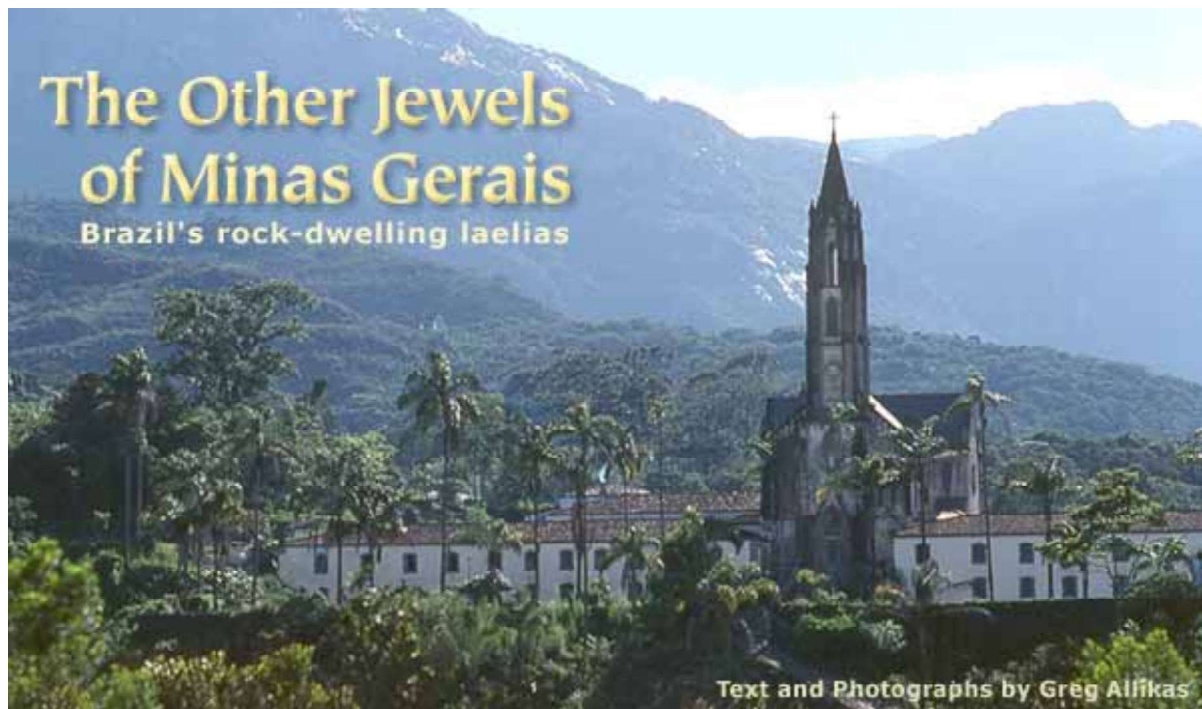


The 19th-century Matriz de Santo Antonio church stands guard over the Serra da Caraça. Part of the old monastery has been converted to a *pousada* (inn) and is open to visitors of the nature preserve.



Within minutes of arriving in the colonial city of [Ouro Preto](#), Brazil, you will most likely be approached by someone trying to sell you semiprecious gemstones – and just up the street from the central square a museum features raw and cut crystals of aquamarine, tourmaline and citrine. These gemstones are the heartbeat of Ouro Preto.

The real mineral treasures of the state of Minas Gerais are not the gemstones, however, but the bauxite and iron ore within its mountains and hills. On these mountains, there are other jewels: Brazil's rupicolous (rock-dwelling) laelias. These beautiful little orchids have perfect, star-shaped flowers that span the rainbow of color. Of the 30 or so species, most occur in rugged habitats throughout east central Minas Gerais. A few species are also found in Espirito Santo, Bahia and Rio de Janeiro.

