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THE AMERICAS

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The Rainforest Aerial Tram

SAN JOSE, Costa Rica **May 1996**

By Donald Perry

Years ago my last letter to the Institute [April 29, 1988; #14] ended with a cliff-hanger about the installation of the Automated Web for Canopy Exploration at Rara Avis, Costa Rica. That project was finished several years ago, and I've started another, so it is time to bring the Institute up to date on what I've been doing.

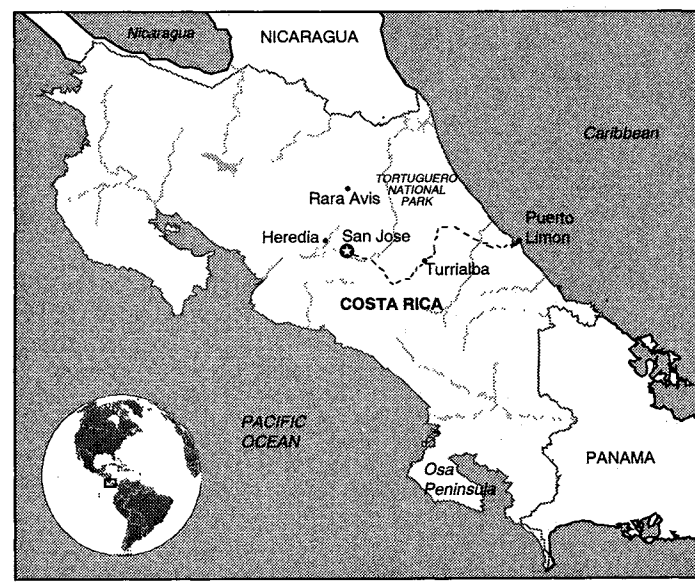
As you may know I have been pioneering the development of canopy-access techniques since 1974. The canopy is the upper, inaccessible region of a rain forest. At that time very little was known about tropical rain-forest canopies, even though it is now believed that they possess the most complex communities of life on our planet.

My work began by inventing the crossbow-and-arrow method of raising a rope into the canopy, which is the most-popular climbing method in use today. This was followed by the rope-web system that appeared on the cover of *Scientific American* magazine in 1984. Rope-web systems are currently being used by several researchers; the cost is minimal, and they offer better access to the canopy than cranes. The rope web led to the Automated Web, which was supported by a Rolex Award for Enterprise in 1984, as well as my ICWA fellowship.

AUTOMATED WEB

I installed the Automated Web at Rara Avis, an out-of-the-way nature lodge in the mountains of Costa Rica's Atlantic-slope rain forest. After considerable effort and good fortune, it was operational in January 1988. Significantly, this was the first vehicle for investigating the canopy.

The Automated Web is a radio-controlled, cable-car-like system with a cage that carries two people. At Rara Avis the 300-meter-long cable spanned a precipitous canyon. The cage departed from a cliff, traveled directly over a breathtaking waterfall,

