10 Cassette Tapes Compared

SPECIAL TAPE ISSUE

75 Years of Magnetic Recording
From Wire to Tape - A Historical Saga

Would You Like a Copy of the First Tape Ever Recorded?

See page 4 for details
"THE BEST VALUE IN A QUADRAPHONIC RECEIVER."

—High Fidelity Magazine
January, 1973

Excerpts from the equipment report
High Fidelity based on test data and measurements obtained by CBS laboratories:

"The Fisher 504 is so loaded with features and so competent in its performance that we can confidently say it represents the best value we've yet encountered in a quadraphonic receiver.

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rated power increases from 128

watts (32 x 4) to 180 watts (90 x 2); into

8-ohm loads it drops from 160 watts

x 4) to 100 watts (50 x 2). This

navor... is a concomitant of the

ual 4/2-channel switching
diguration plus the amplifier's

back circuits... Suffice it to say that

quadraphonic use, the 504 delivers

enough power for two sets (eight

loudspeakers) in many situations.

"And being conservatively rated by Fisher (as the lab data show), it is also an unusually clean amplifier at rated output. This is... over-all, the best amplifier performance we've yet encountered in a quadraphonic receiver.

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"A price of $529.95 is not peanuts, but we have yet to examine in detail any quadraphonic receiver—at any price—that offers more, over-all, to the music lover."

For a free reprint of the entire test report, write to Fisher Radio, Dept.
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March 1973
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The First Tape Recording
And How to Get It

As Robert Angus states in his article beginning on page 42, the tape recorder found its way into German radio stations as early as 1938. Two tapes recorded the following year were actually released on the Urania label in the United States after the war: the opera *Hansel and Gretel* with Erna Berger as Gretel and Coeurful's Harpsichord Suite No. 24, performed by Eta Hirsch-Schneider. They were among the many tapes "liberated" by Ward Botsford, then managing director of Urania, from the Tri-German stations of Leipzig, Dresden, and Berlin in 1948-9.

"Urania had tons of recordings made in 1940 and 1941." Botsford told me recently, "and you should have seen the ones that got away, including a complete *Die Meistersinger* with Furtwangler—in-no kidding—stereo!" Until recently the two Urania albums were probably the earliest tapes to become commercial recordings, but now BASF has released a disc of old German radio tapes, "Openabend der Erinnerung" (OS 2154-8), which includes a 1938 taping of Margarete Teschemacher and Maria Cebotari singing (in German) the Letter Duet from *The Marriage of Figaro*, with the Stuttgart State Opera Orchestra under Karl Böhm.

Yet even this was not the first musically important tape ever made. As Mr. Angus also points out, that historical honor goes to the tape recorded by BASF itself—in its employees' hall in Ludwigshafen, Germany—on November 19, 1936, of the touring London Philharmonic Orchestra under Sir Thomas Beecham. Their experimental tape of the third movement of Mozart's Symphony No. 39, in E flat, K. 543, made prior to a concert in the hall, thus became the first significant recording to use the revolutionary new medium. This symphony, you may recall, itself caused a revolution by introducing the clarinet into the symphony orchestra, and it is in the trio (as usual) of the taped movement that Mozart showed what the new instrument could do, during a duet between one clarinet playing in its high register and another playing in its lowest.

When *High Fidelity* recently inaugurated a search for the original tape, which miraculously managed to survive World War II, it turned up in an employee recreation area at BASF's Ludwigshafen headquarters. But time had done what the war's B-17s could not. The tape was beyond playing—almost beyond repair. However, we discovered that several years ago BASF had sent a copy of the original to the Sir Thomas Beecham Society—when, coincidentally, Ward Botsford was the Society's head. In no time at all, we had a 15 ips dub, and quite a remarkable one at that, considering that the original was taped in 1936. We informed BASF that we had a copy and BASF generously offered to give it to us. When it arrived, the tape was in no condition to play. We were delighted to receive it and decided to put the four-minute movement onto a cassette, today's new and revolutionary (and ubiquitous) tape format. The copy we had was just fast enough to make it an E major Symphony, but BASF readily agreed to bring the tape down to the original performance speed (presumably the LPO played in tune).

If you would like a cassette copy of this historical memento, send one dollar ($1.00) for handling and postage with your name and address to Emanuel H. G. Zang, Tape, c/o Mr. Murray Kremer, BASF, Crosby Drive, Bedford, Mass. 01730. You should shortly thereafter receive a copy of the first professional tape ever recorded. However, only a thousand of these tapes are being made, so if you don't receive one, you'll just receive your money back instead.

**Next month we will remain partly in the past, with HOW TO PLAY ANTIQUE RECORDS ON YOUR STEREO SYSTEM, replete with a strobe disc that will help you to set your three-speed record player for the nonstandard speeds (73, 75, 80 rpm) at which many older "78s" were actually cut. (We'll tell you which, too.) And you'll also find a startling bit of myth-breaking in THE CLASSICAL UPSURGE FOR rock fans, West.**

Bruce & Laing and Loggins & Messina will be the subjects of ROCK'S NEW SUPERGROUPS.
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* Suggested retail price.

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letters

Robeson as Activist

I would like to call attention to the historic career of the great American artist Paul Robeson. The sacrifice of his career in concert, recording, and on the stage was a direct result of his appearances in the trenches of the Spanish Civil War, defiance of the House Un-American Activities Committee, support for Henry Wallace in the 1948 presidential campaign, and, above all, his militant fight for black civil rights. It has generally been forgotten, but the efforts to still his voice in Peekskill, New York in August and September 1949, brought about a confrontation between 20,000 people. The sacrifice of his career in concert, recording, and on the stage was a direct result of his appearances in the trenches of the Spanish Civil War, defiance of the House Un-American Activities Committee, support for Henry Wallace in the 1948 presidential campaign, and, above all, his militant fight for black civil rights.

Ralph A. Greene
President
North Carolina Consumers Council
Henderson, N.D.

The Real Blues Guitarists

In the review of Roy Buchanan's album (December 1972), Mike Jahn sheds the traditional titles such as the world's best and goes to the real core of Buchanan's playing, a trait more record reviewers should try to acquire. However, he errs in stating that B.B. King wrote the book on slow guitar blues. B.B. King, although a fair guitarist, has been commercialized to the point of completely overshadowing the real masters of the blues—slow, electric, or acoustic—Lighnin' Hopkins, J. B. Hutto, Magic Sam, Larry Johnson, Rev. Gary Davis, Elmore James, Leadbelly, T. B. Lenoir, and Spider John Koerner.

Marvin Harwitz
Brooklyn, N.Y.

Double-Stopped Oboe

In "The Best Records of the Year" (December 1971), Leonard Marcus says that Heinz Holliger might very well be the world's greatest oboe virtuoso and that he plays double-stops. Well, I play the oboe myself, and I know that it is impossible to play two notes at once. No matter how great this guy is I'm sure he couldn't do it.

Russell Walder
Deerfield, Ill.

Mr. Marcus replies: If Mr. Walder will take up his oboe, blow into it hard with a loose-lip embouchure, and finger as follows—keep the first finger of the left hand up; push down the next two fingers (A and G); in the right hand push down the second finger on E-sharp and the pinky on low C—he will find himself playing double-stops. The Dorian Wind Quintet is currently touring with Lukas Foss's new Cave of the Winds quintet (expected to be recorded for Vox) in which the composer calls for up to five notes to be played simultaneously by a single wind instrument. It can be done. For further instructions in this technique see New Sounds for Woodwinds by Bruno Baroloazi (Oxford, 1967).

Hearing the Static

People who don't own a set of Koss Electrostatic headphones will think that Michael Marcus was kidding "Eight Experts Choose the Component I'd Most Like to Get for Christmas," (December 1972). He wasn't. Being a humble and impoverished law student I had to settle for the ESP-6 rather than the ESP-9; nevertheless, I soon discovered that one fifth of my records were so poorly recorded that I could no longer stand to listen to them.

Bob Egge
Albany, N.Y.

Esoteric Awards

I think your "international jury" ought to rename itself the Montreux Esoteric Records Jury (December 1972). How can they consistently award first prizes to records that are about as well known (to reviewers as well as to the general public) as was Spiro Agnew in January 1968 is beyond me. This year they really outdid themselves by picking three nonentities over the clearest choice since the inception of the awards—the London Tannhäuser. At last Mr. Marcus had enough sense to try to prevent the Montreux jury from making a farce of the awards and itself.

James D. Walley
Concord, N. H.

Dynamic Dynamite

Am I alone in thinking too many recordings of classical orchestral music are made with excessive extremes of dynamics for domestic listening? They tend to make soft passages inaudible and loud ones deafening; surely modern technology could overcome this. After all, one's listening room is not a concert hall and never will be.

Steven Pantus
New York, N.Y.

Character Change

The article and review of the Furtwängler recordings of the Wagner Ring were informative and intelligent (December 1972). Conrad L. Osborne continues to impress me as the best opera reviewer in the U.S. However the photograph accompanying the article incorrectly states that Furtwängler is congratulating Martha Mödl after her appearance as Brunhilde. The photograph actually shows Furtwängler congratulating Mödl after her appearance as Kundry in Parsifal—I believe during the 1950-51 Li Scala season.

Jay Kaufman
A.P.O., New York, N.Y.

Wolff on Record

This past summer it was my pleasure to hear Beverly Wolff in concert. Here is a fine American singer who, as yet, has not been discovered by recording companies. What a shame if she...
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When you finish reading this ad
we will have one thing in common
You will understand the Zero
100 the way we do.
We aren't teachers. And you are probably
not engineers.
But we can explain the Zero 100 to you because,
in all honesty, the Zero 100 is not a difficult concept.
Neither was the wheel, although it took millions
of years to come into being.
It took us seven years to create the Zero 100.
And it would take more than this ad to explain
those seven years. The attempts that failed, the
plans drawn and redrawn, the designs built and
discarded, computed and remeasured.
Actually the problem seemed to be simple:
Distortion.
Until the Zero 100, no automatic
turntable could play a record
without
causing dis-
tortion in the sound you hear.
Records are cut at right
angles, from the outside
groove to the final one. To re-
produce this sound perfectly,
you need a turntable with a
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record exactly as it was cut,
at the same 90 degree
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iliary arm, enabling the cartridge head
to maintain a consistent 90 degree
angle to the grooves of the record.
Today, you can play a record on
the Zero 100 and hear reproduc-
tion you've never heard before.
Free of tracking distortion.
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read what the reviewers say about the
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Stereo Review

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Records and Recording Magazine

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Sound Magazine

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is allowed to or, almost as an action as was done the scene unrecorded, Traubel.

Many of us give only token recognition to these people and in fact they are not seen. Hoping that one day they will be heard.

First Recording Legend

Philip Hart erred in stating that I was the only one of the composers who did not have the cause of Dvořák's Legends in mind. [December 1972]. I have an L. ena on Supraphon (ALPV 311) Czech Philharmonic Orchestra • Karel Sejna.

June

Cedar

Taking Sides

The designs and text of Patrick J. Smith's article, "Who Really Wrote Stravinsky's Prokofiev's history [December 1972] present me as being on one side against the other in the controversy. Where biography is concerned there are no sides, because there is no one reality—there are only realities. Robert Craft is a stylistic master of portraiture and musical insight. But Lillian Libman's new memoir contains insight too, legitimate and smart and contagiously warm. I'd hate for Ms. Libman to think I was "against" her. I am against no one except the critic who, for its news value (so very far from art value), swells a molehill into such a volcanic eruption that old friends are forced to run in opposite directions.

Ned Rorem
New York, N.Y.

Rozsa Society

Your July 1972 issue devoted to film music was most informative. Especially valuable were Emler Bernstein's inside view and Ken Sutak's survey of the disc situation. (Though I do wish Mr. Bernstein had ranged farther in selecting his examples. The Ten Commandments was OK, but how many readers have even heard of Men in War?) Likewise, the October "Letters" section was a worthy representation of the widespread interest in serious film scores.

But what do you have against Miklos Rozsa? It was bad enough to misspell his name (July 1972, p. 55). What is really unforgivable, however, is your failure to announce the formation of the Miklos Rozsa Society. Under the circumstances, your printing of a mention of the Max Steiner Music Society [October 1972] is difficult to understand. That organization has been established for seven years now, and has received a good deal of publicity in many national magazines. Meanwhile, we have struggled through our first year in relative obscurity. We have ninety-three members in six countries now, but it is certain that many readers of HIGH FIDELITY would want to increase that number if they knew how.

For the record, the MRS is devoted to the study of the works of Rozsa and of other composers who have been neglected because of their cinematic work. Tape recordings and a
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Peripatetic CSO

behind the scenes

The Peripatetic CSO

CHICAGO

The Chicago Symphony is the great freelancer among the major American orchestras. It made its first records in 1916 for Columbia. (They were, in fact, the first symphonic records produced in this country.) For the next thirty-two years it worked alternately for Columbia and Victor. Since 1950 it has made new records not only for both these labels but for Mercury, Angel, London, and now, Deutsche Grammophon.

The CSO has become equally peripatetic in the matter of recording sites. Until 1966 nearly all of its work was done in Orchestra Hall. More recently the orchestra has recorded in Medinah Temple, an even larger Chicago auditorium more notable for its sound than its looks, and two out-of-town locations, the Kranzler Center at the University of Illinois in Urbana and the Sofiensaal in Vienna.

On November first the orchestra was back in Medinah with guest conductor Daniel Barenboim. The DGG sessions were an outgrowth of his recent change of affiliation which brings him to that label predominately. A major Barenboim release, in which he will appear as a pianist in a Brahms collection, is in the offing. Two others are available as of this writing: the Four Serious Songs, with Dietrich Fischer-Dieskau and the Brahms German Requiem in which he conducts the London Philharmonic Orchestra and uses the vocal forces of his Edinburgh Festival performance. A substantial orchestral record for Barenboim in his conductorial role was considered an essential of the design, and the choice went to Bruckner's Romantic Symphony (No. 4) with the Chicago Symphony, an ensemble that everyone agreed was unsurpassed for the weight and richness of tone required in a score by this composer.

Now a regular visitor to Chicago, Barenboim had recorded with the orchestra in Medinah for Angel. He was back on familiar ground. DGG technicians moved in well in advance of the sessions, and long before the first musician arrived everything was organized and totally under control as if they too were thoroughly familiar with the orchestra and hall. Gunther Breest, who produced the record, had Klaus Scheibe on his right as Toningenieur. Scheibe had recorded the symphony before (with Eugen Jochum and the Berlin Philharmonic) and observed that he knew where the problems were and how one solved them. It quickly became clear he was right.

Since DGG now does a substantial amount of recording in the United States, it uses American equipment to a considerable extent and keeps its gear on this side of the ocean. The basic rig for this session consisted of Altec Lansing speakers, new four-channel Ampex tape machines with the latest Dolby noise suppression gear for all four channels, and a board, through which all sounds passed, built by "our sister company" Philips.

The master tape was mixed on the basis of four channels. (A two-channel mixdown will come later.) DGG chose to use about a dozen microphones in all, only half the number others have employed in the hall. Four of this group provided an overall view for the rear channels. The rest offered a fairly close perspective of the stage and individual sections of the orchestra.

Things began in a traditional manner with Barenboim trying a series of short passages of different character to provide a check on microphone placement. A few minor adjustments were made, after which the first movement and scherzo were recorded straight through and the orchestra took a long break while the conductor and crew listened to the results.

Unfortunately there is no economy in this speed. It would take three three-hour sessions to record the same work in Europe. But this is still cheaper than two sessions with the Chicago Symphony. As Breest saw it, there would be no point in coming to Chicago "except for the quality." That quality was heard in the music and was sensed in the positive, happy mood of the session which was remarkably free of tensions that frequently go with recording.

Breest was delighted with the results. "We shall be back," he said. "I am sure we shall be back." ROBERT C. MARSH

NEW YORK

Vanguard Tapes Rossini's La Pietra del paragone

Up until DGG's Carmen project, Vanguard was one of the few labels making opera recordings in the United States. Several sessions back, it brought Newell Jenkins and his Clarion Concerts ensemble into its Manhattan studio and recorded Simon Mayr's Medea in Corinto. Last October, it took on another opera project, again with Jenkins and company: Rossini's La Pietra del paragone ("The Touchstone"). Curiously, this early comedy was first performed in 1812, scarcely a year after Mayr's Medea.

At the company's 23rd Street headquarters in The Masonic Temple, the orchestral forces warming up in the recording area were considerably larger than what you'd find in any opera house (for the public performance, the following week at Tully Hall, it was cut down to conventional propor-
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Hearing is believing. With all that at your fingertips, it's hard to believe that you can buy Koss Quadrafones from $39.95 to $85. But it's true. And while you're on your way to hear them at your Hi-Fi Dealer or favorite Department Store, mail us a request for our full-color catalog, c/o Virginia Lamm, Dept. HF-472. You'll find a lot more from Koss that'll switch you on.
In addition, I learned that the project involved eight prominent soloists and a good-sized chorus, and that the recording sessions had been going on for seven days. All this must have been costing somebody an arm and a leg—but whom?

That was the first question I asked Newell Jenkins while he relaxed, during a break, with a bottle of soda. Financing the project, he told me, was the Mary Flagler Cary Charitable Trust. Mrs. Cary, a patron of Clarion during her lifetime, left a sizable trust fund upon her death in the late Sixties. The trustees decided to allocate part of that fund to Clarion for such special projects as recordings.

"The trustees once asked me what it would cost to record in Europe," Jenkins admits, "I told them we could probably record three times as much music there as we do here. Nonetheless, the terms of the estate are such that the music is to be spent for the benefit of both Clarion and American musicians. If I were to record the opera in Europe with the same singers, it wouldn't be the Clarion Music Society doing it, since I'd be using ensembles like the English Chamber Orchestra; so this would not redound in any way to Clarion's fame. Nor would it work to take the orchestra and everybody over there: In addition to the union costs you'd have the costs of transatlantic flight and of accommodations."

The Clarion Music Society has a musical function as well as a performing one; and Jenkins told me how that function was challenged in the Society's attempt to obtain an authentic score of Piaf. He had originally obtained a copy of the score published by Barenreiter. This edition is derived from a Gunther Rennert production; and its introduction by Rennert admits that, in order to make the work more theatrically viable (by Rennert's lights), he had changed the order of pieces, changed the plot, and inserted a German text. When the opera had a certain success in Germany, the Italians decided they also wanted to stage it. But the story line was so drastically altered that it was no longer possible to simply reinstate the original Romanelli libretto. They were therefore forced to translate Rennert's translation.

That edition was of course useless for any musicologically conscientious organization like Clarion. Another version was the score used in a 1959 La Scala performance. Jenkins contacted a friend at Ricordi, Madame Pestalozza (the sister of Claudio Abbado), asking her for a copy of the La Scala material as well as a microfilm of the autograph score. What he received, though, was merely a La Scala version. Things were obviously missing from it, but it was not until Jen-
What do you think of a guy who bought a $150 turntable to go with a $75 amplifier and a pair of $40 speakers?

SMART. Audio "accountants" have formulas for appropriating funds to the various components in a stereo system. Usually they recommend about 20% of the total to take care of the turntable and cartridge, which is OK if your total is $500 or more.

But what do you do if you really love music, and have a 10-LP-per-month habit that leaves you with peanuts to spend for hardware. If you followed the accountants' advice you might end up with a $5 or $10 cartridge in a $30 changer. It would be arithmetically compatible, and might even sound OK. But later on, when you can afford that monster system you've had your eyes on, you might find that your records sound worse than they did on your old cheapie system—because the inexpensive changer, with heavy stylus pressure and unbalanced skating force, was grinding up the grooves. And your cheap amp and speakers wouldn't let you hear the damage.

And now that you've spent a pile on high power, low distortion electronics, and wide-range speakers, you have to spend another pile replacing your records. So, if you think you will want the best amplifier and speakers later, be smart and get the best turntable now... the BSR 610. Send for detailed specifications.

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You can pluck stations from even the most crowded dials, or from fringe locations (thanks to the sensitive 2µV FET front end and a 1 dB capture ratio). Switch to AM and the center-channel meter winks out, while the signal strength meter stays lit. AM isn't just an afterthought in the 7065. It's quiet and sensitive.

The controls make all that superb performance easy to enjoy. Smooth acting levers switch in positive muting, the two tape monitors (with direct coupling), and loudness compensation. Or click in your choice of three speaker pairs, high and low filters, or mix one or two microphones with any source. The 7065 is ready for SQ 4-channel and any of the other matrix systems.

The price? An enlightened $459.50 (suggested retail), including a handsome walnut finish cabinet. The 7065 highlights a line of Sony receivers starting under $200. Sony Corporation of America, 47-47 Van Dam St., Long Island City, N.Y. 11101.

Buy a Sony, and see the light.
Hollywood—
Sign of the Times

LATE LAST YEAR, Dory Previn's musical, Mary C. Brown and the Hollywood Sign opened in Los Angeles and promptly closed.

As one would expect of Mrs. Previn, the show's premise was a little morbid. It's about a frustrated actress who commits suicide by jumping off the Hollywood Sign that stretches, as Mrs. Previn aptly put it in one of her lyrics, across the hills like a big smile, as if the city were always saying "cheese."

An L.A. TV commentator said that the show followed the example of its heroine and committed suicide. A lot of people thought it was all rather symbolic, for the Hollywood Sign is in danger of following in one of her lyrics, across the hills like a dying, it's dead. They may be overstating the case, but there's some truth to it.

Hollywood itself is no longer the movie capital of the world. But the Los Angeles area as a whole still is; and now it's also the record capital of the world. What's happened of course is that most of the big studios have moved to outlying communities, all the way from Burbank in the San Fernando Valley to Beverly Hills, where a lot of the talent agencies maintain their offices.

Meantime, there has been a recession in the movie industry, which in turn affects the music industry. And television hasn't been doing too well either. If you wonder why, just look at how much trash there is on the tube, though some of the dramatic shows seem to have improved of late. It is rumored that the big networks have been drawing a lot of profit from their record divisions and the record divisions in turn have been living off their music publishing subsidiaries.

"Easy Rider" was one of the most unprofitable movies Hollywood ever made," a director friend of mine said recently. "It's box office success was huge, but it launched a bunch of imitations that have damn near killed the film business."

In short, he said, such pictures turned the public off going to movies.

With all this, the life style of the old Hollywood has disappeared. Movie stars are no longer exalted and beautiful gods, running around in Dusenbergs and living it up at scandalous secret parties in remote and guarded mansions. "The girl in the mink coat, slacks, and smoked glasses going to the supermarket, that was the symbol of the old Hollywood," said Hugo Friedhofer recently. "The symbol still prevails in some places, but it's largely gone now."

Friedhofer, at seventy-one, is the elder statesman of motion picture music—a title he loathes since he bitterly resents getting old. He is also the owner of one of the most caustic and penetrating wits in the city.

Friedhofer came to Hollywood from his native San Francisco in 1929, two years after the advent of sound in movies and a year, incidentally, after Margaret Entwhistle jumped off Hollywood's H as an act of revenge against the city that had ignored her. She was, of course, the model for Mrs. Previn's musical.

He remembers, with wry amusement, the days of the great moguls with minuscule minds. When he was scoring a film about the French revolution, the production head of the studio told him, "This story is laid in Paris, so there should be lots of French horns in the score." For his own amusement, Friedhofer used lots of French horns, and then, at the end, when the escaping hero and heroine are crossing the Channel to England, added a final private joke by scoring the passage with an English horn solo.

"Yes, the city's changed," Friedhofer said. "Now, when you go into the Brown Derby, the only people you see are tourists. You can always tell the tourists. They wear Bermuda shorts, the wrong socks, and the kind of shoes that lace up, and they gawk, expecting to see a movie star. They've got a long wait these days. They all look as if they come from Pocatello, Idaho, not that I have anything against Pocatello, Idaho. They grow potatoes there, I think."

Cresta Hill, on the western edge of Beverly Hills, is a huge complex of hotels, office buildings, and supermarkets, and also the theater where Mrs. Previn's musical briefly appeared. "It used to be Tom Mix's ranch," Friedhofer said. "When it's lit up now, it looks like a bunch of ice cube trays set on end. It helps on hot nights."

"Out where UCLA is, it was nothing. Come to think of it, architecturally it's still nothing. But they have a fine music library. Beyond that, there was only alfalfa and barley, things of interest only to horses and cows." Today, of course, there is an uninterrupted urban sprawl all the way from Hollywood to Santa Monica, a good ten-mile drive.

Movies today are made in a rush, and so are their scores. "I had ten weeks to do the music for One-Eyed Jacks," Friedhofer said. "Now you're lucky to get ten days. As they say around here, 'They don't want it good, they want it Thursday.'"

"But Hollywood was never so much a place as a state of mind, and I was never really a part of it. Most people were, though, if only for a little while. Once I was having lunch with André Previn, and I asked him, 'When you first hit this town, did you go Hollywood?' He said, 'Did I ever! I wore suede socks.'"

Previn, who was a music director at MGM when he was only 18, has left Hollywood. Now forty-three, he is the conductor of the London Symphony, and professional colleagues who only a year or two ago were skeptical of his conducting now say he is becoming one of the best.

Meanwhile, his ex-wife has written Mary C. Brown and the Hollywood Sign and the city fathers are talking about tearing the sign down—before it falls down.
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With the diaphragm (bottom) removed, the acoustic lens formed by magnet's pole pieces is clearly visible at center of driver.

A Whole 'Nuther Loudspeaker?

ESS (manufacturer of the Transtatic I, reviewed in our June 1972 issue) recently invited us to its plant in Sacramento, Calif. to hear something startlingly new. "A radical new approach to loudspeaker design" is a phrase we've heard more often than we care to remember, and often it has heralded some of high fidelity's biggest disappointments; so we had no idea what to expect.

ESS's "breakthrough" turned out to be a structure a little smaller than a bread box containing an accordion-pleated diaphragm, surrounded by massive magnets and pole pieces, acting as a midrange-tweeter in a system that also included a conventional cone woofer. Naturally, it was demonstrated for us; and, frankly, we were startled by what we heard—and pleasantly so. But we'd rather forego specific comments until we've been able to listen in more familiar rooms and with a wider variety of program material than an afternoon's visit would allow.

Vic Comerchero and Phil Coelho (president and vice president respectively of ESS) emphasized that the unit we heard represented only one possible application of the driver principle, in which the convoluted conductor path (the counterpart of the coil in a conventional loudspeaker) is built right into the diaphragm, and they introduced Oskar Heil, the inventor of the new driver, who proved to be a fascinating gentleman. We were struck immediately by his way of talking about sound in general and loudspeakers in particular. His thoughts and vocabulary on the subject—which reflect his background in physics—bear little if any relationship to the clichés we have heard in the past. (We understand that in the Thirties he invented the field-effect transistor—the FET, as it's usually called—but was so far ahead of his time in doing so that the patent had expired before solid-state technology could apply the FET.)

In talking about the new speaker design, he is fond of explaining its basic principle through an allusion to the problem of throwing a cherry pit. Wind up and heave as hard as you can, and the pit still won't go very far. But press it firmly between your fingers and it will "squirt" out surprisingly far, though you will expend far less energy. The wasted energy of conventional throwing, Heil points out, is used in moving your arm—rather than the cherry pit. And conventional speakers, he says, suffer from a parallel sort of inefficiency in the way they project sound into the room.

Heil likens his "air-movement transformer" principle to that of "squirting" the pit because in both cases a higher force at a lower velocity (as in the fingers) is converted into a lower force at a higher velocity (in the pit). Similarly the diaphragm velocity in his sample speaker is only one-fifth that of the air it propels. Part of the key to this action appears to be in the magnet's pole pieces, which not only concentrate the magnetic force in the diaphragm's meandering conductor (a metallic "pathway"

Miami Show Scheduled March 23 to 25

Teresa Rogers and her husband, Robert, well-known independent high fidelity show producers, will stage their first Miami, Florida show on March 23 to 25. Mrs. Rogers, president of High Fidelity Music Shows, Inc., says that most of the fifty-five exhibit rooms at Miami's Sheraton Four Ambassadors had been reserved by mid-December. The doors will be open to the public from 5:00 to 10:00 p.m. on Friday, 11:00 a.m. to 10:00 p.m. on Saturday, and 1:00 to 8:00 p.m. on Sunday. The Rogers recently completed their biennial Wash-
ington, D.C. show, which they have produced since 1954. They have also sponsored biennial shows in Philadelphia, Pennsylvania, and last year held one in Atlanta, Georgia.

**Channel Master “Custom-Tailors” Antenna Systems**

A new antenna, developed for TV sports fans who want long-distance reception of locally blacked-out events, may be an even bigger boon to FM listeners. With it, you can shoot past a strong local station in favor of a more distant station on a nearby frequency with a minimum of interference.

Channel Master’s TV Sportenna package includes a so-called black box: custom-tailored frequency traps to filter out the TV channel one up or one down from the channel the viewer wants. The company says the same principle can easily be applied to trap unwanted FM signals.

Their engineering department cites one limitation: The wanted and unwanted stations should be at least 600 kHz (that is, three FM channels) apart for optimum results. Take, for example, stations on 93.1 and 93.7 MHz. With this spread, Channel Master says, an unwanted signal on 93.1 will be attenuated 20 dB, while the desired signal on 93.7 will suffer only a 3-dB loss. A greater frequency spread will reduce the loss in the desired signal. If you want to receive the trapped station, the trap simply is bypassed.

These special antenna systems are available through Channel Master dealers. Because the traps must be assembled at the plant, you’ll need to know the frequencies of the local and distant stations when you order.

**Quadrophonics and the Cassette**

Among the most-asked questions about quadrophonics these days is, “What about the cassette?” A number of companies are earnestly seeking to come up with a satisfactory answer to that question, and we know of at least three basic approaches that have been pursued. In Japan last fall we were shown demonstration samples of a unit with which JVC claims to have solved the problems. It appears to follow the mainstream on international thinking on the subject in subdividing the stereo tracks to achieve an eight-track cassette that will play quadrophonics in both directions. The long-standing objection to this approach is that it leaves too little margin for errors due to tape skewing in the mass duplication of recorded cassettes. JVC indicates, however, that it believes these problems too are solved. Perhaps the first units may reach the U.S. market this spring.

**Dimensia Praecox**

RCA, a leader in this country’s push toward discrete four-channel sound (via both its massive introduction of Q-8 cartridges and its so-far proprietary position in Quadradiscs), is featuring new compacts with what it calls “Dimensia IV enhanced stereo capability.” Advance information indicates that the stereo systems drive four loudspeakers via some sort of differentiation circuit (presumably comparable to Dynaquad) to achieve “Spatial Sound.” RCA adds that Dimensia IV will play Quadradiscs as enhanced stereo. Where be discrete quadrophonics now?

