



A TECHNICAL HISTORY

www.mercurylivingpresence.com

Running Order

- The Team: Key Personnel
- The Gear: Evolution and Techniques
- The Truck: An Early Mobile Studio
- The Philosophy
- Historical Highlights
- A New "Golden Age"
- How/What/Where to Listen

Pre-History:

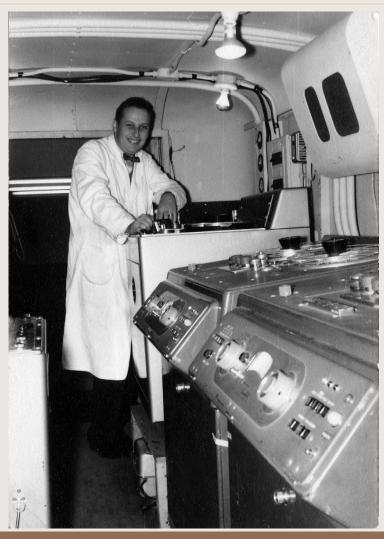
Irving Green, John Hammond and Mitch Miller



Wilma Cozart Fine, Producer/Recording Director



C. Robert Fine, Recording Engineer/Technical Director



Robert Eberenz, Associate Recording Engineer



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Harold Lawrence, Music Director/Tape Editor



Clair Van Ausdall, Associate Music Director

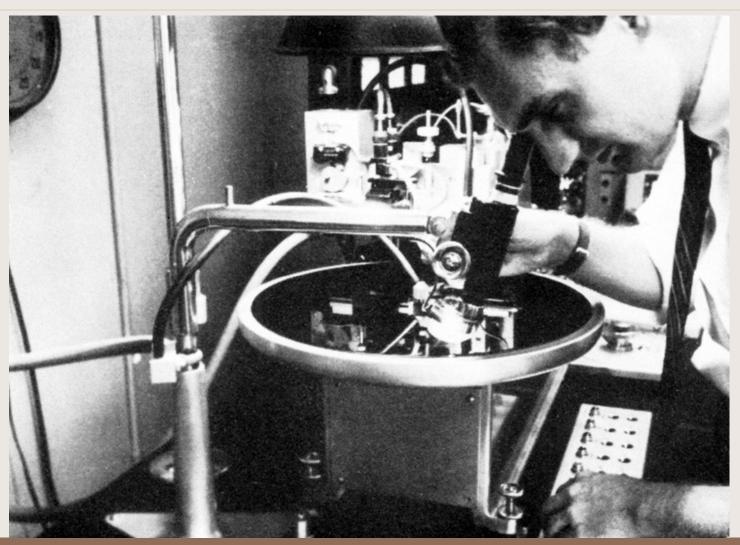


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David Hall (left), Bob Fine (center), Fred Fennell (right)

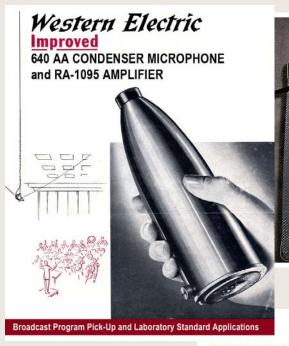


George Piros, LP Mastering Engineer



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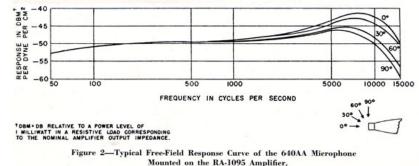
Western Electric 640 Condenser Mic (Pre-History)







TYPICAL FREE-FIELD RESPONSE OF 640AA CONDENSER MICROPHONE IN COMBINATION WITH RAIO95 AMPLIFIE



Neumann/Telefunken U-47 (Mono and early Stereo eras)



MIRACLE MICROPHONE - U-47M

The extremely smooth frequency response, the wide dynamic range, the absence of distortion and noise, and the readily changeable field of pattern, make the U-47M microphone the ideal instrument for quality sound transmission. A small outside switch provides either a highly directional or non-directional characteristic.