The rupicolous laelias are related to cattleyas, the traditionally favored corsage orchids. Since the mid-19th century, when *Laelia flava* and *Laelia cinnabarina* were discovered, they have lent their bold colors to the hybridizer's palette, giving us yellow, orange and art-shade *Cattleya*-like hybrids. Today, with many more of these *Laelia* species having been described, there is a new trend toward using them to breed compact and miniature hybrids in a wide range of colors.

Typically, the plants range from about 3 inches to more than a foot tall.

Some species, like the tiny *Laelia lilliputiana*, rarely reach more than 1½ inches. A few others, like *Laelia angereri*, can be 2 feet tall. Most have several flowers per inflorescence, while a few produce more than a dozen. Some species grow an inflorescence that rises well above the foliage, while with others, the flowers barely sit above the leaves. Flower size averages 1½ inches, but some have small ¾-inch flowers and those of *Laelia briegei* are in excess of 2 inches. There are no dull or muddy colors among the rupicolous laelias. Flowers can be canary yellow, warm gold, orange, orange with red lip, red, orchid lavender, lavender with a gold lip and variations of these colors. One species has white flowers with a gold lip and there are *alba* and *albescens* forms of other species. One species, *Laelia crispilabia*, has even yielded a rare blue *coerulea* color form. Flowers can often have flares of darker colors on the petals, either obvious or latent. Many species reliably produce multiple leads and will grow to specimen size in a few years. Despite these differences, most have one thing in common: They grow on rocks. A few species, although generally included in the section, grow epiphytically.

One particularly exciting aspect of these laelias is that many have been described in our generation. Some of the more desirable representatives were discovered and described during the 1960s and one species, *Laelia alvaroana*, was described only two years ago. There may still be undiscovered species hidden in the remote mountains of Minas Gerais.

Prior to 1996, I had grown only a few of these orchids and those did not live long enough to flower more than once or twice. My first real success came with a batch of plants I brought home from the 15th World Orchid Conference held in Rio de Janeiro, Brazil. The 30 or so species in the *Parviflorae* section of *Laelia* have much to offer and quite a satisfying collection of nothing but, could be made. Indeed, some Brazilian *orchidofilos* do just that.

Unfortunately, these Brazilian jewels have received a bad reputation over the years. Even experienced growers will report sending a few to orchid heaven. A better understanding of how they grow in nature can be the key to success. Remember that they grow on rocks – sometimes directly on bare rock, but often in accumulated detritus or pockets of humus or sand. Some seek the protection of other low plants or rocky outcrops. Otherwise, they receive nearly direct exposure to the sun.

Eager to gain a better understanding of how orchids can grow in these seemingly extreme conditions, in November 2000, my wife, Kathy, and I had the opportunity to visit Brazil on what promised to be a satisfying trip for both of us. We agreed that I would spend a few days photographing orchids in their habitat if Kathy could spend a few days shopping for orchids at the nurseries around Rio de Janeiro. Late November would be a good time to see plenty of orchids in bloom.

The first part of the trip, with Francisco Miranda as our guide, would be to habitats in the state of Minas Gerais. Miranda, who is one of the most knowledgeable people of Brazilian orchids in general and especially *Parviflorae* laelias, has discovered and described many Brazilian species and is currently working on research that will clear up the misunderstood nomenclature among this group of orchids. This trip would be part of that research.



When *Laelia milleri* was described in 1960, it created quite a stir. Hybridizers were quick to recognize its potential as a parent for such popular hybrids as *Brassolaelia* Richard Mueller (\times *Brassavola nodosa*) and *Laeliocattleya* Rojo (\times *Cattleya aurantiaca*). This specimen of *L. milleri* was photographed in situ in the Serra da Moeda at an elevation of 5,250 feet (1,600 m).

