and charm, while the Third, in a single movement, comes from a different world, the one we think of as having been created by Scriabin. Daniel Graham seems to be a committed advocate; he is certainly a powerful one. He projects the expressive character of the music with convincing intensity and deals with the technical challenges as if he enjoyed them. The piano sound has admirable presence, and the pressing itself is up to MHS' highest standard. R.F.

TCHIAKOVSKY: Serenade in C Major, Op. 48 (see GRIEG)

VERDI: Un Ballo in Maschera (see Best of the Month, page 80)

VERDI: Operatic Duets (see Collections—Leontyne Price/Placido Domingo)


Performance: Vital
Recording: Excellent

Here is an album of first-rate concertos in an exciting performance by Julian Bream. Of special interest is Bream's role as arranger. Taking a clue from Thurston Dart, who claims that the Handel Harp Concerto originally had a lute part as well, Mr. Bream has made a stunning arrangement of the work for two lutes as soloists. He has also arranged the two mandolin parts of the Vivaldi G Major Concerto for two lutes. And, thanks to modern technology, he has recorded both lute parts himself. The Vivaldi solo lute concerto is an expansion of a chamber work.

The Monteverdi Orchestra, under the direction of John Eliot Gardiner, supplies a vigorous accompaniment and produces wonderful sonorities by the bold use of the chitarrone as continuo, recorders, harpsichord, and organ.

S.L.

COLLECTIONS


Performance: Fun and games
Recording: Quadraphonic special

One can well understand how E. Power Biggs’ successful quadraphonic Bach record—(Continued on page 124)
If you’re surprised to learn that tubes solve some amplifier problems best, you have something to learn about amplifiers.

And about LUX.

It may seem courageously retrogressive for a company to introduce a tube amplifier—even a highly advanced type—to the semiconductor audio world of 1976. Especially for a company only recently established in the U.S. market with a comprehensive line of solid-state amplifiers and tuners. But for LUX, it is simply consistent with our philosophy: whatever path may lead to improvement in the accuracy of music reproduction will be explored by our audiophile engineers. Whether it leads to transistors or tubes.

Certainly, transistors are not about to be obsolesced by tubes. However, there are some amplifier problems that tubes still handle better than transistors. Overloading is one such problem.

When a solid-state amplifier is driven beyond its rated power, it clips abruptly. Engineers call it “hard” clipping. The term is apt, as the sound from the spurious high-order odd harmonics is raspy and irritating. Further, if the overall circuitry is not stable, and the protective circuits not very well-designed, the distortion is extended in time beyond the moment of overload. Drive a tube amplifier beyond its rated power and it too clips the waveform, but gently and smoothly. This “soft” clipping introduces much smaller amounts of odd harmonics. The distortion is far less irritating, hence less noticeable.

Notch (or crossover) distortion, present in many transistor amplifiers, is another source of spurious high-order odd harmonics. It occurs when the transistor output circuits are not able to follow the musical waveform accurately at the points where it changes from positive to negative and back again. Since notch distortion, unlike clipping, is at a constant level regardless of the power the amplifier is delivering, the ratio of this distortion to signal is worse at lower power. The gritty quality heard from many transistor amplifiers, delivering the ratio of this distortion to signal is worse at lower constant level regardless of the power the amplifier is and back again. Since notch distortion, unlike clipping, is at a point where it changes from positive to negative.

Of course, tubes also have their limitations. Especially conventional tubes. The only tube previously capable of high-power amplification—the pentode—has inherently higher levels of distortion than the triode. Existing lower-distortion triode tubes cannot deliver sufficiently high power as a simple push-pull pair. But LUX, together with NEC engineers, has developed the first of a new breed of triode tube, the 8045G, which with other related technological advances, makes possible a high-power, low-distortion triode amplifier—the Luxman MB-3045. Among the differences in this new triode—plate electrode uses a special bonded metal with high heat-radiation characteristics. Also, the fin structure further aids heat dissipation.