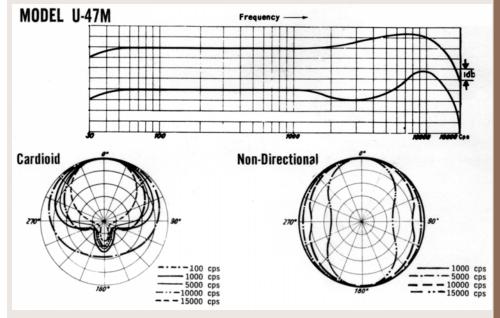


MODEL U-47M Microphone, power supply, cables and plugs Price Complete \$390.00

TECHNICAL DATA

Specifications — U 47 M

Frequency response	± 3 db $30-16,000$ cps.
Output impedance	
Field pattern	non-directional or cardioid
Output level at 1000 cps.	
Matched with 200 ohms	cardioid 2.8 mV per dyne/cm ² (-49 db)
	non-dir. 1.7 mV per dyne/cm2 (-53 db)
Residual noise level equivalent	24 db Ioundness
	less than 1%
	VF 14
	23%" diam., 93%" long
Weight	1.5 lbs.
Power Supply Unit - U 47 N	
Operating voltage	110 volts AC
Cycle	40- – 60
Dimensions	
Weight	6 lbs.



Schoeps/Telefunken M201 (Mono and Stereo eras)



MIGHTY MIDGET - 201M

The 201M can be used as a non-directional or cardioid microphone. A switch mounted inside the head changes the microphone's directional characteristic; a red rim appearing at the base of the head in the non-directional position.

The Microphone's extremely uniform frequency response and wide dynamic range in the cardioid pattern, as well as its slight rise in the upper range in non-directional operation, make it the world's most advanced transducer.

The microphone is indifferent to changes of temperature and humidity conditions. Its construction ensures continuous dependable operation at 175° F. without affecting its performance.

The 201M is an ALL NEW type of condenser microphone, especially suited for broadcasting, TV, recording, and motion pictures. Its compactness and extreme sensitivity make it easily adaptable in any field.

±4db 30-16,000 cps.

MODEL 201M

Microphone, power supply, cables and plugs Price Complete \$490.00

TECHNICAL DATA

Condenser Microphone 201 M

Output impedance	e
Field pattern non-directional or cardio	
Output level at 1000 cps.	,
matched with 200 Ohms cardioid 1.5 mV per dyne/cm* (-54 c	łi
omni-dir. 1.1 mV per dyne/cm² (-57 c	łł
Residual noise level equivalent	
Non-linear distortion less than 1	9
Max. operating temperature	,
Max. relative humidity	
Tubes 6 AU	
Heater Voltage 6.3 ± 0.2 Vo	
Heater Current approx. 0.3 Amp	
Plate Voltage	
Dimensions	
Weight	
	Ž!
Portable Power Supply Unit ELA M 910	
Major voltage	

rower consumption	 approx 16 watts
Pilot lamp	 63 V 03 Amps
Fuse (for 110-240 Volts	 0.5 Amps.
Dimensions	 71/2 x 47/8 x 61/6"
weight	 61/s lbs.

Mounting Armature ELA M 9

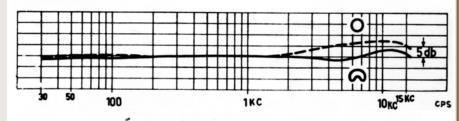
with	1/2"	pipe	thread,	for	mounting	microphone	on	M 904
We	ight							
Price	е							

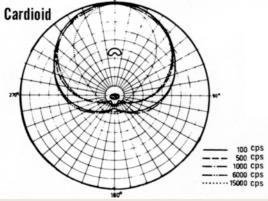




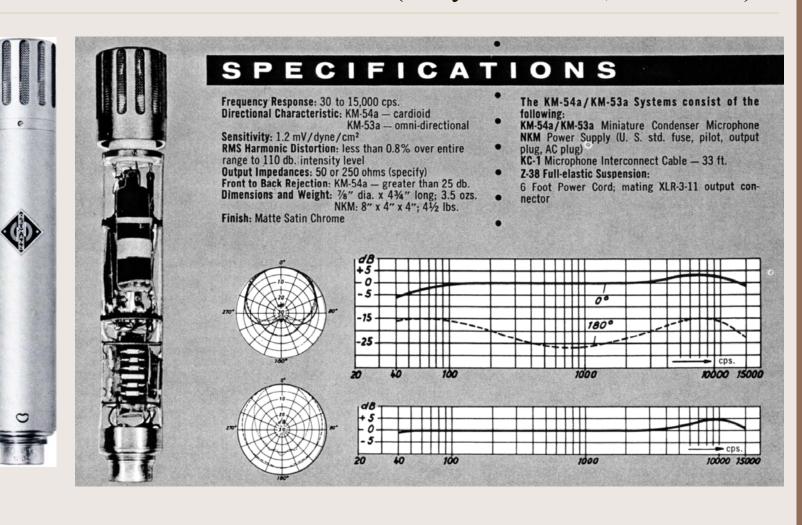
EQUIPPED WITH 30 FEET OF WELL-SHIELDED, LOW-LOSS SYNTHETIC RUBBER-JACKETED CABLE AND PLUGS, STAND-4 OZZ. ARD THREAD FITTINGS. SPARE PARTS ARE AVAILABLE...\$17.50