**equipment in the news**

**Sony’s unique tuner**

Perhaps the ultimate in pushbutton FM tuning is offered by Sony Corp. of America in its ST-555, which has a button for each of the hundred FM channels. A quartz reference frequency oscillator and phase-locked-loop circuitry control tuning while a 200-bit memory array can be set to memorize the frequencies of selected stations and illuminate the corresponding buttons. Automatic-scanning functions also are included. A five-step digital indicator shows signal strength, and multipath can be monitored from oscilloscope outlets on the back panel. The ST-555 has two pairs of audio outputs (one with level control) and a headphone output with its own level control. The price is about $1,000.

**Smallest AR loudspeaker system**

At 9¾ by 15¾ by 6¼ inches, the AR-7 is Acoustic Research’s smallest loudspeaker. Within its walnut-finish wood enclosure are an 8-inch acoustic-suspension woofer and a 1½-inch wide-dispersion tweeter almost identical to that used in the AR-6. A selector switch permits the user to choose between two tweeter output levels. Recommended amplifier power is 15 watts; impedance is 8 ohms. It costs $60.
You're particular about sound. You want the very best reproduction you can get.

But you know different types of recording require different types of tape.

There's music you have on while you're working, and there's the music you really sit down and listen to. Very closely and critically.

Recording voices calls for a different kind of tape. And recording sounds may call for yet another.

But no matter what you're recording, "Scotch" makes a tape for it that's unsurpassed.

Consider our 206 and 207 High Output/Low Noise, for example. These are our best reel-to-reel tapes. They provide an improvement of 3 db in signal-to-noise over standard tapes, resulting in an actual 50% increase in output. Or consider "Scotch" High Energy, our finest cassette tape. It's designed for your most important cassette recording needs.

Remember, "Scotch" tapes are the overwhelming choice of professional studios for master recording.

So no matter what kind of recording you're doing, and no matter whether it's reel-to-reel, 8-track cartridge or cassette, there's only one name you need to remember: "Scotch."

You're particular about sound. But no more than we.

"Scotch" Brand Tapes.
Better tapes you just can't buy.

MARCH 1973
Versatile cartridge deck from Wollensak

3M/Wollensak's Model 8060 eight-track cartridge player system has two features we have not seen before in this equipment: a built-in matrix decoder and a digital counter displaying elapsed time in minutes and seconds. The first allows the system to record and reproduce either stereo or matrixed quadraphonic addition to playing commercial discrete four-channel (Q-8) cartridges. The second makes it easy to time recordings. Signal-to-noise ratio is rated at better than 48 dB, frequency response at 30-15 kHz. The suggested price is $199.95.

Medium-power Heathkit receiver

Heath has filled a gap in the middle of its receiver line with the Heathkit AR-1214 stereo FM/AM receiver kit. The amplifier section is said to deliver 15 watts continuous power per channel into 8 ohms, while the FM section features a phase-lock multiplex demodulator. The preassembled FM tuning unit, the company says, provides a 2-microvolt sensitivity and a 2-dB capture ratio. The phono preamp has its own level controls. The unit comes with black vinyl top, walnut finished end panels, and chrome controls. Price is $169.95. The separate AJ-1214 tuner section and AA-1214 amplifier section each sell for $89.95 including cabinet.

Design Acoustics offers "conventional" speaker

The D-6 loudspeaker from Design Acoustics is designed, the company says, to provide performance and dispersion comparable to its polyhedral D-12 but in a more conventional rectangular enclosure. The works include five 2½-inch tweeters, a 5-inch midrange firing through a relatively small opening for enhanced dispersion, and a rear-firing 10-inch woofer. Separate switches control high, low, and mid-frequency levels. Minimum recommended power input is 20 watts per channel; rated impedance is 8 ohms. Available grille colors for the walnut-veneer D-6 include azure, cocoa, crimson, gold, mandarin, white, and black. Price: $249.

SQ decoders from Audionics

According to Audionics of Portland, Oregon (probably best known as importers of Radford and Sinclair audio products), the new 106 series of SQ decoders is built with precision parts to achieve the best available separation, distortion, and phase difference bandwidth—the latter referring to phase tracking as a function of frequency. In addition, logic circuitry can be added to these units later. The 106C (shown) is the component model at $99.95. The series also includes the 106B ($74.95, the electronics module of the 106C) and the 106A (the SQ circuitry, less additional hardware and power supply).

Add another classic to your library from Sony/Superscope…the bookshelf-size Sony Model TC-640B three-motor three-head stereo tape deck.

Get all of these outstanding Sony features in the most beautifully compact, beautifully priced ($399.95) three-motor tape deck on the market today.

Three Motors. One precisely controls tape speed and two provide extremely fast rewind and fast-forward moves for optimum tape handling ease.

Three Heads. Separate erase, record and play heads give better frequency response and also provide for tape/source monitoring, allowing you to check the quality of recording while in progress.

Built-In Sound-On-Sound and Echo. Switching networks on the front panel facilitate professional echo and multiple sound-on-sound recording without requiring external patch cords and mixer.

Mic/Line Mixing. Dual concentric level controls regulate the record levels of microphone and line inputs independently, also allowing simultaneous mix and record.

Two Large Illuminated VU Meters—calibrated to NAB standards.

Plus Lever Action Solenoid Controls and Locking Pause Control.

Also ask about the Sony TC-352D ($229.95), TC-580 ($499.95), TC-850 ($855.00) at your Sony/Superscope dealer. After all, when it comes to tape recorders Sony wrote the book.

SONY® SUPERSCOPE®

You never heard it so good.
In your report on the Harman-Kardon CAD-5 cassette deck [April 1972] you say that if the cassette ends or becomes jammed "the motor turns off automatically but the drive mechanism does not automatically disengage." Does this mean that the pinch roller remains in contact with the capstan? And if so, is this not a shortcoming that deserves specific mention?—Joseph R. Kaelin, New Kensington, Pa.

In answer to both questions: Yes. And when we say that the drive system does not disengage we are talking about the capstan and the pinch roller. H-K's new HK-1000 cassette deck does disengage, though.

In talking about disc warpage you never mention the problem of boxed sets. I've been putting extra boards into the boxes to fill the empty spaces and support the discs firmly but not tightly, but still I have trouble with warping—particularly in the new, thinner discs (Angel, RCA, etc.). Any other suggestions?—B.D., Hanover, Pa.

If the discs really are packed firmly we don't see how they could warp during storage. Lay the box on a table and press down moderately on the middle. Now place a straightedge across its top. If the box sags away from the straightedge you don't have enough packing in the box.

My present stereo system includes two open-reel decks of 1963 vintage: an Akai M-7 and a Sony 262D. I'm planning to add Dolby noise reduction, but I don't know what considerations are important. Would I necessarily need one with separate record and playback Dolby circuits—maybe the Teac AN-180—to make use of the source monitor feature, for example?—Charles G. Aitken, APO, Seattle, Wash.

"Source" monitoring is not true monitoring: It simply takes the signal coming to the recorder from your stereo system and feeds it back to the system. A "real" monitor allows you to listen to the signal off the tape during recording and requires a separate playback head—which, if memory serves, neither of your decks has. A true monitor can help you evaluate the quality of the recording while you're making it; and to hear the taped signal properly in making a monaural tape. Part of the sound can become extremely weak and distorted in the mono copy. I have a small capacitor in one channel between my Shure M91E pickup and my Kenwood TK-140X receiver. Cutting this capacitor into the circuit helps some records and has little effect on others; but it doesn't get the job done right. What can I use to solve the problem?—Al Dow, Seattle, Wash.

The phase differences you're running afoul of are the same elements in stereo recordings that make simulated quadruphonic possible. It's an inherent property of stereo taping. The mikes can pick up some signals, at some frequencies, 180 degrees out of phase—meaning that left and right signals would tend to cancel each other when they're combined for mono recording. Your capacitor will shift phase by 90 degrees, restoring the canceled signal; but it also can cause cancellation of signals (or frequencies) that were recorded 90 degrees out of phase in the wrong direction. We know of no "right" solution to this Gordian knot, and of no device on the consumer market for untangling it even a little.

When your report on the Marantz 2270 appeared [April 1972] I noticed some discrepancies between the manufacturer's figures and yours. Marantz claims a capture ratio of 1.6 dB but you measured it at 2.0 dB for example. But now I notice something much more important that I—and, I guess, you—overlooked the first time around. Marantz claims far better FM quieting than you measured. Shouldn't you consider to be minor discrepancies, and in some instances—harmonic distortion in the amplifier for example—the test unit was notably better than the published specs. But all this assumes that Marantz's test procedures are identical to ours—an unwarranted assumption. That's the reason for the discrepancy in quieting. Marantz (and many engineers, particularly in communications electronics) defines quieting as the ratio between signal and noise as related to RF input; we (and most of the high fidelity industry) define it as the ratio of signal to total noise plus distortion. So our ultimate quieting figure of about 48 dB is not comparable to Marantz's 67 dB, nor is theirs really comparable to ours—due to required remixing of the original studio material. But in acquiring SQ versions of other records that are now available in stereo can I expect similar changes and disappointments? Also, has there been any progress in the FCC squabble over quadruphonic?—Richard C. Carlton, Pittsburg, Calif.

The recording companies—at least the ones that are into it—are gaining more and more experience in quadruphonic mixing, and their techniques are bound to change. The question of whether the changes will also involve disappointments is moot; some readers find they prefer the matrixed version of some specific recordings to the original stereo when both are heard in stereo. Frankly, we think Columbia is right to offer both stereo and quadruphonic versions until more is learned about both stereo-quadruphonic compatibility and the potential of matrixed quadruphons. As far as we can tell, the FCC isn't "squabbling" over quadruphons, it's sitting tight and waiting to see how things develop. The real squabble may come in a year or two when the proposed direct broadcast methods come up for serious consideration.

I received a mailing piece about a Columbia stereo receiver with "120 watts of continuous power." Though the ad says that the unit is "not available in stores," it looks very familiar. What relation, if any, does it have to Lafayette receivers?—M. C. Wallis, Stockton, Calif.

It doesn't look like any Lafayette product we're familiar with. Our price list doesn't list any "120-watt" receiver by a pretty faceplate. It's very common for a U.S. importer to have a unit custom built in a Far East factory, using existing parts and dies as far as possible to keep costs down. So while the appearance of the unit may be the same as that of models available here through other channels and using the same parts and dies, it may be quite different internally.
AN EXTRAORDINARY OFFER
from
ONKYO

Discover the quality of an Onkyo receiver on your own ...in your own home!

Take It Home and Live With It for 10 Days...

If it's not what we say it is, or more... return it to your participating dealer for a full refund! Ask for a demonstration of our outstanding Model TX-666, Solid State AM/FM Receiver ($429.55). Or the equally unique TX-555 Solid State AM/FM Receiver ($349.95).

Compare them with others...in any price class. Check the performance and specifications. Decide. Then, when you purchase your Onkyo Receiver—take it home for 10 days and live with it! You'll quickly discover that Onkyo's superior performance goes well beyond sterile written specifications—that it delivers dynamically live sound quality through an ingenious blend of superb performance characteristics. To explore the full impact of Onkyo's "Artistry in Sound" audition any of our remarkable Scepter Speaker Systems ($149.95 to $495.95). Match any of them to your new Onkyo Receiver. This offer is limited, but our quality isn't!
At Pilot, our best four-channel receiver is our best stereo receiver.

It takes a lot more than adding two plus two to produce an outstanding four-channel receiver.

Technological change must be anticipated, as well as the needs—present and future—of those who will use the equipment.

Unfortunately, not all companies recognize this.

Fortunately, Pilot does.

We knew from the beginning that many of you would not be able to make the switch to four-channel all at once. That's why the Pilot 366 four-channel receiver (30/30/30/30 Watts RMS into 8 ohms) incorporates an ingenious “double power” circuit that permits you right off to enjoy the full power of this receiver in stereo (60/60 Watts RMS into 8 ohms).

Not only does the 366 provide advanced SQ circuitry, but it can also reproduce any other matrix system currently in use. Plus it will extract hidden ambience information from conventional stereo material.

Naturally, the 366 is fully adaptable to any discrete system.

We didn't stop there, however, in considering the manifold uses of this receiver. An ultra-sensitive FM tuner section (1.8μV, IHF) has a special detector output to accommodate proposed FM four-channel transmissions.

Finally, we saw to it that setting up in four-channel would be a simple operation. The 366 provides a special balancing signal, we call it Pilotone® which makes channel balancing a virtually foolproof procedure.

No matter how you use it, the very things that make the Pilot 366 our best four-channel receiver also make it our best stereo receiver. And yours too.

For complete information and the name of your nearest Pilot dealer write: Pilot, 66 Field Point Road, Greenwich, Conn. 06830.

The Pilot 366 Four-Channel Receiver $499.90.*

*NManufacturer's suggested retail price
Harman-Kardon's Latest Cassette Deck: The Best So Far


Comment: This is the best cassette deck we have thus far tested. To readers still in awe of the fact that a $150 or $200 cassette deck can be called a high fidelity instrument at all, we may seem in that statement to put undue emphasis on fine shades of excellence; but we believe not. Fine though many other units are, the factors that make the $300 HK-1000 stand out are important ones in our opinion.

First, though, a ground plan of the unit’s main features. At the far left is a turns counter; in front of it is the cassette well, whose near edge pops out for maintenance of heads, guides, and capstan. In front on this side is the usual array of pushkeys, whose action is unusually smooth and fuss-free. On the right are, from the back, a tilted meter panel that also includes recording and Dolby pilot lights, a Dolby test button and screwdriver Dolby adjustment controls, recording and playback level-control sliders for each channel, and four switches for mode (stereo/mono), tape (standard, low noise, chromium dioxide), "memory" (on/off), and Dolby action (on/off). To the right of these switches are the main on/off switch (a plastic button that turns red when the unit is on) and a stereo headphone jack. To the left of the switches are the microphone controls: phone jacks and level-control knobs for each channel. On the back panel are standard phono jacks for outputs and inputs (a choice of two input pairs of differing sensitivity is provided), a fuse holder, and a screwdriver control for setting speed accuracy. (This last is intended for servicing only; no instructions for its use are provided in the owner’s manual.)

The memory feature, in case you’ve never encountered one, helps you return to a desired point on the tape. Once you have found the spot you want, you can turn on the memory feature and press the reset button on the counter, returning it to 000. Play (or fast wind) farther into the tape, then press the rewind button, and the tape will be returned to the 000 point. We found this feature useful in copying short selections from disc. Before dubbing each selection we reset the memory counter. If pickup mistracking of an ill-judged level setting marred the copy it was easy enough to return to the beginning of the selection and copy.

The interlock system on the main presskeys is nicely thought out. You can, for example, go directly from play to a fast-wind mode without pressing "stop" in between. When you are in one fast-wind mode (forward or reverse) and press the other, the first button is released, stopping the wind; only a second press on the button for the new direction will cause tape motion to recommence. We know of no system that is faster or more foolproof in searching for a desired spot in the tape. (Some units can go directly from one fast-wind mode to the other with no stop in between, but this can cause an uneven wind in the tape and result in a jammed cassette.) And it goes almost without saying in a deck of this class that the drive system automatically disengages and shuts off at the end of the cassette in any mode.

Two features specifically are designed to promote unusual excellence in home recordings. The first is the excellent pair of peak-reading meters. Their action is sufficiently damped that they do not overshoot on peaks but hold those peaks long enough to be read and evaluated. Harman-Kardon’s instructions for using the meters run counter to the usual make-the-needles-move-but-don’t-go-into-the-red dictum. H-K recommends that for finest results peaks should not exceed −2 VU, and it cautions that on low-level passages the meters may not move at all. The unit’s wide dynamic range makes it possible to record this way—whereas it would produce rela-

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**REPORT POLICY**

Equipment reports are based on laboratory measurements and controlled listening tests. Unless otherwise noted, test data and measurements are obtained by CBS Laboratories, Stamford, Connecticut, a division of Columbia Broadcasting System, Inc., one of the nation’s leading research organizations. The choice of equipment to be tested rests with the editors of High Fidelity. Manufacturers are not permitted to read reports in advance of publication, and no report, or portion thereof, may be reproduced for any purpose or in any form without written permission of the publisher. All reports should be continued as applying to the specific samples tested; neither High Fidelity nor CBS Laboratories assumes responsibility for product performance or quality.
tively noisy tapes on the average unit. The second is the tape switching, which alters both recording characteristics and playback equalization for chromium dioxide tape. While those decks that use the same playback equalization for all tapes simplify the job of setting the controls (to say nothing of the pitfalls of swapping cassettes with owners of other decks) many engineers feel that H-K’s present approach is the correct one for making the most of chromium dioxide’s potential.

Having the Dolby adjustments on the top plate is a good idea. Harman-Kardon will sell a Dolby-level reference cassette ($5.95 plus 50¢ shipping and handling) to anyone who wants to adjust his own playback tracking. The recording adjustment is more important to the user, however, unless he plans to use only a tape for which the machine is set as delivered. The top-plate controls are far easier to adjust than those in out-of-the-way spots on some competing units, and the adjustment should be made with every new tape type for optimum results. In testing the unit we used it as delivered but only with tapes suggested by Harman-Kardon: TDK SD except where chromium dioxide is indicated in the data.

The only disappointing feature is the microphone preamp. Since it has its own level controls we had hoped that stereo mike/line mixing would be possible. Not so. Insertion of a plug into either mike jack cuts off the line input in that channel. One channel can be recorded live and the other from the line feed; or you can switch into the mono mode and mix a mike input from one channel with a line input from the other, but the controls then interact, making mixing problematic.

But the best is yet to come: the unit’s performance. Harman-Kardon has stated that it aimed for exceptional linearity—both frequency linearity and phase linearity—in the HK-1000. Playback response is spectacularly linear, in fact the best we have seen. With chromium dioxide tape the record/playback curve is even more spectacular, since our tests go beyond the limits of the frequencies included on the DIN test cassette used for playback measurements. If the top end is among the best we have tested, the low frequencies are by a considerable margin the best yet. Many cassette decks remain more or less flat to about 60 Hz; the HK-1000 falls off only below 25 Hz. The right-channel measurements with ferric oxide are, if anything, even better by contrast to the results CBS Labs has had with comparable tapes in other decks. You’ll note that our test sample did not respond quite as well in the left channel at high frequencies. But while this curve looks poor with respect to the others for this unit it actually is not bad by comparison to those for other units.

The other measurements range from par (for example, the approximately 40-dB crosstalk measurements and the speed accuracy figures—though the latter can be corrected thanks to the DC servomotor drive) to excellent (the 52 dB or better of signal-to-noise ratio without using the Dolby circuit, for instance).

We often have commented that with normal program material this or that cassette deck can make recordings that are indistinguishable from the originals. The real touchstone of the HK-1000’s excellence is that even with exceptional program material it can do so. After struggling to detect even small differences in sound between the best commercial materials available to us (Ampex B-Dolby open reels at 7½ ips and Dolby/chromium dioxide copies made on the HK-1000), we feel confident in saying that it will reproduce precisely anything you’re likely to feed into it. A superb achievement.

HK-1000 Cassette Deck Additional Data

<table>
<thead>
<tr>
<th>Speed accuracy</th>
<th>105 VAC: 0.06% slow</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>120 VAC: 0.23% slow</td>
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<tr>
<td></td>
<td>127 VAC: 0.23% slow</td>
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<tr>
<td>Wow and flutter</td>
<td>playback 0.08%</td>
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<tr>
<td></td>
<td>record/playback 0.14%</td>
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<tr>
<td>Fast-forward time, same cassette</td>
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<td>S/N ratio (ref. DIN 0 VU, Dolby off)</td>
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<tr>
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</tr>
<tr>
<td>record/playback L ch: 52 dB R ch: 55 dB</td>
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<tr>
<td>Erasure (400 Hz at normal level)</td>
<td>54.5 dB</td>
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<tr>
<td>Crosstalk (at 400 Hz)</td>
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<td>record left, playback right</td>
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<td>record right, playback left</td>
<td>38.5 dB</td>
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<td>mike input</td>
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<td>IM distortion (record/play, –10 VU)</td>
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<td>L ch: 15% R ch: 11%</td>
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<td>Maximum output (preamp or line, 0 VU)</td>
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CIRCLE 143 ON READER-SERVICE CARD
A Good Medium-Priced Speaker from Onkyo


Comment: Like many Japanese companies, Onkyo makes both loudspeakers and stereo electronics; unlike most, it made its entry into this country with its loudspeaker line. The Model 20 is one of the less expensive of what Onkyo calls its Scepter Series. It is a three-way system of traditional bookshelf size containing a 12-inch woofer, 2-inch domed midrange driver, and 1-inch domed tweeter.

On the back panel are polarity-coded binding posts for the speaker leads and stepped controls for midrange and tweeter levels—each marked for "flat" response plus two positions of boost and two of attenuation: marked 4, 2, −2, and −4 respectively. These markings should not be taken as indicating so many dB of boost and attenuation. The extreme positions in the midrange, for example, provide no more than about 2 dB of boost or cut (over a frequency range extending from approximately 500 Hz to 5 kHz), while the treble control yields a maximum boost of about the same figure and a maximum attenuation of about 4 dB (both occurring in the range above 10 kHz). The differences between settings are therefore slight; we tended to prefer the flat settings.

The impedance curve is quite flat, never rising to above 16 ohms, even at bass resonance. The rating point (the low point in the curve above bass resonance) measured close to 5 ohms in the lab, the impedance at higher frequencies averaged a little less than 8 ohms. Because the curve remains at the 5-ohm rating for approximately one octave in the midbass (100 to 200 Hz) we would suggest you disregard Onkyo's 8-ohm rating and treat the Model 20s as 4-ohm units in multiple-speaker hookups.

The efficiency of a 20 may be described as medium since it required 8 watts to produce the standard test level of 94 dB at 1 meter: less power than is required for many acoustic suspension systems, but more than is needed for most other conventional dynamic-driver de-

Onkyo recommends a minimum of 10 watts per channel. This should be adequate for rooms that are neither unusually large nor unusually dead acoustically. The unit handled 300-Hz tones to 100 watts and pulses to a bit above 200 watts before producing excessive distortion, so Onkyo's maximum-power rating of 50 watts strikes us as about right. Not that the speakers can't take more, but though they are unusually distortion-free at lower inputs, the distortion rises rapidly as they are driven close to capacity. In normal rooms, however, this capacity is high enough for the Model 20 to produce plenty of clean sound.

The bass is firm and clean with test tones down to about 70 Hz, beyond which it rolls off; signals remain audible at 35 Hz, though with some doubling. The over-all sound is on the bright side and quite "light." That is, the music is not overstated either by a false resonance (actually a tendency toward ringing) or by an unnatural presence effect (actually an arbitrary boost in the midrange). In fact the Model 20s have a dip in the midrange (around 600 Hz) that may make music sound slightly withdrawn to you if you are used to "presence" loudspeakers or to those with a prominent, indistinct bass.

Some beaming could be detected as low as 2 kHz in listening to test tones, but it is not severe at any frequency and actually improved at the extreme top where one normally expects to find the most severe beaming. Test tones remain clearly audible all around the speaker to the limits of audibility.

If you are looking for a loudspeaker in the $200 range, listen carefully to the Model 20. At first it may seem a little colorless by contrast to competing models; but the sound is clean and eminently honest with any type of program material.
An Excellent Receiver from Kenwood


Comment: The KR-7200 is unusual in two ways: Its performance is above average, even for a fairly expensive receiver, and its controls offer some intriguing options. The latter is obvious when you glance at the front panel. Below a fairly conventional upper section (AM/FM signal-strength meter, FM center-tuning meter, tuning knob, and combined volume/balance control) are the main power switch and headphone jack (which is live at all times); a five-way, three-pair speaker selector (off, A, B, C, A+B, A+C); separate controls for bass, midrange, and treble; the mode switch (left mono, right mono, stereo, reverse stereo, left-plus-right mono); the selector switch (AM, FM, phono 1, phono 2, aux 1, aux 2); and a pushbutton switch panel (tape monitor A, tape monitor B, loudness, low filter, high filter) above another panel that contains a microphone mixing/level control, mike jack, tape B playback jack, and tape B recording jack. The last three are phone jacks; that for the mike feeds a mono signal to both channels; those for the tape connections are stereo jacks.

On the back panel are the usual phono-type jacks for inputs (phono 1, phono 2, aux 1, aux 2, tape A playback) and outputs (tape A recording, "pre-out")—about which more in a moment). The back panel also has a DIN input/output jack for tape A, screw terminals for antenna connections (300-ohm FM, 75-ohm FM, or long-wire AM), and spring-loaded clips for connecting up to three stereo pairs of speakers. There are also three convenience AC outlets, two of which are switched.

Kenwood claims to have added several newly devised circuit features to improve FM performance. CBS Labs tests appear to confirm their success. The mono quieting curve reaches the IHF rating point (30 dB) at only 1.5 microvolts, and quieting already has exceeded 40 dB by the time 2 microvolts—a common 30-dB rating among the better receivers—has been reached. As input is increased, quieting improves rapidly and is better than 50 dB from 7.5 microvolts to the limit of our tests at 50,000 microvolts (0.05 volt). Though this represents very good mono performance, the KR-7200's stereo performance is nearly as good—a truly striking achievement. At the stereo threshold (9.5 microvolts) the quieting is better than 40 dB. From about 20 microvolts on it is better than 45 dB; mono and stereo quieting measurements above 1,000 microvolts were identical.

FM distortion is moderately low in mono; in stereo there is very little increase in distortion and even a decrease in one measurement. Stereo separation also is above par, as are most of the other FM measurements. The only fault of any sort that we could find with this section of the receiver is the rolloff in bass response. Here too mono performance is virtually indistinguishable from stereo, being down about 2 dB at 100 Hz and about 5 dB at 40 Hz. The lab has measured similar bass rolloff in a number of FM sections recently; while linear response is desirable, we should point out (again) that most program material makes little demands on bass below 60 Hz or so and that it is therefore easy to overemphasize the failing.

The amplifier section is conservatively rated at 55 watts per channel for 0.5% THD, 20 Hz to 20 kHz. At clipping the amplifier produces considerably more power at considerably lower distortion. The clipping measurements are, of course, made only at 1 kHz; at other frequencies—and at rated power—distortion stays well below the 0.5% rating, only approaching it at all in the 20-kHz measurements. At half power, distortion measurements were almost all lower than at full power, though both harmonic distortion and intermodulation creep upward as output is reduced below 1 watt. Since Kenwood (among others) has rated past equipment in terms of distortion at 1 kHz only, the lab has used the 1-kHz rating (70 watts) as the reference in measuring input sensitivity and S/N ratios, making these figures comparable to those in past reports.

So much for basic performance. Outside of the midrange control (a welcome nicety, whether to touch up a deficiency in the program material or in your speakers, or to give special emphasis—or de-emphasis—to a soloist) the most striking control feature of the receiver is that for the mike. The switching is so arranged that mike signals automatically mix with the selected program source in feeding a tape recorder; when you are dubbing from tape A to tape B, the mike switches out of the tape A input and is inserted (along with the signals from tape A) at the input to tape B. If you want to add...
spoken commentary to music recorded as background to a slide show, say—or even if you like to sing along with instrumental discs or tapes and record the result—this system is beautifully thought out.

But we said we'd come back to the pre-out connection—standing for preamp output of course. It gives you access to the preamplifier's output, ahead of the tape monitor switching. Kenwood tells us it is intended to feed a quadraphonic decoder, though the manual is vague on this point. If a decoder is to be used from the pre-out connections, it presumably would have to drive a fully external quadraphonic amplification system; to use the KR-7200's amp to drive the front channels you would need to return from the decoder to the receiver, and the tape-monitor jacks would be the logical point for interconnection with the decoder. The pre-out connections might, therefore, be more logically used to feed a recording deck that has no monitor capability (an eight-track cartridge unit, cassette deck, or two-head open-reel deck). The deck's output would then be connected to the KR-7200 via one of the aux inputs. If you plan such a hookup, be sure the deck has plenty of gain in its record input. Even with the low-level input on a HK-1000 deck (measured for a sensitivity of about 32 mV, as reported elsewhere in this issue) we were unable to get full recording levels from the KR-7200's tuner section via the pre-out jacks.

While these ins and outs may be of more immediate interest to the recordist than they will be to the average user, they represent a kind of control flexibility—a potential for solving special interconnection problems—that is always welcome. When they're coupled to the above-average performance of the KR-7200's circuitry, they're doubly welcome.

Kenwood KR-7200 Additional Data

<table>
<thead>
<tr>
<th>Tuner Section</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture ratio</td>
<td>1.5 dB</td>
</tr>
<tr>
<td>Alternate-channel selectivity</td>
<td>68 dB</td>
</tr>
<tr>
<td>S/N ratio</td>
<td>69 dB</td>
</tr>
<tr>
<td>THD</td>
<td></td>
</tr>
<tr>
<td>Mono</td>
<td></td>
</tr>
<tr>
<td>80 Hz</td>
<td>0.30%</td>
</tr>
<tr>
<td>1 kHz</td>
<td>0.23%</td>
</tr>
<tr>
<td>10 kHz</td>
<td>0.90%</td>
</tr>
<tr>
<td>Stereo</td>
<td></td>
</tr>
<tr>
<td>19-kHz pilot</td>
<td>-62 dB</td>
</tr>
<tr>
<td>38-kHz subcarrier</td>
<td>-58.5 dB</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Frequency response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>mono</td>
<td></td>
</tr>
<tr>
<td>0.5 to 3 dB, 60 Hz to 15 kHz</td>
<td>63 dB</td>
</tr>
<tr>
<td>L ch</td>
<td></td>
</tr>
<tr>
<td>+1 to 3 dB, 62 Hz to 15 kHz</td>
<td>75 dB</td>
</tr>
<tr>
<td>R ch</td>
<td></td>
</tr>
<tr>
<td>+1.25 to 3 dB, 60 Hz to 15 kHz</td>
<td>75 dB</td>
</tr>
</tbody>
</table>

| Channel separation | >40 dB, 300 Hz to 1.2 kHz | >30 dB, 20 Hz to 8.2 kHz |

<table>
<thead>
<tr>
<th>Amplifier Section</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Damping factor</td>
<td>40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input characteristics (for 70 watts output)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S/N ratio</td>
<td></td>
</tr>
<tr>
<td>phonograph 1 &amp; 2</td>
<td>65.5 dB</td>
</tr>
<tr>
<td>aux 1 &amp; 2</td>
<td>71.5 dB</td>
</tr>
<tr>
<td>tape monitor A</td>
<td>75 dB</td>
</tr>
<tr>
<td>tape monitor B</td>
<td>75 dB</td>
</tr>
<tr>
<td>microphone</td>
<td>63 dB</td>
</tr>
<tr>
<td>RIAA compensation</td>
<td>±1.5 dB, 20 Hz to 20 kHz</td>
</tr>
</tbody>
</table>
Sony/Superscope TC-55:

More Than a Dictation Unit

The Equipment: Sony TC-55, a battery-operated portable mono cassette recorder with built-in condenser microphone. Dimensions: 1 1/4 by 5 1/2 by 3 3/4 inches. Price: $139.95, including carrying strap, imitation leather case, earphone, "monitor" cable, battery, C-30 cassette; AK-3 AC power supply with rechargeable nicad battery, $29.95. Manufacturer: Sony Corp., Japan; U.S. distributor: Superscope, Inc., 8150 Vineland Ave., Sun Valley, Calif. 91352.

