

EMERALD

Trapiche

A star that vibrates

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The crystallization of the emeralds is in itself an amazing wonder of nature.

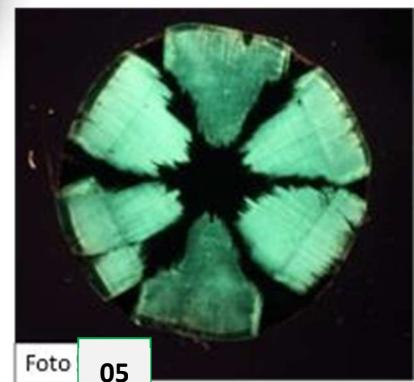


But even more amazing is the crystallization of Colombian emeralds known as **Trapiche**.



1

These emeralds are named for the resemblance they have with the main pinion gears of the trapiche machine, used for the extraction of juice from the sugar cane.



Agustín Codazzi, geographer, cartographer, engineer and an Italian colonel, was responsible for mapping Colombia during the years of 1850-1858. In his second expedition, which began in January 1851 and, as recounted in his biography, he visited the Nevado del Cocuy. He stopped first at the headwaters of Bogota and then in Lake Tota. On his way back, he studied the emerald mines of Muzo. That's when first reported, the presence of these unique crystals¹.

¹ <http://www.banrepultural.org/sites/default/files/83460/brblaa89700.pdf>

These were analyzed and described in 1879 by Émile Bertrand, French geologist, who in his study analyzed the crystallization of this particular habit, in a lot of material from the Muzo mine.

There is a concept that in Colombia, only in the Muzo mines these wonderful stones are formed, which is not correct, as they have also been found in the mines of Peñas Blancas, Coscuez, La Pita, Yacopí, and even Chivor and Gachalá, each with its own specific characteristics.

Of all the stones forming a trapiche, from the different mines, few are usable in obtaining a stone that can be faceted or carved and an even lesser chance of obtaining a gem.

2

For its crystallization, certain conditions were required, such as the chemical composition of the mineralizing fluid, the temperature, pressure and the appropriate magnetism, these conditions conjugated with the force of gravity; conditions which have already been mentioned in the scientific literature; but also I have the conviction that this process was accompanied by a resonance (mechanic)² phenomenon, probably caused by tectonic movements, volcanic and/or cosmic events, with the uncertainty if it occurred in a prolonged wave during a considerable amount of time or in one shocking impulse, just when the crystallization was taking place, which occurred approximately more than 60 to 65 million years ago, and in a fortunate combination of these factors, said resonance could have actively influence the uniform alignment of molecules characteristic of this structure.³

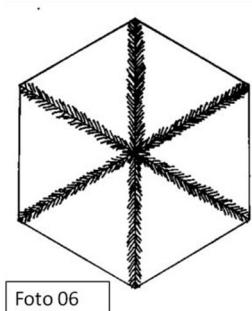


Foto 06

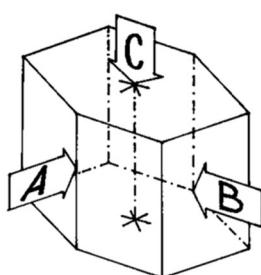


Foto 06a

Through it, I infer, that the emerald ions were geometrically intertwined with added minerals (like beryl, shale, calcite, pyrite, dolomite, kaolin, among others, depending on the locality and geological condition), forming a pattern of 6 radios distributed from the center, observing along the C axis, towards each of the edges of the crystal.

The particular conditions of each vain, the different locations,

resulted in different crystallization patterns, depending on the particular geophysical and geochemical conditions, where the resonance could have been a determinant factor.

I will describe two of the most common incidents:

In the first case, when examined by the axis A and / or B, there is evidence of veils or sets of different aggregates which form the perimeter of the interior hexagon or heart, which mineralized in a parallel structure to the exterior surface descend parallel to the outer surface, replicating its hexagonal geometry in all its dimension, together with its corresponding radii directed to their respective edges.

