Mexico

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Mexico-X

Here we are again with yet another issue on the Mines and Minerals of Mexico, the *tenth* in our series, and it is very clear that we have yet to run out of interesting localities (and collections!) to feature. Mexico is a treasure-house of great minerals, connected by land routes directly to the United States, so American mineral collectors are in the best position to benefit from the outflow of specimens. All the more reason why we must have essential background information to support our purchasing choices and lend a richer appreciation of our acquisitions.

To recap, "The Mines and Minerals of Mexico" series has thus far covered the following topics:

Mexico I: (1998, vol. 29, no. 1)
Boleo
Mexico II: (2003, vol. 34, no. 5)
Ojuela
Mexico III: (2003, vol. 34, no. 6)
Los Lamentos, Fresnillo, Las Vigas, Sierra de Cruces
Mexico IV: (2004, vol. 35, no. 6)
San Pedro Corralitos, Amatitlan, San Francisco mine
Mexico V: (2008, vol. 39, no .6)
History, Milpillas, Las Chispas, San Carlos, Mexican agates
Miguel Romero Supplement (2008, vol. 39, no.6 supplement)
Mexico VI: (2011, vol. 42, no. 5)
Taxco, Refugio, Cerro de Mercado, Del Río, Palace of Mines
Mexico VII: (2016, vol. 47, no. 5)
Guanajuato, La Aurora, Flor de Peña, Legrand, Kerith Graeber collection, Cabrestante mine, Ponciano Aguilar
Mexico VIII: (2018, vol. 49, no. 1)
Santa Eulalia
Mexico IX: (2021, vol. 52, no. 5)
Milpillas mine
Mexico X: (2024, vol. 55, no. 6)
Charcas, Barranca, El Filo, Tepetate-Veronica-San Felipe, Moctezuma, Navidad, San Carlos, the Peter Megaw collection and Mike New.

And yes, we have already begun work on a Mexico-XI Issue. This issue would not have been possible without the support of the ***Fellows of the Mineralogical Record***, the ***Sponsoring Organizations*** and the ***Legacy Project*** contributors listed on the facing page. We all owe them a tremendous vote of thanks for helping the *Mineralogical Record* maintain the quality and page length necessary for publishing oversized issues like the one you are holding now. As I have said before, the *Mineralogical Record* has no protective umbrella organization to support it and cover special projects. Since all of our original major benefactors are now deceased, the generous folks listed on our Fellows page have stepped up to fill that gap and to help guarantee our continuing vitality as a publisher of great reading and reference material for the mineral collector.

As with the previous Mexico issues, we will have a *small* number of copies of Mexico-X hardbound. These lovely volumes make fine collector's items and beautiful gifts. Some day, after we have finished the Mexico series, a complete set of the hardbound Mexico issues will be a real and useful prize for any collector to own. You can order your copy, while they last, from the Bookstore section of our website, or call Tom Gressman at 520-529-7281.

And now, it is time once again to pour a shot of Tequila Herradura into a little salt-rimmed glass and knock it back with a fresh lime handy to bite. Then dig into that tequila-lime shrimp ceviche and filet mignon with chipotle adobo sauce, finishing off with a Mexican chocolate mousse. (I should have eaten before writing this.) Then you will be comfortable and ready to hunker down in a big squishy chair for a good and sumptuous read about many wonderful minerals from Mexico.

WEW

Native miners in colonial Mexico.

The Charcas Mining District

Charcas, San Luis Potosí, Mexico

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Interest in Charcas minerals began 450 years ago with silver mining which at first focused on near-surface secondary silver-bearing minerals and later moved on to primary zinc-lead-copper-silver ore minerals at greater depths. During the past 60 years, Charcas has become famous among collectors for poker-chip calcite and the world's finest danburite, as well as amethystine and citrine quartz, datolite, the world's best nifontovite, and many other species.

INTRODUCTION

The Charcas Mining District covers three principal mining operations: the Aurora mine, the San Bartolo mine and the Rey y Reina ("King and Queen") mine. These mines exploit several vein systems and carbonate replacement-style orebodies, namely the Aurora, Rey, Reina, Santa Isabel, and Leones deposits. In recent decades the district has become famous among mineral collectors for superb crystals of danburite, calcite and datolite, and there has been a more recent discovery of very large nifontovite crystals. But Charcas offers much more than those four minerals; a total of 64 species have been identified from the mining camp, including four that are new for the locality: borcarite, conichalcite, cahnite and rhodochrosite.

LOCATION AND ACCESS

The Charcas Mining District is located 4.5 kilometers northwest of the town center of Charcas and about 110 km north of the city of San Luis Potosí at geographic coordinates 23°07′N and 101°06′W. The district has an average altitude of 2,200 meters, and the climate is temperate to semiarid with an average annual precipitation of 45 cm.

Access is by a paved road that extends north for 80 km from Highway 57, and by 130 km of paved road leading south to San Luis Potosí; the México-Laredo Railroad runs 13 km east of the district, which also has a light-aircraft runway, and at San Luis Potosí the Ponciano Arriaga International Airport receives flights from Mexico City.

HISTORY

The pre-Hispanic history of the region is well documented, but no references or documents mentioning mining at Charcas exist from before the arrival of the Spanish.