Comment: The phrase "condenser microphone" has never lost its audio glamor since the days when a single studio condenser microphone was used to capture an entire symphony orchestra—and capture it with a realism that had never been available on records before. Obviously that's not the sort of performance we can expect from a portable in the $100- to-$150 range, but with a proliferation of these units recently—all with the condenser microphone prominently mentioned in the ads—we decided to try one and see just what it would do.

The controls of the TC-55 reflect the primary intended purpose of the unit: dictation on the go. At the top are buttons for recording, fast forward and "cue," forward (play/record), stop, and rewind. The so-called cue feature helps you find a particular spot on the tape. If you start the cassette playing and then press the fast-forward button, the playback speed increases by about 50 per cent—not enough to render speech recordings unintelligible and therefore just about right for a quick review of the contents.

On the front of the unit are the recording/battery meter (which registers battery voltage automatically during playback) and the mike opening; a pause control and playback volume control; and a music/speech switch—actually the off and on positions, respectively, of a built-in limiter. At the left side are the cassette well and tape counter. On the back are connections for an outboard mike (miniature phone jack), remote stop/start switch (subminiature phone jack), "monitor" output cable (miniature phone jack), and 6-volt DC input (special male pin connector). A portion of the bottom slides off. Inside this section is the built-in power supply: technically, a Z battery, which consists of four AA penlight cells.

Why the provision for an extension mike and a remote on/off switch, since both facilities are built into the unit? For purely dictation purposes the add-ons simplify life a bit since you don't have to hold the whole unit in your hand while you record, and the on/off switch built into some microphones may fit the hand better than the pause control on the TC-55. But we used the unit without extensions and found it fine for dictation.

For music it's less satisfactory in some respects. The drive system is particularly good for a portable of this type. Its differentially-balanced flywheel design minimizes speed changes due to inertial effects, even when the TC-55 is moved vigorously during use; and, presumably due to the servo-controlled motor, speed accuracy figures are strikingly good: dead on at the nominal power supply voltage (6 VDC) and within 0.2 per cent of true when the lab raised or lowered the DC supply by one volt.

The built-in microphone is fairly sensitive and delivers a good, clear signal. But its response has a broad peak of about 10 dB, centered around 5 kHz. While this peak makes for intelligibility in speech it tends to make music sound rather bright and bodiless. Above the peak, response drops off rapidly, producing little useful signal above 9 kHz. Playback response is good in the mid-range and top, but drops off below 100 Hz. The best solution for musical recordings, in our opinion, is to use the TC-55 with a better outboard mike and play back the cassettes through a component deck.

All told, it's a dandy little machine—the best of its type we have examined in detail. But that type still has not progressed to the point where really good musical recordings can be made on it. That is, they may provide you with a delightful memento of an evening's music listening (or music-making); but they can't be expected to give you anything like "professional quality" tapes.

Sony TC-55 Additional Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed accuracy</td>
<td>5 VDC: 0.2% slow</td>
</tr>
<tr>
<td></td>
<td>6 VDC: exact</td>
</tr>
<tr>
<td></td>
<td>7 VDC: 0.2% fast</td>
</tr>
<tr>
<td>Wow and flutter</td>
<td>0.5% (playback)</td>
</tr>
<tr>
<td>Rewind time (C-60 cassette)</td>
<td>41 sec.</td>
</tr>
<tr>
<td>Fast-forward time (same cassette)</td>
<td>1 min. 7 sec.</td>
</tr>
<tr>
<td>Meter action (ref. DIN 0 VU)</td>
<td>0.5 dB low</td>
</tr>
</tbody>
</table>

DIN Playback Response

<table>
<thead>
<tr>
<th>Frequency in Hz</th>
<th>Response in dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>+2.5, -3 dB</td>
</tr>
<tr>
<td>50</td>
<td>150 Hz to 10 kHz</td>
</tr>
</tbody>
</table>
The best time to upgrade your component system is before you buy it.

If you're a typical reader of this magazine, you most likely have a sizeable investment in a component system. So our advice about upgrading might come a little late. What you might have overlooked, however, is the fact that your records are the costliest and most fragile component of all. As well as the only one you will continue to invest in.

And since your turntable is the only component that handles these valuable records, advice about upgrading your turntable is better late than never.

Any compromise here will be costly. And permanent. Because there is just no way to improve a damaged record.

If the stylus can't respond accurately and sensitively to the rapidly changing contours of the groove walls, especially the hazardous peaks and valleys of the high frequencies, there's trouble. Any curve the stylus can't negotiate, it may lop off. And with those little bits of vinyl go the high notes and part of your investment.

If the record doesn't rotate at precisely the correct speed, musical pitch will be distorted. No amplifier tone controls can correct this distortion.

If the motor isn't quiet and free of vibration, an annoying rumble will accompany the music. You can get rid of rumble by using the bass control, but only at the expense of the bass you want to hear.

Experienced component owners know all this. Which is why so many of them, especially record reviewers and other music experts, won't play their records on anything but a Dual. From the first play on.

Now, if you'd like to know what several independent test labs say about Dual, we'll send you complete reprints of their reports. Plus a reprint of an article from a leading music magazine telling you what to look for in record playing equipment. Whether you're upgrading or not.

Better yet, just visit your franchised United Audio dealer and ask for a demonstration.

You'll find Dual automatic turntables priced from $109.50 to $199.50. That may be more than you spent on your present turntable, or more than you were intending to spend on your next one.

But think of it this way. It will be a long, long time before you'll need to upgrade your Dual.

United Audio Products, Inc., 120 So. Columbus Ave., Mt. Vernon, N.Y. 10553

Exclusive U.S. Distribution Agency: United Audio

CIRCLE 19 ON READER-SERVICE CARD
According to popular legend, the Allies were startled to hear from the crumbling Third Reich radio broadcasts by men who could not have been in the studio of origin at the time. Yet the excellent sound quality of these broadcasts precluded their being made from transcription recordings. With the capture of Radio Luxembourg in September 1944 the secret was uncovered: magnetic tape recording, an unheard-of development. Thus the legend.

Yet consider that one American manufacturer was investigating domestic sources of recording tape in the very month that tape recording supposedly was “discovered” several thousand miles away; that Sir Thomas Beecham had recorded on magnetic tape as early as 1936; that magnetic recording played a part in the espionage plans of Germany before the United States entered World War I; that a factory in Springfield, Massachusetts was turning out magnetic recorders in 1912; and that the Danish inventor of magnetic recording first patented his creation in Copenhagen seventy-five years ago.

These are but a few of the facts to emerge from a study of an invention and a man about whom very little is known. The man is Valdemar Poulsen, a pioneer telephone engineer who became known as “the Danish Edison.” The invention was the Telegraphone, a device that stored sounds on steel cylinders or bands or on spools of piano wire by the means of magnetization. The Telegraphone was the direct ancestor of the Blattnerphone of the late 1920s (a magnetic recorder using bands of steel), the wire recorders and early tape equipment of the 1930s and 1940s, and the wire recorders of World War II.

Valdemar Poulsen was born in Copenhagen in 1869. His father was a judge who early recognized his son’s aptitude for mathematics and interest in the theories of electricity. In due course, young Poulsen enrolled at the University of Copenhagen, where he studied electrical engineering. By the time he graduated in 1894, he had already begun work on a device that he felt could improve the efficiency of telephone lines. At that time, one telephone cable could handle only one conversation at a time. Already there were delays in service while subscribers waited their turn. Businesses seeking to use Alexander Graham Bell’s invention found that delays and poor service cut down on their efficiency.

Poulsen’s answer to the problem was a machine that could record a message or conversation at one speed, then, at a higher speed, feed a second machine, recording at the same high speed. A listener at this end could slow down his machine to normal speed in order to decipher the message. During the transmission, the message would be an unintelligible jumble, Poulsen reasoned, making it impossible for unauthorized persons to intercept it; and by speeding the transmission time, it also would increase the capacity of the phone lines. Working with another young engineer, Peder Oluf Pedersen, Poulsen is believed to have produced a working model of his Telegraphone as early as 1894. But the machine was imperfect, and it wasn’t until 1898 that he had a model ready for the patent office. In December of that year, Poulsen received his first patent on it.

Despite his prominence in the field of electrical engineering—Poulsen is credited with creating an arc oscillator for telephone systems, improving telephone coils, and working on the world’s first automatic switchboard—very little is known about Poulsen the man. Even the date of his death in 1942 is obscure, though it generally is taken to be August 6. Poulsen, then sixty-eight, had been working with the Danish underground during the German occupation on a number of undisclosed projects. For its own reasons, the underground delayed releasing
1898—Valdemar Poulsen invents it.
1908—Springfield, Mass., of all places, manufactures it.
1912—Herman Rosenthal's murder publicizes it.
1932—Charles Dexter Rood faces charges of treason over it.
1936—Sir Thomas Beecham first records on it.
And today—millions are enjoying it as the modern tape recorder.

the news of his death. It was more than a month later, for example, that the New York Times carried a short item noting his passing. And although he could truly be said to be the father of the tape recorder, that item never mentioned the Telegraphone.

Poulsen's was not the only engineering mind that early turned to the possibility of magnetic recording. In 1888 an American engineer, Oberlin Smith of Cincinnati, had written a magazine article in which he ruminated about how it might be done. Iron particles might be embedded in a cotton or silk thread, he said, and the particles magnetized in a pattern that could be reproduced later as sound. This symbiosis—the concept of the magnetic element as separate from and carried by the mechanical support—was particularly important; but it was not until the late 1920s that fruitful practical work was done along these lines, and Poulsen appears to have been unaware of Smith's article. By contrast, most early magnetic recording schemes, like Poulsen's, presupposed a homogeneous medium—a steel cylinder, disc, wire, or band that provided both the magnetizable medium and the mechanical strength needed for winding past the recording and reproducing elements.

Some early work represented only a partial approach to the use of magnetism in recording. Edison had received a patent for a magnetomechanical system, using a sheet of steel, in 1878. C. S. Tainter (who with Chichester Bell—Alexander Graham Bell's cousin—developed the wax cylinder as an alternative to Edison's tin-foil phonograph) also had patented magnetic recording equipment in 1885. And in 1887 a Dutch engineer, Wilhelm Hedic, had developed a more elaborate system, using a tape containing magnetic particles (a system cited by Poulsen in his German patent application of 1898). But the systems of Edison, Tainter, and Hedic all were crude by comparison to Poulsen's in that they represented magnetic improvements to the acoustic recording medium; Poulsen's was all electromagnetic, and the medium has remained so ever since.

When he demonstrated it at the Paris Exposition Universelle of 1900, the wire recorder created almost as great a sensation as the telephone had when Alexander Graham Bell showed it at the Philadelphia Centennial Exposition in 1876. Show visitors stood in long lines to listen to recordings of their own voices; and the scientists marveled, for it disproved a time-honored theory. Poulsen demonstrated that localized magnetism could be put on a steel wire in varying degrees and that it would stay there without coalescing. Furthermore, the varying degrees of magnetism could, through Poulsen's electromagnetic device, reproduce sound. But scientists previously had discredited these basic ideas so completely that no contemporaries raced with Poulsen to perfect the invention. Unlike Bell, whose claim to the telephone was challenged by many, or Edison, who ultimately had to share credit for the phonograph as a money-making reality with several others, Poulsen alone was responsible for creating the Telegraphone and discovering the principle of magnetic recording.

The American Telegraphone Saga

Early in November of 1900, Poulsen arrived in Washington, D. C. with a model of his invention and an application for a patent. U.S. Patent No. 661,619 was granted on November 13, and Poulsen promptly set about creating a corporation in the United States to manufacture the machine.

Although the American Telegraphone Company was formed and stock issued early in 1903, nothing much happened until July 30, 1908. By that time most of the original capital was gone and Poulsen
Poulsen's Telegraphone was conceived as an adjunct to the telephone—for dictation or for high-speed telecommunications. These illustrations from an early advertising piece show the special telephone equipment (resembling those in Poulsen's native Denmark) used in remote dictation.

had returned to Denmark. Although it had a factory in Wheeling, West Virginia, American Telegraphone hadn't produced a single recorder. On that hot, sticky July day, the directors turned over control of the company to Charles Dexter Rood, the retiring president of the Hamilton Watch Company of Lancaster, Pennsylvania in return for a cash investment of $188,000 and his services as president, general manager, and member of the board of directors.

Rood, a native of Ludlow, Massachusetts, was one of those Yankee traders on whom legends are built. If biographical data is missing on Valdemar Poulsen, it exists in abundance on the farm boy who went to New York to sell jewelry for the princely salary of $500 a year. By the time he reached his sixty-eighth birthday, Rood had parlayed that job into ownership of Hamilton Watch and substantial real estate holdings in Michigan and Ohio.

Then, at a time when most men are thinking of retiring, Rood became involved with the ailing American Telegraphone Company—an involvement that, because of a series of curious episodes, would see him charged with treason in testimony before the U.S. Senate some twenty-four years later. When he died at the age of ninety-four in 1934, the Telegraphone had all but passed from view.

Whatever else Rood was, he was a master salesman. It was Rood who made the running of railroads on time synonymous with the Hamilton watch. He had persuaded every major railroad in the country to equip its trainmen and conductors with Hamilton watches, and to use Hamilton as their official timepiece. Now he was about to do the same thing with the Telegraphone. In Philadelphia, President Taft was scheduled to speak at the opening of John Wanamaker's new department store on December 30, 1911. Very well: a Telegraphone would be on hand to record the ceremony.

An even more dramatic opportunity came to hand with the murder of an insignificant gambler named Herman Rosenthal in New York on the night of July 21, 1912. The murder created a sensation that threatened to turn Tammany Hall inside out and shake up the city police department. Gambling and prostitution were rife in the neighborhood of Times Square, and many illegal operations seemed to have police protection. It was popularly believed that Lieutenant Charles Becker, head of Special Squad No. 1, was The Man. Meanwhile, a Republican governor had appointed Charles S. Whitman as district attorney in an attempt to clean up the mess.

Whitman had trouble getting information at first. But on the night of July 21, "Beansie" Rosenthal, a former partner of Becker's in a Forty-Fifth Street club, paid a call on the DA. Somehow the newspapers learned that Beanie had spilled all, and by the time the night was over Beanie lay dead on Forty-Third Street with four bullet wounds.

The underworld had no doubt about who was responsible for Rosenthal's death. Neither had DA Whitman, but proving it was another matter—until
a Citizens’ Committee sprang up to provide Whitman with the investigative force he needed independent of Becker’s police stooges. It was rumored that the money came from none other than J. P. Morgan, along with a suggestion that the DA use it to hire private detective William J. Burns.

It was to Burns that Rood went with his wonderful machine. “It will enable you to take reports over the telephone from your operatives, without the need for a stenographer,” he is reputed to have told the detective. Burns never detailed exactly how he used the Telegraphone, but he was kind enough to give it some credit for solving the case. Later, at a public demonstration, which included the press, a representative of American Telegraphone recorded an incoming phone call. When he played it back, Burns listened, horrified. “Here,” he cried, “wipe that recording. You’ve caught all the report of one of my agents. That was meant only for me.”

Thanks to anonymous tips and other information, Burns finally identified the four perpetrators. They led Whitman directly to Becker, who was tried and convicted. As a result, Whitman became governor of New York; the police department was reorganized; the corrupt city administration was voted out at the next election; and quite likely, the Burns agency was put permanently on the map. But sixty years later the Burns people could supply no further details on the Telegraphone episode.

While Rood was ballyhooing the Telegraphone himself, he ordered his employees not to talk to anyone, including the stockholders. And he warned the publishers of physics and electrical engineering textbooks that if they printed anything about the Poulsen patents he would sue them for patent infringement. By now the Springfield factory was in production and recorders began trickling out to customers. E. I. du Pont de Nemours & Company bought twenty for use as dictating machines in its offices in Wilmington, Delaware. And unbeknownst to the stockholders, six machines were sold to the German Navy on an order from Denmark—and thereby hangs another tale.

Two American shortwave stations were part of a transatlantic network linked to a station outside Hamburg, Germany. One, at Tuckerton, New Jersey, was completed early in 1912; that at Sayville, Long Island was finished a year later. While Telefunken built and operated the Tuckerton station, Sayville was operated by a U.S. firm named Atlantic Communications Company. Included in the complement of equipment at Tuckerton were at least two Telegraphones, delivered early in 1914 and described as having been used “with great success.” Late that year the U.S. Navy seized the station in the belief that it might be used to inform U-boats about the movements of coastal shipping. While the seizure was widely reported, details on the equipment in use—including the Telegraphones—were kept secret until 1921.

Meanwhile, up and down the East Coast, radio amateurs were reporting peculiar noises at night. The noise began promptly at 11:00 p.m. and continued into the wee hours of the morning. One ham operator described the noise as “a musical note like the buzzing of a titanic bumblebee which sped through space.” Another ham, Charles E. Apgar of Westfield, New Jersey, was so disturbed by it that he used his own homemade wax cylinder recorder to transcribe some of it. Beginning on June 7, 1915, Apgar faithfully recorded excerpts for two weeks, still not knowing what to make of the sound until one night when he forgot to wind the cylinder machine. As it slowed down, the buzzing became mere Morse code dots and dashes.

Chief Radio Inspector L. R. Krumm of the Bureau of Navigation in New York knew about the mysterious signals and heard about Apgar’s recordings. He promptly summoned W. J. Flynn, then chief of the U.S. Secret Service, and Apgar to a meeting in New York. Apgar played his cylinders for Flynn. Based on them and on general suspicions about the station, the navy and the secret service seized it on July 10, and a lid of secrecy was clamped on what the navy men found there. By 1922, the government was willing to admit that there had been at least one Telegraphone on which messages had been recorded in Morse code at standard speed. The tape was played at high speed, re-recorded in Germany, and played back at the original recording speed. There was no code to be broken after all.

Then, shortly before the United States entered World War I, the German submarine Deutschland paid several good-will visits to Atlantic Coast ports. At one of these, the press was invited to see the latest in fighting ships, and a photographer took some pictures below decks. One of these plainly showed two Telegraphones.

In April 1918, the U.S. Signal Corp sent the company a routine request asking if the Telegraphone could be set up for recording messages. Rood replied that the company was still experimenting with it and discouraged the order. He suggested that such a use would be in the nature of an experiment—even though the secret service knew that the Germans had been using their Telegraphones in just this way for nearly four years. The Signal Corps wouldn’t take no for an answer. Finally, in September—only sixty days before the Armistice was to be signed—the company delivered the first four machines. When they arrived, they failed to work, according to stockholder spokesman George Sullivan.

Sullivan told investigators for Senator Arthur Capper’s Patents subcommittee some years later that during the construction period, Rood asked to be advised as to the proposed use of the equipment. The stockholder attorney said he actively sought intelligence data which conceivably could be re-
Charles Rood, controversial president of American Teleg-raphone, was photographed by local newspaper in 1932 celebrating his ninety-second birthday with dog, Hunter.

corded on the machines—including details on where the machines were to be placed, whether it would be in France or elsewhere, and under whose personal supervision they would be operated. Senate testimony reveals that Rood was also given information on the movements of the troop ship U.S.S. President Lincoln, carrying soldiers to France from the Springfield area. On May 31, 1918 it was torpedoed.

Shortly thereafter, the Poulsen patents expired. American Telegaphone never produced another machine, although the company continued in business for more than a decade. Its major business consisted of lawsuits and charges between minority stockholders and the aging Rood, who refused to the end to dignify with an answer the charges that he had sold out to the Germans.

**The Upsurge of the Twenties and Thirties**

But even as American Telegaphone was sliding into corporate oblivion, a German scientist named Nasavischwily, was experimenting with powdered oxide as a recording material rather than the piano wire used by Poulsen. And in the same year, other Germans were seeking to improve on Poulsen's expired patents. One, Kurt Stille, marketed a revised version of Poulsen's machine; the German Echo-phone Company sold the Dailygraph, a compact wire recorder; and a Karl Bauer is said to have developed the first recorder using a form of tape instead of wire.

German scientists may have been fascinated by the possibilities of magnetic recording, but the postwar German economy simply wasn't ready for it either as a hobby item or a business machine. Inflation made stenographers cheaper than wire recorders. Nonetheless, the experiments continued; and in 1927 a German engineer named Fritz Pfeu-mer succeeded in coating strips of plastic or paper with powdered magnetic material. AEG, the German electrical combine, believed that Pfeumer really had something, and persuaded I. G. Farben-industrie of Ludwigshafen to develop the idea—laying the foundation for much that has followed.

Meanwhile, in the United States two scientists working for the U.S. Navy—W. L. Carlson and G. W. Carpenter—came up with the idea of AC bias as a way of cutting down on noise and insuring the permanence of recordings. The Navy had seized at least one Telegrafophone at Sayville, and Secretary of the Navy Josephus Daniels had been intrigued by the invention. Accordingly, the navy continued to underwrite research into magnetic recording.

Yet another development stemming directly from the Telegrafophone was the Blattnerphone, developed by another German, Prof. Blattner, and sold to the British Broadcasting Corporation and to one of Britain's new sound-movie studios. The Blattnerphone, according to Lynton Fletcher, the BBC's former head of sound recordings and one of the engineers who worked with it back in 1930 and 1931, resembled two ancient Irish spinning wheels joined together. It recorded on a steel band 6 mm. wide. It was possible to edit the band by cutting it with metal shears, then soldering the pieces back together again. “The result of this,” Fletcher said many years later, “was that, on at least one occasion, you'd hear the announcer say, ‘This is Mr. H. C. Harbinger of South Africa,’ then you'd hear a plop as the soldered joint went through the reproducing head, and you'd probably hear the voice of Stanley Baldwin.”

The Blattnerphone arrived in England in the charge of a young technician named Von Heusing. “There was only one engineer, there was only one machine,” Fletcher recalls. “Both were extremely temperamental. Even in those early days we knew that what mattered in making a recording was that the machine should run at the same speed when it was being played back as it had run when the recording was being made. This the Blattnerphone flatly refused to do.” Other BBC old-timers recall that the splices would come unsoldered, and everybody in the studio ducked to avoid being decapitated by bands of flying steel.

The Blattnerphone may have been a bomb, but it...
This BASF photo was made during Beecham's concert at the Feierabendhaus in Ludwigshafen on November 19, 1936, when first taping of major musical event took place. It didn't deter other German technicians—including those at AEG and Farben. What was then the Ludwigshafen plant of I. G. Farben had been incorporated in 1865 in Mannheim, Baden as the Badische Anilin- & Soda-Fabrik—BASF—but its first plant was built at Ludwigshafen on the other side of the Rhine in the Palatinate where it has remained ever since. Though it was absorbed into the Farben combine in 1925 (and became independent again with Farben's decartelization in 1953), it had kept much of its identity and even had to fend off other Farben divisions in developing tape. The Wolfen plant, devoted to the manufacture of films, already had appropriate equipment for tape production; but the directors in Ludwigshafen jealously guarded the project. It was not until the Ludwigshafen plant was razed by Allied bombs in 1944 that the operation was moved to Wolfen: and even then the Ludwigshafen personnel moved up the Rhine to Bavaria and built a temporary plant using a garage as the laboratory and production area, a beer cellar as storage space. But that was to come later.

In 1932, Ludwigshafen came up with its first practical coated tape, and the factory started research on producing it in industrial quantities. A year later, Blattner merged his interests with Marconi and Stille to create a vastly improved machine. At the same time, the C. Lorenz Company had acquired the rights to the Dailygraph, and marketed an improved version of it under the trade name Textophone. This wire recorder led Lorenz to the introduction of the Stahltonmaschine in 1934. Using steel tape like the Blattnerphone, it was put to commercial purposes by German radio in that year.

AEG and BASF had hoped to show their tape and equipment—to be known as the Magnetophon—at the Berlin Radio Fair in 1934. BASF had produced some 165,000 feet of tape, a tremendous quantity by the standards of the day, but when AEG put all the pieces of the Magnetophon together it was discovered that performance was not equal to that experienced in the lab using separate subassemblies. Formal demonstration was scrubbed at the last minute: but at the 1935 Radio Fair the Magnetophon finally was exhibited to the world. It was the first magnetic recorder that might have a familiar look to today's hobbyist, and remained much the same until its "discovery" by Allied forces in 1944.

In 1936 Sir Thomas Beecham happened to be touring Germany with the London Philharmonic Orchestra. Officials of BASF invited him to spend the night in Ludwigshafen and to give a concert in the employees' hall at the factory. The company wanted to make a recording of a live symphony orchestra, using the tape and a Magnetophon loaned by AEG. Beecham obliged, and the result was a milestone: the first modern tape of unquestionable musical importance—the minuet and trio of Mozart's Symphony No. 39, in E-flat, recorded on November 19—and one that miraculously managed to survive World War II. [For details on how to obtain a copy, see editorial on page 4.]

Tape—The Modern Medium

All this had happened publicly: the granting of Pfleumer's patent on tape, the introduction of tape and recorder at the giant Radio Fair, and their use to record the London Philharmonic. Yet the romance surrounding the discovery of Magnetophons as the spoils of war and their spirited out of Germany in 1945 as booty by at least two technically minded American servicemen has so captured the public imagination that the real facts have become obscured with the years. The idea that tape was a strictly kept German secret until 1945 remains.

False though it is in this respect, the story of how tape recording "arrived" in this country is not without its charms, and even its moments of truth. Jack Mullin (now of the 3M Company) and J. Herbert Orr (founder of the Irish tape brand—with a little help from, again, Fritz Pfleumer—and builder of the Opeleika, Alabama tape plant now owned by Ampex) did bring the first Magnetophons to this country. Jack Mullin did team up with the Ampex people to produce the first American tape recorders appropriate for studio work—largely by copying the Magnetophon. And by demonstrating both the quality of the Magnetophon and the editability of
tape. Jack Mullin did capture the imagination of Bing Crosby’s radio-show producers.

That was a key moment in the acceptance of tape on this side of the Atlantic. Crosby’s show had been constructed by an elaborate copying process using transcription discs, but the quality suffered as a result and the costs were high. As Jack Mullin recalled the impasse in a recent issue of Billboard, it was a question of either solving the technical problems or returning to live broadcasting—something Crosby was loathe to do because it would prevent the sort of relaxed ad libbing that had become his hallmark.

Early in 1947 Mullin demonstrated his Magnetophon for the Crosby people. They appear to have given him some of their most difficult transcriptions—discs that had posed severe problems when the final montage had been made for broadcast—and asked him to assemble the appropriate section of the show on tape. They were delighted with the results, and in August of that year the first taped Bing Crosby show (for broadcast October 1) was put together. In one stroke the basis was laid for tape as the way of broadcast life in this country. So was the foundation of the Ampex Corporation as we know it. Since Ampex was to build the replacement equipment that soon would take over from Mullin’s two “liberated” Magnetophons. One interesting footnote to this tale is that although the October 1 show was recorded and assembled on tape, network executives appear to have been leery of the new medium. Transcriptions were cut from the tapes for the actual broadcast, and it was not until May 1948 that the Crosby show went out over the network direct from the original tapes.

What this narrative overlooks is the parallel work that already had been going on here before and during World War II. Of the many people in-

In recent photo George Eash (left), developer of what is now known as the Fidelipac cartridge, talks to Earl Muntz, who made it a commercial success in 4-track stereo form.
volved. Marvin Camras, then of Armour Research, is probably best known today. He had developed wire recording equipment that was used by the U.S. forces during the war and re-emerged (once more, primarily as dictation equipment) for private use with the end of hostilities.

Camras used AC bias, a standard feature of all current magnetic recording equipment, but one that was uniquely responsible for turning the early dictation equipment into a medium capable of handling musical recordings. It had been critical to the development of the Magnetophon, too, though as early as 1927 a patent had been issued (to W. L. Carlson) on the subject and much important work was done in the Thirties by Dr. Dean Wooldridge, then of Bell Labs. By 1938—the year in which the Magnetophon finally was accepted by the German broadcast industry—several American companies were actively working on magnetic recording equipment.

One of these was The Brush Development Company. It experimented with and even produced equipment using steel wire or bands, including some endless-loop steel-band systems proposed by Brush's Dr. Joseph Begun in the mid-Thirties; but as early as 1939 Brush also was marketing a paper-backed tape for use on what was to be known as the Soundmirror. So far had Brush progressed by September 1, 1944, that on that date—the eve of the fabled Magnetophon discovery at Radio Luxembourg—it wrote to the Minnesota Mining and Manufacturing Company (now 3M) to find out whether that company could produce "thin tapes coated with an emulsion containing a uniform dispersion of ferromagnetic powder.... The tape serving as the emulsion carrier should have a smooth surface, be reasonably moisture proof, and have little elastic elongation; it should be 5/6" to 3/4" wide, and about 0.003" [3 mils] thick. The use of a plastic material (cellulose acetate or the like) appears to be indicated...." In other words, it was describing magnetic tape as we now know it. BASF had not been crying in an international wilderness.

The end of the war brought rapid growth in the consumer field. Brush was, of course, ready with its Soundmirror; but its name soon was swamped by a welter of others, some of which are still with us: Concertone, Wilcox-Gay, Magnecord, Pentron, and Webcor were among the best known. By the mid-1950s the tape recorder had developed a well-defined niche both in the studio and in the home; but pioneers like Ched Smiley of Livingston Audio Products and Gene Bruck of Phonotapes believed that recorders might become as commonplace as transistor radios—despite the fact that the cheapest models cost nearly $100 (a Wilcox-Gay or Pentron half-track monaural recorder with tubed electronics). Only about 200,000 Americans actually were buying recorders at that time.

What was holding back the growth of tape, a Cleveland inventor named George Eash decided, was the fuss and bother of handling open reels. And Eash realized that open-reel recorders would never be practical as a source of music in cars. Only a few years before, Chrysler Motors had experimented with phonographs specially designed for the car, and found them wanting. Eash looked longingly at the new car sales of those years, and decided to come up with a player that wouldn't be affected by road vibration and could be operated easily by a driver. The result was a five-inch reel of tape inside a plastic shell. The tape was designed to feed outward from the hub, past a series of windows and notches, and rewind on the outside of the pack.

The inventor created a DC player to handle the tapes with its own retractable rubber idler wheel. In order to make the tape move smoothly, Eash developed a process for lubricating it. By the fall of 1956, he was sending prototypes of the cartridge and its player to manufacturers for their opinions; by the early 1960s several record labels were licensing their catalogues for distribution in the Eash cartridge (ABC-Paramount, MGM, and Verve were among the first), and several manufacturers were producing playback decks for the car or boat.