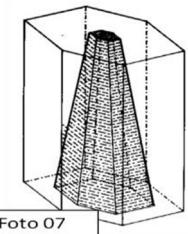


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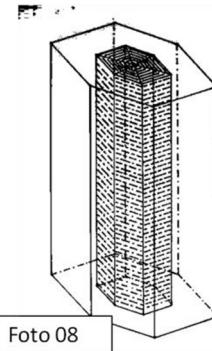


Foto 08

² Chemical classification and thermometry of the chlorite and Macanal shales , eastern emerald belt, Eastern Cordillera, Colombia

³ <http://www.youtube.com/watch?v=oAnuSA7wLCM&feature=related>

3

For the second case, they are configured in a pyramidal shape, starting from a point in the center of the crystal, extending in parallel and replicating the external hexagonal crystallization and accompanied by the same mineral aggregates which are in the spokes. Therefore, the dimension of the heart is modified along the stone.



Foto 09

We can observe the

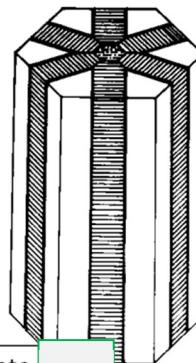


Foto 10

crystallization patterns where is evident that in spite of maintaining its hexagonal configuration, there are variations in the thickness of the radii walls, including the spokes and their particular geometric pattern, including the hexagonal perimeter of the center or if the *heart* if it had formed, or if it had been formed or formed with greater size and prominence, accompanied of small radii showing that, due to this inimitable proportion in the concentration and chemical composition, a different configuration can be present in each case depending on the changes in the concentration of **beryllium-aggregates/aggregates-beryllium**; in some cases due to the larger concentration of emerald, some radii were created, occasionally are exhibited in the calcium veils, other carbonates or translucent minerals; in other occurrences, the alignment of the aggregates leads the emerald, showing ample radial structures of different patterns conformed mostly of opaque minerals such as shale, calcite, pyrite and rutiles, allowing the formation of small radii in parallelepipeds shapes of emerald.

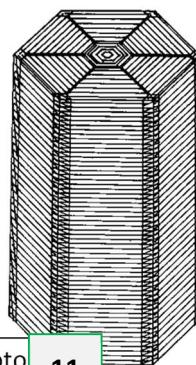
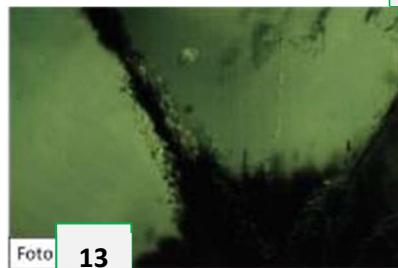
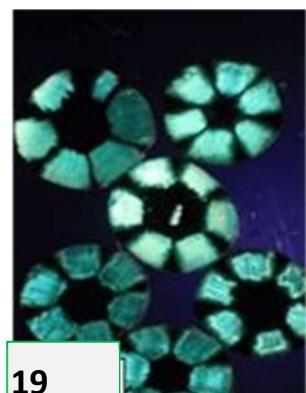
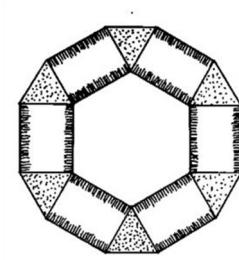
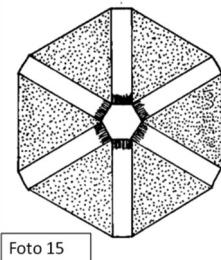
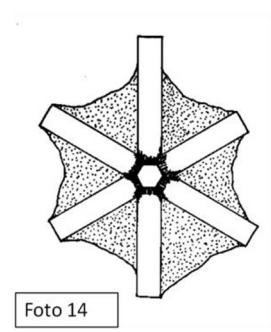


Foto 11

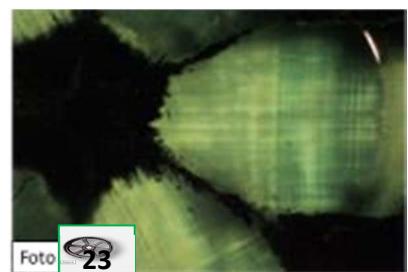
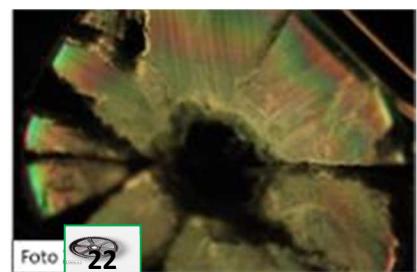
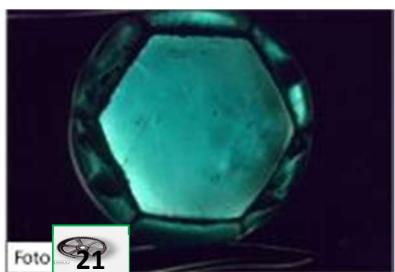
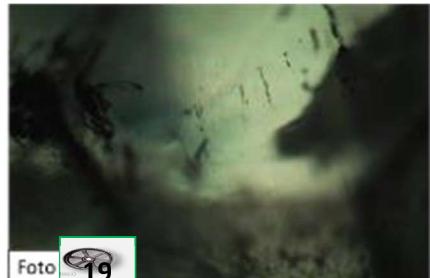


