

Anniversaries

Woman in Andean mining died 90 years ago



LOLA MORA (1866–1936): ARTIST AND PIONEER IN MINING AND OIL IN ARGENTINA

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The year 2026 marks three anniversaries related to the great Argentine artist Lola Mora (Salta, 1866–Buenos Aires, 1936), who abandoned her artistic career to devote herself to prospecting for minerals in the Andes Mountains and extracting unconventional oil from oil shale (Figure 1). In 1926, she published a pamphlet on the subject that is a historical document of great contemporary value. The year 2026 marks the 160th anniversary of her birth, the 90th anniversary of her death, and a century since her pioneering work on what are now called unconventional hydrocarbons.



Figure 1. Lola Mora (1866–1936). National Archives of Argentina (AGN, Public domain).

Dolores Candelaria Mora Vega de Hernández (1866–1936), better known as Lola Mora, shone in universal art by turning rough blocks of marble into beautiful statues (Figure 2). The “Fountain of the Nereids” in Buenos Aires is a sublime example of her imperishable art, as are several allegorical works distributed in some Argentine cities, especially Rosario, Tucumán, Salta and Jujuy. Her life underwent a paradigm-shifting break that led her to radically change her successful career to dedicate herself to a completely different field unrelated to her professional training (Alonso 2018).



Figure 2. Fuente de las Nereidas, Buenos Aires ca. 1910. Source: National Archives of Argentina (AGN, Public domain).

She left the world of art in 1920 at the age of 54 and devoted herself to mining and petroleum. She attempted all stages of mining activity—from prospecting, exploration and exploitation to mineral beneficiation. She ventured into the Puna Mountains in the Southern Central Andes in search of gold, silver, copper and sulphur. Lola explored deposits previously worked by indigenous peoples, later by the Incas and the Spanish conquerors, colonial men and so on through successive generations of miners over the centuries. She challenged the canons of the era since at that time mining was a man's domain. She wrote and filed the prospecting claims in her own hand, drew the sketches, paid the required fees, collected the legal samples, filed the claims at the old mining office, complied with the mining regime of staking out the mines in the field, surveying them, erecting boundary posts, establishing the legal working in the discovered ore bodies, among other tasks of the mining art. She, along with a few helpers and her faithful sheepdog "Bimbo," travelled as far as the end of the rail spur of line C-14 Huaytiquina and then entered the mountains in search of the desired minerals.

However, she was not only interested in precious metals but also in oil, gas and all their derivatives. She did not want to compete against the large national and foreign oil companies already operating in Argentina, a venture for which her modest capital was insufficient. She was not interested in well oil—that is, the so-called conventional oil—but in what today we call "unconventional hydrocarbons." As we say, they are called that today, but she raised this issue in the 1920s and became a true national pioneer in the subject. Lola was convinced that those black rocks she had seen in her childhood cropping out in the hills to the south of the Salta province—and that someone had perhaps surprised her by showing how they burned when touched with a flame—could become the philosopher's stone for the supply of energy that was increasing geometrically in the first half of the 20th century.

She set about studying bituminous shales, especially those cropping out at the Los Negros creek in the Sierra de la Candelaria (Rosario de la Frontera, Salta Province). Still covered by dense bush there remain the ruins of the house Lola Mora inhabited, the remains of the galvanized tanks and the wood-fired kilns where she distilled hydrocarbons. There is also a gallery called the "Cueva del Negro," from which she originally extracted shales for testing. We know much of this from two sources. One is the fortunate, circumstantial and casual encounter Lola Mora had in the town of Salta with the poet Rafael Alberto Arrieta (1889–1968) at the old Gran Hotel or Hotel Plaza. A marble plaque on the chamfer of the wall of the

hotel today recalls some of the great milestones in Lola Mora's life. Later in her life, Lola returned to Buenos Aires (Figure 3).



Figure 3. Lola Mora in 1930 (Buenos Aires). Source: National Archives of Argentina (AGN, Public domain).

The other documentary source is a rustic booklet of 52 pages that she published in Salta in 1926 titled *Combustibles (Problemas Resueltos)* and signed as L.M.H. (Lola Mora Hernández) (Figure 4). Note that despite having divorced her husband because of his infidelity, she continued using her married surname in this case and in numerous mining registration filings. In this booklet she begins by discussing about the national energy policy and the government's apathy and puts in print a prophetic phrase: "Every last schoolboy knows that our mountains are full of minerals, that the subsurface of the entire republic conceals fuel deposits and that with these riches not only can we cover our needs but also feed... the world's industries."

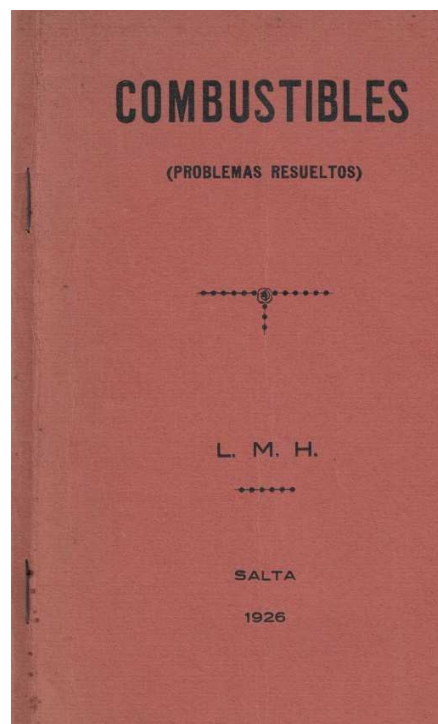


Figure 4. Brochure published in 1926 by LMH (Lola Mora) on the extraction of hydrocarbons and derivatives from Cretaceous oil shales in the province of Salta (Argentina). Copy owned by the author.

She then argues that one should not work shale in the natural state but add value. She discusses the advantages of shale over well oil and provides a global study of bituminous shales in general, especially their distribution within Argentina's mountains. She finally presents her ideas and explains the methods she developed to distill shales and obtain dozens of commercial products (gas oil, gasoline, gas, light and heavy oils, lubricating greases, kerosene, ammonium sulfate, coke, black glass, jet, solid paraffin, phenol, tar and benzol).

Lola Mora's philosophy is reflected in a section titled "Reflections," where she states: "Since nature is composed of everything that creation contains, with all the elements to recreate and develop human intelligence, giving each of them its usefulness and benefit for humanity, we are obliged to study until we find its application in the simple and multiple way that she presents all the principles with which she is endowed and her components until reaching a practical end for their use." She later points out that: "Everything is foreseen by nature and arranged for the conservation of man; then it is up to man to find, with his studies and dedication, the greatness that nature contains and, insisting without fainting, we will reach for the existence of something greater". Lola Mora confesses to the poet Arrieta: "I feel in my laboratory, among my mineral oils, the same emotion that I felt in my sculpture studio." Like so many sages, she died in poverty and, to make matters worse, her valuable papers were burned by her family (Alonso, 2018, 2021).

Further Reading

Alonso, R. N., 2018. The Visionary and Brilliant Lola Mora: A Pioneer Woman in Mining and Oil. Mundo Gráfico, 118 p. ISBN 978-987-698-212-2. Salta [In Spanish]

Alonso, R.N., 2021. Women in Geology from Argentina, Chile and Bolivia. Book Review, **Episodes**, Journal of International Geoscience, IUGS, 44 (4): 469-471.
<https://doi.org/10.18814/epiugs/2021/021033>.

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