According to INAFED and Castro (1882), the discovery of the Charcas mineral deposits dates to 1563, when Juan de Oñate discovered silver and established the first mine, which he named the San Cristóbal in honor of his father, don Cristóbal de Oñate. With the opening of the mine came an influx of Franciscan monks for whom the first monastery was built. In 1574, King Felipe II of Spain authorized the founding of the town of Santa María de las Charcas (Martínez-Rosales, 1983)—named after the important mining province of Charcas in Bolivia. The village consisted at first of just the mine, a few houses, a prison, and a foundry, all servicing the small monastery (Cossio, 1978). The newly created village was in the center of the indigenous territory of the Guachichiles people, a violent and conflict-prone native Chichimec population. The original village was soon burned to the ground, and in 1584 it was reconstructed, and a new monastery was built nearby, at the current site of the town of Charcas (Martínez Sanchez, 2019; Cossio, 1978). Conflicts with the Guachichiles continued to disrupt the development of the area until the mid-1600s (Tonatiuh Serrano Hernández, 2014).

According to Castro (1882), the San Cristóbal mine was short-lived. But in 1583, the Santa Isabel and Leones veins were discov-

Figure 74. **Nifontovite crystals on matrix, 16.5 cm, from the Rey y Reyna mine, Charcas District. Peter Megaw collection; Jeff Scovil photo.**

Figure 75. **Nifontovite crystal group, 5.2 cm, from Level 16 of the Rey y Reyna mine, Charcas District. Peter Megaw collection; Jeff Scovil photo.**

The Barranca Mine
Potrillos District, Durango, Mexico

The Type locality for Durangite

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Durangite in bright orange-red crystals was discovered and described in 1869, from a mine in Durango, Mexico, that remained a mystery for over 150 years. "New" old specimens turned up at a mineral show in 2012, and still no one could say exactly where the type locality was. The site was finally rediscovered in 2022, but the vein had been completely mined out and only small druses of durangite were collected on the dumps.

INTRODUCTION

Durangite, an attractive red-orange fluo-arsenate of the tilasite group, is a rare mineral found in good crystals at two principal localities: The Thomas Range in Utah and the Barranca mine in the state of Durango, Mexico. The original description of durangite from Durango dates back to 1869, when Yale mineralogist George Jarvis Brush (1831–1912) was given three small crystals by California mineralogist and assayer Henry G. Hanks (1826–1907), who thought they might be a new species. And indeed they were.

LOCATION

Determining the exact location of the type locality has proven to be difficult, and it was not achieved until 2022. In his description of the new mineral, Brush (1869) referred to the locality in the following way:

> The stream tin [cassiterite] deposit of Durango in Mexico is well known among American mineralogists for the remarkable specimens of tin-stone [again, cassiterite], as well as for the beautiful crystals of topaz which it affords. Quite recently a bright orange-colored mineral has been found at that locality, and I am indebted to Mr. Henry G. Hanks of San Francisco for the opportunity of investigating it.

Brush had never been to the type locality, and neither had Hanks. The difficulty with Brush's description of the type locality, of course, is that there are many cassiterite-topaz occurrences—a common assemblage in Mexican rhyolite deposits of the Sierra Madre—located in the state of Durango.

Hanks' source of the durangite specimens is revealed in a March 18, 1870, letter from Joseph H. C. Bennett directly to Brush which is on file at the Yale Peabody Museum:

> I send you 5 specimens of a mineral [durangite] which I brought from Mexico some time ago. I gave 2, I think, to Mr. Hanks of San Francisco. I think that they were [then] sent to you for examination. I see by Silliman's Journal of September that I can probably give you enough to analyze & somewhat more for your own use. I hardly think that Mr. Hanks will be able to get any [more] of these specimens from Mexico, as I would

Figure 12. **Durangite crystal, 1.5 cm, from the Barranca mine. Rob Lavinsky specimen, possibly twinned (from the 2012 stash), and photo.**

Figure 13. **Durangite crystal, 1.4 cm, from the Barranca mine. Rob Lavinsky specimen, possibly twinned (from the 2012 stash), and photo; ex Irv Brown collection.**

Figure 14. **Durangite crystal, 1.7 cm, from the Barranca mine. Peter Megaw collection, ex Ron Pellar collection (from the 2012 stash); Jeff Scovil photo.**

The Filo Mine

Sierra El Rosario, Mapimi, Durango, Mexico

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Known since the 1970s, the Filo mine has, on occasion, produced some of Mexico's finest purple fluorite specimens, resembling those from the nearby, more famous Ojuela mine. Specimens are still being dug from a series of prospect pits and short tunnels.

INTRODUCTION

In recent years, a limited number of remarkable fluorite specimens have emerged from northeastern Durango, many labeled as coming from the famous Ojuela mine in the Mapimí Mining District. Although Ojuela is justifiably famous for her fluorites, especially those displaying a cherry-red fluorescence under long-wave ultraviolet light (Moore and Megaw, 2004), these new specimens come from the Filo mine, which, although being within the Mapimí municipality (county), is a totally separate locality lying roughly 20 km from Ojuela. An immediate give-away that Filo is different is the compact, exceedingly fine-grained siliceous matrix, which reflects the quartz-vein origin of the deposit. The extreme hardness of the matrix is daunting to the local collectors, who are accustomed to mining Ojuela's gossan and limestone, and helps to explain why specimen production is limited and sporadic. Despite these difficulties, the locality can yield beautiful specimens that deserve to be considered classics of Mexican mineralogy.