Laelia milleri Blumenschein

ex Pabst

We left Rio de Janeiro and headed north into the state of Minas Gerais. Our destination was the Serra da Caraça, southeast of Belo Horizonte. On our way, we stopped near Belo Vale, southwest of the city of Belo Horizonte, and met [Antonio Resende](#), who knew of a *L. milleri* habitat in the Serra da Moeda. The colorful flowers of *L. milleri* make them desirable to collectors and over-collection may be a problem. However, the worst threat to this species, which is near extinction, is [iron ore mining](#), which can strip a whole mountainside and threaten *L. flava* and *L. crispilabia* as well as other native orchid species. Because of the mining, the species may ultimately exist only in private collections. We were able to find only a few plants in flower to photograph. Where we were, the *L. milleri* seemed to most frequently occupy a southeast face, where the plants received a steady strong breeze. The [rocks were rugged](#) and canted more than some of the other habitats we would see later during our trip – perhaps 30 to 45 degrees.

As in much of the mountainous areas of Minas Gerais, several species of *Vellozia* are dominant, as well as grasses, cacti and other near-xerophytic plants. The farther north we went, the drier the habitats became.

Laelia lucasiana Rolfe



and *Laelia sanguiloba* Withner

After a short visit to see Resende's orchid collection, we proceeded to the beautiful monastery in the Caraça Preserve, southeast of Belo Horizonte. The old college there has been converted into a *pousada* (inn). The monastery is surrounded by the horseshoe-shaped Serra da Caraça, whose highest peak is Carapuça at 6,560 feet (2,000 m). These mountains are home to several rupicolous *Laelia* species and we expected to see *L. lucasiana* in bloom. A rare wolf, [guarás](#), can also be seen here – we saw a pair during a [nightly feeding](#) by Padre Tobias, director of the sanctuary.



The following morning, Miranda and I hiked through the forest to the rocky outcrops at about 5,250 feet (1,600 m), where we hoped to find the laelias. The first we saw was actually a bonus sighting, not *L. lucasiana*, but a *Laelia sanguiloba* (above right) toward the end of this species' flowering season. The [brilliant red-orange flowers](#) were easy to spot even with the plant buried deep within the *Vellozia* on the side of the rocky slope. Getting close enough to photograph them was the biggest challenge.

Just about the time we reached the sacred *gruta* (cave) on the opposite side, the intermittent clouds blowing across the mountains began to release their rain. Sheltered in the cave, watching the [soft rain fall](#), I began to have a better understanding of how these small laelias can exist in such rugged, mountainous areas. Late November in Brazil would correspond to late spring in the Northern Hemisphere. The cool, drier winter season was over and daytime summer showers would soon be a frequent occurrence. During the winter months, the laelias rely on nightly condensation from clouds on cooling rocks to provide the moisture they need to sustain themselves. They have completed their growth cycle; produced new growths, flowered and set capsules, which have ripened and dispersed their seeds. In winter, they are resting, awaiting the warmer days of spring to repeat their growth cycle. As the valleys below begin to warm in the spring, many of the mountains become [crowned with clouds](#) as convection lifts moisture into the atmosphere. From sea level, it may appear as a permanent cloud cover, but here, at an elevation of 5,250 feet (1,600 m), the atmosphere is buoyant and the clouds are

continually moving, alternating overcast with bright sunshine.



Laelia lucasiana flowering in the Serra da Caraça, Minas Gerais, Brazil, at an elevation of 4,920 feet (1,500m). These flowers lead a tough existence in nature, notice the beetle on the flower in the right-hand clump. It is often difficult to find flowers in good condition to photograph.

Miranda had ventured out during a lull in the rain to see if there were any *L. lucasiana* in bloom up the mountain and behind the cave, but we found none of the pretty flowers we sought. The rain ended after about 30 minutes and we decided to go back to a place below where we had seen the *L. sanguiloba*. Here, we found *L. lucasiana* plants, including several with [flowers in perfect condition](#) to photograph. We were maybe 165 feet (50 m) below the *L. sanguiloba*, but the rock was mostly barren here except for pretty dwarf [blue-flowered Vellozia](#), mosses and lichens. The [rock face was broad and smooth](#) and angled about 30 degrees down the mountain and 30 degrees northwest.