MODEL 201M





Neumann/Telefunken KM-54 (early Stereo era, L-R sides)

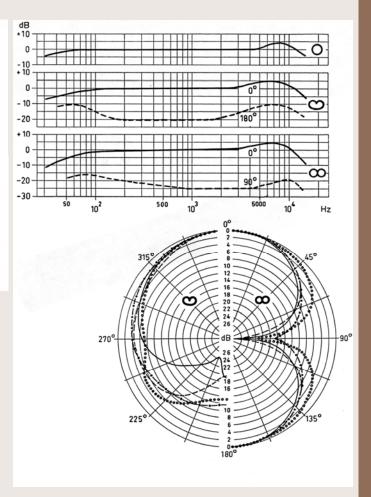


Neumann/Telefunken KM-56 (early Stereo era, L-R sides)

CONDENSER MICROPHONE



KM 56 System Neumann, Berlin



Timeline: Microphones

- Pre-MLP Mercury classical recordings made with WE condenser mic
- First MLP mono recordings used a single Neumann U-47
- The Schoeps M201 mic was first used in 1953, but a U-47 was used for some mono recordings through 1954
- First stereo 3-channel recordings used M201 for the center and two U-47's for the sides (only a few made this way, 1955-56)
- Then M201 for the center and Neumann KM54 (1956) and KM56 (1956-59) for the sides (used for most stereo sessions until 1959)
- Finally, three M201's, Left/Center/Right (standard setup from 1/59 onward)

Fairchild Tape Deck (Mono Full-Track)



Ampex 350-2 Tape Deck (Stereo 2-Track "Binaural")



MODEL 350-2

MAGNETIC TAPE RECORDER

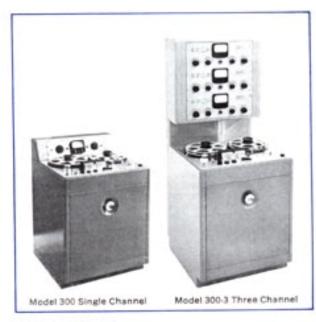
The Ampex Model 350-2 is a dual track audio tape recorder for recording and playing back stereophonic signals in which the crosstalk between channels is not critical. The overall performance and operation are similar to a Model 350.

The Model 350-2 differs from a Model 350 in the following manner:

- The Model 350-2 is available as a three case portable or for rack mounting. When rack mounted, it occupies 36 3/4 inches of rack space.
- 2. A special head assembly has been incorporated. In place of the record head, an assembly consisting of two heads of multichannel design has been made in which one head is stacked above the other, with the two gaps in line. One of these heads covers the upper portion of the tape, the other head covers the lower portion. A similar assembly has been incorporated in place of the standard playback head. Thus it is possible to record, playback, and monitor two channels simultaneously. The standard erase head is provided.
- 3. A catalog number 5701 or 5701-1 Electronic Chassis (Figure 1 or 2) is supplied for Track #1 (upper track). This assembly incorporates the standard erase and bias oscillator. A catalog number 5701-2 or 5701-3 Electronic Chassis (Figure 1A or 2A) is supplied for Track #2 (lower track). This assembly is idditical to the Track #1 Electronic Chassis, except the erase and bias oscillator has been replaced with a bias buffer amplifier. The input of the buffer amplifier (the connector labelled Bias J412P) receives the bias signal through a Bias Interconnecting Cable connected to the Erase Head Connector on the Track #1 Electronic Chassis. The buffer amplifier amplifies the bias signal to provide the bias current for the Track #2 record head. The Erase head is connected to the Erase Head Connector on the Track #2 Electronic Chassis.
- 4. The Installation and Operation Procedures for each track of the Model 350-2 are identical to that of the Model 350. Rack mount installation should be made in the following order, from top to bottom: Power Supply No. 1, Power Supply No. 2, Mechanical Assembly, Track #1 Electronic Assembly, Track #2 Electronic Assembly, Track #2 Electronic Assembly. The head cables for Track #1 are color-coded red. The fuse, F402 in the Track #1 Electronic Assembly has been increased to 5 amperes to accommodate the additional load of the Track #2 Electronic Assembly.