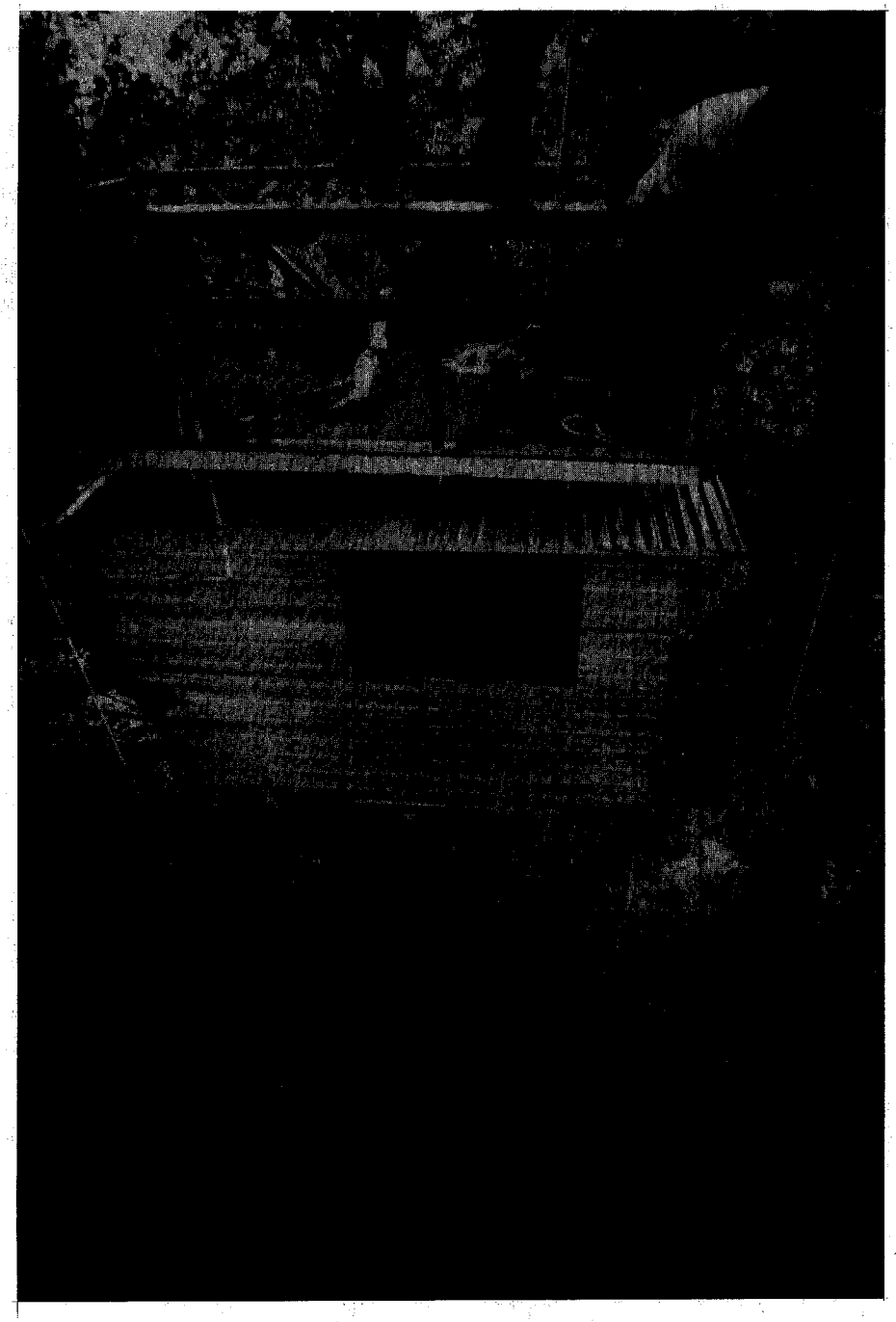


then could descend at any point along a two-hundred-meter-long transect in an expanse of untouched rain forest. It was an awe-inspiring journey into one of nature's most beautiful ecosystems.

The cover article of the January 18, 1988 *New York Times Sunday Magazine* documented the construction of the Automated Web. This was followed by a documentary on *National Geographic Explorer*, as well as many international publications and television specials.

Since then several scientists have begun to study the canopy: a French crew, led by Francis Halle, built an inflatable raft that is transported by dirigible and lowered onto the treetops (due to expense it is no longer operating); catwalks have been built at various locations; and construction cranes have been installed in several forests.

A crane costs about $2,000,000 installed. Twenty Automated Webs could be installed for that price. These would provide access to at least twenty times more forest and enough money would be left over to support several researchers for a long time. Also, the Automated Web is mobile and can be relocated in as little as two weeks to a new area of forest. Even without taking cost-effectiveness into account, more vehicles equal more research and more knowledge. One can only hope that funding for canopy research tools will be better allocated in the future.



A serious disadvantage of cranes, as well as of the Automated Web, is that researchers cannot slip between limbs down into the regions where the greatest biodiversity is encountered. To solve this problem, I am engaged in designing an automated version of the rope web called the Superman system. The Superman system will allow a scientist to "fly" through the rainforest. No other tool comes close to matching the extent of access the "superman" system will have within the forest.

This month I worked with my construction team to build the first treetop canopy-research facility in Costa Rica. This is a two-story treehouse 33 meters above ground. The lower floor has a double bed, cook stove, and shelter against insects and weather. The upper level is an observation deck. It is truly spectacular.