An early problem with the Eash cartridge was playing time. The 600-foot reel would hold thirty minutes of music at 3 1/2 inches per second—at the time, the slowest speed thought to have any real potential for music reproduction. Later, Eash switched to thinner-based tape, which increased the playing time by fifteen minutes, but it wasn't until multiple-track recording became commonplace that Eash's cartridge could be made to hold the desired hour of music.

In Toledo, another inventor, Bernard Cousino, also was working on an endless-loop cartridge. His was much smaller than Eash's, holding a mere four minutes. The Cousino cartridge still is in common commercial use, but neither it nor Eash's cartridge—later to be known as Fidelipac—made a major impact when they were first introduced. Fidelipac didn't really catch on until the fall of 1963, when a master promoter named Earl Muntz happened to see one. Muntz realized that with a few modifications the Fidelipac cartridge could be put under the dashboards of thousands of American cars. The first improvement Muntz insisted on was stereo, using the four-track playback heads developed by Michigan Magnetics and others to double the playing time. (For broadcast use Fidelipac cartridges still are recorded in full-track mono or half-track stereo.)

A few years after Viking began making the first Fidelipac playback units, Garrard developed its own tape cartridge. Garrard hoped ultimately to produce a tape system that could work like a record changer, dropping cartridges from a stack onto a player. The first model, introduced in England but
never sold in the United States, was a heart-shaped affair containing two complete reels. The tape was anchored to the hubs at each end and simply played from one to the other in a device resembling an ordinary open-reel recorder. Garrard’s engineers felt that even if they hadn’t achieved the automatic changer, they had eliminated the threading problem.

A more sophisticated answer was RCA’s cartridge, introduced in 1958 to solve the same problem. For months, RCA’s publicity men beat the drums for the system that would not only revolutionize tape, but perhaps replace the record as well. Like Garrard’s system, it was designed to operate in a changer. And like Garrard’s cartridge, the plastic shell included two hubs, with tape anchored at each end. The difference was size: RCA’s cartridge used quarter-inch tape recorded at 3¾ ips in a plastic shell about the size of a paperback book. The cartridges could be stacked and changed exactly like records—or, at least, that’s what the company thought. The trouble was that early changers jammed instead of changing. And, in a recession year, prices were higher than competing open-reel tapes or records.

Still another cartridge intended for use with automatic changers came on the market in the fall of 1961. It was unique among audio tape products in having one end of the tape anchored within the cartridge, the other being wound into the player during reproduction and rewound into the cartridge when playback was complete. CBS Labs had done developmental work on the system; the Revere division of Minnesota Mining (now, of course, known as the Mincom Division of the 3M Company) made the players; Columbia Records issued a number of cartridges for them. The then ultra-slow transport speed (1¾ ips) made the cartridges among the most compact ever proposed, but it also apparently limited their potential musical quality and the idea failed to catch on with other major recording companies. This open-ended type of cartridge is represented today only in cartridge-TV.

By the fall of 1963, all of the forces that were to shape tape for the next ten years were in place. All of the basic engineering had been done. It was the biggest year ever for the sale of open-reel tape recorders, with a number of reasonably priced battery-operated portables making their appearance for the first time.

Whereas most of these used three-inch reels of tape, Norelco slipped in one that was different. The Carry-Corder, priced at $149, used a twin-hub cassette filled with tape only about ⅛ inch wide. If you looked quickly at the cassette, you could be forgiven for thinking it was a miniature replica of RCA’s ill-fated cartridge. Operation and over-all contours were remarkably similar. Norelco made no claims for its mono-only cassette as a music reproducer. The Carry-Corder was a dictating machine and nothing more, according to Norelco and its parent company, Philips of the Netherlands. But in short order mono cassettes containing musical (usually popular) programs appeared on the European market. The cassette was on its way. Yet by the time the company realized the potential of its pocket recorder and minicartridge, still another type had appeared.

It came from promoter and manufacturer of jet aircraft Bill Lear. Lear, like Muntz, realized the potential of tape players in cars. Unlike Muntz, who was selling four-track units to people who already owned cars, Lear concentrated on the automobile manufacturers. In 1965 he persuaded Ford Motor Company to offer players built into its new cars. To provide the music, Lear signed up RCA and in short order other major record producers. Motorola began making Ford’s players, and Lear Jet made units for RCA.

The Lear Jet cartridge looked suspiciously like Muntz’s modified version of the Fidelipac. But to observers who charged that the Lear cartridge was merely a way around the Eash patents, Lear reported that his cartridge used eight tracks instead of four, thus doubling the amount of music on a given length of tape. To trigger automatic switching from one pair of tracks to the next, the Lear cartridge used a strip of metal foil spliced into the tape. And instead of using a retractable pinch roller in the player, Lear built a rubber roller into each of his cartridges.

There have been other cartridge tape proposals—most recently what is known in Japan as the Hypac cartridge (essentially a miniaturized Fidelipac) and the Faraday Corporation’s Cartrette (even more miniaturized). But—as readers of this magazine must surely know—the major thrust of the last few years has been in the refinement of the tape systems already in existence: noise reduction, improved magnetic coatings (including, of course, Du Pont’s Crolyn, the first of the chromium dioxide tapes, about which the first announcements appeared some five years ago, and various formulations using cobalt or nickel as active ingredients), added convenience features, greater reliability, and a host of other factors that contribute to improved performance in fields as diverse as quadraphonic recordings and computer technology.

Yet despite the growth and refinement of the medium, tape remains essentially the product conceived by Mr. Pfleumer and produced by BASF in 1934—the halfway point in the uneven and often devious seventy-five-year progression that has turned Valdemar Poulsen’s telephonic and stenographic contraption into a host of products that continue to both amuse and amaze the world.
BASF jamproof cassettes.

Now all BASF cassettes feature jamproof special mechanics. The most significant design breakthrough in the cassette marketplace today. Prevents jamming of invaluable recordings. Eliminates wow and flutter. Prevents tape edge dropouts.

Finally a cassette with 100% mechanical reliability. Buy BASF Cassettes with jamproof special mechanics.

For the BASF dealer nearest you, write BASF SYSTEMS INC, Bedford, Massachusetts 01730.

Two precision guide-arms insure smooth precise winds to eliminate jamming.

*Patent Pending

Audio/Video Products
IN SETTING UP a program to evaluate cassettes for consumer use we are faced with a dilemma. Should we adjust the test equipment for optimum performance with each tape we test or should we run all tapes on a "uniform test bed" with no changes in the equipment? The first approach will determine the ultimate capabilities of each tape: that is, the best performance of which the tape is capable if the user's machine (meaning largely its bias and equalization) is optimized specifically for it. With the second approach we'll end up with data showing the relative performance of different brands when treated in a consistent manner.

We—CBS Labs and HIGH FIDELITY's editors—pondered the matter for some time before opting for the uniform test-bed approach. If the purpose of the tests had been to determine which tapes have the greatest potential or to work out optimum tape-to-recorder relationships for a unit still in the design stage, the first approach would have been better. But that's not the case here. You, as a cassette deck owner, generally cannot vary the bias and equalization of your equipment (except within the limits provided by a tape selector switch), so the uniform test bed is basically consistent with your situation and the data it yields more readily answer your questions as long as you know how to interpret the findings.

If, for example, you experience a lack of highs when using brand A, what brands can you choose that will give you a brighter high end without readjusting your deck? Or let's say you like the performance of brand B. What other brands will give you comparable performance? These are questions best answered by a relative ranking of tapes on a common test bed. The only change we made in bias and equalization settings was that required by the difference between the high-performance iron oxide tapes and chromium dioxide tapes—the equivalent of the "low-noise" and "CR0," positions on many tape-selector switches. But within these two groupings all tapes were tested identically.

Testing Procedures

The actual tests we performed fall into four categories: 1) relative sensitivity as a function of frequency; 2) maximum recorded level as a function of frequency; 3) NAB-weighted noise measurement; and 4) a count of audible dropouts in two fifteen-minute segments of tape. We acquired tapes from a cross section of leading manufacturers. Only premium-grade iron oxide and chromium dioxide tapes were selected. After some preliminary tests we decided to use C-60s, rather than C-90s, because they combine an adequate recording time with somewhat better mechanical and electrical properties on average. Ten of the resulting tests appear in this issue. More will be appearing in future issues.

Most of the tests in the series were performed on a prototype consumer version of a Nakamichi professional deck. The professional unit is used in Japan for tape testing on the manufacturer level. The Nakamichi deck has a separate playback head, so we could monitor the tape as we were recording. This is an extremely valuable feature, especially when testing for maximum recorded level.

In order to avoid giving any of the tapes under test an apparently unfair advantage we set the Nakamichi machine for flat response with reference sample ferric oxide and chromium dioxide tapes supplied by Nakamichi.

Relative Sensitivity

The graphs for relative sensitivity and maximum recorded level appear similar to each other—and resemble a conventional frequency-response curve—since all three plot output level in dB as a function of frequency. They must be interpreted differently, however, and here's why. The relative sensitivity curve shows how much signal will be retained by the tape at different frequencies at very low recording levels, where tape saturation and self-erasure do not significantly affect test results. The level chosen is 30 dB below the DIN standard 0-VU level, or -30 VU. The sensitivity curve tells you which tapes have a "hotter" or more sensitive high end. Don't necessarily look for the flattest response; that's a function of the particular machine that is used. If you have been pleased with the results of one tape in our test group and you want to
know what will give you an equivalent low-level response, choose one that has the same sensitivity-curve shape. If you want a brand with a somewhat brighter high end than you have had in the past, pick one whose high end is raised relative to the tape you've been using; do the converse if you want to tone down the highs. Once again, compare these curves with each other—not against a straight line.

Along with the relative sensitivity curves there is a relative sensitivity rating number. All the curves have been "normalized" so that they arbitrarily pass through the 0-dB level at 400 Hz, making it easier to compare relative shapes. The relative sensitivity rating number tells you which tapes provide greater output level for a given input at 400 Hz. That is, a tape with a rating of +2 dB will record 2 dB more flux level on the tape for a given VU-meter reading than will the Nakamichi reference tape. You will want to take this into account when recording. For example, if you are accustomed to brand C with a relative sensitivity rating of -1 dB and switch to brand D with a rating of +2 dB you will be gaining 3 dB of signal level for the same VU meter reading.

If your deck is Dolby-equipped you should recalibrate the Dolby circuitry to take the increased sensitivity into account; that is, the Dolby-level reading should be the same no matter how sensitive the tape is. With or without Dolby, increased sensitivity is important since it could bring you closer to tape saturation; you may wish to compensate for this increased sensitivity by recording at a lower meter reading.

**Maximum Recorded Level**

To tell how much headroom—or ultimate signal capacity—the tape has, refer to the curves for maximum recorded level—which we'll abbreviate as MRL. Working at seven different frequencies, ranging from 100 Hz to 20 kHz, we increased the recording level until distortion reached 3% THD in the output signal or until the output signal reached a maximum at saturation, beyond which self-erasure occurred. Whichever happened first, we took the output level as an indication of the maximum recorded level of which the tape is capable at that frequency for audiophile use. The seven points are then plotted as a continuous curve. The 0-dB reference for the MRL curve is the standard DIN 0-VU level. With ferric oxide tapes, 3% THD is reached before self-erasure sets in at all frequencies below 2 or 3 kHz. For CrO, tapes self-erasure doesn't occur until past 5 kHz.

All things being equal you're best off with the tape that has the best MRL especially at frequencies above 5 kHz. Remember the MRL is not a frequency-response curve; instead, it tells you how much toleration to overload the tape has. But at high recording levels you can drive a tape into self-erasure at high frequencies, and the MRL of the tape will then be a limiting factor in determining the effective frequency response of your system. That's why your instruction manual may warn you to record well below the "zero" level to avoid muddy-sounding, dull tapes. By choosing a tape with a better (higher) MRL you can produce cleaner recordings at a higher level.

**Noise Measurements**

If the MRL is one side of a coin, the residual noise level of the tape is the other. Together they determine the available dynamic range that can be recorded on the tape. The noise level of the tape, like that for electronic equipment, is referenced to an assumed peak signal level—in this case the DIN 0-VU level. Rather than make a broadband noise measurement (one that treats all frequencies equally), we chose to use the NAB weighting function, which emphasizes different noise frequencies in a manner calculated to approximate low-level human hearing sensitivity. The results of the weighted measurement correlate more closely to the actual noise the average person can hear.

We hunted through our available cassette decks and chose the Harman-Kardon HK-1000 [see test report, this issue] as the test bed for noise measurements. Good as it is, the electronic noise of the deck is of the same order of magnitude as that from the tape, so the noise measurements are inflated by this unavoidable residual.

**Dropout Count**

As you no doubt know, any imperfection in the tape's oxide coating or any dirt on the tape surface can give rise to a momentary signal loss or "dropout." While dropouts are not nearly as severe a problem as they once were and are rarely encountered in today's better tape products, really audible dropouts are disastrous to music recordings. Whether or not you hear the flaw depends upon the duration of the loss, what percentage of the signal is lost, and how individual dropouts are clustered.

Several years ago CBS Labs made a series of tests to determine audibility factors of dropouts in music. Based on the results of those tests, a device was designed to categorize dropouts in terms of severity and count the frequency of dropouts in each category. What it registers as minor dropouts are barely perceptible; medium dropouts are readily perceived in fairly continuous music; major ones will be perceived in almost any type of music. We recorded a 3-kHz signal on two fifteen-minute sam-
samples of each tape, using both tracks of the stereo pair, and used the device to analyze the results.

Using the Tests

In choosing a tape you must weigh all the factors we've reported on. Pick one with the best MRL; but check that its sensitivity curve is a close match to one you know works well with your machine or you'll need to adjust the bias and/or equalization. It's a good idea to begin by checking the deck manufacturer's tape recommendations and use them as a guideline, selecting similar types. Check the relative sensitivity rating number to get an idea on how to set your recording level (and to determine whether you will need to readjust the Dolby circuits). Then verify that the noise and dropout levels of your candidate are low. Remember too that noise and MRL are interrelated. If tape E has 2 dB less noise (that is, its noise level is 2 dB farther down) by comparison to tape F, but a comparison of MRL curves shows that you may record at levels 3 dB higher on tape F, the net signal-to-noise when both tapes are used optimally is 1 dB better for tape F than for tape E.

Above all, of course, try the tapes you're interested in. Not only will actual use give you a better grasp of the factors represented in these tests, but it will show up other differences that may be of importance to you. You may find that you prefer one type of packaging or that one brand's tape lengths are better suited to your needs than another's. Technically, these are minor points; but they can contribute materially to your enjoyment of the cassette medium.

Tests of Ten Cassette Tapes

It should surprise nobody if we begin by pointing out that all the cassettes we tested in this group did well. We felt that only the serious recordist would be interested in seeing test data, and therefore we tested only brands that we would expect the serious recordist to choose: nationally available premium cassettes with either chromium dioxide or low-noise ferric oxide magnetic coatings. To the ten types represented here we will be adding tests of comparable competing cassettes in future issues.

The test method is explained in the foregoing article by Ed Foster of CBS Laboratories, which prepared the lab data for us. The cassettes in this group are equally divided between five ferric oxide and five chromium dioxide types. As Foster explains, equalization and recording bias settings in the recorders used for the tests were different for the two tape groups, just as they presumably will be on your equipment if it includes provision for recording on chromium dioxide tapes. Since recorder manufacturers differ in the specific values they choose for either tape type, however, the test data must be interpreted as indications of relative performance within each group.

The striking thing in these comparisons, however, is the similarities rather than the differences between tapes. Particularly among the chromium dioxide cassettes the differences generally are so slight as to be negligible. Even among the ferric oxide tapes the differences, while evident, are not major ones. They indicate that for most purposes perfectly satisfactory recordings can be made on properly adjusted equipment using any of the brands tested. The data presented here become important then, only if you are looking for the very best match between tape, program material, and recorder.

Unless otherwise specified all cassettes are delivered in the so-called Philips hinged plastic box with a paper indexing insert. Though simple and inexpensive, we find this box both attractive and efficient: the more elaborate packaging of some premium cassettes often proves less so, while the minimal packaging of budget cassettes generally offers less (or no) space for indexing, no hub locks to prevent tape loops from forming within the cassette, little if any protection from dust. The cassettes themselves all have some sort of label, though its useful space varies and those using silver paper generally cannot be erased without smudging the silver. In this group we found no silver papers that would not accept a ballpoint pen. (In the past some silver labels didn't.)

Craftsmanship of the molded parts of which the cassette itself is constructed was good or better on all the samples we examined. (Where it is particularly good, the fact is noted in the report.) Except as noted, all cassettes provide a small (approximately 1/4 by 1/8 inch) clear window to view tape, light-colored plastic hubs, and a small, spring-mounted pressure pad. Other mechanical features are noted in the text, though their importance often is the subject of debate among manufacturers and users alike. For example, a welded case may ensure more permanent alignment, but screw construction lets you get inside the cassette to fix a broken or detached tape. List prices, as far as we are able to determine them, are shown for C-60s only, since that length is manufactured by all the reported companies and costs thus can be compared; many brands often are sold below list, however.

One special note about the dropout-count figures. In order to avoid penalizing (or lauding) any brand on the basis of a tape sample that was partic-
ularly low (or high) in dropouts, the lab ran fifteen-minute tests with each of two samples. The considerable difference between the two in some brands proves the wisdom of this decision, and further suggests that even wider variations would show up in a larger sampling. We do think the results prove the degree to which tape manufacturers have solved this sometimes pesky problem, however. The lab found "major" dropouts (as defined in Foster's article) only in one sample of one brand; the other sample of that same brand registered no dropouts whatever. Almost all of the dropouts measured were in the "minor" class— that is, inaudible in most musical material.

BASF SK Low-Noise Ferric Oxide Cassette

BASF describes SK as a low-noise tape, though it is one step below BASF's own LH (for low-noise, high-output) in the company's cassette line. The SK's output is not high, in fact; sensitivity, at -1 dB, is the lowest for any cassette among the five ferric oxide types shown here. But signal-to-noise ratio is, at 57 dB, the best of the group, compensating for the slightly low output. Relative sensitivity falls off somewhat more at high frequencies than it does for most of the tested tapes. On recorders set up for tapes with a relatively "hot" high end, you may prefer to use the SK with the tape selector in the "regular," rather than the "low-noise" setting; on other equipment the "hotter" tapes may produce recordings that are too bright, making SK preferable, even with the selector set for "low-noise." Since the overload curve (maximum recorded level) falls off particularly steeply at the high end, you should take extra care with recording levels when high-level high-frequency passages are involved. It may be necessary to cut back the level in order to keep highs clean and open.

The welded cassette case has a silver paper label. Head shielding was judged slightly better than average. Idlers are mounted on metal bearing pins. SK cassettes come in C-30, C-60, C-90, and C-120 sizes; a C-60 lists at $2.02.

Capitol 2 Low-Noise Ferric Oxide Cassette

Though the Capitol name is relatively new in blank tape, the Capitol division that manufactures it resulted from the purchase, a few years ago, of Audio Devices—a long-time manufacturer of blank tapes for both consumer and professional use. The Capitol-2 formula may be termed middle-of-the-road in this group. The 400-Hz sensitivity rating is par (0 dB), while the high-frequency sensitivity is not particularly "hot." Maximum recorded level is fair at the top end; some extra care should be taken with program material having an abundance of highs to prevent overload.
Maxell UD Low-Noise Ferric Oxide Cassette

Some superlatives are in order for UD. It has the best dropout count we have measured so far; it has, on averages, the best overload characteristics of any ferric oxide tape in this group, and it has the “hottest” high end of any of these ferric tapes. This last measurement may or may not represent an advantage with your equipment, of course. That is to say, it may produce recordings that sound too bright on some equipment. The relatively low signal-to-noise measurement is largely offset by the fairly high sensitivity rating.

The case, which has a particularly fine finish, uses screw construction and metal idler pins. UD is available in C-60, C-90, and C-120 lengths; a C-60 lists at $3.75.

Scotch High Energy Low-Noise Ferric Oxide Cassette Cobalt-Doped

The 3M cobalt treatment (which the company prefers to call “cobalt energizing”) appears responsible for two notable differences between HE and the other ferric tapes in this group: the high (+2.25 dB) sensitivity rating, and the similarly high (almost 5 dB) margin for overload at mid-frequencies. These figures, added to the par signal-to-noise ratio (56.5 dB), result in a somewhat greater dynamic range for this tape, when all factors are used at optimum, by comparison to the other ferric oxides. The high end is not as “hot” as most.
Scotch High Energy Additional Data

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</table>

<table>
<thead>
<tr>
<th>Dropout count</th>
<th>Major</th>
<th>Medium</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>sample 1</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>sample 2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Inside the newly restyled outer box (still of the standard type) is a smoky plastic cassette with silver paper labels and an integral window design (replacing the usual separate piece of clear plastic, which occasionally may come loose) that is slightly larger than average. Case halves are mated with unusual precision, and the sonic welding proved to be the strongest we have yet encountered. The "idlers" are fixed, metal-clad studs. High Energy comes in C-45, C-60, and C-90 sizes. High Energy comes in C-45, C-60, and C-90 sizes. The C-60 listing for $3.00.

CIRCLE 157 ON READER-SERVICE CARD

TDK SD Low-Noise Ferric Oxide Cassette

A number of today's recorders are optimized for SD. If yours is, the SD sensitivity curve will serve as the "standard" for your machine. The high end is not particularly "hot" by comparison with other ferric oxide tapes in this group. Other measurements too are about par: The maximum recorded level curve is good, but not spectacular; sensitivity rating and signal-to-noise are squarely in the middle of the field.

The excellently crafted case is held together by screws and uses metal idler pins. SD is available in C-30, C-60, C-90, and C-120 lengths; a C-60 lists at $3.45.

CIRCLE 156 ON READER-SERVICE CARD

TDK SD Additional Data

<table>
<thead>
<tr>
<th>S/N ratio (NAB)</th>
<th>56 dB</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Dropout count</th>
<th>Major</th>
<th>Medium</th>
<th>Minor</th>
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<tbody>
<tr>
<td>sample 1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>sample 2</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

Advent Chromium Dioxide Cassette

Advent's cassette provided the lowest dropout-count reading in the chromium dioxide group. Otherwise it
represents par performance all round.
The case has screw closings and metal idler pins. Its
label has a special box for indicating Dolby-processed
recordings. It is available either in a library holder with a
twelve-cassette capacity or in standard boxes, in C-60
or C-90 lengths; the C-60 lists at $2.99.

Advent Chromium Dioxide Additional Data

<table>
<thead>
<tr>
<th>S/N ratio (NAB)</th>
<th>60 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dropout count</td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>1</td>
</tr>
<tr>
<td>Minor</td>
<td>0</td>
</tr>
</tbody>
</table>

Ampex 363 Chromium Dioxide Cassette

Ampex’s chromium dioxide cassette performed at par
with other tapes in the group, with two exceptions: the
lower sensitivity rating (~1.5 dB) and slightly “hotter”
high-end sensitivity.
The welded case offers less than average space for
labeling and uses metal idler pins. Ampex 363 cassettes
come in C-40, C-60, and C-90 lengths; the C-60 lists at
$4.25.

Certron Chromium Dioxide Cassette

While the overload (maximum recorded level) curves
for the other chromium dioxide cassettes in this group
are almost identical, that for Certron’s entry shows a
somewhat reduced maximum level in the region of 10
kHz. This was judged only a minor difference. Otherwise
the Certron cassette may be rated at par.
The screw-type case has metal idler pins. Shielding
was judged slightly smaller (and therefore presumably
less effective under some circumstances) than average.
C-60 and C-90 sizes are available, the former listing
at $1.99.
The Memorex entry produced a somewhat higher output than the other chromium dioxide brands tested, as represented by the +0.25-dB, 400-Hz sensitivity rating; but its signal-to-noise ratio was slightly lower. Both of these departures from average are minor, however, and are largely self-canceling. The over-all rating is therefore par.

The well-crafted case is held by screws and has molded-in plastic idler pins. The pressure pad is larger than average and is mounted on a springy foam pad. The wrap-around head shield is unusually generous in design. So is the window, which allows an excellent view of the tape within; but the hubs are dark in color, making tape motion difficult to spot with the dark (usually black) hub spindles so often employed in cassette decks. The silver label (whose paper represents a big improvement over that used in early Memorex cassettes) on the cassette case offers average space for identification; that on the box offers far less than average. The box, a nonstandard design that opens from the side, has no hub locks. C-45, C-60, and C-90 lengths are available, the C-60 lists at $3.95.

Norelco 400 Chromium Dioxide Cassette

The similarities in test data between the Norelco 400 and the Ampex 363 make the two appear entirely interchangeable, with somewhat lower 400-Hz sensitivity than the other brands and a slightly "hotter" high end.

The case is held by screws and has metal idler pins. Pivoted arms are provided to encourage even winding of the tape within the cassette. The silver paper label offers less usable space than average. Norelco 400 cassettes are available in C-60 and C-90 lengths, the list price of a C-60 is $3.49.
phase distortion, plus substantially better stability with four double tuned phase linear ceramic filters and four monolithic IC's in the IF section.

6-stage limiters
The IF section includes 6-stage limiter circuits. Used in conjunction with differential amplifiers in monolithic IC's, noise interference is completely eliminated with a signal to noise ratio of 75dB. Exclusive Phase Lock Loop (PLL) IC circuitry in the TX-9100 multiplex section Developed and used for the first time by Pioneer, the Phase Lock Loop (PLL) circuit is actually an electronic servomechanism. It maintains continuous and precise phasing between the pilot signal and the subcarrier, supplying optimum channel separation. Completely drift free, no alignment is ever required. The PLL cannot be affected by humidity or temperature since there are no coils or capacitors to be detuned. This provides complete stability and reliability.

New pulse noise suppressor in the TX-9100 operates with computer control
This circuit operates automatically when it is switched on. It effectively blocks radiated noise from airplane and auto ignition systems, neon and traffic lights, etc. It does not interfere with frequency response and stereo separation. Whether the signal is weak or strong, this automatic 'brain' decides when the PNS gate circuit is to operate.

Unique muting control
A 2-position variable muting control uses electronic switching as well as reed relay switching. This eliminates interstation noise and the popping noise of tuning and detuning.

Complete command with a wide variety of controls
Whether it's for AM, FM or headset output levels, Pioneer provides greater operating precision with three independently operated output level controls. A headset may be used without a following power amplifier. Precision tuning is achieved with the aid of signal strength and tuning meters.

AM section highlights IC's
The entire AM section, following the front end, is a unitized IC. A monolithic IC replaces 84 individual components plus a ceramic filter. By using a differential amp circuit and a balanced mixing circuit, there are better spurious characteristics and special AGC amplification.

Great specs for great performance

<table>
<thead>
<tr>
<th></th>
<th>TX-9100</th>
<th>TX-8100</th>
<th>TX-7100</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM Sensitivity (IHF)</td>
<td>1.5uV</td>
<td>1.8uV</td>
<td>1.9uV</td>
</tr>
<tr>
<td>Selectivity</td>
<td>90dB</td>
<td>80dB</td>
<td>60dB</td>
</tr>
<tr>
<td>Capture Ratio</td>
<td>1dB</td>
<td>1dB</td>
<td>1dB</td>
</tr>
<tr>
<td>S/N Ratio</td>
<td>75dB</td>
<td>70dB</td>
<td>70dB</td>
</tr>
<tr>
<td>Image Rejection</td>
<td>110dB</td>
<td>100dB</td>
<td>85dB</td>
</tr>
<tr>
<td>Stereo Separation</td>
<td>40dB</td>
<td>40dB</td>
<td>40dB</td>
</tr>
<tr>
<td>Distortion (THD)</td>
<td>Mono: 0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td></td>
<td>Stereo: 0.3%</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Spurious Response</td>
<td>110dB</td>
<td>100dB</td>
<td>100dB</td>
</tr>
</tbody>
</table>

The Amplifiers: SA-9100, SA-8100, SA-7100
Two separate power supplies utilize 30,000 uF total capacitance
You read it right. The power supply in the SA-9100 uses a total capacitance of 30,000 uF, 15,000 uF each for the balanced positive and negative power supplies. This completely eclipses anything now available in integrated amplifiers. This super high capacitance results in an absolutely pure DC voltage supply. There's constant DC voltage regulation regardless of line voltage changes and signal input. Even at extremely low frequencies there's stable power output, excellent transient response and minimum distortion — only 0.1% at any frequency between 20-20,000Hz for 60 watts output per channel. These positive and negative power supplies provide absolute stability in all stages, even in the equalizer amp and proceeding to the control and power amps. Therefore, the signal lines become zero potential to completely eliminate the usual (and annoying) click noise of operating controls and switches.

Stability is increased even further by the differential amplifier used in the first stages of the equalizer and control amplifiers (also the power amp.) 100% DC negative feedback supplies excellent stability and transient response; it also eliminates distortion. To further increase...
stabilization, special electronic regulator circuits are used. Transient response is also improved with a superb damping factor of 70.

The unique equalizer amplifier
To make certain that extraneous signals do not interfere with the input signal, the equalizer amp is totally enclosed and sealed to shield it against leakage. There's also extra assurance of precision with special low noise metal film resistors and styro capacitors. Both are manufactured under continuous computer control to highest laboratory test equipment tolerances: ±1% for resistors, ±2% for capacitors. Until now such precision has been unheard of in hi-fi equipment. Deviation from the ideal RIAA curve is only ±0.2dB.

Since a direct-coupled SEPP complementary circuit is used in the equalizer amplifier, virtually any dynamic phono cartridge can be accommodated without overloading or distortion. For example, with 2.5 mV sensitivity, the overload at 1KHz is an unbelievable 250mV, and 1200mV at 10KHz!

The control amplifier: Twin stepped tone controls custom tailor your listening.
Now you can make the most critical bass and treble adjustments with supreme ease. In fact, there are 5,929 tonal combinations you can select to suit your listening room acoustics and to compare or compensate for component frequency response. On the SA-9100 and SA-8100 four tone controls (two for bass, two for treble) make 2dB (2.5dB with SA-8100) step adjustments for the entire audio spectrum. Working together with the tone controls is a buffer amplifier with 100% negative DC feedback. The main bass control governs ±10 dB at 100 Hz; the sub-bass, ±6dB at 50 Hz. The main treble control governs ±10 dB at 10KHz and the sub-treble, ±6dB at 20KHz. This, plus the tone defeat control (described in the next paragraph) makes the SA-9100 the most exciting-to-use amplifier that has ever powered any hi-fi system.

New tone defeat switch
Because of the extremely wide variety (5,929) of frequency adjustments made possible by the twin tone controls, the tone defeat switch adds extra flexibility. Adjusting the tone controls to your satisfaction, you can flip the tone defeat switch. Bass and treble responses instantly become flat. When it is switched off you return to the original tone control settings.

The power amplifier
To sustain the ultra sophistication of the equalizer and control amp sections, the power amp has a direct-coupled pure complementary SEPP circuit, double differential amplifiers and two constant current loads. The combined effect is the achievement of wide power frequency range and excellent transient response. 100% negative DC feedback is supplemented by 660dB dynamic negative feedback for minimum distortion and absolute stability. The pre and power amps can be used independently with a separation switch.