We spent 30 or 40 minutes photographing the laelias and looking for others in the area. The sun was now shining brightly and there was a strong breeze. The rocks had quickly dried from the rain under these conditions; some deeper pockets of humus might stay wet for a period of time, but, for the most part, the laelias do not.



Laelia ghillanyi Pabst

On the following day, we took the scenic route through Ouro Preto to Belo Horizonte,



where [Kleber Lacerda](#) would join us for the remainder of this expedition. Lacerda lives in a high-rise in the middle of Belo Horizonte, a city of about 4 million, where, in his [rooftop shadehouse and planters](#), he grows several hundred orchids. Most are Brazilian species interspersed with a few dendrobiums and other Old World genera.

Lacerda is a doctor specializing in tropical medicine, and he and Miranda have described numerous *Catasetum* species and frequently exchange information about the rupicolous laelias.

(left) *Laelia ghillanyi* in its rugged habitat at about 4,920 feet (1,500m) in the Serra do

Cipo

We got an early start the next morning for the Serra do Cipó where we hoped to find *L. ghillanyi* in bloom. Karl Meyer, another *orchidifilo* from Belo Horizonte, had joined our party. I felt fortunate to be in the company of such experienced and knowledgeable orchid enthusiasts.

The first location provided us with a challenging steep climb, first up a grassy hillside, then across large rocks, which, in this area, are of volcanic origin as opposed to the iron-ore mountains where *L. flava*, *L. milleri* and *L. crispilabia* are found. We saw few flowering laelias, but a [deadly coral snake](#) was coiled in the rocks. The next location was less vertical, but [still rugged](#). When we finally found *L. ghillanyi*, it was not growing on smooth rock faces like the *L. lucasiana*, but in cracks and crevices in rough boulders. A constant strong breeze blew across the mountain, but the area was hot and dry. Both tall white and dwarf blue vellozias and other near-xerophytic plants were present. In this habitat there were small streams running down the mountain. I kept expecting to find that this extra moisture would support a different type of plant colony that, in my mind, would include colorful pleurothallids. Such was not the case, and this probably indicated that, although the courses for the water were permanent, the water itself was seasonal.

One of the desirable traits of [L. ghillanyi](#) is the variability of the flowers, and the examples we saw here were no exception. The typical *L. ghillanyi* is a concolor orchid-lavender. Lacerda and Miranda found beautiful flared examples. One was a deep rich lavender with full, round petals. I saw several with lavender segments and a cream-colored lip and also spotted a plant with very pale *albescens* flowers. This species, which was described

in 1973, has been underutilized as a parent for producing attractive miniature *Cattleya*-like hybrids. We can only imagine what hybrids could result from using some of the select color forms of *L. ghillanyi* as parents.

T

The flowers of *L. briegei* are generally of good form, making it a desirable species on its own and as a parent. Latent flaring in the petals is often transmitted to first-generation offspring.

Laelia briegei Blumenschein ex Pabst

We would spend the next two nights lodging in Serro, a town of 20,000 inhabitants 155 miles (240 km) north of Belo Horizonte. Our first day's excursion was to habitats of *L. briegei*. This species was described by Blumenschein in 1960 and the large, bright yellow flowers are usually of good form. These desirable characteristics have made the species popular as a parent for producing attractive, compact *Cattleya*-like hybrids such as *Laeliocattleya* Tokyo Magic (× *Lc.* Irene Finney), *Sophrolaeliocattleya* Mine Gold (× *Slc.* Jewel Box) and *Brassolaeliocattleya* Love Sound (× *Blc.* Bouton D'Or). Progeny of *L. briegei* often display the latent flaring characteristic of the species.