LUX also developed a low-distortion high-voltage driver tube, the 6240G, capable of delivering over 200 volts of audio signal to the output triodes. Also, a new output transformer (LUX’s long-time special area of expertise) has been designed to take optimal advantage of the triode configuration feeding it. The quadrafilar winding and core technology of this transformer represents another breakthrough. Overall, from input to output, the use of advanced design direct-coupled and self-balancing differential amplifier stages ensures stability and minimum phase shift.

The MB-3045 produces a minimum of 50 watts continuous power into 4, 8, or 16 ohms, at any frequency from 20 to 20,000 Hz, with total harmonic distortion no more than 0.3%. As the MB-3045 is monophonic, a pair of them connected to a stereophonic preamplifier will not be subject to stereo power-supply interaction.

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- Signal-to-noise ratio: 85 db
- Variable input sensitivities: 20 to 20 kHz

MB-3045 features include:
- High-quality transformer design
- Direct-coupled and self-balancing differential amplifier stages
- Stability and minimum phase shift

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CIRCLE NO. 11 ON READER SERVICE CARD

LEONTYNE PRICE, PLACIDO DOMINGO: sensuousness and persuasive ardor

Mme. Mesple reveals equally winning ways. Her phrasing is very musical, her command of the high tessitura is spectacular, and her tech- nique is very fluent, though trills are not her forte and, in fact, she even omits some of them. The voice is light and even fragile at times; she is not a lyric soprano with a good florid technique like Montserrat Caballé, nor one with exceptional dramatic insights like Beverly Sills. She is a coloratura soprano in the tradition of Lily Pons and Mado Robin—and at least their equal in natural musicality and all-around technical skill.

Mme. Mesple’s gishlish, fluttery timbre is ideal for Gilda and Amina (La Sonnambula). Her “Caro nome” is very sensitively done, which makes me regret that she recorded only the aria, without the “Gualtier Malde” pas- sages which provide such a touching frame for it. The scene from La Sonnambula, on the other hand, is complete, and the tender aria is effectively contrasted with the dazzling cabala- letta “Ah, non ginge” in which the second chorus, at a slowed tempo (?), is delivered with just the right amount of ornamentation.

The record liner credits Mady Mesple for the cadenza in the Lucia Mad Scene. I fail to hear anything really original in it, but the sing- ing is fine. The rarely heard aria from La Gazz- zia Ladra (quite similar to Rossini’s “Una voce poco f’また”) provides the only real novelty. It is spectacularly sung, with an interpolated high F-sharp. The program could have been put together with more imagination, but this is a major artist, she sings her heart out, and she receives good orchestral support and very effective sound as well.

RECORDING OF SPECIAL MERIT


Performance: Excellent and charming

Recording: Excellent

Mady Mesple, Frunce’s reigning coloratura soprano, has not been heard at the Metropoli- tan since her brief appearance as Gilda during the 1973-1974 season. Her absence cannot be ascribed to artistic shortcomings, for her ex-ceptional skills are notably displayed on rec- cords, particularly on her recital of French arias on Scaphrin 00215.

In the present program of Italian arias ing, involving the four organs of the Freiburg Cathedral played from one console, would provoke a sequel. In this instance it takes the form of a chiefly “fun” collection with Buxte- hude and Krebs works thrown in to add a bit of serious ballast. I’m not enamoured of the Handel arrangements taken from Sumson and the Water Music, but the little “Aylesford” keyboard pieces are something else again, especially the two-voice Fugue in G and the delectable little tidbit titled Imperitance. The Purcell pieces are mostly familiar favorites of Biggs buffs. But the real gem on side two is the Banchieri Dialogo per Organo, with its hugely effective (in quadraphonic) back-front interplay. Though the grandiose perorations of Krebs and Buxtehude are magnificent room-shakers, the really effective quadra- phonics happen in the small pieces that rely heavily on the reed and mixture registrations that bring with them a strong sense of direc- tionality. Handel’s “Aylesford” pieces and Banchieri’s Dialogo being the most striking instances in point.

