Capillitas Mine Catamarca Province, Argentina: The other Rhodochrosite locatity

David Stoudt

39th Annual New Mexico Mineral Symposium
November 10-11, 2018,Socorro, NM
pp.19-21

This page is intentionally left blank to maintain order of facing pages.

Capillitas Mine
Catamarca Province, Argentina
"The other Rhodochrosite locality"

David Stoudt, Santa Fe, New Mexico

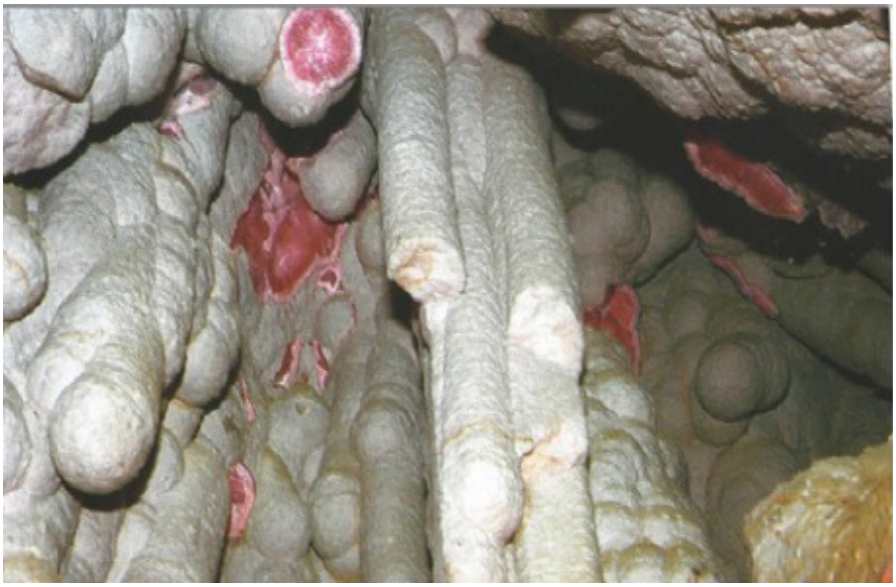
Argentina is known for it's imposing scenery and landscapes from southern-most glaciers to high altiplano deserts. All people marvel at majestic mountains and thundering waterfalls. Commercial mining deposits, oil and gas fields are under active development. For travelers, world-class beef and wine can be had. It can be a mineral and fossil collector's paradise with limited interest from the local population. Collector's number less than 200 in a population of over 37 million. But traveler, be aware; this can be some of the most desolate landscape and sometimes forbidding adventures.

The author has been fortunate in a professional geological career to have worked in over 37 countries. He has lived in three countries as an American ex-pat. Argentina was one of those countries where he could drive his vocation as an oil/gas geologist and avocation of mineral collecting. Two industry icons have aided his adventures.

Capillitas Mine, Catamarca Province, northwestern Argentina has been known as a complex gold and copper mineral bearing deposit for over 500 years. The mine dates to the days of the Incas and Spanish conquistadors. The author attempts a comprehensive understanding of the complex geology and mineralogy of what some call a South American, "enigma." The discovery of the Capillita "stalactite cavern" in November 1986, lead to one of the Argentina national disgraces when one cavern, measuring 15 m (49 ft) in width and 6 m (20 ft) in height, was destroyed on orders by the Argentine Federal and Military government. Saadi (1991) documented the cavern with some of the few known photographs which will be shown in the presentation. It is known as the "Argentine Day of Infamy."

Left–Rhodochrosite: Capillitas Argentina (36cm x 20cm, Stoudt, 2006). Right–Rhodochrosite, Pyrite: Capillitas Argentina (Hand cobbled, Stoudt, 2006).

Capillitas is found on the western boundary of Argentina and on the eastern margin of the conveyor-belt style, Pacific oceanic plate. At Capillitas, 5 to 9 million-year-old Miocene volcanics intrude and pierce 400 million to 1 billion-year-old granites and hard rock basement from Ordovician to Pre-Cambrian in age. Nineteen (19) known rhodochrosite veins up to 600 m (1,968 ft) in length are found in both the intrusive volcanics and the granite basement. The volcanic intrusive neck measures approximately 1,500 m (4,920 ft) in width and at an elevation of 3,100/3,300 m (10,168/10,824 ft) above Sea Level. Current estimate is that 20 kms (12 mi) of underground workings are present. Spectacular banded and stalactitic-form rhodochrosite has been mined for over 50 years. Rhodochrosite mined prior, was thrown on the dumps as waste. Today mining at Capillitas has not changed much from decades ago, still hand cobbling. Production volumes of any the base minerals are unreliable as the mine has changed ownership numerous times with fraud and corruption by both ownership and local/ national government.