RAIN FOREST AERIAL TRAM

Despite the decade-long efforts of non-profit organizations, the media and research, the devastation of natural habitats continues at accelerated rates. It is now clear that only by reaching local populations can the preservation of nature suc-

ceed. To approach the problem from this angle, I have diverted my attention from canopy research to develop the Rain Forest Aerial Tram — my new project that will educate tens of thousands of local people and travelers about rain forest preservation.

The potential success of such a project was suggested in 1990 by the influx of tourists to Costa Rica who wanted to see nature. Many had seen or heard about the Automated Web and they wanted a ride into the canopy. The Automated Web, however, was not designed for tourists, and it did not have the capacity for large numbers of people.

How would the Aerial Tram be funded? As with my efforts to develop the Automated Web, the non-profit, scientific, and eco-friendly agencies I contacted showed no interest, even though my business would be aimed at rain forest-preservation, education and employment for locals. With the help of Norman Fast, I turned to private-placement stock sales. Johan von der Goltz, of Boston Capital Ventures, took great faith in the project and obtained the millions of dollars necessary for its completion.

A business team was assembled, sites located, designs prepared, surveys made, and property purchased.

Three years ago I moved to Costa Rica with my wife, Roberta, to oversee the construction of the Aerial Tram. We rented a house 30 minutes from San Jose. We split each week between the San Jose house (computer, fax, washing machine, oven, hot shower and telephone) and Rancho El Toro (where the only running water was in a river that flowed through the front yard).

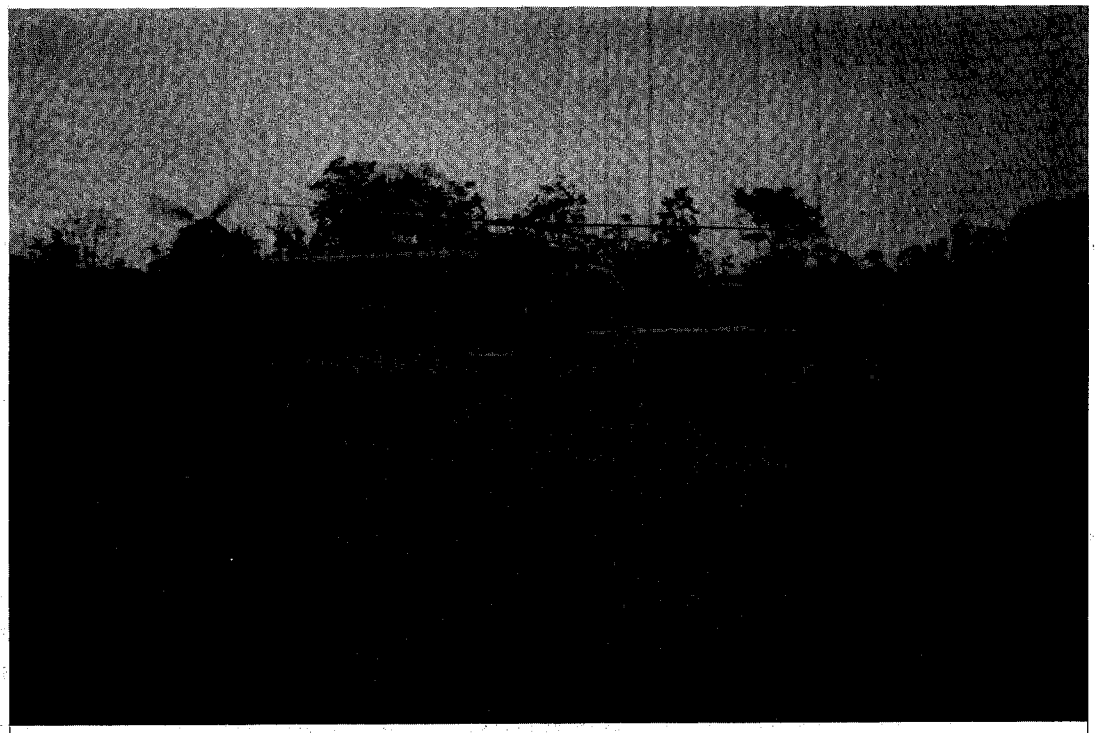
Author (left) and Nils Erickson, a ski-lift expert, riding the Automated Web.

