

***The Dragon Caves*** (Faye Brownlie)



Las Cuevas del Drach (The Dragon Caves) are situated half a kilometer away from the Mediterranean Sea, on the south-east coast of the island of Majorca. Today this subterranean paradise is considered to be one of the key tourist attractions of the island. On a one hour tour, visitors can walk on 700 meters of paths, experiencing the stillness and beauty of the stalactites and stalagmites; and calm waters within the caves. In fact, you can complete your tour with a boat ride down Lake Martel, accompanied by a live quartet, all members of the local Chamber Orchestra. How did this come to be?

## Formation

### Subdivisions of the Cenozoic Era – The Age of Mammals and Birds

Era	Period	Time mya*	Key events
C	Holocene (Recent)	.01	The world as we find it today. Dramatic human influence on world's biology, and climate.
E	Pleistocene	2-.01	The Ice Age – great ice-sheets, and glaciers advance and retreat. Modern humans (homo sapiens) appear.
N	Pliocene	5-2	World's plants, animals, and geography much like today's. Early humans use stone tools.
O	Miocene	24-5	High point of Age of Mammals. Grasses spread and support grazing animals. Climate continues cooling.
Z	Oligocene	34-24	Many modern types of flowers and trees appear. Climate starts long-term cooling.
O	Eocene	55-34	First really huge mammals evolve, along with some modern bird groups. Warm climate.
I	Palaeocene	65-55	Dramatic evolutionary radiation of mammals after extinction of dinosaurs. Warm climate.
C			

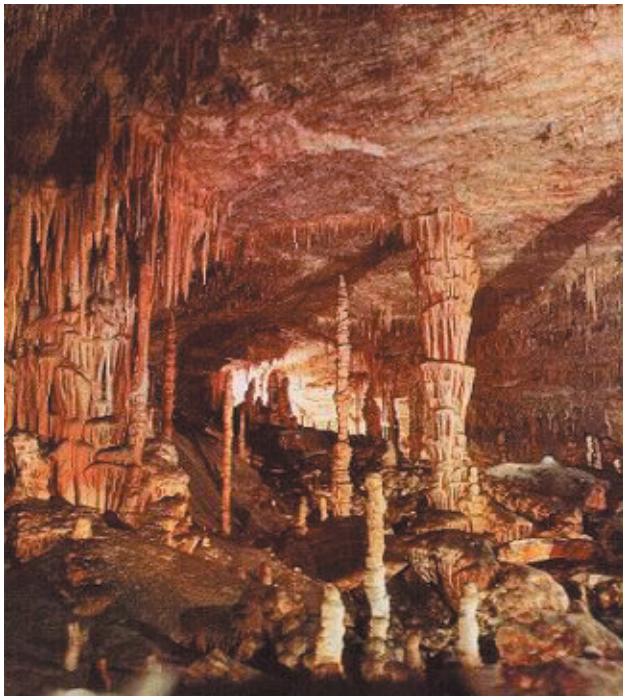
\*mya – million years ago

The Dragon caves are ancient, formed in the Miocene Period. They are Karst caves. Karst landscapes and caves are formed when water containing carbon dioxide percolates through the ground and dissolves the soluble rock it passes through. In this case the rock is limestone, and the Dragon Caves like most Karst caves, are formed in limestone.

Limestone, a sedimentary rock that contains large amounts of the mineral calcite (calcium carbonate), is formed mostly from corals and the shells of marine organisms that have died and settled on the ocean floor over tens of thousands of years. When formed, limestone is solid and impermeable to water. However, over time the rock may form cracks from the effects of glaciers moving over it, or from other **tectonic** forces. It is these cracks that allow the water to ooze in, start to widen them, and create caves and other features like sinkholes that are common in Karst landscapes.

Typically, air and water have a concentration of carbon dioxide (CO<sub>2</sub>) approximately 0.03%. In water, this small concentration of CO<sub>2</sub> produces a weak acid (carbonic acid) that takes literally tens of thousands of years to dissolve the limestone and create the caves. As the caves are forming, dripping water, which contains the dissolved limestone, creates icicle like, **calcareous** stalactites that hang from the ceiling of the caves and stalagmites, made as the drips land on the floor of the cave and grow up.

## Discovery



*Surrounding us on all sides, radiating in the glow of the magnesium lamp, are marble cascades, rows of organ pipes, lace curtains and crystal chandeliers. And all this splendour is made of just one substance, calcium carbonate. Sculptured by one artist: drops of water! A truly unforgettable spectacle.*

(Notes from Martel)

These caves were first mentioned in writing in 1338, but it wasn't until 1632 that mention of the name 'Drach' or Dragon appears. In Majorcan mythology, the dragon has a snake-like body and bat-like wings. It is considered to be an evil devil, a symbol of strength, and a sentinel of a treasure. Many believe that all these symbols are represented in the caves.

For many years, only three chambers had been discovered in the Caves of Drach. These were the Black Cave, the White Cave and the Luis Salvator Cave.



*Martel (1859-1938) He is considered to be the father of modern **speleology**.*

In 1896, E.A. Martel of France, was invited by Archduke Louis Salvator to explore the Dragon Cave. He discovered 1200 meters of unexplored cavities, including a fourth cave, Frenchman's Cave, and the largest subterranean lake in Europe, aptly named Lake Martel.

Martel was the first to explore caves with a scientific interest. He kept detailed journals using both words and images. For this exploration he brought new equipment that he had designed – two small canoes to use to navigate the waterways.

Martel was captivated by the lake which he measured as 177 meters long by 40 meters wide by 9 meters deep. His observational notes describe his first impressions after seeing the lake:

*Thousands – if not millions – of tightly clustered stalactites hang down like long diamond tear-drops. Reaching down to almost touch the surface, they form perfect reflection on the water, creating the impression as if the boat were suspended between two pine forests.*

*Some of the columns evoke images of subterranean Indian temples, full of elephant trunks and ears. Others resemble Egyptian capitals and pyramids of intricately entwined lotus leaves. Silently we navigate the boat between these islets and **baldachins**, careful to avoid breaking of one of these delicate needles with our paddle.*

(From the film Journey into Darkness by B. Kliebhan)

## Development

In 1922, Juan Servera Campo and his wife, Angela Amer Madal, purchased the property that contained the caves and prepared them for visitors. They created new paths, stairs and an amphitheatre facing Lake Martel.

Carlos Buigas created a system of lights, in 1935, to allow visitors to appreciate the grandeur of the caves. He was so gratified with the results, he refused to take any money for his five months of work!

Other information about the caves was discovered in archaeological excavations. An eleventh century Arabic vase and a Roman chandelier with the motif of Caesar's eagle indicate that visitors from afar have been coming for centuries to the Dragon Caves. Will you someday contribute to this ongoing story and descend into the tranquility of the underworld? What evils, strengths and treasures await your discovery?

**Baldachins** – a canopy or overhang, often above an altar or a tomb

**Calcareous** – containing or like calcium carbonate; chalky

**Speleology** – the exploration and study of caves

**Tectonic** – forces and conditions within the earth that cause movement of the earth's crust