350-2 6/1/53

Ampex 300 Tape Deck (Stereo 3-Track)



SPECIFICATIONS:

Speeds	Dual speeds: 15 and 7½ ips
Frequency Response	± 2 db, 30-18,000 cps at 15 ips
Signal-To-Noise	60 db full track, 55 db multi-track
Flutter and Wow	Below 0.1% at 15 ips
Timing Accuracy	
Equalization	

300 SERIES - MASTER RECORDERS

...300 Series Master recorders/reproducers are the recognized standard of the recording industry...designed to fulfill the demands of the professional recording industry in producing the finest quality monophonic and stereo masters. Includes Ampex "Four Star" one year warranty.

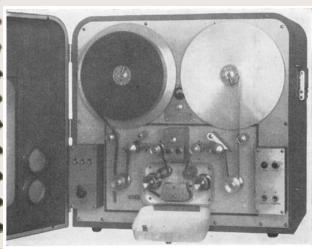
AVAILABLE MODELS: The 300 Series is available in single or multi-channel versions (one, two, three or four channels normal configuration; up to eight channels on special order). Three-motor transport handles reels to fourteen inches and tape widths up to one inch on special order.

APPLICATIONS: Designed for the master recording industry, it is used to produce the finest quality ¼ or ½-inch master tapes for the cutting of master disc records or commercial tape duplicates. It records and reproduces single and multi-channel monophonic masters and two or three-channel stereo masters.

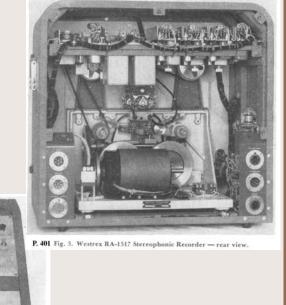
FEATURES: Larger, more advanced transport — 300 transport has indirect capstan drive — a rigid unit-assembly and massive capstan flywheel mounted in extra large, precise bearings virtually eliminate flutter and wow—FAST/SLOW start switch permits "on" and "standby" capstan operations — ultra precise alignment of the head stacks assure perfect playback of multi-channel recordings — optional SEL-SYNC® provides switching that converts any of the record heads to temporary playback mode while others are still recording — A-B switch allows monitoring by VU meter, headphones or line-connected studio monitor.

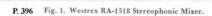
ADVANTAGES: 300 Series Recorders assure complete dependability of audio and mechanical performance, and continuity of service year after year. The unexcelled performance in making multi-channel master tapes is verified by the use of the 300 Series by virtually every major company in the recording industry.