Fluorite specimens have always been highly sought after by mineral enthusiasts, and a new locality always seems to stir up considerable interest. The Filo mine appears to be just such a "new" locality, even though it has been sporadically producing distinctive and highly aesthetic specimens since the 1970s (Mike New, personal communication, 2020). Gerardo Cordero and Juan Ramón Caldera were the first to collect specimens there for Mike New, and their sons still collect there today (Juan Caldera, personal communication, 2023). Curiously, Filo does not appear in the principal Mexican mineralogical and fluorite references (Panczner, 1987; Jurgeit and Megaw, 2006; Haghenbeck and Haghenbeck, 2011), but it has made cameo appearances in the literature (Megaw, 2013; Moore, 2016; Polityka, 2016). Given the quality of the specimens and recently revived production, the fluorites from Filo deserve a place alongside those from Naica, Múzquiz, Santa Eulalia and San Martín-Sabinas.

The Filo vein system lies within the Municipality of Mapimí, approximately 17 km due southwest from the municipal seat of the same name (Fig. 1). The workings lie along the axis of a steep, northwest-trending defile cut into the northwestern end of the Sierra El Rosario (Fig. 2). At 2,820 meters elevation, Sierra El Rosario is the highest topographical feature in the area, with a knife-edge linear crest called a *filo* ("blade"), from which the locality takes its name.

The occurrences lie in the upper reaches of the canyon and are reached by a rough track that often washes out in the rainy season. Much of the year the road is impassible, and it is an arduous hike from the small hamlet and ranches of the Santa Librada ejido (the agricultural collective that owns the surface rights over the area) clustered around its base. The owner of the Filo mineral concession leases the collecting rights to local miners.

HISTORY AND OPERATIONS

Five hundred years ago, before the Spanish Conquistadors arrived, the Mapimí area was home to indigenous tribes of the Toboso culture who somehow eked out an existence in one of the most desolate

Figure 12 (left). **Fluorite, 8 cm, from the Filo mine, Santa Librada. Peter Megaw collection; Chris Stefano photo.**

Figure 13 (below left). **Fluorite, 3.1 cm, from the Filo mine, Santa Librada. Peter Megaw collection; Chris Stefano photo.**

Figure 14 (below). **Fluorite, 5.1 cm, from the Filo mine, Santa Librada. Peter Megaw collection; Chris Stefano photo.**

Topaz Localities in Mexico

Tepetate, Veronica, San Felipe

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Although topaz has been found at many sites in Mexico, some of the best specimens have come from small diggings north of the town of Tepetate in San Luis Potosí state, from the Verónica workings near Copetillo in Zacatecas state, and from workings near San Felipe in Guanajuato state. These three occurrences have provided most of the collector-quality specimens of Mexican topaz during the last 60 years.

LOCATION

Although there are dozens of topaz occurrences in the states of San Luis Potosí, Zacatecas and Guanajuato, this article will deal only with the three most prolific ones, namely the Tepetate, Verónica and San Felipe workings. Because of unreliable reporting by the diggers, and assumptions made by buyers, many specimens have been assigned to the wrong locality. A number of Verónica mine specimens, for example, have in the past been assigned by Mindat to Tepetate (since corrected), and probably most specimens from the San Felipe find have been assigned to Tepetate as well. Crystals from the Verónica mine can be tentatively distinguished by their habit, inclusion density and the abundance of included or associated specular hematite (see below), but specimens from Tepetate and San Felipe are more difficult to distinguish from each other. In addition, it should be remembered that there are many minor topaz occurrences scattered along an extensive belt of rhyolite deposits, and many of the crystals from these are very similar as well.

HISTORY

Topaz crystals from San Luis Potosí were figured by Grünhut (1884), Pelikan (1890) and Eakle (1898), though no specific locality was given. Grünhut wrote that he was pleased to be able to study a topaz crystal from a "new" Mexican locality (new to him, at least), which had originally been purchased by a local museum from mineral dealer Louis Sæmann (1821–1866) in Paris. Following Sæmann's death, his business was absorbed by the company of August Krantz (1809–1872) in Bonn, so this specimen must date before 1866 unless Krantz sold it with its original label.

Anton Pelikan (1890) was studying etch figures on topaz, and how they varied with each crystal form. He obtained his numerous study specimens from the Austrian mineralogist Gustav Tschermak von Seysenegg (1836–1927), who had acquired them the year before on behalf of the University of Vienna.

The Philadelphia mineral dealer Albert E. Foote wrote in the February 1892 issue of his *Naturalist's Leisure Hour and Monthly Bulletin* that "on my last visit to San Luis Potosí, I secured some of the best specimens of this very beautiful gem mineral ever seen."

Aguilera (1898), in his geographical study of the minerals of Mexico, noted topaz occurrences in San Luis Potosí state in the Municipio de Cerritos (Cerro del Tepózan and Sierra Cambra, located northeast of the city of San Luis Potosí) and near the city of San Luis Potosí itself (Hacienda de Canoas), none of which are near Tepetate, suggesting that the Tepetate occurrence had yet to be discovered. A later edition (Salazar Salinas, 1923) added topaz occurrences at Mesa de San José Buenavista and Mesa de Santa Cruz, also within the Municipio of San Luis Potosí, but no mention of Tepetate.

Figure 42. **Topaz cluster with red rutile inclusions, 2.3 cm, from the Verónica claim near El Copetillo, Villa García Municipality, Zacatecas. Michael Shaw collection and photo.**

Figure 43. **Topaz crystal group with red rutile inclusions on rhyolite with hyalite opal, 3.8 cm, from the Verónica claim near El Copetillo, Villa García Municipality, Zacatecas. Rob Lavinsky (The Arkenstone) specimen, ex Richard Hauck collection; Joe Budd photo.**

smaller; crystals over 5 cm are considered extraordinary. The color ranges from colorless to golden brown and deep brown, in some cases zoned. Miners grade them as *blancos* (colorless), *amarillas* (yellow), *comena* (beeswax color), *miel* (honey-colored), and *café* (rich brown) (Miller and Olson, 1967). The color of the crystals is thought to be related to the temperature of crystallization, colorless crystals having formed at temperatures above 500° C, and amber-colored crystals below that temperature. Compositional differences are very minor but correlate somewhat with color, the amber color correlating with higher As and Sb, whereas the colorless crystals are richer in Li, Nb, Ta, Zr, Cr, Ni and Zn (Dewonck *et al.*, 1998). The color is principally due to the presence of color centers which are unstable above 500° C (Leroy *et al*., 2002). Crystals are susceptible to sun-bleaching, like their Utah counterparts. Crystals fluoresce a bright green color under longwave ultraviolet light.