The habitats of *L. briegei* were mostly by the roadside, necessitating little of the climbing associated with the other locations we had visited. These laelias were quite [plentiful in at least one location](#) and the sight of dozens of blooming plants showing off their bright yellow flowers was reminiscent of an alpine meadow in the spring. We stopped at three or four different locations that had one thing in common: ledges. *Laelia briegei* is found on nearly flat ledges or moderate slopes of less than 20 degrees. Many of the habitats were smooth expanses of sandstone but the species could also be found where the terrain was less even and the rock surface was broken by crevices and small boulders. The plants seemed to have [no preference for protection](#) by other plants; there were as many fully exposed as there were growing in low vegetation or grasses. The general flatness of these habitats provided many places for humus and soil to accumulate and these were where *L. briegei* would often be found. Their roots were intertwined with those of neighboring *Vellozia* or cactus, creating a micro habitat that could trap moisture and nutrients. The environments we visited were in a strip between 12 1/2 and 25 miles (20 and 40 km) northwest of Serro and the elevation was 3,280-4,265 feet (1,000-1,300 m).

Being farther north and lower elevation, the daytime temperature was warmer than previous habitats, with the average being in the mid-80s F.

I noticed frequent [evidence of fires](#); burned-out *Vellozia* and charred *L. briegei* pseudobulbs. As in the habitats of *L. ghillanyi*, there were water courses. These seasonal streams branched and extended down the hills. In some areas, these water courses appeared to isolate populations of the orchids from fire and create a permanent source for seed. These plants are tough, though, and I saw [new leads sprouting from charred pseudobulbs](#). Because of the lack of dense vegetation, the fires move quickly across these *lajes* (ledges) and might only damage, not destroy, the laelias.

One of the most exciting discoveries was seeing a natural hybrid between *L. briegei* and *L. rupestris* (syn. *L. crispata*). The Brazilians knew of these plants, and found two. The first was a creamy-yellow with pink markings on the lip. The second (shown at right) was far more dramatic, with cherry-red flowers and yellow flaring. These natural hybrids have much research value and help us understand how overlapping population ranges can result in new species. They also provide insight as to how the species segregate and become unique.



Laelia tereticaulis growing in situ. Note the thin layer of white sand that covers the rock. The leaves of rupicolous laelias are

generally nearly vertical to minimize their exposure to the direct sun, a characteristic typified by *L. tereticaulis*.

Laelia tereticaulis Hoehne

The plants of *L. tereticaulis*, which resemble those of *L. rupestris* (syn. *L. crispata*), share the same type of near-xerophytic conditions. While we were looking for the former, we saw many plants of the latter that were not in flower. The differences that separate the plants botanically are beyond the scope of this article, but an observant eye could distinguish specimens in flower. Their flowering seasons are several months apart: when *L. tereticaulis* is in flower, there are ripe capsules on plants of *L. rupestris*. While the flowers of *L. rupestris* may sometimes be presented at odd angles and crowded at the apex of the inflorescence, they are usually more numerous, and flat and fuller of form than those of [L. tereticaulis](#), and often a darker color. The flowers of *L. tereticaulis* generally have an awkward appearance, with narrower petals and reflexed segments. Both species share the blue-gray powdery, glaucous leaves that protect them from their extreme environment.

The [habitat of *L. tereticaulis*](#) is indeed extreme, reminding one of Arizona or Utah. Although these laelias favored the same flattish ledges as some of the other species, the terrain was more rugged, with the ledges sometimes being vertically separated by several meters. Plants were common, but because we were near the end of their flowering season, we found few in bloom. The most striking aspect of this habitat was the desertlike character. Many species of cactus were seen, and the temperature was the warmest of all the habitats we had visited. The more northern location, some 121/2 miles (20 km) northeast of Diamantina, and the lower elevation, about 3,600 feet (1,100 m), were responsible for the warm, arid conditions. Surprisingly, the vegetation was also denser, with more low xerophytic shrubs and succulents inhabiting the rocky ledges. But because the ledges were mostly horizontal, there were pockets of accumulated detritus and soil where the laelias could find what little moisture was available. I found a beautiful waterfall that tempted me with its cool waters but there were no laelias growing on the nearby rocks and no visible epiphytes in the surrounding forest. This was probably due to my inexperienced eyes, because these streamside forests were reportedly *L. pumila* and *Cattleya bicolor* habitat. Seeing how these plants grow in such extreme conditions, one can only marvel at the adaptations they have made to do so. One of these adaptations is common to nearly all of the rupicolous laelias: The leaves of these orchids are generally nearly vertical to minimize their exposure to the direct sun. *Laelia tereticaulis* typifies this trait.