Exclusive direct-coupling in all stages
Until now direct-coupling has been used only with the power amplifier. Pioneer takes it a dramatic step further in the SA-9100 and SA-6100. Direct-coupling in all stages from the equalizer amp to the control amp to the power amp. More effective? Absolutely. It achieves the finest transient response, wider dynamic range, THD and IM distortion of only 0.04% (1 watt). It's an incredible achievement.

Level set, volume and loudness contour controls adjust to listening preference
Three controls working together adjust to any degree of loudness. The level set control is the primary volume control. Its maximum loudness setting is 0dB. Successive settings of -15dB and -30dB result in lower gain. Once the desired volume is obtained, the volume control is used for fine adjustments within the given range. While the loudness contour boosts bass and treble, it may also be used with the level set control. The more advanced the position of the level set control, the lower the effective range of the loudness contour.

The original and positive speaker protector circuit
Since the signal is fed directly to the speakers because of direct-coupling, an automatic electronic trigger relay system is incorporated into the power amplifier. This protects the speakers against damage from DC leakage which can also cause distortion. It also prevents short circuits in the power amplifiers.

Maximum convenience for program source selection
While there is a multiple function rotary switch for microphone, phono 2 and two auxiliaries, Pioneer has included an additional convenience. A separate flip type lever control for instant switching between the more widely used tuner and phono 1 and any other single program source. Incidentally, both switches are shielded to protect the input against undesirable extraneous signal pickups.

Two-way tape duplicating and monitoring
There are two separate flip type switches on the front panel of the SA-9100 for tape-to-tape duplicating and monitoring. Two tape decks can be connected for recording, playback and duplicating in either direction, with simultaneous monitoring.

Level controls for phono 2, aux 2
In order to match the level of various inputs, individual level controls are provided for phono 2 and aux 2.

Speaker B control
This special control helps in the use of two pairs of speaker systems of different efficiencies. There is no sacrifice of damping or distortion when switching from one pair to the other.

Impedance selector for phono 2
An easy-to-use switch allows you to employ any phono cartridge input (25K, 50K, 100K ohms).

Two-position high & low filters
The low filter switch on the SA-9100 and SA-8100 has subsonic (below 8Hz) and 30Hz positions. The high filter switch has 12KHz and 8KHz positions.

Maximum versatility in program sources

<table>
<thead>
<tr>
<th>Program Sources</th>
<th>SA-9100</th>
<th>SA-8100</th>
<th>SA-7100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tape monitor</td>
<td>S/N</td>
<td>2-90dB</td>
<td>2-90dB</td>
</tr>
<tr>
<td>Phone</td>
<td>S/N</td>
<td>2-80dB</td>
<td>2-80dB</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>S/N</td>
<td>2-90dB</td>
<td>2-90dB</td>
</tr>
<tr>
<td>Microphone</td>
<td>S/N</td>
<td>2-70dB</td>
<td>1-70dB</td>
</tr>
<tr>
<td>Tuner</td>
<td>S/N</td>
<td>1-90dB</td>
<td>1-90dB</td>
</tr>
<tr>
<td>Outputs</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Speakers</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Headsets</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tape Rec.</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Consistent power transport requirement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMS power both channels driven</td>
<td>20-20KHz</td>
<td>60-60 watts</td>
<td>65+65 watts</td>
</tr>
<tr>
<td>SA-9100</td>
<td>40-40 watts</td>
<td>2-90dB</td>
<td>50+50 watts</td>
</tr>
<tr>
<td>SA-8100</td>
<td>20-20 watts</td>
<td>2-90dB</td>
<td>35+35 watts</td>
</tr>
<tr>
<td>SA-7100</td>
<td>20-20 watts</td>
<td>2-90dB</td>
<td>35+35 watts</td>
</tr>
</tbody>
</table>

This new lineup of Pioneer tuners and amplifiers is unquestionably the most advanced available today. Yet despite this overwhelming sophistication, they're sensibly priced.

See your Pioneer dealer. He'll show you how this series of fine instruments can outperform any units in their price range. All prices include walnut cabinets.

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West: 13300 S. Estrella, Los Angeles 90248 / Midwest: 1500 Greenleaf, Elk Grove Village, Ill. 60007 / Canada: S. H. Parker Co., Ont.
The 17th annual edition of this "bible for record collectors." Hundreds of the authoritative, detailed reviews which appeared in High Fidelity in 1971 are arranged alphabetically by composer, sub-divided by category of music when releases of his music were considerable. A section on Recitals and Miscellaneous too, and an Artists' Index to all performers reviewed during the year, as well as those mentioned only in the text.

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JOLSON. Michael Freedland. Illus. Index.

An ungarished story of Jolson's life and career. The boy sneaked into his first Broadway theater at 12, lived in a Catholic Boys Home (with Babe Ruth and Bojangles Robinson), worked in burlesque at 14; the man became a legend as one of the greatest entertainers in Broadway history.

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For anyone who has felt the impact of Stravinsky's music on his own aesthetic responses, this is a book to treasure. As Horgan writes in his foreword, it is an "act of homage to a transcendent artist who for almost four decades indirectly and impersonally brought aesthetic fulfillment to my life and learning— an experience which then for another decade and a half was crowned by personal friendship with him and his wife." It is not intended as a work of musicology or complete biography, rather a sketchbook, rich in detail and anecdote, by a loving friend with the novelist's eye and ear for character and scene.

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To celebrate the Beethoven bicentenary High Fidelity published the most immense critical discography ever undertaken by any magazine, appraising every available recording of the composer's works. At the end of the year these separate discographies were completely revised and updated and are here collected into one convenient book. It is hard to imgine any record collection without it on an adjacent shelf. Index to performers.

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Eight new chapters and one third more material in this new edition. 544 pages. 180 pages of appendices (Federal and International laws, statutes, contracts, applications, agreements, etc.)

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In the past decade, the international art world has discovered the comic strip as a significant contemporary art form. Horn documents in his learned introduction the worldwide influence of Hogarth, names by French critics the "Michelangelo of the comic strip." Now Hogarth presents a new pictorial version of the novel that inspired the original comicstrip—completely redrawn for this handsome volume. A fascinating book and a marvelous gift for any generation.

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The story of the rise, glory and decline of America's big bands, the excited scene, the enraptured public, and 70 long profiles of great personalities, among them Count Basie, Cab Calloway, the Dorsey's, Duke Ellington, Benny Goodman, Harry James, Woody Herman, Glenn Miller, Paul Whiteman. Stimulating, nostalgic, authoritative, this book reconstructs an exciting and romantic era in American musical history.

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LETTERS OF RICHARD WAGNER:


Wagner laid the foundation stone of the Bayreuth festival theater in 1872. In this centennial edition are the deeds, words, and persons involved in its realization.

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LETTERS TO MINNA WAGNER. Trans. by W. Ashton Ellis. Reprint of the 1909 ed. (2 Volumes).

Christine Wilhelmine Planer, the actress "Minna," was married to Wagner for 30 years, with various separations. Sorrowful letters these, yet they also mark such occasions as "The Flying Dutchman" premiere and Wagner's first hearing of "Lohengrin" in Vienna.

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Announcing a major breakthrough that will have universal impact on all future high fidelity components and their performance.
Introducing Pioneer series of tuners and amplifiers.

The time has come to completely re-evaluate the standard you now use to judge high fidelity performance.

With this new line of tuners and amplifiers, Pioneer presents many ingenious innovations in circuitry that are being used for the first time. However, this exclusiveness is only secondary. While each new circuit can be considered revolutionary by itself, what is even more important is that their combined capabilities achieve precision and performance heretofore unattainable.

The Tuners: TX-9100, TX-8100, TX-7100

FM front end — an engineering triumph
The height of sophistication, the TX-9100's stabilized, drift-free front end replaces printed circuit boards with completely metallized construction. The same used in high precision communications equipment. Employing three dual gate MOS FET's and a buffer circuit in the local oscillator, there's exceptionally high gain with extremely low noise. Two tuned RF stages with a 5-gang variable tuning capacitor contribute to the highest selectivity (90dB) and astonishing FM sensitivity (1.5uV). The exclusive use of a heavy gauge die cast aluminum housing assures uncanny stability.

IF section — the epitome of advanced research
In the pursuit of excellence, significant new IF section technology was developed. The result is optimum selectivity with minimum

Exclusive heavy gauge die cast aluminum housing assures uncanny stability.
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Ask any artist or musician, any recording engineer or audiophile, chances are he uses TDK for his professional work. Unmatched in purity and fidelity over the full range of human hearing, crystal clear in its dynamic response and with complete reliability, TDK truly is the tape of the expert. Cassettes, 8-track cartridges or reel-to-reel, in the widest choice of formulations and lengths, including cassettes running as long as 3 hours.

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In Canada, contact: SUPERIOR ELECTRONICS INC Montreal
"The AR-1500 is the most powerful and sensitive receiver we have ever measured..."
- JULIAN HIRSCH, Stereo Review, Nov. '71

"...a stereo receiver easily worth twice the cost (or perhaps even more)...
- Audio Magazine, Dec. '71

Mr. Hirsch goes on to say:
"The FM tuner section of the AR-1500 was outstandingly sensitive. We measured the IHF sensitivity at 1.4 microvolts, and the limiting curve was the steepest we have ever measured...The FM frequency response was literally perfectly flat from 30 to 15,000 Hz...Image rejection was over 100 dB (our measuring limit)...

"The AM tuner was a pleasant surprise...it sounded very much like the FM tuner, with distinct sibilants and a quiet background, and was easily the best-sounding AM tuner we have had the pleasure of using...

"...all input levels can be matched and set for the most effective use of the loudness compensation. This valuable feature is rarely found on high-fidelity receivers and amplifiers...

"The phono equalization was perfectly accurate (within our measuring tolerances)...The magnetic phono-input sensitivity was adjustable from 0.62 millivolt to about 4.5 millivolts, with a noise level of -66 dB, which is very low...When properly set up, it would be impossible to overload the phono inputs of the AR-1500 with any magnetic cartridge...

"...it significantly bettered Heath's conservative specifications. Into 8-ohm loads, with both channels driven, the continuous power at clipping level was 81.5 watts per channel. Into 4 ohms it was 133 watts per channel, and even with 16-chm loads the receiver delivered 46.5 watts per channel. Needless to say, the AR-1500 can drive any speaker we know of, and with power to spare...

"At 1,000 Hz, harmonic distortion was well under 0.05 per cent from 1 to 75 watts per channel...The IM distortion was under 0.05 per cent at level of a couple of watts or less, and gradually increased from 0.09 per cent at 10 watts to 0.16 per cent at 75 watts...The heavy power transformer is evidence that there was no skimping in the power supply of the AR-1500, and its performance at the low-frequency extremes clearly sets it apart from most receivers...

"Virtually all the circuit boards plug into sockets, which are hinged so that boards can be swung out for testing or servicing without shutting off the receiver. An "extender" cable permits any part of the receiver to be operated in the clear—even the entire power-transistor and heat-sink assembly! The 245-page manual has extensive test charts that show all voltage and resistance measurements in key circuits as they should appear on the receivers built-in test meter...

"In sound quality and ease of operation, and in overall suitability for its intended use, one could not expect more from any high-fidelity component."

From the pages of Audio Magazine:
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The First-Rate Music of Johann Strauss

A new Fledermaus augments EMI's series of Viennese operettas.

by David Hamilton

How INGENIOUS the men who first formulated the central plot device of Die Fledermaus (they were, in fact, Meilhac and Halévy, better known to posterity as the librettists of Bizet's Carmen), and how fortunate we are that it came into the hands of Johann Strauss Jr. For a happier concatenation of the mixed-identity clichés basic to so much nineteenth-century operetta (and opera as well) can hardly be imagined, centering on the multiple deceptions arranged by Dr. Falke for Prince Orlof's masked ball—and what better than a ball scene fruitfully to engage the gifts of a great dance composer? Strauss never quite matched the success of this work; although Der Zigeunerbaron and Eine Nacht in Venedig are full of first-rate music (stimulated, too, by the infusion, respectively, of Hungarian and Venetian references), their plots are much less direct, the librettos less well organized, and thus the theatrical totality less rewarding.

Last-act problems are endemic to the genre: after the intrigue has been raveled to maximum complexity at the end of the second act, the only essential dramatic function remaining is the moment of revelation—the rest is padding. Even Fledermaus suffers at this point, but there is not a weak number in the score, which reaches an irresistible high point in the second-act finale, with the marvelously unsentimental sentiment of the Briiderlein ensemble and its “Duida” coda—surely one of the more enduring hymns ever penned to a grammatical subtlety (and untranslatable into English, which no longer employs a distinction between intimate and formal second-person pronouns).

Fledermaus has now been recorded some eight times in more or less complete form, and Angel's latest version (the third from this company) is thus part of a fairly crowded field. Still surviving in the catalogues, after more than two decades, is the Clemens Krauss mono version (now on Richmond), deservedly regarded as a classic of this literature for its warmth and rhythmic sparkle, and the easy professionalism of its cast: Hilde Gueden's gracious yet pointed Rosalinda, Julius Patzak's elegant Eisenstein, Anton Dermota's mellifluous Alfred, Wilma Lipp's pert Adele. Only the musical numbers were recorded, however, and the absence of dialogue keeps this from competing directly with newer versions; at the bargain price, it remains an indispensable supplement to any of the others.

Two other mono versions long ago vanished: Columbia's Metropolitan Opera recording, using the gaggy Howard Dietz translation (still fun because of Ljuba Welitsch's richly accented Rosalinda and Ormandy's surprisingly alert direction), and the first Angel, a Karajan/Philharmonia production with Schwarzkopf, Gedda, Krebs, Streich, and Kunz. The ladies here were especially good, and neither Karajan nor Gedda proved able on later occasions to recreate the genial relaxation of their work then. Some dialogue was included, and the Briiderlein solo was assigned to Gedda (presumably to avoid range problems for Kunz).

Stereo has brought us five more recordings, all with dialogue—and with numerous cast duplications. Boskovsky's cast brings back many old friends: not only Gedda's second Eisenstein, but Walter Berry's third Frank (he also did Falke for London), Renate Holm's second Adele, and Otto Schenk's second Frosch, while Rothenberger can be heard as Adele on the RCA recording. (Other champion repeaters over the years: Kunz has appeared twice as Frosch and once each as Falke and Frank, while Wächter has sung not only Frank and Falke, but also Eisenstein—a tenor role!) Of these stereo versions, two are relatively negligible, although not incompetent. In the earlier Angel stereo set, the two princip
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Nicolai Gedda—That's Gedda with a "Y"—the Central Element in EMI's Operettas

by Edward Greenfield

Nicolai Gedda has long since resigned himself to the fact that outside his native Sweden his name is going to be mispronounced. "Yedda," he enunciates with his characteristically crisp diction, but he does that only on my insistence, and seems to realize that such a pronunciation would regularly be misunderstood or else counted as an affectation. His father's surname is in fact Ustinov ("nothing to do with Peter" Gedda explains) and though he always spoke Russian at home, becoming entirely bilingual, he opted for his mother's family name in his career.

Gedda's fluency in languages lies at the heart of his success, and has done from the start. His background could hardly be more cosmopolitan. His father was a schoolteacher in Russia before the Revolution, who then fought in the "White" Russian army, and finally reached Stockholm as a member of a touring Cossack Choir. Settled there with his Swedish wife, he became a cantor and choirmaster in the Russian Orthodox Church. "It trained my ear," he says, "when I was not born with perfect pitch." To his three fluent languages he quickly added French ("my favorite language in college") and, as he confesses, became a perfectionist, when from the start he appreciated the importance of meticulously correct pronunciation if an authentic singing style is to be achieved in any language.

Gedda's treble voice broke at sixteen, and for two years he was left with "nothing but a croak." He did his Swedish military service, and then with no prospect of further full-time musical education went into a bank. Luckily one of the bank's customers, who knew of Gedda's singing, suggested that he should enter for the Christine Nilsson Award at the Stockholm Conservatory. He won it, and for two years studied there. In 1952, thanks to the efforts of two of his teachers, he was spectacularly given the tenor lead in the Royal Opera's production of Adolphe Adam's Postillon de Longjumeau, with its extraordinarily difficult main aria.

He was a riotous success. So much so that the press assumed he had come from abroad, knowing nothing of him as a local product. It so happened that Elisabeth Schwarzkopf was appearing in Stockholm at the time. Her husband, Walter Legge, in his role of EMI impresario was on the lookout for singers who could work in Russian. He heard Gedda and asked him to audition. Gedda was immediately engaged for the role of Dimitri, the Pretender, in EMI's first recording of Mussorgsky's Boris Godunov with Boris Christoff as the Tsar. By the summer of 1952 he had become an international recording artist, having made his professional debut on the stage only that April. Of his headlong ascent he says gratefully, "I didn't have a long way to go to find success. I had luck, and a lack of nerve."

That spectacular "break" was more effectively exploited when Walter Legge not only went on to promote Gedda in a whole series of his own opera recordings.
but did everything he could to mention his name in the right quarters. "Letters would drop into my pigeonhole from La Scala and from all over Germany," Gedda explains, still reflecting his own surprise that success could come so easily. His La Scala debut came in fact only nine months after his first professional appearance.

Already he had started on the long series of records for EMI, which as he suggests—just a little diffidently, characteristically anxious not to claim too much—makes him "maybe the most recorded tenor of all time." His current total of albums is well over the hundred mark, ranging as he says "from oratorio to Robert Stolz." One of his first records—promoted by Walter Legge—was as tenor soloist in Bach's B minor Mass with Karajan conducting and Schwarzkopf among his fellow soloists. After that Karajan was one of his most enthusiastic sponsors. not only on records but in opera houses all over Europe.

Unlike many artists Gedda thoroughly enjoys recording—maybe his "lack of nerve" has something to do with it—but he confesses that he would not enjoy it so much if he had been type-cast in the studio. From the start he has had the widest range of recording repertory—partly a tribute to his command of languages, partly to his vocal technique—and not the least important was his work in operetta. Only rarely has he appeared on stage in operetta—two or three gala performances in Vienna and a comparatively ill-fated production of Zigeunerbaron under Leinsdorf at the Met. He does not particularly want to sing operetta on stage, for he feels a different kind of tenor is required, but recording is different. His first round of Strauss operetta recordings had the incomparable vocal team of Schwarzkopf, Kunz, and Loose with Karajan conducting Fledermanus and Ackerman conducting Zigeunerbaron, Wiener Blut, and Eine Nacht in Venedig. He also appeared in both of the classic versions of Lehár's Lustige Witwe with Schwarzkopf, the second one in stereo completed at the very peak of Walter Legge's career with EMI in the early Sixties. By then it was a question of recording in stereo, and with Walter Legge's departure from EMI in 1964 it was left to the German end of that company, Electrola, to sponsor a series of operetta recordings with Gedda. As he says, these include his own personal favorites among his own records—such sets as Strauss's Eine Nacht in Venedig and Lehar's Zarewitsch. He also did excerpts from the alternate version of Lustige Witwe as a tenor Danilo.

If you ask him which musician colleagues he has enjoyed working with most, he will pause tactfully, and then suggest Victoria de los Angeles as one of the most delightful. It was with her that he made complete recordings of Bizet's Carmen and Massenet's Werther. Gedda also especially cherishes the memory of working with Beecham (on Carmen) and with Klemperer on a whole series of recordings from Messiah and the B minor Mass to Don Giovanni and Zauberflöte. "I felt so good with them," he says. "A singer with a little musicianship was appreciated, and neither of them thought about himself at the expense of the composer. With young conductors it is not the same."

His repertory goes on expanding. Recording this last summer in London, Gedda happily coped with the demands of the hero's role in Berlioz' Bérevenu Cellini on the one hand, and the coloratura elaboration of the tenor role of Arnold in Rossini's Guillaume Tell. I saw him at work in both opera sessions, and each time he was so much at ease that he acted as well as sang his part quite naturally. As he said to me when the EMI Tell was almost completed. "It is incredible what those two chords in your throat can support. I can hardly believe that I can still do the Tell recording after all my voice has been through this year—colds and infections and so on, seven Traviatas at Covent Garden, the recording of Celini for Philips as well as a Prom performance."

He praises two of his teachers for having coached him in a technique that can stand hard work, together with the necessary globetrotting—his first teacher in Stockholm, the Swedish Wagnerian tenor Martin Oehman, and Mme. Paula Novikova, with whom he had regular lessons in New York over many years until she died some five years ago. "I am never too proud to learn," he says firmly, and he pays tribute to the help he received in his early days from Walter Legge and Karajan, not to mention singing colleagues who on such a project as Strauss's Capriccio could set him right on stylistic matters in a work he knew not at all.

Now although he does not take formal lessons, Gedda conscientiously studies new roles, and is always glad to obtain advice from acknowledged experts—he gave the instance of Colin Davis in Celini.

Home for Gedda is now officially Switzerland, where his country house near Lausanne is a haven for as long as he can manage it. But he also finds peace and an opportunity to get down to serious study (whether on new Lieder for his recitals or new operas) when he visits New York. His Central Park West apartment is only a few minutes' walk from Lincoln Center, and he regards that too as home, staying there for as much as four months at a time.

His career at the Met has been long and successful. When I talked to him he was still downcast by the death of the Swedish general manager. Goeran Gentile, for over twenty years a personal friend. Only a few days before the news of the tragic accident in Sardinia, Gedda had received a letter from Gentile confirming an engagement for the latter's own production of Verdi's Ballo in maschera in January 1974.

Singing at the Met, Gedda says, is a special joy, and much as he liked singing at the old house, the new theater he counts "acoustically a great success," even finer than the old. He is still surprised and delighted that "from the stage the new Met seems more intimate" despite the increase in size.

His engagements at the Met take up a large proportion of his singing time, but he still pursues a very active recording career. Next summer he will be continuing his association with Philips in the next of Colin Davis' Berlioz series with Damnation de Faust, and German Electrola is planning recordings with him of Millocker's Betetstudent and Schumann's long-neglected choral work, Das Paradies und die Peri. Gedda also hopes that he will be able to record more operas with Beverly Sills, maybe some Bel- lini.

"After all, a voice doesn't last forever," he says, but at least it looks as though Gedda's voice by careful husbanding and thorough technique will last longer than most. His heavy commitments over the summer of 1972 were carefully calculated, and though he relishes doing "more demanding parts" like Celini and Arnold in Tell, he will never take on a role—Wagner for example—that might endanger his ability to sing florid music. "I keep it in mind always," he says, "that I want to go on singing Ot- tavio's Il mio tesoro with all the coloratura in place. I have to be careful with the heavy parts, making sure not to exag- gerate the middle register." With such thoughtful analysis Gedda confirms that one has registered from his actual singing. Here is a very rare animal indeed—a thinking tenor.
pal parts were weakly cast, and Otto Ackermann failed to inspire much brio in his otherwise capable forces. And Robert Stolz's mannered direction combined with Rudolf Schock's coarse Eisenstein removes the Everest set from competition, despite Wilma Lipp's very professional Rosalinda.

The RCA recording had a nice theatrical flavor, and bespoke some worthwhile attention to detail, but the casting was marred by several obnovances to the American market; after reading in the liner notes about the text-critical efforts undertaken before the sessions, one was staggered to hear the Brüderlein solo transposed down a tone to accommodate George London, with the ensemble repetition remaining in the original key, joined by an ugly harmonic non sequitur! What price authenticity?

That leaves Karajan's second recording on London, as the only really admissible competition for the new Angel. First issued with a rather distracting "gala sequence" featuring London stars, it is now also available in a two-disc "un-gala" version. By comparison with the conductor's earlier set, this one has always struck me as a bit overblown and grand-operatic. The cast was good, although short of Krauss's level (even Gueden failed to live up to her earlier technical standard, although she remained quite charming); despite these reservations it still seems a very professional and atmospheric job, quite splendidly recorded. Boskovsky achieves a lighter touch, and he certainly knows how the music ought to go—doubtless he played in the fiddle section of the VPO for one or another of the earlier recordings! Although the Vienna Symphony is not quite as expert as the Philharmonic (a deficiency which shows up primarily in the overture), its playing has plenty of sparkle, and the wind staccatos come out with a pleasant "chiffy" edge. I like, too, the alert percussion work: in Strauss, these instruments do not merely make accents, but often participate in the orchestra as a kind of additional, if unpitched, voice (the most striking demonstration of this function can be heard in the old Klemperer or Furtwängler recordings of the Kaiserwalzer).

This cast, alas, is a less happy story. Gedda's voice seems in rough estate, especially in the first act, where he sounds nasally brassy: the engineers are clearly using two mikes and the controls to match his volume level with Rothenberger's and the result is anything but a true blend. The lady isn't in her best condition, either, with uneven coloratura and a shaky top range: on records, not all the charm in the world can compensate for this. In fact, vocal honors go to the Orlofsky: Brigitte Fassbaender uses a brassy, chesty sound that makes the travesty plausible, and phrases with fine line. Also good is the Alfred of Dallapozza—a tenorino with a sweet sound and a flair for humor. Happily. Fischer-Dieskau is fairly un-Dieskauish as Falke, but does not bring real sweetness of tone to his big solo. The others are acceptable, and I would be inclined to regard this set as an acceptable alternative to the Karajan, in a more intimate style, were it somewhat better recorded.

One distracting feature of the sound is the dialogue, spoken very close, right into the mike and unnaturally loud in relation to the music. More importantly, though, the wash of resonance obscures detail and muddles the lower registers in tutti passages. I'm sorry to keep hammering on this point month after month, but it is musically significant, and if London's engineers could solve the problem twelve years ago, we should be able to expect equally good results today.

Some textual points: Most of the usual small cuts are made (I don't think any recording is absolutely complete), plus a "new" one—the little dialogue passage in the middle of the chorus that opens Act II. The original ballet music is omitted (only Karajan/London gives it all), and nothing is inserted in its place. Although Falke's role is beefed up by the interpolation of a solo from Waldmeister. The scene for Frosch, the jailer (all spoken), is kept down to a minimum, which will doubtless please American listeners unfamiliar with the finer points of Viennese humor.

This Fledermaus is actually part of a growing series of operetta recordings, with Gedda as the fixed central element, that has been accumulating from the German branch of EMI: however, none of the others has been released on a domestic label, although all can be obtained on an import basis. Among these are two other Strauss works, and they are worth consideration in the present context (I hope to report on the Lehár, Kálmán, and Oscar Strauss works in a future issue).
wards from its gypsy setting, but at the same time the book suffers from a heavy infusion of Hungarian lore and customs that may once have had a function vis-a-vis the Austrro-Hungarian Dual Monarchy but is today a dead letter to most of us; Count Camerino, the Chairman of the Public Morals Commission, with his prating about the proper thing, seems less a figure of fun than a bore. All the same, the tunes are ravishing, the ensembles well built, and the orchestration especially delicious, even for Strauss.

Because the score runs too long for two discs, especially when dialogue is included, Zigeunerbaron has never been recorded in really complete form: some cuts are standard; others vary from one recording to the next (the new EMI includes a short number for Arsenza in the last act that is probably a “first recording”). Three mono versions are no longer available: Krauss /London (sharing most of the virtues of the corresponding Fledermaus, with Patzak’s Barinkay an especial delight). Ackermann /Angel (which boasted the Schwarzkopf/Gedda/Kunz team and their customary skill and polish), and a Vanguard that I never heard.

Current stereo competition includes a colorless if competent presentation by Holleiner on Angel (Gueden’s small-scale Safi providing at least a modicum of rhythmic verve) and Stoltz’s Everest set, with the rough sound of Rudolf Schock in the title role and a thin-sounding if authentically Hungarian soprano (Erzsebet Hazy) as Safi. Connoisseurs of German singing may be intrigued to note the presence of Hilde Künstzzi and Karl Schmitt-Walter in small parts, but unfortunately Stoltz tampers with the scoring and rushes pell-mell into too many numbers, including the lovely duet “Wer aus Griechen”.

It would be nice to report that the new EMI is good enough to untie that Gordian knot—but it isn’t. Perhaps this was one of those sessions where things just don’t go right; whatever the reason, I’ve rarely heard an opera set recording so lacking in polish and ensemble. Everyone is working hard, but not carefully, and the result is often downright unpleasant to hear.

Grace Bumbry brings a certain earthy fervor to the role of Safi, but she can’t sing enough of the music really comfortably to justify this unusual casting; her upper register is so effortfully produced, her interpolations high in the second finale so very flat, that one can only wonder. “Why?” Kurt Bohme gives us a crude, stenographic reading of the pig farmer Zsupan, as if hog-calling had been the big thing—but this part can’t be genuinely funny, rather than earnestly so, as Kunz has shown. Gedda too seems in rough voice, singing chopily instead of smoothly, in depressing contrast to his work in the old Ackermann recording. Rita Streich’s Arsenza is more to the point stylistically, although her upper range is now perilously thin. Another sign of advancing years comes with Prey’s entry—for Ackermann he sang “Komm in die Gondel” song (on the old Angel mono set. Gedda appropriated this for himself), and Prey sings his interpolations with smooth warm tone. There is no current competition for this recording, and although I will not part with the old Schwarzkopf/Gedda/Kunz set, this rather less polished affair does give you most of the music in an amiable, pleasantly theatrical presentation. (Non-German-speakers should note that the EMI sets do not include librettos, let alone translations.)

**STRAUSS: Die Fledermaus.**

- Nicolai
- Adelina
- Prince Orlofsky
- Brigitte Fassbaender
- Eisenstein
- Alfred
- Dr. Falke
- Dr. FOWL
- Alexander
- Wolfgang Berry
- Grace Bumbry
- Hilde Künstzzi
- Karl Schmitt-Walter
- Halle R. 5921

**STRAUSS: Der Zigeunerbaron.**

- Safi
- Arsenza
- Arsenza
- Agosta
- Detlev von Manstein
- Cesare Caramello
- Cesare Caramello
- Emilio de Rinaldi
- Enrico Patti
- Bayerische Staatsoper
- Mozart
- Beethoven
- Schubert
- Wagner
- Richard Strauss
- Emanuel Bach
- Antonín Dvořák
- Gustav Mahler
- Richard Strauss
- Emanuel Bach
- Antonín Dvořák
- Gustav Mahler
- Richard Strauss
The Surprising Shostakovich

Two recordings of his gleeful new Fifteenth Symphony lead to a name-that-tune game.

by Royal S. Brown

ONE WOULD THINK that, after years of expecting the unexpected from Shostakovich, we would be at the point of no longer being surprised by the Russian composer's surprises. Yet how can one not be jolted when, after the stark morbidity of the Fourteenth Symphony, itself a surprise but also one of the composer's indisputable masterpieces, along comes a symphony gleefully quoting from Rossini's William Tell Overture in the first movement and more solemnly incorporating Wagner in the last? How can one not be confused when, after what seems like a return to the nose-thumbing sarcasm of the Ninth Symphony in the first movement, Shostakovich proceeds with a totally serious second movement that offers little more than a series of threadbare recitatives? For example, a trombone solo accompanied only by the most banal of oom-pah-pahs in the tuba and double basses effectively vulgarizes a lovely melody previously introduced in flute duet? And to add to the general illogic, there is an airy but acerbic third movement that finishes almost before it gets started, not to mention a fourth movement that rises to a heroic climax reminiscent of the Seventh Symphony and then fades away in what is little more than a percussion cadenza over a sustained string chord that goes on for some forty measures.