Topaz crystals typically occur in at least two major habits, reflecting different collecting areas in the rhyolite; and indeed Leroy *et al*. (2002) state that the color and habit of the topaz crystals do vary

The Moctezuma Tellurium Mine

Moctezuma Municipality, Sonora, Mexico

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The Moctezuma gold-tellurium deposit, discovered by a local rancher in 1935, is famous as the prime occurrence in the world for the oxidized minerals of tellurium, having yielded 44 species containing essential tellurium. Moctezuma is also the type locality for no less 18 species, most of them tellurium-containing. The site is difficult to reach, but specimens can still be found on the market.

INTRODUCTION

More than 200 minerals are known to contain tellurium as an essential constituent. This complexity is linked primarily to the rich redox chemistry of Te, which incorporates many possible oxidation states (Te^{6+}, Te^{4+}, Te^{0}, Te^{2-}) as well as intermediate states such as in polytellurides (e.g., Te_2^{2-}) (Grundler *et al.*, 2008; Christy *et al.*, 2016). The Moctezuma deposit is the premier locality worldwide for tellurium mineralogy; it is the type locality for 18 minerals, and has yielded 44 species containing essential tellurium. A preliminary report by Richard V. Gaines appeared in 1970, in the second issue ever published of the then-new collectors' magazine, the *Mineralogical Record*.

LOCATION

The Moctezuma mine is located in west central Sonora, Mexico, near the small town of Moctezuma (lat. 29° 47.5' N; long. 109° 41' W). The area is a semi-arid zone of the Sonoran Desert characterized by extreme seasonal variation, with cool, dry winters and hot, wetter summers. It is about 210 kilometers by road from Hermosillo and 175 km south of the International Boundary at Douglas, Arizona. Access to the mine from the town of Moctezuma is via a very poor dirt road extending 22 km south-southwest. The first 14 km passes over a recent lava flow, after which it is necessary to ford the Moctezuma River. From there the last 8 km across a rugged, hilly terrain are impassable even by four-wheel-drive vehicles, and must be traversed on foot. Visits should be made only during the winter months, as the high summertime temperatures and lack of potable water in the Sonoran Desert render travel dangerous from April through October.

The Moctezuma mine has also been known by the local residents as the *Bambolla* ("hot air") or *Bamboya* mine. According to Richard Gaines, this was in reference to what the local people considered to be exaggerated tales of rich gold ore found there. The Mindat-preferred name, however, is the Moctezuma mine, and the main ore-bearing vein is the Bambolla vein.

Bambollita and San Miguel Mines

The Bambollita ("Little Bambolla") mine, also called the Oriental

Figure 18. **Emmonsite crystal cluster, 1.9-mm view, from the Moctezuma mine. Joachim Esche collection and photo.**

Figure 19. **Emmonsite, ca. 1-mm view, from the Moctezuma mine. Julius Weber collection and photo, as illustrated on the cover of the March-April 1972 issue of the *Mineralogical Record*.**

San Miguel mines as yellowish to dark green crusts, rosettes and sprays of curved hairlike crystals up to 5 mm long showing a vitreous luster. The crystals range from spheroidal to elongated, rounded and vermiform to fairly sharp and acicular with indistinct termination faces. Associations include most of the other secondary tellurium minerals.

The name is for American economic geologist, Samuel Franklin Emmons (1841–1911) of the U.S. Geological Survey.

Eztlite $Pb_2^{2+}Fe_3^{3+}(Te^{4+}O_3)_3(SO_4)O_2Cl$

The Moctezuma mine is the type locality for etzlite, where it is found as part of a suite of oxidized ores including emmonsite, schmitterite, kuranakhite and cuzticite. The paper-thin crusts of