Rhodochrosite stalactite cavern discovered November 1986. Destroyed on orders of Argentine Military and Federal government ("Argentine Day of Infamy"). Interlocking series of small caverns measuring a total of 15 m width (50 ft) by 6 m height (20 ft). Stalactite diameters up to 45 cm (1.5 ft). Photo covers 4.5 m (15 ft) in height by 2.5 m (8 ft) in width.*Photographed by J.A. Saadi, January 1987.*

Capillitas mineralogy has been estimated at 120 mineral species by Mindat.org (2018) and at 150 species by Putz, et al. (2009). The later work was an Argentine sponsored survey of the mine. Primary minerals include pyrite, enargite, gold, tetrahedrite, sphalerite, chalcopyrite, galena, bornite, chalcocite, in paragenesis order. A bornite/ chalcocite stock measuring up to 200 m (656 ft) in diameter was mined in the distant past. Wire-gold was recently found in a boulder on the mine flank. Secondary minerals are covellite, anglesite, gypsum, malachite, azurite, cerussite, cuprite, pyrolusite, realgar, orpiment, chalcanthite, dioptase and copper. Rhodochrosiite and capellite (combination of rhodochrosite, smithsonite and siderite), quartz and barite are considered gangue. The presentation will focus on subsurface vein and mine workings and rhodochrosite from private collections. Many of the primary and secondary minerals are very poorly documented in photographs and collections. Specimens went undocumented from the ancient workings and Argentine museums lack representation.

Capillitas rhodochrosite (manganese carbonate) occurs in both the volcanics and the granite. There is abundant manganese in the adjacent bedrock in the form of pyrolusite veins. The "enigma" occurs when considering there are no carbonate (limestone and dolomite)

host rocks existing within 200 miles of Capillitas. In a comparison of Bisbee minerals which many collectors from the symposium probably have in their collections, Bisbee had carbonate caverns/spelothems formations overlying the primary ore bodies (Graeme, et. al, 2016). Bisbee has meteoric-surface water influence and deep subsurface mineral laden fluid influence. Capillitas rhodochrosite or manganese carbonate could only have come from deep seated, subsurface carbonate laden fluids. So meteoric waters in normal cave formation probably did not occur at Capillitas. Today, 40 miles away from Capillitas occur carbonate-rich hot springs which look like miniature Yellowstone Mammoth Hot Springs. The present may be the key to the past (Lyell, Principles of Geology, 1830). Various researchers have labelled Capillitas as: 1) Epithermal formation as deposited from warm water at shallow depths or 2) Hydrothermal formation under high temperature and high pressure.

Many dazzling specimens of Capilltas rhodochrosite are found around the world. However, the best from Argentine seldom leave the country.

The author would like to thank Virgil Lueth (Socorro) for accepting a distant mineral deposit for this Southwest symposium; Kelsey McNamara (Socorro) for publication requests beyond the call of duty; Charles Dalton (Denver) for presentation review; Edurado Jawerbaum (Argentina) for collecting fellowship and road adventures and Susan Hoffman, my wife (Santa Fe) for putting up with a globe-trotting geologist and mineral collector.

References (partial listing)

Angelelli, V., Rayes, R, 1946, Estudio Geologico Minero del Districto Cuprifero de Capillitas, Provinciade Catamarca: Direccion General de Fabricaciones Militares, Buenos Aires; 50 pp.

Campbell, W.R.; Barton, P.B., 1996, Occurrence and Significance of Stalactites within Epithermal Deposits at Creede, Colorado, Canadian Mineralogist , vol. 34, Pt 5, pp. 905–930.

Cassedanne, J., 1998, La Rhodochrosite de Capillitas Argentina, Le Regne Mineral, No., 19, pp. 5–14.

Greame, R. IV, etal, 2016, The Forgotten Caves of Bisbee Arizona: A Review of the History and Genesis of these Unique Features; 178 pp.

Hill, C.A., Forti, P., 1997; Cave Minerals of the World, second edition; National Speleological Society, Inc., Huntsville, Alabama, 463 pp.

Logan, W.S. MD, Rhodochrosite: Crystals of Drama and Nuance; Blurb Publishing, 158 pp.

Mansfield, F., 1943, En Busca de la " Rosa del Inca", Editoral del Autor, Buenos Aires, 194 pp.

Mindat.org, 2018, Capillitas Mine, Andalgala Department, Catamarca, Argentina.

Putz, H., etal; 2009, A Contribution to the Knowledge of the Mineralization at Mina Capillitas, Catamarca, Argentina; Revista de la Associan Geologica Argentina; vol 64, n.3., 21 pp.

Radice, M.M., 1949; Contribucion al Conocimiento Mineralogico del la Rodocrosita de Yaciemntos Argentinos; Universidad Nacional de la Plata; Tomo IV; pp. 247–319.

Saadi, J.A., 1991, Monumento Geologico: Diatremes, Portadores de Formaciones Estalactiticas de Rodochrosita Minas Capillita, Argentina; Boletin de Instituto Gemologico Espanol, N# 33, Madrid, Espana.

Saadi, J.A., 2006, Gemologica: Las Piedra Preciosas de la Republica Argentina; Cordoba Argentina, 183 pp.

Zavalia, M.F., 1988, Mineralogia y Genesis del Yacimiento Capillitas Catamarca, Republicia Argentina; Universidad Nacional de Salta, tesis doctoral, 258 pp.