

The Stone of Hope Emerald



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The beautiful green gemstone known as emerald has enjoyed admiration throughout the ages. There are accounts dating back to roughly 4000 BC, in references to one of the oldest gem markets known, that of ancient Babylon, and one of the earliest mines known was the famous Cleopatra's Emerald Mines, just in from the Red

Sea. A gem having such a long history of course is surrounded by much folklore and superstition, emerald being strongly linked to the mystery and inconsistencies of Love and dedicated to the goddess Venus, the alluring green color associated with nature, fertility, the eyes, and many cures have been attributed to the wearing of this precious green stone. According to the famous mineralogist/gemologist, George Frederick Kunz, in his book "The Curious Lore of Precious Stones" (Halcyon House, New York, 1938), "emerald sharpened the wits, conferred riches and the power to predict future events ... (but for) the latter virtue (it)... must be put under the tongue. It also strengthened the memory." He also states that emerald helps the truth to be seen, and protects the wearer from poison or evil spells. However, as regular "Vox" readers will already know, I am not well educated in this arena of gemological mysticism, and while I find it fascinating, let us move into an area in which I am familiar.

In the world of more tangible science, emerald is the green variety of the mineralogical species of beryl, which is a silicate mineral, combining with aluminum and beryllium. It has a specific gravity of roughly 2.71, which is much lighter than



*Fine emerald-cut
Zambian emeralds,
courtesy of ICA.*



*A fine antique Colombian emerald
which was mounted in this brooch
circa 1900*

diamond, so that if you have an emerald and diamond of the same weight and cut, the emerald will look bigger.

Other members of the beryl family include aquamarine (the blue variety), morganite (the pink variety), heliodor (the yellow variety), goshenite (the colorless variety), bixbite or "red emerald" (the red variety; see the article "A Very Rare Red - Red Emerald" in the "Vox", Summer 2003); there is another green variety, simply referred to as green beryl, but its color is very different from the strong green of emerald, and the cause of its color is also due to different elements. There may be another "cousin" in this family of beryl, called pezzottaite, but debate continues as to whether this is a new mineral species or another "different" pink beryl (see "Gems and Gemology", Winter, 2003). So as you can see, beryl has quite a few varieties, but none have stirred the imagination, launched ships across

produces a rather inferior emerald, the Indian aristocracy, or the Maharajas, were among the most important buyers of fine Colombian emeralds over the past 300 years or so, starting in the early 1700s with the Moghul rulers. Many fine jewelry houses, such as Cartier and Van Cleef & Arpels, purchased collections of emeralds from Indian maharajas during the first part of the 1900s, as was the case with the famous Merle Oberon necklace that Cartier made for her in 1938, and Antiquorum sold a few years ago for over \$2.2 million.



Fine antique Colombian emerald, approximately 40 carats, the emerald most likely from a Maharaja's collection

Very rich, lively emeralds used to be mined in Sandawana, but were only found in small sizes (usually under a carat), and are no longer available. Mozambique, South Africa, and Madagascar also produce emeralds. Russia also produced emeralds in the Ural Mountains, as well as Austria, but no mining is carried on there today. Pakistan, in the Swat Valley, produces a chromium rich emerald which is quite beautiful, but again, in small sizes (averaging under five carats, in very long,

thin crystals). Emeralds have also been found in the USA, in North Carolina, and a few very promising stones have recently been mined there. These are the most important mining locations, but there are many other locations around the world that produce emerald.

Emeralds vary considerably in price, from a few dollars per carat to many thousands per carat. So what distinguishes one emerald from another? When it comes to colored gemstones, generally speaking, the finer the color, the less important the other qualities

become, such as clarity, cut, and carat weight. And conversely, the less fine the color, the more important the other factors become. Overly saturated, or dark stones, as well as stones that are too pale, are common and do not command important prices, even if they are only lightly included (this pertains especially to pale emeralds). There are always exceptions to the rule, but the closest to the pure spectral green (think of a rainbow), the better. In grading emerald color, it is important to note how lively the stone is, since emeralds are usually a bit "sleepy", and sometimes even dull, so bright or "crystal" material is especially rare and sought after. Many people have asked me if emerald is "soft" - the answer is no; emerald has a hardness of 7.5 - 8 on Moh's hardness scale of 1 to 10, one being the softest. Because they can be very "stressed" internally, emeralds require special care. Emeralds that are heavily included, and having internal and externally reaching fractures, have a greater possibility of breakage or chipping than less included stones. Since most emeralds have a fair number of inclusions, known as the "jardin" (or garden) in them, a lightly included emerald will obviously be rarer and more valuable, especially if it has good body color.

Emeralds are fashioned in many ways, cut into both cabochon and faceted forms, and even carved. The crystal shape lends itself well to the always popular "emerald" cut, which is a stepped-cut rectangular or square shape, or the faceted pear shape, but they can be found in any shape - round, triangular, cushion, and so on. The color is nicely shown off in the cabochon cut, which has a flat bottom and curved upper portion, also in a variety of shapes.



Fine antique Colombian emerald mounted in a Van Cleef and Arpels ring, the emerald most likely from a Maharaja's collection

oceans, or commanded the high prices as that of emerald!



Emeralds are found in many locations around the world, but the most prized are the fine stones found in Colombia. There are many emeralds mined in Colombia, and as with any gem species, most mined are of commercial quality and not what the trade refers to as “gems” or “gemmy”, which in trade slogan means “fabulous”, or of a very fine, rare quality. However, when the quality of the material is fine, the Colombian emerald rules as king of the emeralds, commanding a price far beyond stones from other localities. They can usually be positively identified in the microscope by “3 phase inclusions” – a jagged pod within the stone that is filled with a liquid, containing a gas bubble and a solid (usually halite or common salt crystal). The most important mines are in Chivor, producing a strong blue-green colored emerald, and Muzo, producing a warmer, yellow-green emerald. These emeralds owe their color primarily to trace elements of chromium. As seen in other gems that get their color from chromium, such as Burmese rubies, their body color is rich and strong, but they are usually quite “included”. To find an emerald that has magnificent color and is relatively free of inclusions requires both patience and money, for the combination makes for a very rare “gem”. It is not difficult to find emeralds from Colombia in large sizes, up to 100 carats or so, but these will not be

expensive, “gem” quality emeralds; the fine gems are usually considerably smaller. Exceptional stones can be quite pricey – I know a dealer who paid \$85,000 per carat for a 12 carat Colombian stone!

Another important producer of emeralds today is Zambia. These emeralds are much “cleaner”, or less included than many emeralds, however, the color is slightly different from those of Colombia, having a more bluish undertone, since they are not chromium rich.

This very slight difference causes a very large difference in price, falling substantially under the price per carat for a fine Colombian stone (although a fine Zambian stone will be much more expensive than a mediocre Colombian stone). I have not seen the very large sizes, however, in the Zambian emeralds. The finest of these gems can sell, wholesale, for up to \$20,000 per carat.

Brazil also produces emeralds, but these are generally not of fine quality; they can be found in very large sizes, but this material is not chromium rich, is usually quite included, to the point of being opaque, and does not exhibit fine color, tending towards a pale green. India produces emeralds as well, but also of commercial quality, not fine gems. Let me take a moment to mention that while India