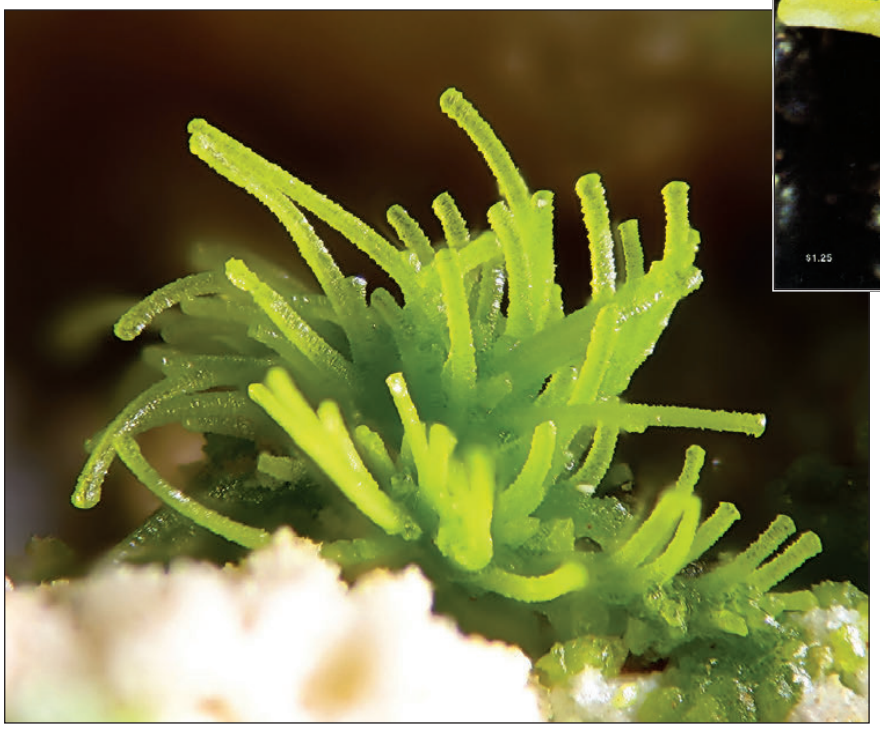

Figure 20. **Emmonsite, 3-mm view, from the Moctezuma mine. Christian Rewitzer collection and photo.**

The Navidad Mine

Inde, Durango, Mexico

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For many decades the Navidad fluorite mine in Durango has produced excellent and distinctive creedite specimens in quantity, as well as attractive octahedral fluorite specimens. Because most of this creedite is colorless to orange, it has always been somewhat upstaged by the great purple creedites from Santa Eulalia and Akchatau. Barring those comparisons, however, Navidad creedites are world-class in size and quality, and their abundant availability has put them within reach of any collector.

LOCATION

The Navidad mine is located in the Indé municipality, about 130 km due west of the large city of Torreón and about 40 km northwest of the town of Rodeo, but outside the boundaries of the municipality of Rodeo. The name "Abasolo" has sometimes been incorrectly applied, because the small town of Abasolo (22 km southeast of the mine) is closer to the mine than the town of Rodeo, though both towns are still within the Rodeo Municipality. Likewise, "Rodeo" or "Mina Rodeo" have sometimes been used incorrectly as the locality designation. Actually, the mine is not very near *any* town or village in Indé municipality, but the nearest would be San Rafael de Jicorica (sometimes misspelled Jícora or Jicoriga), about 15 km to the southeast, or Francisco de Asis about 18 km to the northwest—and indeed some specimens (Moore, 2020) have been labeled as the Navidad mine, San Rafael. For mineral labels the locality can be cited simply as the "Navidad mine, Indé Municipality, Durango," but could also be labeled "Navidad mine near San Rafael de Jicorica, Indé Municipality, Durango."

The mine name Navidad translates as "Nativity" (Christmas). But the full correct mine name is the "Clarines Navidad" or "Clarines de Navidad" (Christmas Trumpets) mine. The satellite photo identifies it only as the "Unidad Navidad" (Christmas Unit); "Unidad" (Unit) being a standard adjective for mining company properties.

HISTORY

Opened in 1947 and still in operation today, the Navidad mine has been exploited primarily for massive industrial-grade fluorite. The vein is very vuggy, and has also yielded large numbers of distinctive specimens of octahedral fluorite crystals and colorless to orange creedite clusters (Moore, 1989; King and Robinson, 1990; Moore, 1997; Polityka, 1999). Megaw (1999) reported:

> Stan Esbenshade (Midwestern Minerals) has been busy at Rodeo, Durango, collecting numerous plates of pink to purple octahedral fluorite. Individual crystals average ¾ inch (2 cm) across with some "Cyclops-like" prominent singles to 2 inches (5 cm). Some plates are partially coated with quartz and many show attractive white highlights along certain crystal faces. Stan has also been getting moderate quantities of the lustrous creedite balls from the same locality. These range from an inch (1 cm) to 6 inches (15 cm) across and some are essentially creedite-cemented plates and fragments of chalcedonic quartz casts over octahedral fluorite (now mostly gone). Other groups incorporate chunks of purple fluorite giving a nice color contrast with the white to orange creedite. Stan also has 2–3 chunks of massive lavender creedite up to 4 inches (10 cm) across, partially encrusted with lustrous lavender crystals to 4 mm.

Figure 25. **Creedite, 6.3 cm, from the Navidad mine. Joe and Susan Kielbaso collection; Jeff Scovil photo.**

Figure 26. **Creedite (rare lavender color), 4.5-cm view, from the Navidad mine. Domenico Preite collection; Matteo Chinellato photo.**

The San Carlos Sulfur Mine

San Felipe Municipality, Baja California, Mexico

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The San Carlos sulfur mine in Baja California has been the source of modestly priced but attractive crystallized sulfur specimens since at least the early 1960s. Many a rock shop in those early days stocked a bin full of colorful sulfur specimens to catch the eye of young collectors. Though not the equal of Sicilian sulfurs, the finest Mexican examples contain lustrous crystals to over 1 cm and make museum-quality display specimens. Despite decades of small-scale specimen mining, the supply is far from exhausted.

INTRODUCTION

Sulfur is found naturally in fumarolic areas near volcanic activity or along fissures emanating from magma bodies at depth. Baja California is thick with volcanic rocks and accompanying hot springs and fumaroles where the smell of sulfur is common. Two important sites in Baja have become centers for the commercial mining of sulfur, but both stand abandoned today. The earliest-known of these deposits, mined since the 1800s, is at Cucapá south of Mexicali. The mine has had various names including La Rafaela, El Éxito, and Promontorio. No crystal specimens are known to have been recovered there, so it is of no interest to mineral collectors.