Westrex 35MM Magnetic Film Recorder



P. 399 Fig. 4. Westrex RA-1517 Stereophonic Recorder.

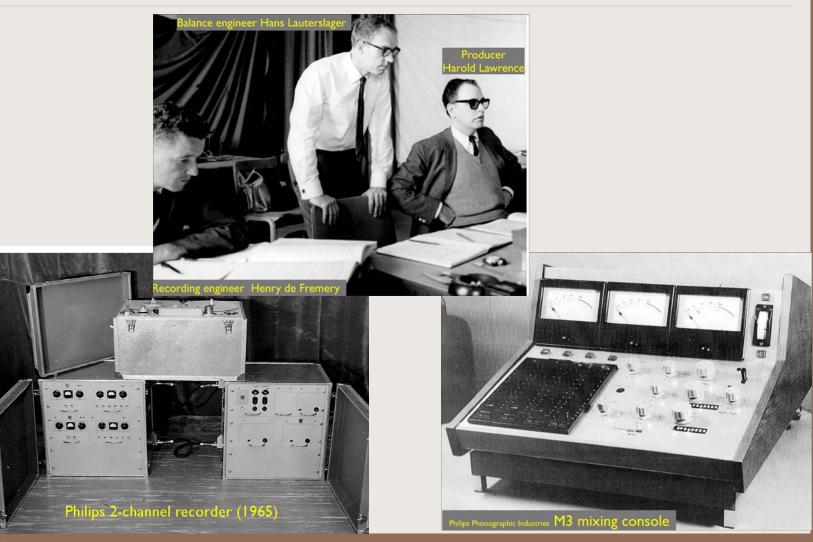




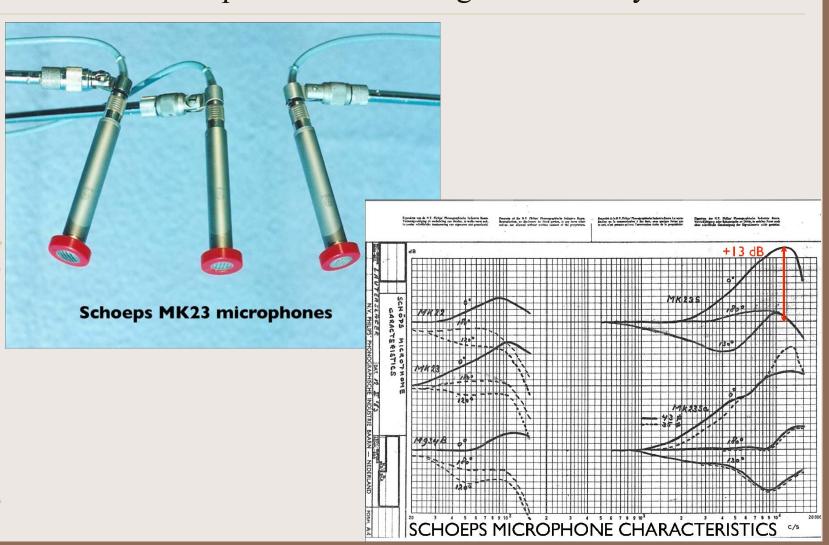
Westrex 35MM Magnetic Film Recorder



Philips "M3" Recordings for Mercury (1965-66)



Philips "M3" Recordings for Mercury



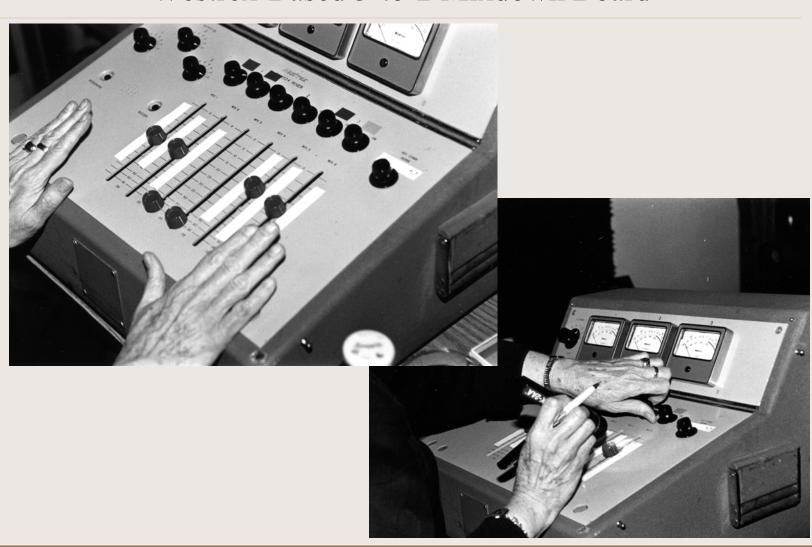
Single-Mic / 3-Mic

- All Mercury Living Presence mono recordings from 1951 through 1964 were made with 1 microphone.
- This mic fed the mono master and the center channel during the stereo recording era (12/55 onward).
- In 1955-56, 2-mic "Binaural" recordings were made, some released.
- 3-Spaced-Omni stereo recording is both mono-compatible (center mic serves as mono pickup) and a method to capture full stereophony with few mics. It offers a strong center plus depth, width and height not possible with 2-mic stereo pickups. First 3-mic recording, 12/55 (Minneapolis).
- Mercury engineers always recorded direct feeds from the microphones to individual tape tracks (full-track for mono, 3-track for stereo).
- Master tapes were edited from first-generation session tapes (FT/3T).
- Stereo LPs and CDs were produced from a 3-2 mix created at the time of mastering. Second-generation "cutting master" 2-track tapes not used for original U.S. releases.

Timeline: Recording Firsts

- First Single-Mic recordings, 1947 (Reeves Studios, WE 640)
- First U-47 recording, 12/1950 (Reeves Studios)
- First Chicago session, 4/1951 (Single U-47)
- First M201 recording, 4/1953 (Chicago)
- First for-release Stereo recordings, 11/1955 (Minneapolis)
- First all-M201 recording, 1/1959 (Detroit)
- First for-release 35MM recording, 5/1961 (Rochester)
- First UK session with Philips engineers, 7/1965 (Watford)
- Final Living Presence session with original team members, 11/1967 (San Antonio)
- Final Living Presence-branded recordings, 1970 (New York)

Westrex-Based 3-to-2 Mixdown Board



Scully Cutting Lathe / Westrex Stereo Cutter



Scully Cutting Lathe / McIntosh Amps/ Westrex Stereo Cutter

"(The system) used Class A 200 watt-per-channel (McIntosh tube amplifiers) idling with low internal amplifier impedance and peak power capability of up to 1KW. The feedback was reduced from 20dB (on the stock Westrex system) to less than 6dB and the cutter allowed to operate at its normal resonance, so equalized to match the ... RIAA standards. All preemphasis was low-passed at 15kHz."

