

# Blue Topaz



Virgen da Lapa, Minas Gerais, Brazil

## Background

Blue Topaz does occur in nature, but is rare and almost always lightly colored. Brazil has historically been one of the leading producers of gem quality topaz crystals, producing very large specimens weighing several dozens of pounds.

Most if not all blue topaz used in jewelry has been irradiated and heat treated to artificially create the blue color. The radiation process gives them their deep sky-blue colors. In a few rare circumstances, some forms of blue topaz tend to slightly fade in exposure to sunlight after extended periods of time.

Typical topaz associations in the Virgen de Lapa locality include cleavelandite, quartz, tourmaline, lepidolite, beryl, and herderite .

## History

The most famous locality for gem blue topaz in Brazil is Virgen de Lapa (aside from Itinga) where mining began in the 1930s. Interestingly, miners found these specimens by accident as they were mining for beryl due to a high demand for industrial goods in WWII. Mining in the region continued through the 1970s.

In his work *Gem & Crystal Treasures* Peter Bancroft asserts between 1960 and 1973 this locality “produced beryl continuously, and occasionally large pockets of gems were found in them that yielded aquamarine, morganite, tourmaline, and topaz, in cavities that ranged from a few centimeters to approximately two meters in diameter.” During the early seventies, many light blue topaz crystals were discovered, with outstanding weights and sizes.

The largest topaz crystal on record was discovered in Brazil and is showcased in the American Museum of Natural History. It weighs approximately 271 kilos and exemplifies a profound faceted termination.

## Location

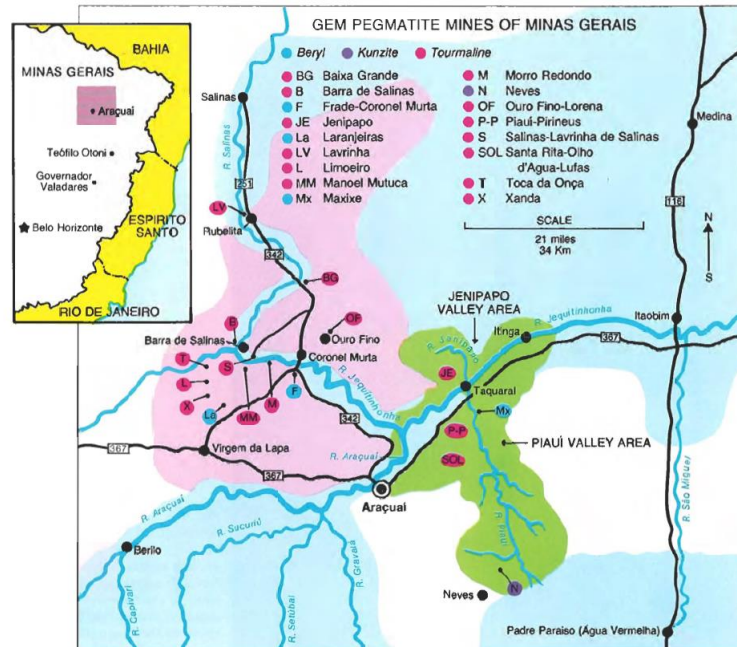
The Virgen da Lapa region is located in the northeast in the State of Minas Gerais in Brazil. It is roughly 870 square kilometers and has a population of about 15,000. Minas Gerais as a whole has produced some of the best mineral specimens known to the world.



## Mines

The five major mines of the Virgem da Lapa group are:

- The Limoeiro (lemon tree)
- Xanda
- Manoel Mutuca
- Toca da Onça (cave of the jaguar)
- Laranjeiras (orange tree).



The first three will be further discussed as little information is available for the Toca da Onça and Laranjeiras mines. We do know that some pockets at the Toca da Onça yielded fine green tourmaline and gem green beryl crystals. The Laranjeiras mine is the source of some of the 15 cm+ gem green beryl crystals as well as some blue tourmaline specimens.

As mentioned previously, the pegmatites in this area were first mined during World War II for commercial beryl on land owned by the family of Servio Getulio Ursine (nicknamed "Xanda"). When demand for beryllium, mica, and quartz dropped after the war, all of the mines were virtually abandoned for many years. Open pits near the present Xanda mine produced commercial beryl almost continuously from 1960 to 1973 when a new demand for beryllium again encouraged pegmatite mining. In 1974, underground tunnels were driven to follow the pegmatite veins in what is now the Xanda mine. Rich discoveries resulted in the exploitation of other bodies nearby, as described below.

### Limoeiro Mine

The structure of the Limoeiro is typical of that of a primary pegmatite (Shigley and Kampf, 1984). A thin, light-colored layer of muscovite mica formed the pegmatite contact with the surrounding schist. The miners then tunneled through a 4 to 10 cm thick feldspathic border zone made up of the three main constituents of all pegmatites: feldspar, quartz, and muscovite mica. These crystals were fine grained when first encountered and became coarser as the miners progressed toward the core of the pegmatite. The core of the pegmatite consisted of milky quartz. Gem pockets occurred near the core and were (atypically for most pegmatites) very common, averaging about one per square meter. They varied widely in shape as well as in dimension, with some pockets measuring only a few centimeters and others a cavernous 2 m in diameter. The miners could tell when they

were close to success because the walls near the gem bearing pockets were composed of massive lepidolite and albite, embedded with black tourmaline. The pockets were lined with albite, quartz, microcline, and lepidolite crystals on which were perched long green tourmaline prisms and well-formed crystals of topaz, hydroxylherderite, and other species. One of the best gem quality green tourmaline crystals ever found occurred in one of these pockets, however, the need for explosives to penetrate the hard-rock pegmatite at this and the nearby Xanda mine undoubtedly destroyed many such crystals. In 1975, 200 garimpeiros (Portuguese for "prospectors") worked this mine, but by mid-1976 easily accessible pockets had been cleaned out and only 30 miners remained (Cassedanne and Lowell, 1982). The mine has since been abandoned, mostly due to chaotic bulldozer stripping.