Thus, when combined a variation of the geochemical and geophysical processes that are part of the mineralization and crystallization of the emeralds and with resonance as the conductor, the different combinations of beryllium-aggregates-aggregates-beryllium were merged with the uniformity provided by the frequencies of wavelength or oscillation, taking advantage of the transition medium (mineralizing fluid), which acted as a musical instrument, allowing the creation of these rhythmical homogeneous and methodical crystallization patterns, which we know today as **trapiche**.

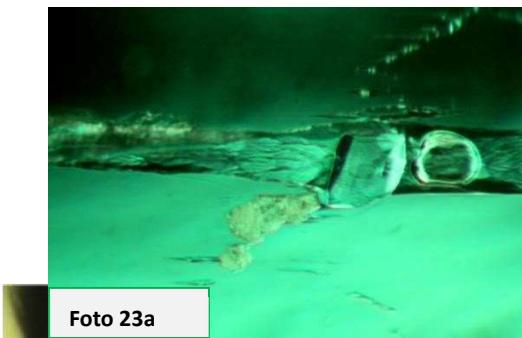


A characteristic of this stone is in the crystalline alignment of the beryl that fills the spaces between the spokes, which tends to form a detectable tissue of fibrous or tubular structures that emerge from the C axis to each of the sides of the hexagon ; similar structures are formed between each of the radii, reaching the outer perimeter of the crystals in an alignment parallel to the edge and in a reticular and perpendicular formation to the C axis of the structure , which, in view appear as a "tissue " of woven fibers, showing a pattern visible in the whole dimension of the crystal, very different from the crystallization habit of beryl, in its emerald variety, which is formed without this particular phenomenon.

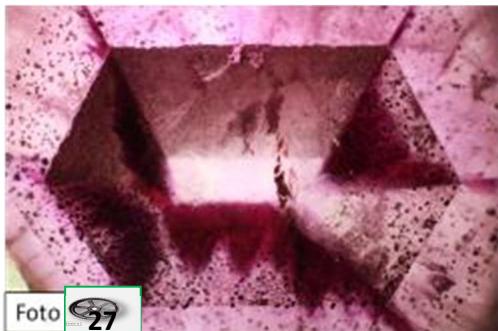
The hexagonal center or "heart" of the trapiche consists of a turbid material, visually similar to the material that is known in emeralds as the drop of oil effect, where there is a formation akin to the material present between the spokes and parallel fibers juxtaposed with C axis traversing the crystal, forming a different pattern.



In addition to the previously described inclusions, which give specific settings to the trapiche, the material also has the type of inclusions typical of Colombian emeralds including 3-phase (halite crystal, Brackish water and a gas bubble), and there is also the possibility of finding inclusions of other aggregates.