As might be expected from all this, Shostakovich's Fifteenth has elicited an almost incredibly broad range of critical opinion everywhere it has been heard—except in Russia, where it was premiered on January 8, 1972 (after having been postponed a month because of Shostakovich's ill health), and where it was received with surprising warmth by both the press and no less a figure than Tikhon Khrennikov, the head of the power-wielding Soviet composers' union. On the other hand, critical opinion in the United States after Ormandy premiered the work this past September and October varied from the vituperative—the New York Times critic did not fail to haul out his usual stock of anti-Shostakovich clichés, while the Philadelphia Bulletin critic wondered whether the work might not be the product of a "gifted manic"—to the glowing, as in Andrew Porter's perceptive account of the work in the New Yorker. As might also be expected, many attempts were made to figure out just what Shostakovich was trying to do. In a note on the jacket of the RCA recording, Ormandy indicates that the annotations for the Soviet disc state that Shostakovich was trying to depict a toy shop in the first movement. I would personally tend to be suspicious of this type of statement, however, since in the past such ideas have sometimes been devised, either by Shostakovich or by the Russian critics, as post-facto "programs" whose primary justification is to satisfy the generally limited imaginations of Soviet music analysts. It seems to me that this "collage" technique used by Shostakovich results first of all from a kind of stream-of-consciousness technique that is hardly unique to the Fifteenth Symphony. Listen to the opening bars of the Sixth Symphony's finale, for example, and you will hear what is practically an inversion of the William Tell theme—and later on in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme—and in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme—and in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme—and in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme—and in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme—and in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme—and in the same movement Shostakovich directly lifts a few bars from Mozart's Fortieth theme.
the opening rhythm of the *William Tell* theme. For instance, is announced by a nonmelodic rhythmic figure, used constantly by Shostakovich in his various works, in the horns immediately preceding the Rossini quote. And the presence of the Wagner "Fate" motif from *Die Walküre* and *Götterdämmerung* in the finale seems to have suggested another Wagner motif—the first three notes from the *Tristan* prelude—which, instead of leading into the opulent chord one expects, introduces a calm, rhapsodic theme that totally changes the mood of the movement. In the second movement, we find at several points an incongruous, completely un-Shostakonian chordal progression (which returns at the end of the last movement, as do other motifs) that brought the opening of Debussy's *Jeux* to one critic's mind. There is even a point toward the end of the symphony where I feel that Shostakovich must have had the "Wiranne Leut" motif from Berg's *Wozzeck* in the back of his mind. See what happens when you start quoting? All in all, one gets the impression of a heightened musical consciousness following a somewhat cubistic course that alternates the whole of a musical climate to which it is attuned and plunges back into its own personal history. This is not the first symphony in which Shostakovich turns out to be somewhat of a Slavic Charles Ives.

Maxim Shostakovich and Eugene Ormandy offer two widely differing approaches to this symphony. Maxim takes the music pretty much as it comes, playing up the brashness and sarcasm of the first movement and hitting the climaxes of the last for all they are worth. His interpretation effectively communicates the full meaning of the work's many changes in direction, and he quite skillfully pits these contrasts against one another in a well-controlled performance whose essence indeed lies in the sum of its many parts. Ormandy's concept of the work, on the other hand, is almost mystical—keeping in mind the "Fate" motif that opens the last movement and the basic seriousness that takes over once the first movement has passed. Ormandy imparts this feeling (well in keeping with the orientation of Shostakovich's recent works) to every note of the symphony, producing a general atmosphere of understatement and unity not to be found in the Russian rendition. There are moments when Ormandy's manner has its drawbacks, such as at the end of the second movement, where the fortissimo open-fifths in the bassoons intended to jolt the listener out of the second movement and into the third (which follows without a pause) simply disappear in what can be no more than a mezzo-forte. Otherwise, Ormandy's almost philosophical sculpturing of the piece offers both a valid and valuable alternative.

Interestingly enough, both conductors seem to have acquired engineering approaches appropriate to their interpretations, although Ormandy, I am afraid, has been somewhat scuttled by RCA's policy of not releasing stereo-only alternatives to their Quadradiscs; just for starters, this seems to be responsible for the inexcusable breaking up of the second movement over the two sides of the RCA release. On the Melodiya/Angel disc, the woodwinds in particular get a bright, clean sound that greatly enhances the concertante flavor of the symphony, especially in the first movement. In the RCA recording, the woodwinds generally sound as if they were being played behind a closed door, which is due, I feel, to the fact that the overtones are swallowed up both by the quadraphonic "ambience" one has to hear simultaneously with the two front channels if one has stereo only (which I imagine is the case with 99.99 per cent of our readers) and by the superfluous disc noise made inevitable by the extremely low recording level.

On the other hand, RCA offers a much deeper sound that is particularly effective at those moments (rare in this basically chamberlike work) when the full orchestra is playing—thus, the climax to the passacaglia in the fourth movement has a sonorous, rich, almost organlike quality on the Ormandy disc, whereas Maxim Shostakovich, as he reaches the high point, brings out the brasses in a Slavic style totally opposed to the Ormandy aesthetic, resulting in some unpleasant shrillness. Both releases suffer from excessive reverberation—at one point in the first movement, where the strings become involved in a polyrhythmic canonic effect reminiscent of the Second Symphony, the Melodiya/Angel release makes it sound as if an electronic echo effect were called for. The result is curiously effective but hardly idiomatic. RCA, on the other hand, obviously had quadraphony on the brain, and the added reverberation seems particularly inappropriate to the work, especially when incompatibly crammed into the two channels the vast majority of listeners will hear. [For an evaluation of the quadraphonic version, see four-channel reviews, page 108.]


Mercury reissues six Kubelik/Chicago Symphony discs.

The six records in these two boxes provide valuable historical documentation of the collaboration between an important conductor, a great orchestra, and a truly creative team of recording producers. Let it be said at the outset that these records, containing orchestral performances of high quality, offer an acoustic ambiance of a very special sort, despite the fact that they do not enjoy the benefit of stereo sound. In their way they represent a landmark in the recording of the symphony orchestra that can still be listened to with great satisfaction. In a larger context, moreover, they demonstrate one of the ways in which the electronic recording of line music can become an art of a very special sort.

The brief and stormy career of Rafael Kubelik with the Chicago Symphony Orchestra from 1950 to 1953 is still remembered for its intense partisan hostility. When he came to Chicago, the thirty-six-year-old Kubelik had impressive credentials: the son of a great violinist for whom he had served in his teens as piano accompanist on his last tour of the U.S., highly regarded work with the Czech Philharmonic Orchestra before and after World War II, and a promising engagement with the BBC which was interrupted by his move to Chicago. Since 1953, moreover, Kubelik has fulfilled that promise in a number of European posts and guest engagements here (including a return to Chicago) and abroad, and has now again accepted a major post in this country as the first music director of the Metropolitan Opera. To many, his post-Chicago success has raised questions as to the legitimacy of the attacks leveled at him by the Chicago press during his tenure there.

The Orchestral Association engaged Kubelik toward the end of a stormy interval following the death of Frederick Stock in 1942 that ended only with Fritz Reiner’s assumption of the musical direction in 1953. When Stock died, the Chicago Symphony Orchestra had had but two musical directors—Theodore Thomas from 1891 to 1905 and Stock thereafter. Both had been firmly rooted in the German symphonic tradition, had built the orchestra in a Central European style, and had devoted their entire efforts solely to the Chicago orchestra. Stock’s successor, Desire Deauw, met the Association trustees’ requirements as a resident conductor, but he lacked major stature as a conductor and stylistic affinity for the tradition of Thomas and Stock. He was followed by Artur Rodzinski, a first-rate conductor recently discharged by the New York Philharmonic in a dispute with the board and manager. Rodzinski shortly came into similar conflict with the Chicago trustees over a number of issues, most intensely over his desire to use the orchestra as a basis for reviving Chicago’s then-dormant opera, a project close to the heart of certain major critics. The trustees’ firing of Rodzinski in his first year in Chicago greatly aggravated the hostility of the press which harbored a longing for the kind of “father figure” that Stock represented as a dominant leader in the city’s musical life. The situation was further exacerbated by an effort to engage Wilhelm Furtwängler as the orchestra’s director; that conductor withdrew as soon as a hue and cry was raised over his alleged Nazi associations. Two seasons of guest conductors ensued, but the fundamental conflict between the press and trustees raged unabated, so ferociously that, in retrospect, virtually no choice by the trustees of a new musical director could have survived.

In these years, and during Kubelik’s tenure, the most influential and widely read critics went far beyond the limits of journalism or legitimate criticism in attempting to effect policy changes by the trustees and management. To a large degree, therefore, Kubelik was appraised not on his own merits or shortcomings, but on the basis of implications, and explicitly as the chosen instrument of the Orchestral Association. Thus, the audiences attending the Friday afternoon concerts already had read devastating attacks on the previous night’s performance. This continued week after week for three seasons, a crushing experience for conductor and orchestra alike. Recordings are, of course, only samples of the work of a resident music director—though they should represent his best work—but there is ample evidence here, as there was when these records were first released, that the Chicago Symphony Orchestra under Kubelik was capable of first-rate performances of a varied repertory.

It must also be noted that, during the interim between Deauw and Reiner, the personnel of the Chicago Symphony Orchestra underwent substantial improvement in quality and quantity. The city had long enjoyed a music
profession of high quality, with a strong emphasis on Austro-German and Czech musical traditions. (On his arrival, Kubelik found a number of first- and second-generation Czechs in the roster of the orchestra.) Beginning with Rodzinski, and continuing through the guest-conducted seasons as well as the Kubelik years, the orchestra was strengthened impressively both by local players and by importation. Such principal players as the fabulous trumpeter Adolph Herseth, Philip Barkas on French horn, Arnold Jacobs on tuba, Leonard Sharrow on bassoon, and Bert Gaskins on piccolo were already well established in the orchestra when Reiner took over. He naturally molded the orchestra in his own unique way, as has Solti more recently, but the quality of a great orchestra is already evident in the Kubelik recordings.

Kubelik was attacked both for his inexperience and for his innovative programming. In his defense it may now be argued that during his thirties he had that much experience as many who have since taken over American orchestras; however, in accepting a heavy schedule of work, he submitted himself to more extensive exposure than the younger breed of conductors do today. Chicago had become accustomed to the conservative programming of Stock, whose adventurous days were long since past, and the audience and critics reacted adversely to his programming of the then novel music of Bartók and Hindemith and to the still novel music of Schoenberg. There was also some complaint over his rather strong emphasis on Czech music—Janáček as well as Dvořák and Smetana. Bartók’s Music for Strings, Percussion, and Celesta and Hindemith’s Symphonic Metamorphoses, included in these releases, were considerably more innovative than they are today. I would have preferred to have Schoenberg’s Five Pieces for Orchestra, a fine performance, in this set instead of two Tchaikovsky symphonies. Similarly, I would have liked the complete Mozart instead of only two exerpts, for this Kubelik version has qualities of rhythmic vitality and musical force that I have found somewhat less evident in his two subsequent recordings of this Smetana cycle. Another important performance not included here is that of Mozart’sSymphony No. 34 in C, K. 334, as impressive a reading as that of the Tragic Cycle.

When this recording of the Pictures at an Exhibition first reached the market in 1951, it was regarded not only as a superb performance but also as an extraordinary advance in the art of recording the symphony orchestra. There have been subsequent records of this standard orchestral showpiece with greatersome impact, thanks largely to quite different recording techniques, but purely as orchestral sound, this record still ranks as a strong spell. The production credits for processing this new release list the personnel involved in their most recent transfer but fail to give credit to the even more important and truly ground-breaking contribution of the original producer David Hall and recording engineer Robert Fite, who were responsible for the original recording technique.

When the history of recording serious music is updated, the scheme originally devised by Hall and Fite for the first “Olympian Series” records by the Chicago orchestra (and later used in Minneapolis and Detroit) will undoubtedly receive proper recognition. Using but one microphone, suspended high over and sometimes in back of the conductor, the performances were recorded on wide-track tape with high-quality equipment. The records were made in Orchestra Hall, a site since abandoned as unsuitable for modern recording, but at that time offering a congenial ambience for orchestral recorded sound. This system, using but one microphone, left to the conductor working with the recording personnel—the final decision as to orchestral balance and overall sound, a method quite different from the multichannel techniques that were later developed and that allowed the producer and engineers much latitude in achieving balance in the final product. It was thus possible for Kubelik, the individual responsible for artistic effect, to exercise maximum control. If this system resulted in recordings that sometimes slighted orchestral detail or occasional solo projection, this shortcoming parallels the actual experience of the listener at a “live” concert, who never hears every orchestral nuance with the same emphasis or speculating on all elements. These records exemplify a quite different philosophy of sound reproduction from that heard on most orchestral records today. Despite promotional claims that one technique or another produces the “real” sound of the orchestra, any method represents a compromise and at best an amalgam of musical performance and electronic technique. The most successful achievements occur when the combination produces a truly musical effect—not necessarily an exact concert-hall experience—that does justice to the music in the listener’s own living room. In this the Chicago Symphony Orchestra recordings from 1951 through 1953, with their single aural perspective of the orchestra, represent an occasion on which the recording of the symphony orchestra reached true artistry. The effect is quite different from—and neither superior nor inferior to subsequently developed stereo and multichannel techniques which seek to lay bare the full panorama of the orchestra, often from a variety of perspectives or from no fixed perspectives at all.

As a documentation of the best results of this monaural recording technique, as well as a memorial of the best of Kubelik’s work with the Chicago Symphony Orchestra, these reissues make a great contribution. Though I have had to compare them with well-worn discs from the 1950s, it seems to me that the sound is brighter on the new records, tape hiss considerably less apparent, and the bass somewhat stronger and with better “bite.”

With Kubelik coming to the Metropolitan Opera and with the international acclaim now heaped on the Chicago Symphony Orchestra under Solti, there should be considerable interest in these remarkable examples of the recording art. For considering all elements, these records will long remain notable demonstrations of how performance and electronics can be wedded to produce a very special kind of art.

CHICAGO SYMPHONY ORCHESTRA: The Kubelik Legacy. Chicago Symphony Orchestra, Rafael Kubelik, cond. Mercury MG 3-4500 and MG 3-4501, $11.96 each set (three discs, mono only).

Fournier and Backhaus are more equal partners in the Brahms than Fournier and Schnabel were in the Beethoven. The cellist had about eight more years of experience behind him when he taped these works for London/Decca in 1954, and as novel. Backhaus was a less frequent sonata partner than Schnabel and, perhaps precisely for that reason, a bit more self-effacing. Sometimes he is a bit too self-effacing in the first movement of the F major Brahms. As many of you know, this work is like a tornado with furiously lashing piano tremolos. In his calm, scrupulous account, Backhaus uses the pedal charity and the result is clearer but less immediately exciting than I think Brahms intended. On the other hand, it is a pleasure to hear all the part-writing so knowingly projected. Backhaus was a remarkable artist in certain repertory and Brahms was perhaps his greatest specialty. He phrases with gracefulness but without petulance. A big, calm, magisterial style with velvety tone and a requisite husky bass line. I have heard more emotional performances of these sonatas but rarely, if ever, such worldly-wise ones. Tempos tend to be moderate—a bit faster in slow movements, slower in fast ones—and every movement emerges as a beautifully turned entity. There are no first-movement repeats in either work and the F major is consequently a bit foreshortened. As for the sound, it is a pleasure to report that absolutely no concessions have been made for this disc. Both instruments are faultlessly balanced and each sounds exceptionally realistic in tone. The electronic stereo reprocessing has, for once, been done with the greatest of tact, and the resurrected sonics are, to these ears at least, preferable even to the toppier, more reverberant engineering allotted to Fournier and Firkusny on the later DGG disc. But that performance is so utterly different and effective in its own way) that it is pointless to make comparisons.

Suffice it to say that both of the releases under review are musts for any collection of chamber music. My only regret is that Vox might have done better with the annotations. I am all for the comprehensive approach that puts the discussed music in context, but certainly it is going a bit far when Charles Stanley (whether by accident or design) tells us all about Brahms's first two violin sonatas. 

H.G


Beethoven: Sonatas for Cello and Piano. Pierre Fournier, cello; Artur Schnabel, piano. Seraphim IB 5075, $5.96 (two discs, mono only).


Selected comparison:
Fournier/Firkusny

DGG 139119

Fournier is still active and has, in fact, re-recorded these sublime works with other keyboard collaborators—the Brahms with Firkusny, the Beethoven twice with Kempff and, to lesser effect, with Gulda. The present versions, though, are anything but uninteresting, sonically outmoded duplications. Here is incomparable proof of the piano's crucial importance in what are, after all, bona fide duos. I have always had an axe to grind with some—indeed most—string players who persist in playing the chamber music game known as "shoooh the piano player!" Critics too have often been guilty of dismissing a sonata partner with a cursory "so and so was the executant. A few side-joins betray the set's shellac origins and there are some ticks, swishes, and momentary bursts of surface noise in the two Op. 5 works. Yet, how wonderful it is to have these memorable—if slightly uneven—performances available at last long, and at a bargain price to boot!

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H.G
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Such liberties, whatever one might think of them musically, do require a conductor of supreme craftsmanship and here it is my duty to report that Barenboim is out of his (imagined) depth. Surely it is putting the cart ahead of the horse to take such chances when the most basic elements of ensemble give him so much trouble. For one thing, Barenboim has one of the crudest, most inflexibly soft techniques imaginable. He is seemingly unable to get his players to start together. One is reminded again and again of the kindly but inept Anton Bruckner leading the Vienna Symphony in his own Seventh Symphony. ("After you, gentlemen!"). The pulsations of the cellos and basses as they start after the first of the sections are in fact ambiguous here that no tempo at all is discernible for a good dozen bars. Rhythms are listless, phrasing unshaped, tempos (slow to begin with) are made to plod because accentuation is so lax. Another major disaster area is that concerning balance and clarity. What is audible is largely a matter of haphazard chance—the harp booms out at measure 48 in the first movement but it is impossible to hear its figurations intelligibly. The lower strings sag as if they were in need of a corset, the muffled basses and the drums pound away in the dirgelike second movement with the impact of a truckload of cooked oatmeal. Hundreds of attacks lack unanimity, and many carefully marked piano or pianissimo markings are cavalierly ignored.

As for the two soloists, Edith Mathis is an intelligent soprano with true intonation and a warm, pure voice. She tries her best but every attack is a run of the mill. Her rendition is so lax. Another major disaster area is that concerning balance and clarity. What is audible is largely a matter of haphazard chance—the harp booms out at measure 48 in the first movement but it is impossible to hear its figurations intelligibly. The lower strings sag as if they were in need of a corset, the muffled basses and the drums pound away in the dirgelike second movement with the impact of a truckload of cooked oatmeal. Hundreds of attacks lack unanimity, and many carefully marked piano or pianissimo markings are cavalierly ignored.

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A remarkably "right" performance of what is arguably Dvořák's best symphony. Sertoli, like the late George Szell, holds the line rather taut and keeps textures sinewy and clear. Unlike Szell, however, the Polish conductor doesn't refine away all the heft and darkly Wagnerian colors that pervade this music so much of its unique flavor. The reading is outstanding for its directness and forward propulsion. its willingness to eschew the episodic Slavonic Dance characteristics as does Kubelík, to name one of the more successful advocates of such a DG version: the earlier Vienna Philharmonic performance was much less distinguished). Yet Rowecki—and the exceptional Philips engineering—is equally extraordinary in the detail department. Every absorbing facet of Dvořák's colorful and imaginative orchestration is clarified while retaining the squareness of Zdenek Kostel's equally clear but much more stilled reading for Supraphon (briefly available in the U.S. on the defunct Crossroads label). The London Symphony (which has recorded the score excellently on three prior occasions) is in particularly good form here. Every section of the ensemble—whether the galvanic timpani, full-throated winds and brass, or strung strings—responds to Rowecki's leadership with unusually passionate, committed playing. Dvořák's D minor Symphony and Carneval Overture are two works which would (and indeed especially in the order for Toscanini and which he inexplicably never conducted. I can pay no greater compliment to Rowecki than to liken his performance of the symphony to one which I have always imagined being given by the Maestro. It has the same kind of revelatory impact—an impact that derives not from any willful theatricality, but from a closer, more potent re-creation of Dvořák's demands. This is also one of the few editions of the D minor Symphony to offer a bonus. The Dov'ak symphony gets the same massive treatment as the symphony. A glorious piece. Its willingness to eschew the Dvořák symphony cycle, by the way, needs only the Symphony No. 3, Op. 10 for completeness. (That work, paired with the Hussitiska Overture, is already announced on the back of the present record jacket as $6 600 286 and is presumably due for imminent release.)

H.G.

Martin: Golgotha. Wally Stampfl, soprano; Marie-Lise de Montmollin, alto; Eric Tappy, tenor; Pierre Mollet, baritone; Philippe Huitentocler, bass-baritone; Paulette Zangian, piano; André Luy, organ; Symphony Orchestra and Chorus of the University of Lausanne, Robert Faller, cond. Musical Heritage Society, MHS 1337/8, $5.98, plus 65c handling charge (two discs, available from Musical Heritage Society Inc., 1991 Broadway, New York, N.Y. 10023).

It would be difficult to imagine a contemporary composer whose work is better suited to rendering the story of the Passion than Frank Martin. There is an austere, a strong sense of control, and yet a feeling of grandeur that immediately puts the Swiss composer's musical language on a spiritual plane with Bach's. These characteristics pervade all aspects of Martin's technique, such as the harmonies. whose richness (in the opening chorus, for example) never becomes on the somewhat inappropriate—if beautiful—opulence one occasionally finds in Poulenc. Furthermore, Martin's Golgotha, completed in 1940 and inspired by Rembrandt's etching "The Three Crosses," manifests what I find to be a particularly useful use of his orchestra. Martin alternated passages from the Bible with selections from Saint Augustine, thus affording him the opportunity for some extremely moving contrasts, both musical and otherwise. In the "Jesus Before the Sanhedrin" movement, for instance, the highly dramatic passage which precedes especially the passages (by Martin's dynamic rhythmic language) where the chorus, representing the crowd
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H. C. Robbins Landon edited a performing score that comes as close to the original (now lost) as imagina- tive and painstaking scholarship can insure. This is the first recording of the Mass that was to be made, superbly recorded by Colin Davis and included in this album. is still innocent of everything but a passion for music. Mozartean melancholy. But Mozart was not a rococo artist: he retained only the elegance and some of the grace of the style, which he then endowed with solid substance. There are many fine passages, and almost the entire first movement of K. 488 is rewarding, but in the heavenly slow movement, where the orchestra just pours out that deeply emotional melody, Brendel again swoons a bit. That sudden turn with the Neapolitan sixth should not be treated as just a pale harmonic patch in the background: it should be chilling. So, while in many ways this is a good recording, the pianist does not equal the conductor's excellence.

R. S. B.

Mozart: Sacred Music. Helen Donath, Heather Harper, and Kiri Te Kanawa, sopranos; Elizabeth Bainbridge, Gillian Knight, and Yvonne Mininni, altos; Ryland Davies, tenor; Stafford Dean, Clifford Grant, Gwynne Howell, and Gerd Nienstedt, basses, John Alldis Choir, London Symphony Orchestra and Chorus, BBC Symphony, Colin Davis, cond. Philips 6707 016, $21.95 (four discs).

Soloists and conductors accustomed to the display of virtuosity in the later Romantic era often do not know the difference between concertos for "piano orchestra" and "piano with orchestra." In Mozart's concertos the orchestra is a full-fledged partner every bit as important as the soloist himself. Something that Neville Marriner knows and safeguards admirably. The internal balances are very delicate. for example, the Geta- ssemane, K. 337, No. 19, in F, K. 457; No. 23, in A, K. 488. But Musical Heritage is to be thanked for making this earlier Erato release easily available — it is a perfect set for the Easter se- son and should definitely complement those other compositions that traditionally add their beauty to this time of year.

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the part of a composer, especially in a case
where the challenge is from the past and must
be reconciled with a strong feeling and com-
mitment to the present. To a creative artist
with a pronounced individuality, past and fu-
ture are only ways of thinking, not realities;
for him there is only the eternal present. As I
have said above, Mozart always assimilated
new impressions, but this time he struggled:
he grasped the musical essence, the eloquence
and depth of Bach's linear style, but was not
willing to abandon the present. So this sub-
title work, undoubtedly with the Requiem the
greatest setting of the Mass between the B mi-
nor of Bach and the D major of Beethoven, re-
acts a spiritual dualism, and alternation of
magnificently grave and powerful movements
clearly under the influence of the two giants of
the baroque with the elegiac, sweet, and alto-
gether mundane atmosphere of Neapolitan
church music. Composers became fond of as-
sisted tolerance of the Ordinary of the Mass to
solo arias, giving rise to the so-called cantata
Mass. By Mozart's and Haydn's time the sym-
phonic principles also invaded orchestral ac-
nanced church music, not in the second
half of the eighteenth century when we have a blend
of Neapolitan opera and Austrian symphony
with traditional elements of baroque choral
polyphony. Mozart in his earlier Masses used
the compound style cheerfully and selec-
tively, only occasionally striking a deeper
tone, but in this Mass he is clearly experi-
menting. However, instead of blending the old
and the new, he juxtaposes them: only in the
mighty Kyrie does he use both, while the
Christe eleison changes into the operative.

The opening of the Gloria is Handelian in
its choral splendor and euphony; indeed, Mo-
}
This rewarding album also contains other sacred works by Mozart which have been recorded elsewhere. The quality of the sound is fine, but where the dynamics rise Davis's best intentions are often thwarted. To make such recordings as memorable as those of the D minor Krekie and the verus cuppus Davis will have to take his forces to a good studio or concert hall. Never mind the organ: the few spots where it is needed can be taken care of by a small portable instrument. And of course he should silence those calla parre trombones. But we will accept these recordings as a large down payment on future delivery.

P.H.L.

RACHMANINOFF: The Covetous Knight; The Isle of the Dead.

The Covetous Knight:

Albert

Lev Kuznetsov (I)

Money Lender

Alksandr Litvinov (I)

Baron

Baron

Duke

Sergei Yakovenko (b)

Moscow Radio Orchestra; U.S.R. Symphony Orchestra (in "The Isle of the Dead").

Operatic success came early to Rachmaninoff. Aleko, his first work for the lyric stage, was produced when he was only twenty and was an immediate hit. That, however, was the last of his theatrical triumphs. The composer weighed many subjects for opera, among them: Gogol's Moma Vanga, Chekhov's Uncle Vanya, Turgenev's Torrents of Spring and Flaubert's Salammbo. In the end only two projects reached completion: Francesco da Rimini (to a libretto by Modeste Tchaikovsky) and The Covetous Knight (or, as it is usually referred to in English, The Miserly Knight) a word-for-word setting of a play by Pushkin. These were presented on the same bill in 1906, then disappeared from the repertoire. The new recording of the latter suggests reasons for its failure as a stage work, but reveals a great deal of beautiful music.

The Covetous Knight tells a simple cautionary tale of avarice. A noble miser keeps his son Albert in poverty. One day the old man publicly accuses the son of trying to secure his death, and promptly dies of a seizure. This somber subject evidently made a strong appeal to Rachmaninoff's imagination: The orchestral coloration is dark, full of half-tones and rich hues. The vocal parts are conceived in an expressive and plaintive mood that concentrates a lot of the emphasis on the text—with the result that the dramatic situation is alive and immediate. The brooding mystery of these obsessive figures is exceptionally vivid.

However, in The Covetous Knight situation is more important than development. For all the striking incidents in the final scene—the latter's accusation, the son's acceptance of his challenge to a duel, the duke's banishment of Albert, the fatal seizure—Pushkin's drama is essentially about a state of soul, and this Rachmaninoff has followed only too faithfully. The most striking part of the original play is the long middle section, a monologue for the miser in which he reveals the depths of his infatuation with money. The episode is remarkably effective, yet it takes up nowhere. The drama is immobilized. Nothing comes out of it except Albert. But he, like Dobrin and the other singers here, is dramatically exciting. Gennady Rozhdestvensky is very responsive to the passionate colors of this lush, late-Romantic score, to all the shifts of mood and sudden flights of emotion. There is a helpful libretto/translation, though a few misprints have been allowed to get through.

Unfortunately, no photograph of Arnold Woklin's painting, Isle of the Dead, has been included in the booklet that accompanies this issue. Rachmaninoff's melancholy evocation of this now largely unfamiliar work is like a Tchaikovskian rendering of a Strauss tone poem. But whereas the painting now seems hopelessly dated, the music sounds attractively old-fashioned, with its great waves of

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RCA Records and Tapes

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RAFF: Symphony No. 3, Op. 153 (Im Wald); Ode to Spring, Op. 76. Michael Ponti, piano (in the Ode); Westphalian Symphony Orchestra (in the Symphony); Hamburg Symphony Orchestra (in the Ode), Richard Kapp, cond. Cadence CE 31063. $3.98.

Raff died in 1882 leaving a prodigious quantity of music—including eleven symphonies. It was inevitable that the present renewal of interest in the romantic period should produce a revival of his work, and this record gives us a generous sampling of what is usually regarded as his best efforts.

The Third Symphony is attractive picture music, filled with the distinctive spirit of Central European romanticism and nature worship, and achieved in terms of interesting thematic material and fine craftsmanship. It's too limited in scale to rival the works of Schubert or Schumann, and it's too tranquil. To use an old Toscanini phrase, this music hasn't much blood in it. But it's pretty enough to justify an organized Raff fan club among those who find the past more congenial than the musical present. Kapp's performance strikes me as a very good one, sympathetic in the fullest sense, well played, and nicely recorded.

The Ode to Spring really doesn't contain a great deal of substance, but it does provide Ponti with the occasion to produce some sensitive phrases and clear, bright tones. I surmise that he gets just about everything out of the work that there is to be found. And again Kapp and the orchestra forces are fully in sympathy, but there is nothing memorable in this music. Two minutes after it's over it has totally vanished from your mind. At least that's the effect on me.

But while it lasts you may enjoy it, and if so, enjoy, enjoy.

SCARLATTI: The Spanish Lady and the Roman Cavalier. Fiorenza Cossotto, mezzo; Lorenzo Alvary, bass; Salvador Dalí, speaker; Compresso Strumentale Italiano, Giulio Confalonieri, cond. London Stereo Treasury SR 33153. $2.98.