-- C. Robert Fine describing the Fine Recording discmastering system

Remastering for Compact Disc In The 90's



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Remastering for Compact Disc In The 90's



Remastering for Compact Disc In The 90's





Remastering for Compact Disc

Dennis M. Drake, original re-mastering engineer, describes the setup at Polygram Studios, Edison N.J. (letter dated 10/19/90):

"The original Westrex tube film recorder and console were used during these sessions. We also utilized the original Ampex 300 3-channel tape recorder. The output of the (3-to-2 mix-down) console was then fed to our dCS 900 analog to digital converter ...

The digital output of the dCS was then fed as a 24-bit (44.1kHz) signal to our Harmonia Mundia Acustica digital bus. This bus contain(s) a re-dithering module which took the 24-bit signal and re-dithered it down to the 16-bit world of the Sony 1630 system ...

Noise-shaping of the extra bits instead of truncation was an important step in maintaining low-level resolution and detail of the music ...

All CD masters were first generation digital. Although it would have been easier to do final editing (in the digital realm), we did not want to compromise the magnificent sound of these recordings in any way."

Original Configuration, 1952



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Original Configuration, 1952



Original Configuration, 1952



Early Stereo Configuration, Mid-50's



Early Stereo Configuration, Mid-50's



Early Stereo Configuration, Mid-50's



Early Stereo Configuration, Mid-50's



After 1958 Rebuild





35MM Mag-Film Recording, Detroit 1962



Red Square, Moscow, 1962



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Recording in Moscow, 1962



Recording Civil War weaponry at West Point



Timeline: Truck Evolution

- Truck originally built for Albert Schweitzer documentary (Jerome Hill, director; Oscar winner). Called "The Cinecruiser."
- Originally configured for mono full-track tape recording sync'd to motion-picture cameras. Fairchild tape machines with Pic-Sync capability.
- First used for Mercury Living Presence 4/1952.
- First stereo experiments were "binaural" 2-channel, beginning late 1954. Two-track Ampex 350-2 was used. 2T used for backup through 1956. Some 2T "binaural" recordings released.
- Three-channel Ampex 300 acquired late 1955, first used 12/55, a first by an American classical label.
- Truck extensively rebuilt 1958.
- Trip to Moscow, 1962.
- Numerous trips to U.K. and Europe 1956-64.
- Portable Westrex 35MM recorder used in truck 1961-1964.
- Truck retired mid-1960's, donated to Oradell NJ Explorer Scouts.

The Philosophy

"The music is what this is all about ..."

"We didn't use any control of the dynamic range..."

"We just placed the microphones so they would reproduce the music as truly as possible and then recorded it without any change from what the conductor and the musicians were doing in their performance"

"When you hear one of these recordings ... you feel as though you are actually there."

-- Wilma Cozart Fine, NPR interview, 1996

MLP Releases Over Time

Mono LPs released 1951 to mid-1960s.

Stereo LPs released 1958 to 1970.

LPs pressed by RCA Indianapolis ("I" in the deadwax) 1951-1962. After Philips acquired Mercury in 1961, pressing moved to Philips plant in Richmond, Indiana ("RFR" in the deadwax).

Mercury Golden Imports reissues produced by Philips in Holland, mid 1970s.

Wilma Cozart Fine hired by Philips/Polygram to produce CD reissues, 1989.

During 1990-1999, approximately 150 original albums remastered to 125 CDs.

By 2010, most of the single-unit CDs were out of print.