The other sulfur mine in Baja is the San Carlos mine (also known as the Apache, Verónica, or San Felipe mine), located 37 km south of the tourist town of San Felipe, on the old Puertecitos road, 7 km due west of Playa Hermosa. This is a large sulfur field covering an area measuring about 1 km (NE–SW) long by 500 meters (NW–SE) wide. The various San Carlos workings are centered around 30° 43' 17" North , 114° 46' 39" West (digitally at 30.72139,–114.77750). Nearby is the Delicias mine (located about 1,000 feet to the southeast), a source of sulfur specimens identical to those of the San Carlos mine.

On the flat area past the old warehouse site there is a landing strip for small planes. But the main access is via a branch road extending east from the mine to the gulf coast town of Nuevo Mazatlán. This road, which is today the main route to the mine, branches off Highway 5 going west, just north of the kilometer 32 marker. Proceed for about 6.5 km to the old Puertecitos road. Most of the mining activity was focused to the north of this junction, extending up the valley for about a mile (Kier, 2024). Google maps identifies the site simply as *Mina de Azufre* ("Sulfur mine").

HISTORY

Sulfur mining in the area goes back at least to the late 1920s, when the former governor of Baja California (in 1915–1920), Col. Esteban Cantú (1881–1966) owned one of the sulfur claims, the El Apache. Cantú had single-handedly been responsible for keeping Baja California out of the Mexican Civil War during his term as governor in 1915–1920, and for a while thereafter was forced into comfortable exile in Mira Loma, California. But he returned to Baja a few years later to invest in mines, and was elected a senator in 1956. As of 1952, Cantú was said to be leasing his Apache claim

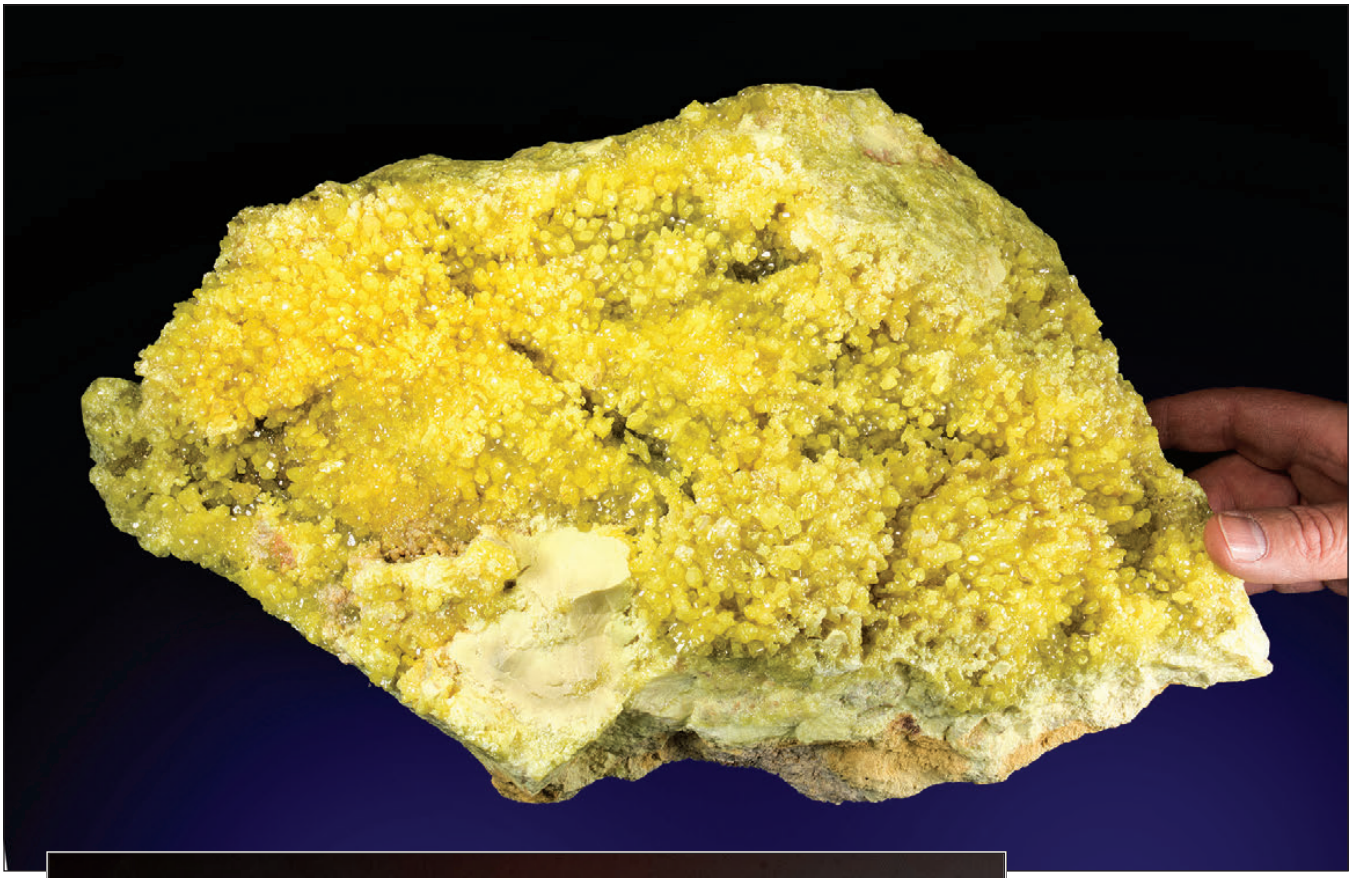

Figure 14. **Sulfur crystals lining a large pocket, 35 cm, from the San Carlos mine, Baja California. Weinrich Minerals specimen and photo; ex Chris and Agatha Galas collection.**

Figure 15. **Sulfur crystal with cavernous or hoppered faces, 2 cm, from the San Carlos mine, Baja California. Weinrich Minerals specimen and photo; ex Martin Jensen collection.**

Peter Megaw
and the
Minerals of Mexico

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Peter Megaw has been a fixture of the annual Tucson Gem and Mineral Show (as Exhibits Chair), a specialist and professional consultant in the mineral deposits of Mexico, and a determined collector of the finest Mexican minerals for several decades. He has inherited the mantle of the late Miguel Romero as the leading preserver of the mineral patrimony of Mexico.