This recording has a subtitle that expresses the nature of the disc more precisely (if such a term can be used in this instance) than does its innocent sounding main title, "A cosmic divertissement by Dalí," it says, and the premier égérie of the bourgeoisie actually speaks on the recording. His Spanish/English/French medley is largely incomprehensible, though I could pick out a key statement. Dalí says that he places two lamb chops on his wife's shoulders because of love, love for her and for lamb chops. Giulio Confalonieri, "who found and lovingly arranged Scarlatti's music," believes that this sort of thing "is close to Salvador Dalí's heart."

Well, this is a bit equivocal, unless Dalí's heart beats to Confalonieri's music. This is not Scarlatti's Scipione nelle Spagne (1714), but the result of an abortion performed on the opera. Now artistic abortion has not yet been le-
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galvanized, and let us hope that it will remain on the books forever. Much of this music—contrary to the title—is “in tribute to Scarlatti,” i.e., not written by him. Unfortunately, Maestro Confalonieri is a counterfeiter whom the Secret Service would catch within a dozen measures. So after flawed Scarlatti and fake Scarlatti, which is supposed to represent Dali in action, we arrive at the Master himself. Well, the whole thing does not make any sense. Confalonieri should be sent to Devil’s Island. London induced for being an accessory to the crime, and the excellent singers paid compensation for their pain and anguish, or at least given one of Dali’s limp gold watches. As to Dali, he is out of my backwater so I cannot pass judgment on him. But come to think of it, he is the only legitimate contributor to this silly farrago. for he is at least an authentic nut.

P.H.L.


This “grand orchestra” approach to two of Schubert’s lesser symphonies departs from tradition but is no less attractive. Ordinarily these works are romped through with sparkle and intimacy by an ensemble of near chamber proportions. Here the massive heft (especially in the lower strings) reduces the intimacy, but the sparkle is very much present in the alert, sharply pointed playing Ormandy draws from his superbly drilled forces. His tempos are not terribly fast—some of them.

Some of the finer nuances are lost in an approach that goes more for sharply terraced dynamic contours and contrasts between string and wind choirs. The latter are always well forward in this excellent, bright recording despite the aforementioned weight of the former. Ormandy, aside from the size of his orchestra and preferences for sonority, has some admirable notions vis-à-vis phrasing and tempo relationships. For instance, he finds a pace for the problematic third movement of No. 4 that accommodates both its outer sections and the central trio (somewhat more tensely handled than in the customary reading which slows down to an amiable saunter). Then too he gets a fine, spunky exuberance to No. 6’s scherzo and exceptional swagger to both finales. Frankly, I am slightly tired of having the Gemütlichkeit stressed in these works and welcome Ormandy’s attempt to relate them both to the mature Schubert of the “Great” C major and Unfinished symphonies.

In short, two admirably sentimentless, militarily disciplined readings that really clear the air. Strongly recommended. H.G.


Selected comparison (Preludes, Op. 74): Horowitz

Kuerti

Selected comparison (Poem): Monitor 2134

This recording of the Preludes was made in the latter’s home in Santa Monica, and the following comments are based on the latter’s notes and a copy of her liner notes. Since Laredo returned to this repertoire for the first time in five years, the pianist’s supple and warm approach to these preludes and her romantic, singing legato make them worth listening to, as does the recorded sound, which is especially good, save for a slight pinched quality in the midrange.

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Having recorded the complete Scriabin sonatas and a number of shorter works for Connoisseur Society, Ruth Laredo now moves to Desto with the first stereo version of the complete Op. 11 Preludes, which she plays beautifully. The comparison between Chopin and Scriabin has been made unpleasing times, but it is not until hearing these Preludes that you realize how insufficient the comparison is for many of Scriabin’s other early works, such as the remarkable Op. 8 Etudes, which have a particular harmonic richness and rhythmic drive that immediately distinguish them as Scriabin. The twenty-four Op. 11 Preludes, on the other hand, rarely seem to me to offer this kind of depth—although Laredo maintains just the opposite in her liner notes—and as such often seem like genuine pastiches. But the pianist’s supple and warm approach to these preludes and her romantic, singing legato make them worth listening to, as does the recorded sound, which is especially good, save for a slight pinched quality in the midrange.

The five Op. 74 Preludes are something else again. These are the last pieces Scriabin wrote, and not only can they be situated musically miles away from the Op. 11 Preludes, but they seemed to have opened the door onto a third period in Scriabin’s career. Here, Laredo’s interpretation lacks only a certain intensity to put them on an even par with those of Anton Kuerti, which are incomparable, and she receives somewhat better engineering. And I greatly prefer her version of the Op. 32, No. 1 Poem in F sharp minor to the one played by

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A. Gulton COMPANY

CIRCLE 23 ON READER-SERVICE CARD

The continuous popularity of The Nutcracker and the best-seller status of almost every recorded representation, in whole or in part, make it all the more shocking that there has been no new complete version in almost a decade. Dorati's goes back to 1963. Ansermet's to 1959, and Rodzinski's still further to the very dawn of the stereo era. So Previn has an obvious advantage on a sheerly sonic level: The EMI producer/engineer team of Christopher Bishop and Christopher Parker captures the London Symphony at its best in transparent, fairly closely miked yet unmimicked, vividly realistic sound—sonics which are particularly noteworthy for their sharp focus and clarity in passage passages as well as for their fury, brilliance, and powerful impact in the climaxes.

Previn frees himself here from most of the interpretative mannerisms that have marred some of his previous major performances, yet he retains a distinctively individual approach. He even achieves the minor miracle of restoring the seductive freshness of so hackneyed a piece as Wall's Waltz of the Flowers. Best of all, he stresses the quintessentially theatrical magic of this music's most dramatic moments—those so inadequately suggested in the lightweight suite that is all many home listeners know of The Nutcracker. So I have no hesitation about placing so admirable an all-round version at the top of the list of available choices. That doesn't mean it supersedes or renders obsolete the others. However, good as it is, it still is no more than primus inter pares, and many of us will continue to treasure the more briskly tempestuous Dorati reading, the more grandly ceremonial one by Ansermet, and the more eloquently poetic one by Rodzinski, which still remains my personal favorite. And it's surprising how good the much older recordings still sound—although in this respect, of course, Previn and Ansermet are even more lucid and colorful aural appeal. R.D.D.


Selected comparison:

Dorati, Met 3-9018

I've seen Jansons' name before as conductor of the Leningrad Philharmonic in a Bach cello concerto, but I haven't heard that performance and the present jacket notes provide no biographical information. Hence the electro-surprise of meeting a "new" artist so authoritative and gifted both as interpreter and executant. The charming, if inexpressively rare art heard, first Tchaikovsky Suite may not be the most difficult score in the world, but it isn't the easiest either, and in any case Jansons has to compete with no less redoubtable a rival than Antal Dorati—yet he not only gives Dorati a close run for the money overall but actually surpasses him in a more infectiously zestful first-movement fugue and a more jauntily piquant Gavotte finale. Melodiya engineers provide a more gleamingly transparent recording too, though the thicker, five-year-old Mercury sonics still sound impressively rich and warm.

These all comparisons are important, however, only in establishing the presumably younger conductor's credentials. Dorati's version is available only as part of a set comprising all four Tchaikovsky suites, the only complete set currently available; whatever else
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MEMOREX Recording Tape Reproduction so true it can shatter glass.

For reasons doubtless best known to their advertising agency, the sponsors of this record have elected to give featured billing to the advertising agency. The recital given by Victoria de los Angeles and Alicia de Larrocha on November 13, 1971 (and repeated by public demand nine days later) left a good deal of euphoria in its wake. Spanish music, with its sensuousness and rhythmic vibrancy, makes a very direct appeal, and is, beside that, heard all too infrequently in our concert halls. The idea of combining De Larrocha's elegant brilliance and De los Angeles' warmth and femininity in the idiom of the music, eachconfident of her interpretive uniqueness, was extremely gifted musicians, each thoroughly at home in the idiom of the music, each confident of her interpretive uniqueness, was positioned to create excitement, the atmosphere of a special occurrence. The jacket of the present disc—a live souvenir of this partnership—is festooned with testimonials to the venture's inevitable success. Unfortunately, the undeniable pleasure created by this stroke of managerial acuity, has been inflated out of all proportion to its artistic value. The record is offered as a "treasure" that "is now part of musical history," and what was gleaned from two recitals (the original and the repeat) is offered here as "The Concert at Hunter College." as if New York had been vouchedsafe an epiphany. Divorced from place, physical presence and...
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Hirsch Henslek Laboratories, Stereo Review

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FM Guide

Listening is believing—ask your hi-fi dealer for a demonstration. Write for your free ‘Empire Guide to Sound Design.’
The Inflammatory Ljuba Welitsch

Some memories of the audience at last year's Metropolitan revival of Donizetti's La Fille du régiment didn't understand why a standing ovation erupted in the last act when a red-haired lady appeared at the top of the stairs, gesturing extravagantly. Poor things, they might not have been opera-goers during the late 1940s, when Ljuba Welitsch, of the gleaming silvery voice and the inflammatory stage presence, was making her brief but sensational career as an unforgettable Salome, a superb Verdi soprano, and—among other things—the most outraging Musetta ever to hit New York or London. Doubtless it is to that brief (nonsinging) appearance last year, and the publicity thereby engendered, that we owe these welcome reissues, of which the Seraphim offers the earlier master, including a Salome finale taken from a 1944 Austrian broadcast (issued for the first time) and a selection of her English Columbia 78s from 1947-48; the Richmond recital first appeared in 1954.

The Welitsch sound was something rather special, not merely for its distinctive color, but because it was so needle-sharp in focus, without sacrificing spin or life; this has great musical value, if it permits singing of truly instrumental precision. The potential drawback, however, is serious: for without equally precise intonation, the results can be painful to hear (a farther round sound gives a singer more freedom, of course). Happily, Welitsch had a harmonic sense (as well as intonation, aural acuity in other musical dimensions), and there is not a minute on either of these records to give the listener qualms: the purity of intonation is so remarkable as to be a source of aural pleasure in and for itself: try the chromatics in the allegro of the Freischütz: Primer.

More than this, she had imagination—every aria here is brilliantly conceived, with a sharp profile for every piece, for every change of mood (the Overture scene, regretfully sung in German, is a strikingly mercurial performance). She always trusts the composer, working out her interpretation within a framework of great literal accuracy, rather than pulling and hauling the music about to fit some personal "idea"—and yet every note is vibrant with personality, every climax set forth with fearless thrust.

Two of the Seraphim tracks duplicate repertory found on the equally important Oxford Welitsch record (32 16 0077). The Toreador aria is a very similar piece. for every change of mood (the Overture scene, regretfully sung in German, is a strikingly mercurial performance), and adds a very deep breath after the final note. (In both versions, she starts by pressing ahead of the orchestra, but this isn't a problem here.)

The newly resurrected Salome finale conducted by Lovro von Matacic, would seem to be the earliest available Welitsch recording, and comparison with the 1949 Reiner-led Odyssey reveals very little change in the voice except a filling-out of the low register. The reading of the final pages here is extremely suggestive (in both senses of that word), and the whole has perhaps more impetus than the studio version, despite congealed sound and some orchestral mishaps along the way. (Welitsch made still another version of the scene, just before coming to New York, with Karajan conducting, but one of the original masters was irreparably damaged in transit and so she redid it with Reiner.)

I must also mention the uncommonly faithful Bohème aria—she may have hammed up her stage Musetta unconsciously, but you just don't often hear this tune sung so well. On the Richmond disc, the Faust aria numbers (also in German), are tremendously vivid, and the Ballo arias was purely for urgency, directness of phrasing and linear purity. There are a few signs here, in the slight but palpable lessening of focus at the top, that all was not well with the voice, but you would hardly notice unless making direct comparisons with earlier recordings: the operetta numbers are splendid, with great vitality and spirit. Alas, a couple of tracks are cut short at the end by a hair, there are traces of primitive pauses before high notes (this last flaw was less evident in my earlier copy, a British Decca tenor), and the resideus sound is also a shade "topy"—enough said—both are among the great vocal records of all time.

LJUBA WELITSCH: Opera and Operetta Arias. Ljuba Welitsch, soprano; Vienna State Opera Orchestra, Rudolf Moralt, cond. Richmond R 23188, $2.98 (mono; from London LLP 69, recorded c. 1950)


LJUBA WELITSCH: Opera Recital. Ljuba Welitsch, soprano; various orchestras and cond. Seraphim 60202, $2.98 (mono; from various original records, recorded 1944, 1947-48).


by David Hamilton
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CIRCLE 32 ON READER-SERVICE CARD

MARCH 1973

The Art of Kathleen Ferrier. Kathleen Ferrier, contralto; Isobel Baillie, soprano (in the Purcell and Mendelssohn); Gerald Moore, piano;

ers—two sopranos, two tenors, a countertenor, and a baritone—who specialize in the music of the Middle Ages and the Renaissance: for this experiment in Americana they have added a mezzo and a bass-baritone, and each side of the record begins with a little flourish of instrumental sound, no more than an illuminated initial letter in music.

The group sings everything in madrigal style, with highly refined and beautiful tone, great sensitivity to nuance, and the supple rhythm that goes along with these other qualities. Historically speaking this is all wrong for Morgan, Billings and Company, whose concepts were choral rather than soloistic, whose nuances were rough and blocky if they existed at all, whose tempos were fast and hard-driven, whose sense of vocal tone was anything but refined, and who would probably have been shocked out of their wits at the hermaphroditic sound of the countertenor.

The Folklore Division of the Library of Congress puts out a set of the old New England composers and southern folk hymns as sung at a Sacred Harp convention which is probably close to the historically accurate style and is utterly hair-raising in its effect: there are, or were, other Sacred Harp recordings too, but they don’t seem to be currently listed.

On the other hand, the singing of these works in the style used on this record can be logically defended. To play Bach on the piano is to falsify him, but who screams at Glenn Gould? To be sure, one would be hard put to justify, say, the performance of a Beethoven symphony by a harmonica band; but music of the past requiring less complex instrumentalities than the symphony orchestra has a way of accommodating itself to a wide range of interpretative approaches; indeed, it proves its quality by such accommodation: and if one understands what one is dealing with, and does not confuse one thing with another, a modern approach, seriously and sensitively undertaken, may even turn out to be a scholarly contribution of high merit. Such is the case here, especially since the madrigal-like style brings out the strange voice-leading and unconventional harmonies of the music with special clarity and point.

As I have mentioned, the most remarkable things here are the anthems, especially the great, long, monumental, and totally magnificent Judgment Anthem, by Morgan and a cycle of three pieces by Billings, on a text from the Song of Solomon, which adds up to a single anthem-sized work of quite surprising character. What Billings emphasizes here is the sensuous, sexual quality of the text. An erotic anthem out of Puritan Boston, by William Billings no less! Will re-evaluations never cease?

There is also a beautiful Anthem for Thanksgiving by Billings, and shorter pieces by two major contemporaries of Morgan and Billings—Daniel Read and Andrew Law.

The second side is given over to fifteen Southern folk hymns, mostly by composers known and unknown, of the early nineteenth century. Some are in the form of fuguing tunes; all of them are lovely as sung by the Western Wind and its collaborators. A.F.
Vienna Philharmonic Orchestra, Bruno Walter, cond. (in the Mahler).
Seraphim 60203, $2.98

MAHLER: Kindertotenlieder. PURCELL: Come Ye Sons of Art; Sound the trumpet. The Indian Queen: Shepherd, leave decoying. HANDEL: Ottone: Spring is coming. Come to me, soothing sleep. MAURICE GREEN: O praise the Lord; Greeting.

After more than twenty years this performance of the Kindertotenlieder is still uncommonly moving. In the intervening period Mahler has been revealed as a more various genius than he seemed when Walter, almost alone among leading conductors, was spreading his gospel just after World War II. It is not easy, for example, to see that Walter's views on Mahler's master's acerbities are as valid, or even as desirable, as Walter's handling of Mahler, eloquent and compassionate. Mahler's handling of Mahler, eloquent and compassionate. Walter's views on Mahler's master's acerbities are as valid, or even as desirable, as Walter's handling of Mahler, eloquent and compassionate. Walter's views on Mahler's master's acerbities are as valid, or even as desirable, as Walter's handling of Mahler, eloquent and compassionate. Walter's views on Mahler's master's acerbities are as valid, or even as desirable, as Walter's handling of Mahler, eloquent and compassionate.

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The recital marks the fiftieth anniversary of Rethberg's debut at the Metropolitan, a house she served with distinction through twenty seasons, from 1922-1942. In her prime Rethberg's voice was astonishingly pure. The scale was even, the tone lustrous. Though her intonation was not absolutely dependable she sang with an almost instrumental clarity of line. Many of her phrases are startling still on record. This recital is designed to celebrate sounds as radiant as ever. The voice, a true contralto, one of the last of a vanishing species, was extraordinarily emotive. Though dark in timbre, it was capable of great variation in color. It was also capable of great delicacy and ethereality. There were times when Rethberg sounded disembodied. It seemed to have gone beyond earthly disquiet and discovered transcendent serenity—as she does at the conclusion of "Nun seh' ich wohl" when she takes a perfectly posed, exquisitely soft E on Sterne.

At the same time there was a quality of vulnerability about Ferrier, even before her terrible fate—death by cancer at an early age—was revealed as inevitable. Since then, her art, as it survives in memory and on records, has been shrouded in poignant obscurity. For that reason the second side of this recital will provide a useful corrective. A lot of it consists of lighter music than one normally associates with Ferrier. What one discovers from the Purcell and Mendelssohn duets is Ferrier's charm and femininity. Isobel Baillie, her partner, was a leading British soprano of the 1920s and 1930s, and was nearing the end of her career in 1945 when these records were made. Right up to the last she kept the bright girlish timbre which Vaughan Williams used to such ravishing effect in his Serenade to Music, and her voice blends perfectly with Ferrier's very different coloration. There is a rare sense of rapport between each singer, and also between them and their accompanist, Gerald Moore. The total effect, however, is a little gentile. In the case of Mendelssohn the drawing room atmosphere is appropriate. But in the Purcell and the Handel it is not, though the actual singing is superb. The two pieces by Maurice Greene, an eighteenth-century English composer, are pleasant trifles. Texts only for the Mahler.

D.S.H.
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The voice, at best, was only serviceable. The top was powerful, the bottom had some good notes, but the middle was always comparatively weak and lacking in color, and the registers were poorly integrated. As splendid as Simionato was in Rossini on stage she only got past the trickier moments by the exercise of will power and charm. She aspirated fast passages. Zest alone carried her through the registral breaks when singing scales. An oeilade, a toss of the head, an impudent smile would be the making of "Una voce poco fa," just as a tragic slump of the shoulders, a lowering of the eyes as if with inexpressible pain would be the making of "Voi lo sapete." Oddly enough, very little immediacy survives on her recordings. Without the physical presence of Simionato her art seems pallid and lacking in vitality. She had great presence, an unmistakable personality, the gift of instant communication.

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CIRCLE 58 ON READER-SERVICE CARD

MARTTI TALVELA: Lieder Recital. Martti Talvela, bass; Irwin Gage, piano. London OS 26240, $5.98.

SCHUMANN: Zwölf Lieder, Op. 35. KILPINEN: Kirkonkallio; Tunturin; Vanha kirkko; Suvi laulu; Janke; Rannalla.

The twelve songs set to rather uninspiring poems by Justinus Kerner form a group rather than a cycle. Though Schumann seems to have been at pains to relate the songs by key they do not have much more in common than a certain similarity of mood and sentiment. There is no sense of progression here, only a series of mainly melancholy narrative fragments. These build up a vague impression of love frustrated, of parting and regret, with nature somehow offering a hint of consolation.

Kerner's verses inspired Schumann only fitfully, except for a couple of songs—Sehnsucht nach der Waldgegend and Auf das Trinkglas eines verschobenen Freundes. Other than these there is little sign of the composer's characteristic poetic feeling in this collection.

Neither does Yrjö Kilpinen achieve much of interest in his songs here. There was a time in the 1930s when Kilpinen enjoyed a small vogue. Ernest Newman and Walter Legge both discerned in him the natural successor to Hugo Wolf as a composer of Lieder and formed the Kilpinen Song Society on HMV to advance his renown. To this end, five 78s of his songs were issued, all sung by baritone Gerhard Hirsch and accompanied by the composer's wife, Margaret. Some of these have recently been reissued on Preiser. None is duplicated on Talvela's recital, however.

The effect made by all Kilpinen's songs is pleasing but dim. Kilpinen, who died in 1959, was a traditionalist, who attempted to extend the life of the nineteenth-century Lied into the twentieth century. Melodically and harmonically he got no further than Brahms.

Martti Talvela brings to his recital one of the most beautiful voices of our time. No richer, smoother sound is to be heard from a bass today. The scale is perfectly even; in every part of the scale the voice rolls forth with fluency. Only the occasional use of aspirates mars the legato line. There isn't much verbal immediacy in his treatment of the Schumann songs, however, though the breadth of his style is often an awesome distraction. But Kilpinen, a fellow Finn, gives him greater confidence, it would appear. Talvela attacks these songs with a gusto and freedom from inhibitions one does not feel in the case of the Schumann. Irwin Gage is a sensitive accompanist, but his rhythmic instincts are not very subtle and he can do little to mitigate the generally stodgy air that hangs over this recital. Texts and translations.

D.S.H.
Eight Exceptionally Clear Quotes from Reviewers on the Advent Model 201 Cassette Deck:

"The Advent 201 easily met its specifications and established itself—at least for now—as the best cassette recorder we know of. Having used it to evaluate the forty types of cassette tapes in a survey report, we have a familiarity with, and a respect for, its capabilities."

Julian Hirsch, STEREO REVIEW

"Well, I have tested it and used it. And I can state categorically that it represents the finest cassette deck available—one that is not likely to be surpassed in the near future."

Larry Zide, STEREO & HI-FI TIMES

"In addition to the Dolby circuitry and the special bias and equalization control for Crolyn, the deck was the first we had come across in which a properly recorded cassette could be made literally indistinguishable from the sound source."

HIGH FIDELITY

"It is difficult to restrain our enthusiasm for the Advent 201. The unit came with a demonstration tape that had been dubbed onto Crolyn tape by that specific machine from a Dolby "A" master tape. The sound quality, especially with the finest playback amplifiers and speakers, was literally awesome, as was the total absence of hiss or other background noise."

Julian Hirsch, STEREO REVIEW

"The 201 is a superlative tape deck. That it is a cassette unit with these qualities is something that would not have been believed just one year ago."

Larry Zide, STEREO & HI-FI TIMES

"In making recordings from discs and FM—both at the time of preparing the original report and in the intervening months—we find that the 201 documents the premise that the sound of state-of-the-art cassette equipment need make no apologies whatever to the better open-reel decks."

HIGH FIDELITY

"Summarizing, the Advent 201 is a tape deck of superlative quality. It is difficult to imagine how its sonic performance could be substantially improved."

Julian Hirsch, STEREO REVIEW

"All told, the 201 represents the present state of the cassette art."

Larry Zide, STEREO & HI-FI TIMES

"The only important fact that those quotes (and a dozen more like them) don't fully indicate is the special, almost addictive, pleasure that cassettes provide when used with a tape machine as good as the 201. There is something just right about being able to put the latest Stones recording or a Beethoven symphony into your shirt pocket. And there is a real joy in knowing that locked in these little cassettes is music of unsurpassed quality that you can hear again and again—easily, conveniently, and without concern about scratches, loss of quality and the other ills that discs are heir to.

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If you would like more information, including a list of Advent dealers, please write us at the address below.

Thank you.

Advent Corporation, 195 Albany Street, Cambridge, Massachusetts 02139.

March 1973
4-channel discs/tapes BY ROBERT LONG

Q-Disc Classic. At last, a recording of real musical importance on Quadrados the Shostakovich Symphony No. 15 with Ormandy and the Philadelphia (RCA Red Seal ARD1 0014, $5.98) reviewed in depth on page 74. Heard quadraphonically with a JVC CD-4 cartridge and demodulator, the Fisher 504 receiver, and four Onkyo Model 20 speakers it sounds quite magisterial.

The perspective is mostly conventional: the orchestra is arranged in the usual pattern at front, with the back channels saved for ambience. The one exception (due to my room?) is that some percussive sounds tend to move toward the back-left speaker. Otherwise the spatial sense is that of the concert hall; it should delight those who want big concert sound but don’t want to be on the podium.

The Broadway-Cast Albums. The most convincing quadraphonic recording of a Broadway-cast album that’s come my way so far is Company (Columbia SQ 30993, $6.98). While it doesn’t sound literally like a theater performance, the quadraphonic placements make musical sense—that is, they project the sense of the score (and the lyrics), not merely distribute the original tape tracks around the room in arbitrary fashion. As a result there’s real excitement in the album, and it reconfirms my feeling that the four-channel medium should be able to help Broadway scores escape from the patness—the canned-ness if you will—that can make the recording seem like a pale reflection of the theater performance.

Purlie (now out in Q-8 cartridge—Amplex L 70101, $7.98—as well as in the Ampex SQ disc reviewed in April 1972) also has excitement, but it derives mostly from the performance itself. The quadraphonic distribution of musical forces adds space and differentiation but no real distinction (or thank Heaven) gimmicks.

Hair (RCA OQ8 1038, $7.95) was among the first Q-8 cartridge releases. It’s a natural for quadraphonics. The sound has no particular theatricality, but then Hair is anything but a conventional theater piece. The cast seems perfectly at home scattered around my living room.

Hello, Dolly! (RCA OQ8 1006, $7.95) is entirely different as a show—extremely (and delightfully) artificial for one thing, and utterly theatrical. The arbitrary placements that RCA has chosen for the Q-8 mix prevent any sense of the theater, however. And when Carol Channing and company are made to waltz around the room in “Put On Your Sunday Dress” the effect can only be described as cheap.

Compare this with No. No. Nanette (Columbia SQ 30563, $6.98). It’s also a stagy show and every bit as artificial in its way as Dolly. Yet there’s a cohesiveness to the quadrophonics that lets you get at the show’s charms with less interference from the engineering. The big tap dance number (to I Want to Be Happy) may be a bit much with the light fantastic being tripped all about you, but thanks to memories of Bushy Berkeley’s Hollywood years, his Broadway offering makes a delightful sense of its own when presented this way.

Why does the dancing work for Nanette but not for Dolly? It’s a question of the sound image that each presents. Dolly suggests isolated groups of instruments or singers that the engineer has placed here or there with respect to the speakers. Columbia’s sound suggests one orchestra and one huge chorus line—spread out all around you, but all working together. If neither image is really theatrical, Nanette’s is at least phonographic: Its values are chosen for their effectiveness in home reproduction. And that, perhaps, is the highest praise possible. If so, it applies as well to Company, whose more modern and intimate idiom moreover permits some synthesis of phonographic and theatrical values.

Some RCA Pops Q-8s. If you’re looking for Q-8 cartridges that make effective use of the medium for popular music, you might try “Mammy Blue” by Hugo Montenegro (PQ8 1861, $7.95) or “Something Else” by Danny Davis and the Nashville Brass (PQ8 1692, $7.95). The Danny Davis album is pleasantly swinging. While Davis’ playing may remind you of Al Hirt, the backgrounds—with their strong country flavor—won’t. Montenegro is much more urbane. To me his concoctions have too little meat and too much seasoning, but they’re effective—and an effective vehicle for quadrphonics. Both are very well recorded. The Davis album is rich but natural in balance, while the large Montenegro forces come through with appropriate brilliance. I prefer the less aggressive Davis, but you may not.

Another successful RCA pops album on Q-8 is “The Best of the Guess Who” (PQ8 1710, $7.95). While specifically rock in idiom, the Guess Who is fitted into the quadraphonic perspective in much the same way as the other two groups: fairly close-to with a nice sense of space and without undue forcing of the quadraphonic effects. All surround you with musicians, and all make that approach work. The sound is cohesive (that is, it does not suggest arbitrary and artificial placements) so that you hear music, rather than quadrphonics.
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CIRCLE 44 ON READER-SERVICE CARD
the lighter side

reviewed by
MORGAN AMES
ROYAL S. BROWN
R. D. DARRELL
HENRY EDWARDS
MIKE JAHN
JOHN X. WILSON

symbol denotes an exceptional recording

JONI MITCHELL: For the Roses. Joni Mitchell, vocals, guitar, piano, songs. Rhythm accompaniment. Banquet; Let the Wind Carry Me; Ludwig's Tune, nine more. Asylum 5057, $5.98 Tape: TP 5057, $6.97; CS 5057, $6.97


It is a phenomenon of pop music that, among established artists, excitement is tied up with continual growth. Traditionalists deplore this pop criterion, circa 1972, circa Future Shock. They use it to "prove" rock's superficiality, its change-for-change's sake core. While this shallowness exists in pop music, it is foolish to bloo out all for some. The fact is that growth can be more than mere change, and change can be a great deal more than exploitiveness. It depends on who is doing it at what point and for what reasons. Satisfying pop albums are made by artists who are simultaneously growing and maintaining their own unique thread of self-definition, their human strength, whether studied or intuitive or both. The Beatles were masters at this process. Each album was different but the same, experimental but self-sure.

Joni Mitchell's new album is superb because she has grown while maintaining her essence and because she has the heart to take chances. James Taylor's new album is disappointing because he has stood still, thus automatically falling back onto himself. My copy of the James Taylor album arrived with no accompanying information except song titles (there are eighteen, mostly short), the names of the writers, publisher, and producer. No musicians are listed, no studio or engineer. Perhaps it was an error in packaging. Perhaps Taylor is feeling secretive or indifferent. Perhaps the album sprang full-grown from the sky.

But we do know that James Taylor recently married Carly Simon, and both of them have said that they feel too good to do much work. For me, happiness is better than work, and I am glad for them.

But here we are with this new album if it is new, much of it may be unreleased old material. I suspect that it was made solely to fulfill a contractual obligation, as are so many commonplace albums made by commonplace artists such as Taylor. Oceans may open, after all, land masses may split, love may save a human life, but business goes on.

There is nothing wrong with Taylor's new album and nothing fresh. One track has already become a hit single. He sounds safe and fine and charming. He does not sound involved. The songs are only fair, considering his earlier work. Had Taylor not spoiled us with his earlier streak of inspiration, the album might not even sound flat. But I already have this album. I got it last year. James Taylor's new album is disappointing, though he had probably come back strong when he's ready. As far as I'm concerned, this album is a rip-off.

Joni Mitchell's new album is the opposite of James Taylor's. Indeed, with this set, she becomes her own art form. No one else comes near her or even tries. I'm not even sure this is a pop album. It is nearly a concert piece--a series of songs that become a whole through sheer originality. A friend of mine, a composer, said, "There is a leaness about her. She makes it hard to take even Carole King or Laura Nyro seriously." He is right. Miss Mitchell has disregarded everything that is extravagant and has given us marrow.

Surely Miss Mitchell's voice has never been so beautiful nor so relaxed. My friend also said, "It isn't fair that somebody who sings and writes that well should play that well too." Miss Mitchell has always had such a flawless sense of tempo that she has brought off entire albums without even using a rhythm section, whether playing guitar, dulcimer, or keyboards. Her piano playing, always original in style, is even stronger now. She has been practicing.