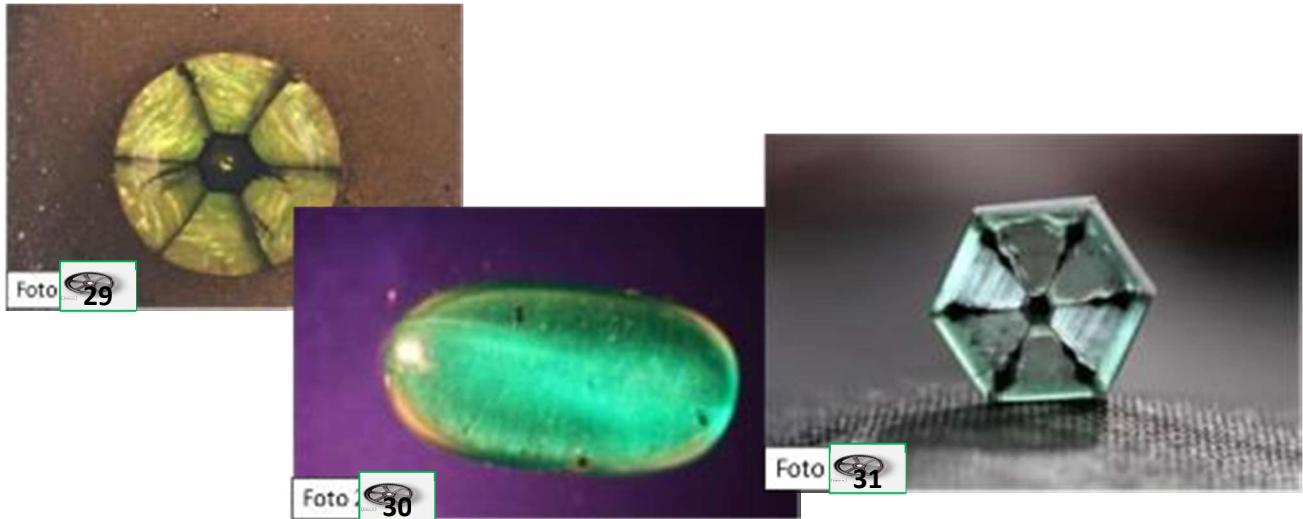


The phenomenon is not unique to Colombian emerald Trapiches; it is also found in Brazilian emeralds from the Goias mines, tourmalines of Zambia, Burmese and Vietnamese rubies, sapphires from China, beryl from Mananjary, Madagascar and recently, a finding of trapiches in quartz, amethyst variety originated in the department of Guainía, Colombia, by Mr. Victor Castañeda.



But it is in the Colombian emeralds where we find the best paradigm for its fascinating and curious beauty and rarity, which makes them commercially appreciated and valued by connoisseurs and collectors.





Another peculiarity of the reticular system or "tissue" that is set in the crystalline material of triangles or trapezoids that form between the radii of the trapiche, is the presence of a visual characteristic effect known in gemology as "Cat's Eye" (chatoyance).

This is another of the unexpected surprises of Colombian emeralds, created by a retroreflection effect that occurs when light is reflected in the fibrous structure that runs through the crystal, in a parallel alignment to the direction of the stone endowed with this effect. "Cat's Eye" stones are obtained from the material located between the radii of forming trapiche having this wonderful feature.



Foto 32

It should be noted that not every stone that has this fibrous formation has this visual characteristic, nor will be able to be used for **carving** these beautiful gems. Only rarely is feasible to identify them and benefit from them.

The rough trapiches appear in the most varied and interesting shapes, with a magical combination of minerals that makes them almost surreal, amazing us even more with this particular harmony that nature offers.



Foto 33

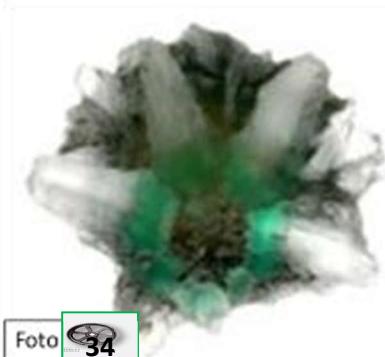


Foto 34



Foto 35

Of these, fantastic pieces are available, thanks to the hands of a skilled carver who unleashes the imagination and is inspired by this wonderful natural mixture, which can surprise us with a variety of different forms, extolling the same art that nature created.



The probability of finding a piece that has a shapely, proportionate and focused star. A crystalline material with few inclusions between the radios, a beautiful emerald green color and a considerable size, is extraordinary, and only those who hold these properties are definitely considered as **Gems**.



These wonders are found in a variety of prices, shapes, sizes and qualities.

They may be sold, from \$ 50 (fifty dollars) to over U.S. \$ 10,000 (ten thousand dollars) per carat and thanks to their rarity, scarcity and uniqueness, can be considered as a good investment.

Here then that nature, combining a dance of phenomena occurring in one or more of these pulsating geologic periods, presents us on this occasion and through Colombian emeralds, a very unique way to express their vibrant beauty.

Bogotá DC October September 2012

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SUGERENCIAS www.youtube.com/trapiche
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“vibrating”