Needless to say, the Biggs performances are zestful, and the recording, in both two- and four-channel formats, is by turns fearfully impressive and delightfully entertaining.

D.H.

RECORDING OF SPECIAL MERIT


Performance: Excellent and charming

Recording: Excellent

“The Operatic Duo of the Century!” is the brazen proclamation on the jacket of this al- bum—this from the same company that once
boasted the teams of Caruso and Farrar, Ponselle and Martinelli, Galli-Curci and Schipa, and Milanov and Björling. The album billing boasted the teams of Caruso and Farrar, Ponselle and Martinelli, Galli-Curci and Schipa, and Milanov and Björling. The album billing

The Puccini side, in fact, is very nearly toire is familiar, but these two artists bravely great operatic duos of the decade. And they live up to their stellar reputation in this, their first joint recital disc. The repertoire is familiar, but these two artists bravely great operatic duos of the decade. And they live up to their stellar reputation in this, their first joint recital disc.

The Ballo duet sizzles as it should. Some of Verdi’s dynamic markings fail by the wayside, but we too are swept along by the tidal wave of the emotion-charged singing. There are glowing moments in the Otello scene as well, but here Miss Price sounds not so much like the tender, yielding Desdemona as a star soprano determined not to be outdone by the star tenor. The results caress the ear, but the effect would have been more memorable had the artists paid more attention to Verdi’s expressive markings.

More assertive direction would have helped matters, but Nello Santi was apparently content with sometimes prosaic efficiency. The orchestral sound is lustrous, however, and the technical presentation is all we can ask for. Richard Mohr, the recording producer, is also the author of the expert annotations. G.J.

RECORDING OF SPECIAL MERIT


Performance: Very good

Recording: Very good

The music on this handsomely produced disc, imaginatively selected from materials researched by UCLA’s renowned Robert Stevenson, is of more than historical interest; most if not all of it is downright fascinating. None of it is what anyone might regard as primitive, though some of the pieces are based on folk styles; it is all extremely well crafted, the work of polished professionals, some of them—such as the Italian-born Domenico Zopili (1688-1726)—of European origin and all of them apparently conversant with European musical developments in their time.

All the performances reflect enthusiasm as well as fastidiousness, and the sound is very good indeed. This is the sort of release that would enhance any catalog, and surely beyond what most of us would expect from a university press operation. R.F.
Changing instruments meant changing technique and music as well.

One of the most fascinating facets of today's musical life is the continuing exploration of old instruments and the lessons they have to teach us. The modern musician is pretty much spoiled by the comparative uniformity of instruments. Grand pianos, for example, are similar enough throughout the world that a pianist is able to move from one instrument to another and play the same program without too much difficulty. If, however, he were taken back to the first years of the nineteenth century, he would find the situation wildly different. In Vienna he would be confronted with a frail instrument that had a treacherously light action, a beautiful singing treble, and knee levers instead of pedals. In London, on the other hand, he would find a much larger instrument with a heavy action, a weak treble but a strong tenor register, and foot pedals. In shifting from the Viennese in-
ate instruments. It is rare that the modern concert artist can adjust to old instruments, but Mr. Frager is rare. His performance of the Appassionata on an 1806 Broadwood sheds new light on this popular work.

The Beethoven repertoire is further explored by Barbara Holmquest on two more Colt instruments. Conrad Graf was one of the finest piano builders of all time, and the silky sheen of the Graf treble is well captured in the last movement of the Waldstein Sonata. Although the sound of the Broadwood is ravishing for the Moonlight Sonata, Miss Holmquest unfortunately does not take Beethoven's pedal markings for the first movement seriously. Also, her performances are marred by some odd tempos and wrong notes.

Volume VI of the Colt collection demonstrates how well old instruments sound in chamber music, both instrumental and vocal. The modern piano tends to override other instruments, while the older pianos really blend, which puts quite a different emphasis on the balance.