arcel Dupré's complete Mercury Living Presence recordings, newly remastered from original tapes and available for the first time as a box set. The set also includes two recordings made for Philips. CD₁ FRANCK Pièce héroique, FWV 37 J.S. BACH "Schübler" Chorales, BWV 845-650 Fantasias, BWV 562 & 572 CD 2 CD 7* DUPRÉ 3 Preludes and Fugues, Op. 36 WIDOR Organ Symphony No. 6, Op. 42 No. 2 **MESSIAEN Le Banquet céleste** Organ Symphony No. 2, Op. 13 No. 2 DUPRÉ Prelude and Fugue, Op. 7 No. 3* Triptyque, Op. 51* J.S. BACH Charales BWV 607, 615, 622 637, 645, 662, 668, 671, 680, 684 **CD 3*** CD 9 J.S. BACH DUPRÉ Symphonie-Passion, Op. 23 Hymne "late confessor", Op. 38 No. 12 DUPRÉ Cortège et Litanie, Op. 19 No. 2 ariations sur un Noël, Op. 20 Ave Maris Stella IV, Op. 18 No. 9 **CD 10** SAINT-SAENS Symphony No. 3, Op. 78 CD 5* First CD release* antaisie en la majeur, FWV 35 astorale, Op. 19 No. 4 MARCEL DUPRE at the organs of Saint Thomas Church, New York (CDs 1 & 2) - Saint-Sulpice, CDs 3-7) - Abbatiale Saint-Ouen, Rouen (CDs 8 & 9) - Ford Auditorium, D ASSOCIATION DES AMIS DE L'ART



Mercury Living Presence Box Set 1 released in 2010; Box Set 2 in 2013 and Box Set 3 in 2015. All three releases included limited-edition LP box sets (lacquers cut from digital masters).

With the release of Mercury Living Presence Box Set 3, all of the 1990s CD remasters are were in print, together, for the first time ever.

The Box Sets included a total of 12 newly-remastered albums, 10 of which are new to CD.

In late 2015, UMG/Decca Classics and the Marcel Dupré Society in France coproduced "Marcel Dupré: The Mercury Living Presence Recordings," a 10-CD box bringing into print new remasters of all Dupré's Mercury and Philips recordings.

In 2018, new remasters of violinist Henryk Szeryng's Mercury Living Presence recordings were included in a Decca box set of his complete recordings.

New remasters for Box Set 3 made at Abbey Road Studios by Andy Walter and in US by Tom Fine working with Plangent Process (Jamie Howarth and John Chester).

Remastering supervised by Raymond McGill (box set producer) and Tom Fine (consulting engineer).

First-generation master tapes used when they were available in the vault.

Plangent Process utilized to save "basket-case" second-generation dub of Copland 3rd Symphony (Dorati-Minneapolis, 1953), the only surviving source media.

Plangent Process also used to transfer 3-track first-generation masters of Beethoven 3rd Symphony (Dorati-Minneapolis, 1957) and Hindemith/Schoenberg/Stravinsky wind music (Fennell-EWE, 1957).

For the Marcel Dupré box set, all remastering was done in the US by Tom Fine, working with Plangent Process (Jamie Howarth and John Chester). Production supervised by Raymond McGill (box set producer) and Bruno Chaumet and Adam Freeman from L'Association des Amis de l'Art de Marcel Dupré.

For the Henryk Szering box set, the violinist's Mercury Living Presence and first two Philips recordings were remastered in the US by Tom Fine, working with Plangent Process (Jamie Howarth and John Chester). The box set was produced by Edward Weston at Decca Classics.

First-generation master tapes used for the MLP recordings.

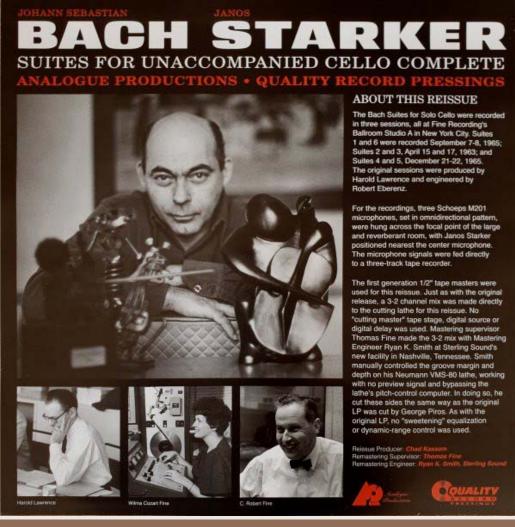
In 2019-2020, new all-analog LP reissues were produced for Chad Kassem's Analogue Productions. The cellist Janos Starker was featured. Titles are a 2-LP 45RPM reissue of Dvorak's Cello Concerto with Antal Dorati conducting the London Symphony and a 6-LP 45RPM reissue of Starker playing Bach's Suites for Solo Cello.