### **Xanda Mine**

The Xanda pegmatites are located 2.5 km southwest of the Limoeiro. Intensive work on the 135m outcrop of the pegmatite was first begun in 1974, and eventually hundreds of garimpeiros invaded and worked the pegmatite. The mineralogy of the pegmatite is very similar to that of the Limoeiro body except that the fine-grained border zone contained three additional minerals: tourmaline, garnet, and biotite mica. Beryl was found near the lens-shaped milky quartz core (Neves et al., 1980). Since the mine was opened, cave-ins have occurred at many adits: the southeast part of the deposit became buried beneath a massive landslide. In the northwest section, where the bulk of large gem crystals were originally found, the adits are now inaccessible and back-filled with waste. Some tunnels in the Xanda extended 150 m within the body, often turning sharply with no apparent reason for such changes in direction. At the ends of these "s" turns, however, gem pockets containing the largest and best blue topaz crystals from this deposit were found.

Apparently, the miners had a sixth sense for locating the gems (Bancroft, 1984). The Xanda mine, like the others in this group, is on private land and is not operated under a government concession. The land is rented to a tenant, who buys the mining equipment and in turn rents to the garimpeiros who work the pegmatite, with the understanding that the tenant has first choice in buying whatever is mined, generally at his own price. Little bargaining is available to the garimpeiro. Possibly because of these arrangements, many specimens disappeared during mining, even though the workings were closed whenever the miners were not busy (Lucio, 1980). The garimpeiro who sells his crystals secretly to avoid commission or other payments is called a curiango, a Brazilian bird that busies itself only during the night. Such curiangos were more prevalent in these mines than at most others in Brazil. According to the mine owner, the Xanda pegmatite outcrop was so rich that fine green tourmalines and blue topaz crystals were found almost immediately after pick-and-shovel work began. Even before systematic tunneling was started, local farmers had encountered many blue topaz crystals as well. Not recognizing them as having any value, however, they just threw them on the dumps damaging or destroying what were later determined to have been superior crystals. On another occasion, a group of miners, after celebrating at a party, stuffed a stick of dynamite into

the pegmatite-blowing into an adjacent pocket and destroying at least 10 superb topaz crystals (Bancroft, 1984).

Of the five mines in this group, the Xanda was historically the steadiest in production. From 1979 to 1982, however, the mine was completely closed down. It reopened for a year in 1983, operating with a crew of only four men. The expense of equipment, maintenance, diesel fuel, dynamite, and the like is reflected in the slow pace of mining at this and many other pegmatite deposits. The potential for further discoveries is great throughout this area, but the far greater costs of hard-rock mining (as compared with alluvial or strip mining) make it dubious that gem material alone could be profitable.

### **Mailoel Mutuca Mine**

The 18,000-acre ranch owned by Manoel Mutuca lies south of the city of Barra de Salinas and immediately south of the Jequitinhonha River, and only 8 kilometers from the Xanda and Limoeiro mines. This mine is very near the famous 1940 workings of the Barra de Salinas mine (across the river from the town of Barra de Salinas), which produced superb rubellite crystals. The Manoel Mutuca mine is mostly known for producing incredibly fine sapphire-blue gem-quality tourmaline, with some crystals up to 15 cm long x 12 cm wide and weighing as much as 1.2 kg. It did however produce some blue topaz as well. Most of these crystals occurred in colluvial deposits, but at least one in-situ pegmatite also yielded specimens.

### **Other Information**

- Another famous locality for Brazilian blue topaz is the Itinga Mine, also located in Minas Gerais.
- According to William Metropolis, the finest mineral specimen he's ever seen came from this region, although the exact mine is unknown. Although no one other than a handful of people have seen it (including himself), he describes it as a two foot or more red tourmaline crystal sitting next a foot long gem blue topaz crystal on matrix. For someone who has examined literally millions of specimens over 40 years to say this piece is the best he's ever seen speaks volumes.
- The largest flawless blue topaz gemstone in the world was recently displayed at the London Natural History Museum. The "Ostro Stone", named for Maurice Ostro's father Max Ostro, clocks in at 9,391 carats, is 100% flawless, and weighs



over 2 kg. It was discovered 30 years ago and the story is interesting. Max and his family lived in Poland during Nazi occupation, and were sent to a death camp in 1943. Max and his brother jumped off the train in an effort to escape; the brother died, but Max survived.



Max ended up in a labor camp for 18 months but escaped just before he was due to be sent to Auschwitz. With the help of a family friend, he hid in a grave for weeks during a harsh winter, surviving on potatoes. When the war ended, he travelled back to his family home only to find that he was the only survivor, and another family had already moved in.

He decided to go into business with the few possessions he had, and eventually emigrated to South America to escape the communist regime in Poland. He travelled all over the continent in search of gemstones, surviving malaria, piranha attacks, and a host of other Indiana Jones-esque adventures. It was in Minas Gerais Brazil where he found the blue topaz crystal that was to become the now famous Ostro Stone.