Turning to the German National Museum at Nürnberg, Ernst Groschel gives us a side of Chopin done on an Erard of 1841 and a side of Schubert done on another magnificent Graf. Mr. Groschel is a sensitive musician, and the instruments are almost modern in sound. The virtue of both instruments is the clarity and delicacy of tone that allow one to hear the inner workings of the music, all too often forgotten by players on modern pianos.

The recording of harpsichord and organ duets, also done at Nürnberg, must be counted a disaster. The Guissani Sonata is a dreadful bore, and the Giordani was originally conceived as a harpsichord duet. The recorded balance is so heavily weighted on the harpsichord side that one is unaware that there is a melody in the last movement. But with Diabelli and Kufner for guitar and piano we enter the finest world of the nineteenth-century salons. Although lightweight, the music breathes an elegance that is enhanced by the silvery sheen of these old instruments.

The last two records take us into the world of historic organs. Here we are given a fine sampler which includes such great builders as Compenius, Stein, Schnitger, and Silbermann. If one has never heard French reeds, the 1782 Cliquot will come as a hair-raising experience. Of special interest is Michael Thomas' recording on the Claviorganum, a bizarre combination of harpsichord and organ. Unfortunately, the only piece that comes off musically is the Bach Fantasia and Fugue in A Minor. The rest of the music is hindered by the cumberosseness of the instrument and by Mr. Thomas' rather lumpy performance.

The Oryx engineers are to be congratulated for capturing (for the most part) these sounds so faithfully. And certainly the main thrust of this series lies in the unusual sonorities presented. As for recording musical experiences, the discs are uneven, depending on the repertoire and performer. Nonetheless, musicians—especially keyboard players—owe it to themselves to familiarize themselves with this extremely important pioneer series that boldly presents a musical tradition we are just beginning to understand. And even nonmusicians will find in these records an opportunity to broaden their musical experience in an unusual and valuable way with a whole new variety of sounds emerging from their speakers.

—Stoddard Lincoln


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Editorial Coordinator

Louise Boundas

"THERE had been a revolution in printing in the last ten years," says Louise Boundas, "and I am having to learn along with our typesetters and printers just what can be expected from the new techniques and processes." As STEREO REVIEW's Editorial Coordinator, she is the magazine's resident expert on these processes, and she supervises the complex procedure of turning authors' manuscripts into articles on printed pages. All copy, both technical and musical, passes through her hands several times and thus comes under her scrupulous scrutiny.

Ms. Boundas was born Louise Gooch in Yazoo City, Mississippi, and grew up in a variety of small Southern towns. She graduated with honors from the Woman's College of the University of North Carolina at Greensboro. "I majored in English and took some advanced math and physics and worked on the college literary magazine, but I didn't intend to teach. And the prospect of a career in publishing was not what lured me to New York. Like a lot of young Southerners who are interested in the arts, I just could hardly wait to get here."

I was only twenty when I arrived (I had graduated at nineteen, but Mama wouldn't let me), so I had to live at the YWCA for a short time because I was too young to sign a lease on an apartment. I came armed with a job offer from the New York Public Library, but since I didn't really want to be a librarian, I looked around for a while. I was told that a girl could never expect to get a job in publishing until she could type sixty words a minute and take shorthand."

Even without these skills, Louise got a job on the staff of a group of engineering journals editing highly technical copy and performing some production functions. "Although the office was in a beautiful mansion on Fifth Avenue, it was an editorial sweatshop. They hired only women because that was all they could afford. The pay was less than subsistence, but the training was excellent."

With that experience Louise soon got a better job at Conover-Mast, the publishers of a number of trade magazines. When William Anderson left the company to join STEREO REVIEW, Louise succeeded him as managing editor of Electro-Technology, a position she held until the magazine moved to the Midwest.