INTRODUCTION

Peter Megaw is well known to anyone who has ever exhibited at the Tucson Gem and Mineral Show. On set-up day he can be seen motoring around the show floor on his three-wheeled scooter, tending to whatever problems and details might crop up (or out) regarding the spectacular temporary displays that go into the making of the world's finest ephemeral mineral museum. During the rest of the year he does geological consulting for mining companies operating in Mexico, works on adding to his unique library of Mexican mining literature, and relentlessly pursues new discoveries of collectible Mexican minerals. A visit to his house and office is an immersion in mineralogical data that would take months to fully explore. Happily (for the ***Mineralogical Record***), he is headquartered right here in Tucson, and his presence has been a boon to the entire series of special issues devoted to the minerals of Mexico, both as an author and a reviewer as well as a source of fine specimens and ephemera to illustrate.

EARLY LIFE

Peter Kenneth McNeill Megaw was born in Pittsfield, Massachusetts, on July 18, 1952, the son of college professors Ann (mathematics) and Neill Megaw (English). Growing up in Williamstown (the home of Williams College, where his parents were faculty members), he had a strong interest in nature and a compulsion to collect practically anything. Among his first treasures were a galena cleavage chunk he found in the school driveway, some crude pyrite crystals from somewhere and a sky-blue rock he picked up on the shore of Lake Champlain. His next door neighbor happened to be Dr. Freeman Foote, a Williams College geology professor, who knew about Peter's interests and gave him a cast-off field compass. He also taught Peter how to get into the college geology museum, even if the door was locked, so that he could ogle at leisure the T-Rex skull, the giant slabs of petrified wood, big chunks of rose quartz and the ultraviolet mineral exhibit.

At the age of 13, Peter attended a summer camp where his counselor was a caver who took the kids into some nasty, muddy, tight caves in central Pennsylvania. He loved it and promptly joined the National Speleological Society. He was readily accepted into the New England caving community, and spent many weekends underground. He also had an eighth-grade science teacher named Richard Hamilton who taught the class the rudiments of mineral identification; Peter took to it like a duck to water, and had a perfect score on the final test.

When he was 16, Peter's parents sent him to Sweden for a year

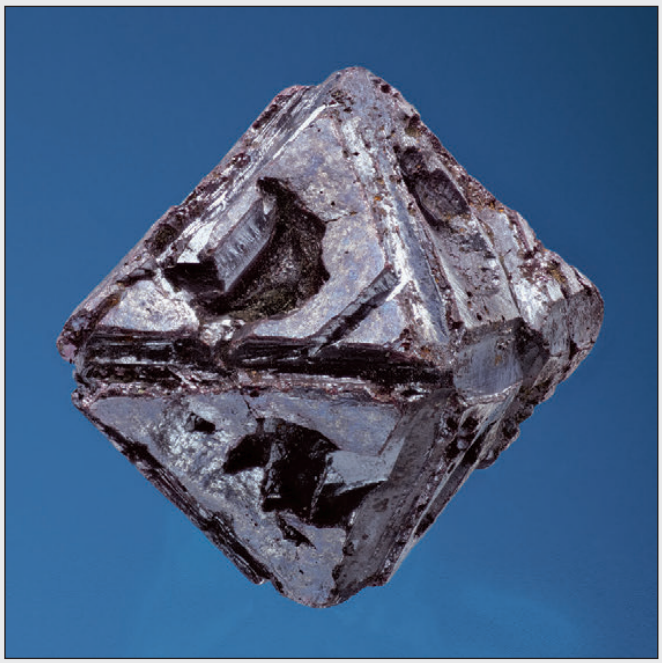

Figure 28. **Cuprite, 1.2 cm, from the Boleo mine near Santa Rosalía, Baja California Sur, Mexico. Peter Megaw collection, ex American Museum of Natural History collection; Jeff Scovil photo.**

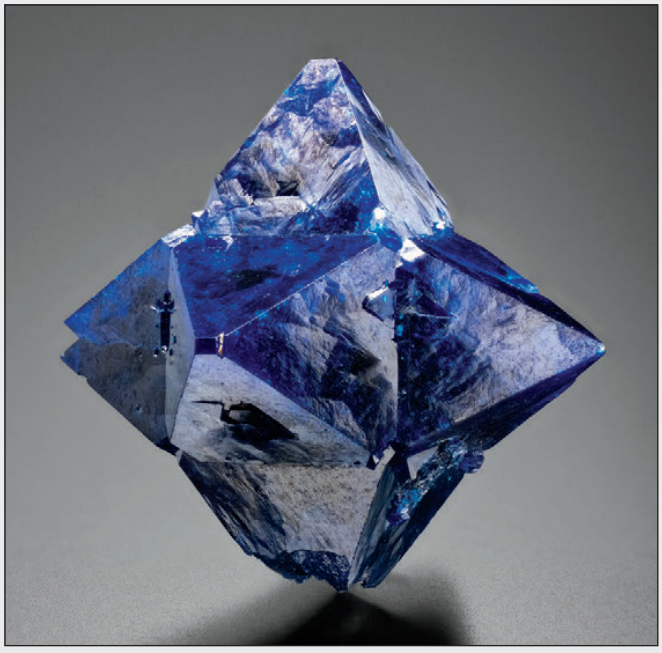

Figure 29 (above). **Cumengeite, 2 cm, from a 2019 find at the Curuglu mine, Boleo District near Santa Rosalía, Baja California Sur, Mexico. Peter Megaw collection; Jeff Scovil photo.**