She has done interesting things here with background voices (all her own). For one thing, she has enormous vocal range. putting together two-and-a-half octave strides, far more than most nonclassical singers. But it is her placement of the chorus that is individualistic, as well as her harmonies. All is unexpected and sparse. In Cold Blue Steel and Sweet Fire, the chorus appears only on the repeats of a single line. Do you want to contact somebody else? The harmonies are strange and gripping.

Miss Mitchell has come to terms with the technical problems of syntax. She discards all rules. There are no conventional lyric rhythms or rhymes. There are only thoughts and images married indescribably to musicality. Such writing has never worked before. It rambles and ranges and strays. It is not always cohesive. It is only compelling.

Certain thoughts ring out immediately. In Bananafly: "Three waitresses all wearing black diamond earrings, talking about zombies and Singapore slings, no trouble in their faces, no one anxious voice, none of the crazy you get from too much choice, the thumb and the satchel or the rented Rolls-Royce...."

Ironically, in terms of this double review, many of Miss Mitchell's songs are about James Taylor, with whom she was once very close. See You Sometime says: "I'm not ready to change my name again, but you know I'm not after a piece of your fortune and your fame. / 'cause I tasted mine./I'd just like to see you sometime." And Lesson in Survival: "Maybe it's paranoia, maybe it's sensitivity./Your friends protect you, scrutinize me./I get so damn tired./not all at the spirit that's inside of me./Oh baby I can't seem to make it with you socially, there's this reef around me./That Miss Mitchell finds the courage for such songs is her own burden. She has included her own kind of Top-40 tune called You Turn Me on. I'm a Radio. It rolls and flows with country feeling.

While her first albums were strictly solo efforts, Miss Mitchell has begun to add a few carefully chosen musicians. This time she includes Tom Scott, Russ Kunkel, Graham Nash, Stephen Stills, and a few others. Tom Scott's contribution is extraordinary. He weaves in and out and around her with transparent combinations of woodwinds and saxophones. As always, engineer Henry Lewy's...
Manufacturers often talk and write about performance specifications, particularly their wide frequency range, as an indication of their equipment's quality. But how does this relate to "listening quality"? Speaker manufacturers publish nearly identical specifications—but these are of interest only as theoretical abstractions, since no one can significantly relate them to "listening quality."

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It's tough to compare something in a class by itself.
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contribution is loving, expert, and Joni-wise. The recorded sound is particularly beautiful. I suspect that part of Miss Mitchell's freedom is related to her managers. Geffen and Roberts (listed under Direction), who have a way of making their special stable of artists feel particularly safe and at home, plus Miss Mitchell's new recording situation with Asylum Records, a company run by Geffen and Roberts and distributed by Atlantic.

It is easier to write about what is not important in music than what is. If you have not really experienced the world of Joni Mitchell, you are missing something precious. M.A.

TOMMY. The London Symphony Orchestra and Chambord Choir, guest soloists: Overture; It's A Boy, 1921, Amazing Journey, Eyesight to the Blind: Christmas: Cousin Kevin: The Acid Queen: Undertone: Do You Think It's Alright: Fiddle About: Pinball Wizard: There's A Doctor: Go to the Mirror: Tommy Can You Hear Me, Smash the Mirror: I'm Free: Miracle Cure: Sensation: Simple West: Tommy's Holiday Camp, We're Not Going to Take It: See Me, Feel Me: Ode SP 99001 $11.96 (two discs).

If it were possible to pick the one outstanding achievement of rock, it might well be Tommy, the opera originally recorded in 1968 by Peter Townsend and the Who. In addition to being the first full-length, plotted construction by a rock group, Tommy started the rock-opera syndrome of the past few years. The Who's two-disc set of this rock opera is a reasonably hard-rock version. A ballet company later used this version as the basis for a dance. Now, the second recorded version of Tommy has been released. It's a mammoth production that attempts a classical treatment of rock, a curious counterpoint to the many rock treatments of classical themes. The London Symphony Orchestra and Chamber Choir is conducted by David Measham, a Leonard Bernstein protege: but the vocal parts are sung by pop singers: Sandy Denny (the nurse); Graham Bell (the lover); Steve Winwood (the father): Maggie Bell (the mother): Rickey Havens (the hawker): Merry Clayton (the Acid Queen): Ringo Starr (Uncle Ernie): Rod Stewart (the local lad): Richard Harris (the doctor). From the original cast.

This meld of symphony orchestra and chorus, classical arrangement, and rock voices is a fascinating experiment, but unfortunately it amounts to little more than that. Though it far surpasses all previous classical-rock fusions, it suffers from the same lack of cohesion that marked under Dink. The pop voices were not blended with the classical voices, and the resulting sound is dissonant and jarring. The opera is a reasonably hard-rock version. A ballet company later used this version as the basis for a dance. Now, the second recorded version of Tommy has been released. It's a mammoth production that attempts a classical treatment of rock, a curious counterpoint to the many rock treatments of classical themes.

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Roger Daltry sings the part of Tommy; John Entwistle the part of Cousin Kevin and author Townsend is the narrator.

It is easier to write about what is not important in music than what is. If you have not really experienced the world of Joni Mitchell, you are missing something precious. M.A.

LOUDON WAINWRIGHT III: Album III. Loudon Wainwright III, vocals and guitar; string, rhythm, keyboards. The graphics accompanying the two-disc boxed set are the best I've seen in a long, long while.

Loudon Wainwright III's case, every reprint is always a rave. Wainwright's first two albums have been greeted with hurrals and it is astounding that the public doesn't know him. His third LP, his first for Columbia, is even better than his first two albums. If you get the third disc, you'll gain him a large following. Here, once again, is Wainwright's piercing, agonized voice, and his sensitive funny-sad songs. His melodies here have been tastefully arranged and played by White Cloud, a skillful, imaginative rock band. This musical backing makes Wainwright's perceptive, plaintive talent an even more impressive package.

Every song on this disc, including the number that Loudon did not write, Smoker Joe's Cafe, is a gem. For example, Needles to Sat is a compassionate statement about human values: Drinking Song is a sad-sweet song about alcoholism: Hometown Crowd is an ode to sports: the banjo-sung Dead Skunk deals with a dead skunk: East Indian Princess is a witty comment on geographical differences. New Parts is a song about romance in which Loudon writes: "Don't make a hullabaloo, I'm not the hot potato, I'll try any trick and I'll pull any ploy: I'm a used-up twentieth-century boy...

I hope I don't get a reprint of this review with Loudon's fourth album encouraging me to write a rave in the hope that Loudon's career gets off the ground. This "used-up twentieth-century boy" deserves a hearing and he deserves it now.

H.E.


There's a witchery about making record albums. You don't really know if you "got it" until you've got it. Even then, it may take a while to figure out if you really did what you wanted to do. In the record business, whole albums are thrown on the scrap heap if it had been recorded differently. This "used-up twentieth-century boy" deserves a hearing and he deserves it now.
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The light color is the result of taking the carbon out of the oxide side of the tape. Carbon doesn't help the recording properties of tape in any way. But other manufacturers are forced to use it in order to achieve good static properties. Capitol 2 solves that problem differently.

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Just as the side of the tape that touches the heads should be smooth, the texture of the back of the tape should have a controlled roughness that improves handling characteristics.

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Shawn Phillips is a very special critic's baby and he deserves every word of praise that he's received. Listen to "Faces." His fourth solo LP. Phillips' songs are riveting. They are so very complicated, personal, and unique that they require a second and third hearing for total comprehension. They'll get that also because they deserve it. Subtly backed here by a number of fine musicians including Steve Winwood. Phillips once again displays his uncanny skills with electric, twelve-string, and acoustic guitar. He's one of the few who can conjure up a whole orchestra with one instrument. In addition, his voice is as emotive and versatile as it ever was. This disc includes three unusually conceived, artfully performed tunes with a rock beat. Hey Miss Lonely. We, and I Took A Walk; L'Ballade is seven minutes long and symphonic in feeling; Chorus is another seven-minute number which features Phillips singing all the vocal parts, playing all the guitars; and demonstrating his exquisite mastery of the sitar. Persian Plight is a twelve-minute composition which begins with the sounds of nature—thunder, rain, birds—and then builds into a
complex, fascinating song that depends on unusual repetitions to achieve its full effects. The variety is staggering. Phillips' gifts are awesome: the originality of the entire enterprise merits special commendation. "Faces" is definitely worth looking at—and listening to! H.E.

Theater and film

The Red Mantle. Original Soundtrack. Music composed, arranged, and conducted by Marc Fredericks. RCA 4815, $5.98.

Say you're kidding. The notes specify that this is "A Classic Story—A Sensitive Score." But what this is is a product. I have not seen The Red Mantle and do not know how the score works to film. But I have heard the album. Rare is the film composer whose music works both ways. Among the few are Johnny Mandel, Hank Mancini, Dave Grusin, and Jerry Goldsmith. Marc Fredericks, who wrote this score, is not among them. We begin, appropriately enough, with the main title. I have immediate visions of Maurice Jarre and Frances Lair. Between the two of them, they have turned an alarming number of movies for me—Ryan's Daughter, Plaza Suite, ad in-bloody-finitum.

As The Red Mantle theme runs on, I see Alt McGraw and What's His-Name bumping through the snow in the unloving big money film. Love Story. Both themes are about equally touching. They sound like Italian street music. Their music goes down to business; you might say. Cash registers ring in the percussion section.

Later in The Red Mantle we have a song (lyric by R. I. Allen) called When Will the Killing End? It is well sung, studio fashion, by a young man who gets the following credit beneath the song title: "with vocal." Presumably this subcredit is included so that we will know that the singing we hear is a vocal. Thank you. Still later we get another vocal, this time with martial lyric by Sammy Cahn (really awful). The singer is a girl and she has a name! Judy Scott. She is about a third as good as the unnamed male singer. Same goes for the song.

In between these two vocals we have a lot of "dramer" music. What does it tell us about composer Marc Fredericks? That he likes Stravinsky. Not that he steals well, for that is a singular talent, but that he likes Stravinsky. Don't we all.

The album has yet another flavor. Television. The drama somehow reminds me of cues from "from sides" or "Mission Impossible." only longer and played with more musicians. As for the orchestra. Take my wife. Please. The strings are thin and the brass flat. The recorded sound is Holland Tunnel.

The notes explain things. Fredericks is vice president in charge of all musical production at BHDO an advertising agency, and he has won a lot of CLIO awards, or gingle Oscars. He gave us Peter's You've Got a Lot to Live and many more. As a matter of fact. Mr. Fredericks is excellent at composing for radio and TV spots, a field that is more difficult than you might think.

High Fidelity Magazine
Victor Young probably would have been rotten at composing for Pepsi. Commercially, Stravinsky probably would have been touching, original, and poisonous. We are what we do if we do it long and well. Nearly all composers of jingles want to write film scores. A rare few can do both jobs very well. Most can’t.

JOURNEY THROUGH THE PAST. Music from the film soundtrack. Crosby, Stills, Nash & Young; The Buffalo Springfield; Neil Young; The Stray Gators; The Tony and Susan Alamo Christian Foundation Orchestra and Chorus. For What It’s Worth; Mr. Soul; Rock & Roll Woman; Find The Cost of Freedom, eleven more. Reprise 2XS 6480, $6.98 (two discs).

Since I have not seen the film, Journey Through the Past, I can only assume that it deals in some way the history of Neil Young’s composing and performing career. Reassembled on this two-record set are the two most important musical organizations in Young’s career: Buffalo Springfield and Crosby, Stills, Nash & Young. Neil Young fans will obviously have a field day. They will also come away with renewed affection for that seminal West Coast band of the Sixties, Buffalo Springfield, a band that fused country-and-western, folk, and rock music into something vibrant and new. Rehearing Stephen Stills’ For What It’s Worth/Mr. Soul and Rock and Roll Woman affirms that Stills did his best work with the Springfield. Needless to say, they all did.

When Crosby, Stills, Nash & Young take over, the writing, while not as impressive, is certainly helped by those familiar throbbing harmonies and unforgettable instrumental breaks. Along the way, Young also provides the listener with Words, which takes up the entire side of one LP and which seems to be a work in progress as Young pursues a number of musical ideas. His triumph, however, may very well be a perfectly lovely instrumental entitled There is enough good singing and writing here to make “Journey Through the Past” an admirable two-record set. Neil Young can be an indulgent writer and composer. He has that indulgence under control on this soundtrack to a film that I’d very much like to see.

H.E.

jazz

ERROLL GARNER: Gemini. Erroll Garner, piano; Ernest McCarty, Jr., bass; Jose Mangual, conga; Jimmie Smith, drums. How High the Moon; It Could Happen to You; Eldorado five more. London XPS 617, $5.98.

Erroll Garner’s records are judiciously spaced out by years rather than by months because a good Garner disc can last a long time and, as a rule, the individual tunes are of relatively little importance—the essential thing is half an hour or so of Garner at the piano. So one Garner collection tends to be little different from another. And what differences arise are likely to

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involves the technical aspects of the recording rather than his performance.
This one, however, does offer a musical difference. It includes some glimpses of Garner as harpist and an instrument that he plays in a much more, or better, fashion than the lush expansiveness of his piano work. His harpichord turns up here on When A Gypsy Makes His Violin Cry, playing the role of a very saucy gypsy guitar with Garner humming along almost like Slam Stewart with his bass. And on Trio For Two, Garner's spare, economical use of the bright harpichord sound against his boiling rhythm section turns the old standard into a samba that even borrows a phrase or two (and plenty of rhythm) from Perez Prado's Pianola. On both pieces, Garner uses the harpichord for added color, keeping the piano available to round out the performances with typically Garnerian touches.

And there is plenty of that Garner style on the disc—most notably in Garner's addition of a current song. Something, to his huge bag of great standards and in a superb version of an old favorite, These Foolish Things. Both tunes have that vivid Garner romanticism with which he brightened up the dark little clubs of the 52nd Street in the Forties.

ART VAN DAMME QUARTET: The Many Moods of Art, Art Van Damme, accordion; Heribert Thusek, vibraphone; Joe Pass or Freddy FunkoQuiet, guitar; Eberhard Weber or Peter Witte, bass. Kenny Clare or Charly Antolini, drums. Laura: Cheek to Cheek; Since I Fell for You, sixteen more. BASF MPS 25113. $6.98 (two discs).

Here's a name out of the past—and a surprise. Art Van Damme had a thing in the late Forties and early Fifties as a very popular cocktail jazz accordionist, favored primarily by listeners who liked to think they were jazz fans but could not stomach most jazz. Van Damme's performances were usually gently swingy little things that barely reached the outer periphery of jazz although he managed to keep winning jazz magazine polls as "top accordionist"—largely, one presumes, because the voters could not think of any other accordionist (Joe Mooney, who was around then too, was a well-hidden secret). Van Damme became a secret himself in the Sixties—this two-disc set is the first recording by him that I have been aware of in the past ten or fifteen years. And it is really something to be aware of because a lot of musical water seems to have flowed over Van Damme since last he was heard from. Playing with some combos of European musicians (except for one American, guitarist Joe Pass, who plays on some selections), this collection, recorded in Germany, reveals a new Van Damme, an accordionist with jazz qualities that were rarely evident before, one who has obviously been listening to Joe Mooney. His phrasing on ballads is now much like Mooney's, giving these slow tunes the delightful rhythmic jabs that is one of Mooney's charms. And on the faster pieces, he gets some interesting voicings with accordion and guitar that give the performances a strong ensemble color. Although the most provocative aspects of the album are those that reflect Mooney's influence, Van Damme does well on his own in some of his fleet-fingered exercises. Maybe with this set as a reminder, somebody will get another look at this set as a reminder, somebody will get another look at.

Cecil Taylor-Buell Neidlinger: New York City R & B. Cecil Taylor, piano, Buell Neidlinger, bass; Billy Higgins or Dennis Charles, drums, Archie Shepp, tenor saxophone; Clark Terry, trumpet, Roswell Rudd, trombone, Steve Lacey, soprano saxophone, Charles Davis, baritone saxophone. O.P., Cell Walk for Celeste, Cindy's Man Mood, Things Ain't What They Used to Be. Barnaby KZ 10305. $5.98

For most of the past ten years, Buell Neidlinger has been out of jazz, playing in symphony orchestras and teaching, currently at the California Institute of the Arts. But from 1957 until 1962, Neidlinger played with Cecil Taylor and gave him a strong functional core. This record, made in 1961 for the Candid label but never released before, was Neidlinger's date; but since three of the four selections are trio and quartet numbers with Cecil Taylor, it is stamped very strongly with Taylor's musical personality.

Taylor, in those days, was a more traditionally organized pianist than he has been in recent years, and his playing all through this disc is warm and melodic, even in some relatively spiky passages with Archie Shepp on Cell Walk for Celeste. Neidlinger also brought together for this date a remarkable eight-piece band to play Mercer Ellington's Things Ain't What They Used to Be in an arrangement by Neidlinger and Roswell Rudd. The piece is developed with an austere serenity through Rudd's trombone, Steve Lacey's soprano saxophone. Taylor's piano (he is Ellington-derived and settles into an Ellington mood very easily), balanced by the swirls and slashes of Archie Shepp's saxophone. In the midst of it all, up pops Clark Terry sounding, for once, as though he cannot really think of anything to do.


In view of the influence that Charlie Christian had on the course of jazz—he established the electric guitar at the expense of the acoustic guitar, turned the guitar into a viable solo instrument, and created a style that was so pervasive that it was followed religiously by every jazz guitarist for twenty years—there is remarkably little of him on records. His entire recording career; except for someacetates made at MGM's—a period of less than two years—is contained in this two-disc set. Most of it will be familiar to Goodman or Christian fans.

In addition to the performances with the Goodman Sextet, Christian's official home within the Goodman troupe, it includes the previously issued warm-up excerpts—Blues in B and Waitsin for Benny—and Christian's one showcase with the full Goodman band. Solo Flight: also included is his only other appearance on record with the band. Honeyuckle
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in brief

**FLUFF.** Roulette SR 3011, $4.98

AM enthusiasts will probably enjoy this disc, the debut effort of a hard-rock quintet from New Jersey.

**AL GREEN:** I'm Still in Love With You. Hi X SHL 32074, $4.98

Al Green has the most soulful falsetto in the entire rhythm-and-blues field. Listen to Love and Happiness: then join the converts.

**LENNY DEE:** Where Is the Love. Decca 75368, $5.98

The notes say: "Back in 1955, Lenny Dee recorded Poster Child and brought the organ out of the church..." It's time Lenny brought it back. The album is a church social, vanilla-flavored white bread. I can't imagine who in the world would pay good money for it.

**SOLID GOLD ROCK 'N' ROLL, VOLS. 1 AND 2,** Mercury SR 61371, $4.98 each (two discs)

Two LPs of rock oldies ranging in time from about 1955 to 1969. All of these songs came from Mercury or one of its labels, so the selectivity can be held in question. The two collections are better than most such LPs, though.

**JERMAINE JACKSON:** Jermaine. Motown M8752, $6.95; M752L, $5.98

A pleasant soul package from Michael Jackson's older brother Jermaine which features tasteful renditions of the standard. I Only Have Eyes for You, Paul Simon's Homeward Bound, and two Holland/Dozier/Holland soul stirrers. I'm in a Different World and Take Your Mind Off Me. 

**THE J. GEILS BAND:** "Live" Full House, Atlantic SD 7241, $5.98

A recording with the Metronome All Stars of 1940. What is new here are three pieces recorded on acetate at a jam session in Minneapolis in 1940 with Jerry Jerome, one of Goodman's saxophonists. Frankie Dunlop on piano and unknown bassist and drummer. The recording is reasonably good, considering the circumstances, and the performances are interesting, not only for Christian's contributions but for the opportunity to hear the generally underrated Jerry Jerome.

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Comparisons by Pittsburgh's Audio experts of over 100 speakers, receivers, changers, and cartridges included in the most informative catalog of its kind. Complete with lowest wholesale prices.
The Turning of Two Tapeworms. For well over a year and a half I've been a fascinated "letterary" follower of two enterprising tape collectors' plans for "doing something" about the special handicaps under which they and fellow open-reel aficionados have been laboring in recent years. With energy and optimism undrained by their quotidian Wall Street business lives, they've been working to meet what they feel are the aching needs not only for a mail-order firm specializing in open reels but also for a more detailed and comprehensive catalogue (with regular updating supplements) of the available reel repertoire than any that are now extant.

Initially incredulous about so quixotically specialized a venture (I even quibbled facetiously whether the two men involved were not actually metamorphoses of the two girls who write imaginative mysteries under the name of "Emma Lathen"), I gradually became convinced of Messrs. Barclay's and Crocker's sincerity as well as reality — did my best to supply whatever advice and odd bits of cataloguing information I could ... and now welcome the first fruits of their endeavors. These are a handsome 96-page catalogue and a 4-page first "Reel News" supplement, both devoted exclusively to open-reel tapings. Classical releases are listed numerically by label, with full composer and complete-opera cross-references; pop releases are listed by artist and by miscellaneous categories; and in general there is far more detailed information provided (for the classical programs in particular) than is usually supplied elsewhere. Indeed I have only two complaints: a minor one about the printer's failure to supply foreign-language accents, a major one about the characteristic lapse into the terminologically barbaric usage of "***-recorded" when just recorded tapes are meant. But of course neither flaw seriously diminishes the value of this catalogue to open-reel collectors, who may obtain it for $1.00 from Barclay-Crocker, 11 Stone Street, New York City 10004.

"Ampex II" Reel Processing. In addition to providing its own mail-order service and catalogue (confined of course to the labels it represents, and including cassette and cartridge as well as reel releases), the Ampex Corporation continues its vital contributions to the Renaissance of the Reel movement by announcing a whole series of technological advances. These include, besides occasional Dolbyized reels, the use of new low-noise, high-output tape stock for all future reel releases, new solid-state duplicating equipment, and various new mastering techniques designed to meet higher quality standards. Last month I commented on the first Dolby-B reels. And my first test of "Ampex II" technology (in comparing old and new productions of the celebrated 1964 Ansermet versions of Respighi's Pines and Fountains of Rome, London L 80129) confirms at least the substance of the claims of technical improvements. Perhaps not all the potential $/N-ratio increases are consistently achieved, but some are immediately evident, and these, together with the higher average modulation levels permitted by the tape-stock and duplication-technique changes, are genuine steps forward.

I must qualify that praise only slightly to note that they are most dramatically successful only when the "Ampex II" techniques include Dolbyization ... that even the best results still can be blemished by such old processing bug-bears as pre-echo, reverse-channel spillover, and high-frequency distortion ... and that optimum progress still depends on absolute quality-uniformity among duplicate copies of the same recorded performance. And judging by reports I receive from both colleagues and "Tape Deck" readers, such uniformity is as yet by no means always achieved — by Ampex or any other manufacturer.

Promises to Keep. I should have known better than to promise, in the last issue, a report on the first RCA/Stereo Reel releases before I actually had them. The delays in getting any new major project under way are producing corresponding commentary delays — but both review copies and reviews should be along soon. Meanwhile, I can keep my promise to report on more of the first Ampex releases of Dolbyized reels — all of them, in fact, except the two I haven't received: Kubelik's Mahler Fifth (DGK K 42056) and Solti's Mahler Eighth (London K 49011).

I've already discussed the conventional proceedings of Thomas' Piston/Schuman coupling (now DGK L 43103), Ashkenazy's and Mazael's Scriabin, Solti's Mahler Sixth and Seventh Symphonies (London L 480251, K 480231, and K 480249 respectively). All of these new versions demonstrate the in calculable benefits of Dolby-silenced backgrounds, but the Scriabin and Mahler Seventh reels have long A-side blank beginnings which must be skipped to avoid spillover intrusions. I deliberately avoid commending two other releases — the Dolbyized versions of Abbado's Tchaikovsky Fifth (DGK L 43198) and Leinsdorf's Stravinsky Petrushka (London L 475058). In spite of their admirable technical qualities, I can't overcome my aesthetic objections to Abbado's romantic mannerisms or to the unexpectedly dry and harsh Phase-4 sonics of the Stravinsky ballet.

I have strong aesthetic misgivings too about Stokowski's approach to the Franck Symphony (now London/Ampex L 475061, $7.95; also non-Dolby reel L 75061, Dolby cassette M 94061, 8-track cartridge M 95061). But who's going to worry about aesthetics when Franckian warmths are so lovingly fired to white heat by uninhibited Stokowskian expressiveness? Especially since here the Phase-4 sonics are ineffably luscious, and for good measure the Old Sorcerer gives us a piquant appetizer to the Franck Feast in the form of the Ravel Fanfare for the children's ballet, L'Eventail de Jeanne.

But Musicassettes Still Flourish — particularly under the aegis of Columbia, the only major manufacturer (in the U.S.) to Dolbyize all its cassette releases. One that effectively utilizes Dolby noise-reduction means and magnificently "big" sonics is Vol. V of the E. Power Biggs "Bach Organ Favorites" series (Columbia MT 31424, also MA 31424 cartridge; $6.98 each). Biggs's program here sometimes ventures off the most-heavenly paths to include the Preludes and Fugues in G minor, S. 542, B minor, S. 544, and C. S. 545: the long glittering Fantasy in G, S. 572: and two Chorale-Preludes, S. 753 and S. 680 — the latter also known as the "Giant Fugue". Scarcely less impressive in their own ways are the very different — taut, intense, lucid — sonics of the Bartók/Boulez coupling of The Miraculous Mandarin (in its seldom recorded complete-ballet, not suite, version) and Dance Suite (MT/MA 31368, $6.98 each). The ballet, especially, is far from easy listening, but it's well worth grappling with.

Boulez, again, conducts, but with the Cleveland Orchestra rather than the New York Philharmonic, for Entre mon's Ravel concerto for the left hand which provides the new half of a coupling including the Entre mon/Or mandy/Philadelphia Ravel Concerto in G which dates from 1964 but which has not been available previously in any tape edition. What is fascinating here is not only the contrast in audio-engineering characteristics (with both improved tonal qualities and acoustical ambience in the newer recording) but the differences in Entre mon's playing — a bit slap-dash and hard-toned in the Concerto in G, notably more disciplined and eloquent in the work for the left hand only (Columbia MT/MA 31426, $6.98 each).
Meet the creator.

Today, the musical artist has a new instrument at his command—the recording studio. It’s an instrument that can capture sound, manipulate and mold it, stack it and scramble it, equalize and echo it—a contemporary creative tool with possibilities confined only by the borders of imagination.

Some might call this musical sound-foolery, an adulteration of the pure musical art form. But throughout history, the truly creative artist has always used whatever instruments were available to reproduce the music he heard in his mind. The artist is no different today—but the instruments he uses are. And this has resulted in a dynamic new range of musical experiences for us all.

The creator—a 4-channel studio that fits on a shelf

With the needs of the contemporary artist in mind, TEAC tape technologists set out to design a precision musical instrument that would provide studio electronic flexibility and studio performance accuracy—yet be compact enough for home use and priced within the bounds of reason. The result: the creator, TEAC’s amazing Model 3340 4-Channel Simul-Sync Tape Deck—a recording studio that fits on a shelf.

The 3340, backed by TEAC’s exclusive two-year Warranty of Confidence,* is carefully crafted in the TEAC tradition of professional quality. 10½-inch studio reels; a quick and gentle three-motor transport; four studio-calibrated VU meters; eight input controls for complete mic-line mixing; dual bias selection; 7½ and 15 ips studio-accurate speeds. And Simul-Sync.

Simul-Sync: what it does and how it works

Overdubbing has become a familiar term to every knowledgeable musician. Simply, it means a) recording a voice or instrument on one track of a multi-track tape machine, b) adding another voice or instrument to a different track at a different time, and c) matching the two tracks so it sounds as if they were recorded simultaneously when played back. To overdub properly, the artist recording on the second track has to listen to the material recorded on the first track while performing in perfect synchronization to it.

That’s where the problem occurs with most tape recorders. Conventional record/playback monitoring systems only let you listen to the previously recorded material off the playback head. That means a time delay between the track being recorded and the track being monitored. A small delay, to be sure, but large enough to make perfect synchronization virtually impossible.

TEAC engineers solved the problem with Simul-Sync. They designed a studio-tolerance 4-channel record head, then added electronics that allow each track on that head to be switched independently to either record or playback modes. By doing so, they completely eliminated the time lag and permitted the artist to add track after track—all in absolute synchronization with each other.

The TEAC Simul-Sync head, operating in conjunction with a 4-channel erase head and a hyperbolic playback head capable of reproducing either stereo or 4-channel material, served as the foundation for the TEAC 3340 concept. It also opened the door to a whole new realm of musical creativity and enjoyment.

Exploring the realm

Here are just a few of the sonic effects possible with the TEAC 3340:

1. Unlimited overdubbing: Up to nine individual instruments or voices can be recorded at different times without any track being used beyond second generation. Sensational signal-to-noise ratio is the result.

2. Professional quality mixdown. All four channels to a single track or ½-track stereo masters. The optional TEAC AX-20 Mixdown Panel makes it a quick and easy process. Individual controls also allow for desired mixing level for each channel.

3. Special effects. Enter the world of psycho-acoustic phenomenon where the creative juices can really start flowing. Things like echo, cross echo, 4-channel rotating echo and pan pot effects (with AX-20 Mixdown Panels). You can put echo on some instruments and not on others. One-man group arrangements, with a single artist playing all instruments and singing all vocal parts. Backwards recording, an effect that gives any instrument a totally new sound. Dual speed recording, mixed down in perfect sync. With all these effects at his disposal, the professional musician can quickly save the cost of a 3340 in reduced studio experimental time alone.

4. Pseudo-quad recording through ambient delay to the rear channels. And, of course, full discrete 4-channel record and playback.

5. Are you creatively curious? If so drop TEAC a line, and ask for the “Meet the creator” booklet. It describes all of the 3340 effects in detail and explains how each is done. And it’s free.

If creative involvement is what you’re after, meet the creator—the TEAC 3340 4-Channel Simul-Sync Tape Deck. It’s the 7" reel, 3¼ – 7½ ips version, the 2340.

When it comes to creative recording, they perform miracles.

*TEAC or one of its authorized service stations will make all necessary repairs to any TEAC tape deck resulting from defects in workmanship or material for two full years from the date of purchase, free of charge to the original purchaser.

The TEAC 2340 and 3340 are priced at $798.50 and $849.50, respectively. For complete information, please write to TEAC, 7333 Telegraph Road, Montebello, California 90640. In Canada: White Electronic Development Corp., Ltd., Toronto. TEAC Corporation, 1-81 Nishishinjuku, Shinjuku, Tokyo, Japan. TEAC EUROPE N.V., Kabeberg 45-47, Amsterdam – W.2, Holland. H.F.I., S.A., Abo Piedad Hidalgo 1679, Guadalajara, Jal., Mexico.

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