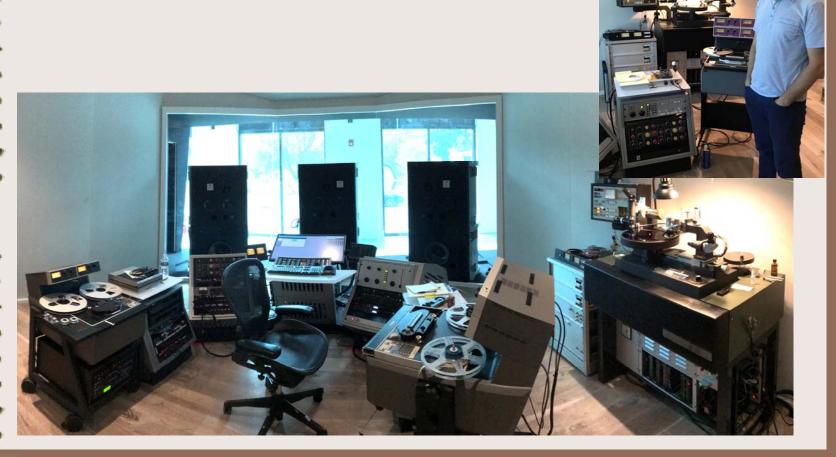
The LPs were cut by Ryan Smith at Sterling Sound, Nashville, in 2018. Tom Fine restored the master tapes and oversaw the LP remastering. Plating and manufacturing at Chad Kassem's Quality Record Pressings plant in Salina KS.

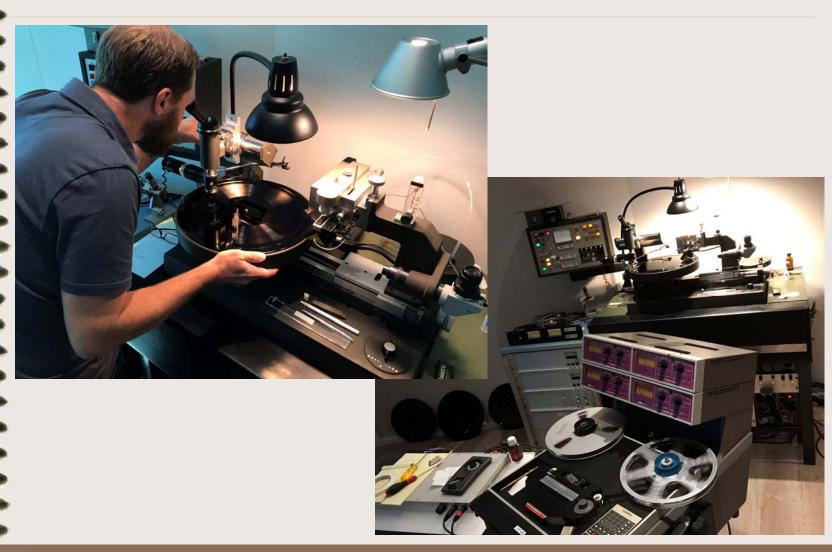
First-generation 3-track master tapes were mixed 3-2 "live" to the cutting lathe by Tom Fine and Ryan Smith.











Coming Soon

In 2021, look for new streaming-only reissues of Mercury Living Presence recordings. There are a couple dozen stereo titles never released digitally, plus much of the mono catalog.

There will also be a new Mercury Living Presence website and Facebook presence.

April 2021 will be the 70th Anniversary of the first Mercury Living Presence recording session in Chicago. Celebration planned!

How/What/Where to Listen

As of late 2020, Mercury Living Presence Box Sets 1 and 2 are mostly sold out. There are copies of Box Set 3 in some retailer inventory, also some stray single-CD product. The Marcel Dupre and Henryk Szeryng box sets are available from some retailers around the world, but mostly out of inventory. The Compact Disc is a submerging medium, and the age of many-CD box sets for classical back-catalog recordings is winding down.

But there's good news! Mercury Living Presence content is widely available on streaming services, and soon all of the digital catalog will be readily available and easily searchable/findable on Spotify, Apple Music, Amazon, Qobuz, Tidal, etc. There will also be a program of streaming-exclusive releases (no physical product) and curated playlists broadcast on social media, fitting with the new way of distributing and consuming music. As we enter 2021, streaming is the mass medium for modern music consumption.

In your favorite streaming app, search the following artists to find their Mercury Living Presence recordings: conductors Antal Dorati, Paul Paray, Rafael Kubelik, Howard Hanson, Frederick Fennell and Victor Alessandro; pianists Byron Janis and Gina Bachauer; cellist Janos Starker; violinist Henryk Szeryng; guitarists The Romeros (Los Romeros).

Look for a relaunch of the Mercury Living Presence website soon, and for a Mercury Living Presence brand-page on Facebook.





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