The Aerial Tram site is a 50-minute drive by car or bus from the capital, San Jose, on Costa Rica's most-picturesque highway. It winds through a beautiful mountainous park near the center of the country called Parque Nacional Braulio Carrillo, which is adjacent to the Aerial Tram property. The highway ends at Limon, connecting San Jose with this important Atlantic-port city.

Dosel S.A., the corporation I founded, owns 450 hectares (1000 acres) of rain-forest property in the Atlantic foothills. It shares a three-kilometer border with Braulio Carrillo Park. The land was forest reserve; in other words, it could have been cut. The Aerial Tram project is part of the UNESCO Man and the Biosphere Reserve. As a buffer project that helps protect the core area (Braulio Carrillo) from human activities, the Tram falls under Category 2 of the Biosphere Reserve program. The land is now a preserve that protects the forest and its wildlife from hunting, plant collecting, animal poaching and logging.

In December of 1992 construction began with a private, two-kilometer road from the highway to the site where our facilities would be built. During construction, I made sure that everything possible was done to minimize disturbance to nature. The road survey line was moved to avoid trees, and eventually a route was found that placed the major length of road in an old pasture. Our Costa Rican contractor installed a 1.4-kilometer banana tram, a harvesting system found on plantations, to haul more than 500,000 pounds of materials used to build the steel-and-concrete footings for the twelve towers. A wooden trail was built under the banana tram to prevent foot-traffic erosion on the forest floor. The trail was constructed of trees on the property that were dead and had fallen long before.

In February 1993, after extraordinary negotiations on the part of our general manager, Michael Skelly, a helicopter was hired from the Sandinista Air Force to



Helicopter used to transport towers to their positions in the forest.

transport the steel-tube towers from a nearby field to the site. It was wonderful to see the war machine disarmed and engaged in a peaceful activity. The pilot, of course, had never done this type of work and he demonstrated impressive prowess when, as though threading a needle, the towers were lowered onto their footings through small holes created in the forest roof. These holes were made by selecting trees that might obstruct tower placement, setting ropes in them, and pulling them to the side, where they would not be damaged by the forceful wind from the chopper's rotor. When the aircraft flew away, the ropes were removed from the trees and the holes in the canopy closed back up over the towers.

To my knowledge, this was the first time forest was not cleared during the installation of a ski-lift. It was our biggest obstacle and the operation was a tremendous success. It was also somewhat dangerous and quite scary. Upon tightening the final bolt, the entire team — some 30 workers — breathed a collective sigh of relief.

The Rain Forest Aerial Tram is a unique, 1.2-kilometer, modified ski-lift system designed by John Williams (my longtime friend who has helped with each of my canopy-access methods) and a group of consulting engineers. It has twenty-two cars that carry six people each. The cars are separated by a minimum of 150 meters so that riders enjoy a private canopy tour. The cars are permanently attached to a cable that rotates in a loop carrying them out through the dark humid understory and then back through the bright, airy spaces of the canopy, where distant volcanic mountains and broad vistas of the rain forest roof prevail. The round trip takes about 1.5 hours.

During a talk, Roberta and I came up with a design idea that significantly reduced the system's impact on the forest. The incoming cars would ride above the outgoing cars on F-shaped towers, allowing for a narrower corridor through the forest, about nine feet, in comparison with the twenty-foot corridor necessary for a typical ski-lift with T-shaped towers.

John Williams and I stood firmly in support of this new idea as we badgered the reluctant consulting engineers to solve the design puzzle. All they said was, "We'll do it, but we can't guarantee that it will work."

Well it does work, and it works like a dream. Threaded through the forest, the Aerial Tram is virtually invisible from the air. It is truly a new way to see nature, one that eliminates many problems that develop when large numbers of tourists visit a sensitive habitat. I'm happy to say that at the Tram we put the people in cages.