Figure 30 (above right). **Aurichalcite with cerussite and hemimorphite, 3.5 cm, from the 8th level of the San Antonio mine, Santa Eulalia District, Chihuahua, Mexico. Peter Megaw collection; Jeff Scovil photo.**

Figure 31. **Boleite, 1.4 cm, from a 2019 find at the Curuglu mine, Boleo District near Santa Rosalía, Baja California Sur, Mexico. Peter Megaw collection; Jeff Scovil photo.**

In Memory of
Mike New

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My father Michael Edwin New was born in Ogden, Utah on October 24, 1945, to parents Everly and Nadine New. Everly was involved in the Criminal Investigation Division of U.S. Military Intelligence, and Nadine was a housewife who had been studying to become a nurse.

Relatives have told me over the years that my father was a very precocious child. His many antics involving playing with reptiles, scaring older relatives, driving (and wrecking) tractors in the field, and a host of other fun but dangerous incidents, earned him quite a reputation with the adults and a lot of respect from his similarly aged relatives and friends. My father also excelled in school, and at an early age an interest in science took hold. During summers in the early 1950s my father spent a lot of time in or near Ferron, Utah, where he had an uncle named Russell. I remember my father telling me that one of his very earliest encounters with minerals was at the interesting (and explorable!) barite dikes in the countryside around his farm.

By my uncle's account, around 1958 or so the New family, now with three children in tow, moved to Phoenix, Arizona, and settled in central Phoenix. My father said that during this time he had started to do some very minor field collecting, and on lunch breaks he would sometimes sell his specimens! As most budding collectors soon learn, money is needed if they are to pursue their interests further, so my father, while working as a newspaper delivery boy, also took some part-time jobs with prominent mineral shops of the time, including Jimmy Mueller's on 10th Street and Camelback Road, the Rock Hobby Shop on 24th Street and Indian School, owned by Alfred and Cecile Storer. During this time his knowledge of minerals grew and he started to develop his collecting habits: he would regularly take collecting trips to local mines in Arizona, mostly with his best friend Keith Vanderbosh.

In the early 1960s, Everly decided to move once again, this time to Orange County, California, following new jobs that were available in the construction boom. My father had just a year of high school left, so he decided to stay and finish out the year at Arcadia High School (where, incidentally, Steven Spielberg had been a classmate for years). At the end of the year he rejoined his family in Orange County and settled in for a new chapter of his life.

Figure 1. **Mike New (1945–2022).**

In southern California, my father began attending California State College at Fullerton. He met my mother, Sandra Stratton, when he was 20 years old, at a friend's party. They started taking guitar lessons together, and soon fell head first into the early 1960s folk music boom. Attending classes became secondary to attending folk concerts at the legendary Golden Bear nightclub every Friday. They even cut a long-playing record, which, sadly, is lost to time!

My mother and father were married in 1966, at my mother's parents' home in Yorba Linda, California. Very soon thereafter, my father was drafted into the U.S. army for the war effort in Vietnam,

Figure 9. **Mike New at the Ojuela mine in 2002, making specimen mining plans with his Top Gem associates Lazaro de Anda (left), Federico Salas Alzarado (right) and Antonio Briones. Tom Moore photo.**

Figure 10. **One of the finest Guerrero amethyst clusters (13 cm) ever found. It was recovered by Mike New and Wayne Thompson at the Santa Margarita mine near Amatitlán, and has served as the website logo for the *Mineralogical Record* for many years. It is now in the Jason New collection, and is pictured in *Ikons: The Beauty of Fine Minerals* (2024).**

out, and he did pretty well running the business from his nursing home bed. Special attention must be given to Faustino Piceno, our warehouse manager and dutiful employee for 17 years. Without him, the operation of Top Gem for many years would never have been remotely possible, and during my father's worst periods in the nursing home, Faustino visited him and cared for him on a nearly daily basis.

In early 2020, I was informed that my father was to be awarded the prestigious American Mineral Heritage Award, which is basically the field collectors Hall of Fame award. I tried to get him to accept in person and make a public appearance, but his health prevented it, so in one of my life's proudest moments, I humbly accepted the honor in my father's place. Over the next few months my father's health deteriorated until finally he passed on July 23, 2022. There was still, however, one more mineral honor to be won: I learned at the funeral itself that my father would be honored with a new mineral named after him, mikenewite. Appropriately, this rare mineral occurs so far only with purple adamites from Mapimí: a more fitting tribute would be hard to imagine.

My father made many life long friends in his years as a mineral enthusiast, and he would thank people like Curt Van Scriver, Stan Esbenshade, Andy Clark , Gary Fleck, Tony Jones and most of all Wayne Thompson for their camaraderie and shared misadventures! I myself cannot adequately describe the joy I experienced in learning from him, and I will forever be grateful for the love of nature he instilled in me, places he took me to, and the wonders he showed me! Mostly though, we just had so much damn fun! Rest in peace, Dad!

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