After taking a master's degree in English at Yeshiva University, she taught in a junior high school in South Yonkers. Attempting to teach something so structured as traditional language skills in the unstructured situation of "heterogeneous classrooms" was depressing and made her pessimistic about the literacy of at least one generation and probably two. After two years she was happy to return to publishing as an editor for the Public Affairs Committee, and in 1972 she joined the staff of STEREO REVIEW.

In addition to her solid literary and technical printing background, Louise brings to the magazine a strong interest in music. She particularly enjoys instrumental music of the Baroque and Classical periods and some popular songs, such as those of Gershwin and Porter. And she hears a lot of jazz because her husband is an avid jazz fan.

Louise is married to George Boundas, a magazine art director whom she met at Conover-Mast. They have recently moved to a house in Westchester County where Louise is enjoying gardening ("I planted a hundred narcissus bulbs and a hundred tulips this fall") and expanding her picture collection, a pleasure afforded by the increased wall space of the new house.

With reasonable good humor Louise puts up with a certain amount of teasing about being the office feminist because when new on the staff she was asked for her strong views on equality of opportunity and remuneration. "Publishing has exploded women and continues to do so, but opportunities are finally becoming more nearly equal in this field, as in others. We just have to learn to take advantage of those opportunities."

—William Livingstone

STEREO REVIEW

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The Sony TC-756 set new records for performance of home tape decks."

(Hirsch-Houck Laboratories further noted, "The dynamic range, distortion, flutter and frequency-response performance are so far beyond the limitations of conventional program material that its virtues can hardly be appreciated."

The Sony TC-756-2 features a closed loop dual capstan tape drive system that reduces wow and flutter to a minimum of 0.03%, logic controlled transport functions that permit the feather-touch control buttons to be operated in any sequence, at any time without spilling or damaging tape; an AC servo control capstan motor and an eight-pole induction motor for each of the two reels; a record equalization selector switch for maximum record and playback characteristics with either normal or special tapes; mic attenuators that eliminate distortion caused by overdriving the microphone pre-amplifier stage when using sensitive condenser mics; tape/source monitoring switches that allow instantaneous comparison of program source to the actual recording; a mechanical memory capability that allows the machine to turn itself on and off automatically for unattended recording.

In addition, the TC-756-2 offers 15 and 7½ ips tape speeds; Ferrite & Ferrite 2-track/2-channel stereo three-head configuration; and symphase recording that allows you to record FM matrix or SQ* 4-channel sources for playback through a decoder-equipped 4-channel amplifier with virtually non-existent phase differences between channels.

The Sony TC-756-2 is representative of the prestigious Sony 700 Series—the five best three-motor 10½-inch reel home tape decks that Sony has ever engineered. See the entire Sony 700 Series now at your nearest Superscope dealer starting at $899.95.

SONY® Brought to you by SUPERSCOPE.

*SQ is a trademark of CBS, Inc. © 1976 Superscope, Inc., 20525 Nordhoff St., Chatsworth, CA 91311. Prices and models subject to change without notice. Consult the Yellow Pages for your nearest Superscope dealer.
"You know, I've always thought of music as a universal language. In fact, that's probably the reason my daughter Nancy and I get along so well together. So when it's time for some easy listening, we get it on together with Koss Stereophones. Because nothing brings back the excitement of a live performance like the Sound of Koss.

"This year the engineers at Koss have made that sound better than ever, with an all new Decilite™ driver assembly. It's the first High Velocity driver element to deliver all 10 audible octaves, and it's featured in the new HV/1a and the HV/1LC Stereophones. Take it from old 'Doc', the new Koss High Velocity Stereophones deliver a fidelity and wide range frequency response unmatched by any other lightweight stereophone.

"So if you'd like to hear some lightweight, hear-through Stereophones that'll curl your toes, slip into the new HV/1a or the HV/1LC with volume-balance controls at your Audio Specialist. Or write for the free Koss full-color catalog, c/o 'Doc and Nancy'.

With a pair of the new Koss from the people who invented Stereophones.