Laelia bradei Pabst

Laelia bradei (right) is one of a group of small, yellow-flowered laelias that includes



L. esalqueana and *L. itambana*. It was also one of the most elusive of the orchids we sought and it was not until our third location that we found blooming plants suitable for photography. About 12-1/2 miles (20 km) south of Diamantina, we finally saw a number of plants with flowers in good condition. We considered ourselves lucky, being that we were a month early for the main blooming season (which is normally in January). The *L. bradei* habitat was relatively gentle and similar to some of the *L. briegei* locations. Although there were rock outcrops, the laelias were on mostly horizontal ledges. The plants could be found in depressions in the rock at



about 4,265 feet (1,300 m), where accumulated debris offered moisture and nutrients to the *L. bradei*. The day had turned overcast so the temperature was pleasant, where it would probably be in the mid-80s F during the middle of a sunny day. It did not seem quite as dry as where we saw *L. tereticaulis* and *L. rupestris* and there were far fewer cacti. We actually had to cross a [swampy meadow](#) to get to the rocky ledges.

Later, in Petropolis, we purchased several plants of *L. bradei*. The small, 1-inch (2.5 cm) flowers are produced two to six per inflorescence on plants that are less than 3 inches tall. Flower color of these [perfect little orchids](#) ranges from soft butter-yellow with darker-edged petals to an overall canary yellow.

As we headed back to Belo Horizonte, we encountered heavy rain and decided to change our plans and spend the night in Petropolis. Our hosts in the Rio area, Sandra Odebrecht and Steve Champlin of Floralia, offered to let us stay in the house at their Petropolis nursery. This would allow us the following day to explore three Petropolis nurseries: Binot, Floralia and Quinta do Lago.

I was pleased to find artificially propagated plants of many of the orchids whose habitats we had just visited offered for sale at these nurseries. On another day trip to Aranda in Teresopolis, we saw many fine *L. purpurata* in bloom. We were able to add many new *Laelia* and other Brazilian species to our collection.

We stayed at the Floralia compound in Niteroi, across the bay from Rio de Janeiro, for a few days before returning home. To most of the world, Floralia is known first and foremost for its orchids. But to residents of Niteroi, Floralia is a garden center and weekend family destination. As the

season was close to Christmas, the [showroom](#) was filled with New Guinea impatiens and begonias in rich hues, fuchsias, racks of poinsettias, Araucaria Christmas trees and, of course, orchids. By mid-morning on any weekend day, the adjacent playground is full of children playing and parents sipping a beverage or having a snack from the honey shop. The naturalized [Cattleya harrisoniana](#) in the trees above were in full bloom, providing a bright splash of color. The Floralia location in Petropolis even has its own restaurant, the alpine tea house, where lunches and light snacks can be enjoyed. Although Floralia does sell orchid hybrids, the majority of its laboratory effort goes toward producing select clones of Brazilian species. Currently, the flask room has about 5,500 bottles. It was a privilege to have an inside look at one of Brazil's better-known orchid nurseries.

Having seen the native habitats where rupicolous laelias grow, we gained a better understanding of their cultural needs, which should help us grow the plants with even greater success in our South Florida shadehouse.



L. to R.; Kleber Lacerda, Karl Meyer and Francisco Miranda

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