El TORO and the RIO MOLINETE

Our country house at the Aerial Tram site was sublime. Rustic does not capture its true ruggedness as a Costa Rican pioneer home. Long abandoned as a living quarters, its most-recent occupant had been a young bull. Roberta swept the dirt floor down to a hard layer that must have been a mixture of dung and mud and anything else that fell into the quagmire when the bull lived inside. I used to joke that our

floor had the best shit-shine in the region.

The house also had bats, spiders, ants, wasps, snakes and much more. The size of the indoor spiders would get a rise out of almost any urbanite that wandered in. But those spiders were understated emissaries of their kin that lurked in the jungle surrounding our house.

Climbing up a slope one day, I reached toward a rock to get a handhold and it stood up and skittered away. My heart raced. The tannish object was a spider with a leg span of nearly ten inches, close to the world record.

Our roofed dining area had a stingless-bee nest that swarmed every time we started a fire. Oddly, these bees also swarmed whenever we tried to rid the roof beams of termites. It could be concluded that the termites were somehow "telling" their distress to the bees, who then flew at us. They stuck in our hair and delivered moderately painful bites, for this species does not sting. When we left the termites alone, the bees grew calm and finally so did we. In the end we decided it was best to live together, each species in its proper niche, none disturbing another.

Over one of the beds was a large wasp nest. Its creators were big, black wasps that typically nest on the undersides of roofs. The wasps were not particularly aggressive in that they didn't attack on sight, in fact, one could say they seemed docile. They flew in and out of the house gleaning nearby fields for prey, such as caterpillars and insects. I could approach the nest quite closely and all they would do is mill around on the surface flicking their wings. The movement was like a nervous tic, and convincing enough to ward off anything with eyes. No one wanted to remove the nest so it stayed in the house for many months.

Lying there watching the wasps flick their wings often made me wonder how well the nest was glued to the ceiling. It is amazing how one can become accustomed to such a thing.

One day Richard, a friend who helped renovate El Toro, was stung while pounding a hammer on a wall that was apparently a little too close to the nest for the wasps' comfort. Richard's arm swelled with a bright-red glow. The point where the poison was injected erupted into a lesion a few days later. It was weeks before the spot healed completely. Richard moved the bed and ran a gutter to the nest, and the wasps were gone after the first rain.

Food had to be stored in tight containers or in a cooler. The most conspicuous residents of the forest are ants, and scouts from a leaf-cutter nest arrived at the ranch with tedious regularity to search for scraps. Just about any food left out would attract ants within minutes, even if it was in a plastic bag. An ant would cut about a half-inch in diameter circle in the plastic. Aided by a growing number of companions, many connected holes would soon be cut in the bag. The contents, such as leafy vegetables, were cut into circles, and other items, such as cheese, were snipped into manageable sizes. A head of broccoli could disappear in one night. Often the circles of plastic were carried off along with the booty, only to be abandoned en route, littering the ant trails that led from the house.

The compost pit was serviced by a well-trodden,

Near the site of the boarding station, author and engineer John Williams admiring a drive shaft.

leaf-cutter trail. Certain pieces of food were carried off and abandoned in the same manner as the plastic, so that this trail was an intriguing mosaic of colorful bits of leftovers.

At night bats flew into El Toro to eat insects and nibble at our fruit that hung in the kitchen area, where it remained inaccessible to most forest occupants. Another species of bat came into our bedroom, hung from the walls and screeched, often after midnight. Night-vision equipment confirmed my suspicions: they were vampire bats. The screeching alone could cause a fitful night, but more alarming were the mosquito-net collisions. A late-night discussion was devoted to whether or not these collisions were accidental, but the matter remains moot to this day. I was always concerned that after falling asleep a toe might unknowingly poke out from under the net.

Getting a good night's rest wasn't easy at El Toro. One night I was wakened by a frog chirping steadily. I searched the living room with a flashlight and found that these were the last calls he would make. The front half of the frog was calling while the back half was being devoured by a snake.

In front of the dining area was the Rio Molinete. It was partially concealed from view by a Calliandra tree. This riparian tree gives forth a burst of flowers about every three weeks that is sought out by hummingbirds. It was a pleasure to sit there in the early mornings, drinking coffee and often seeing seven species of hummingbird, including the green thorn tail, black-crested coquette, and the snow-capped, all scuffling for positions at the flowers.

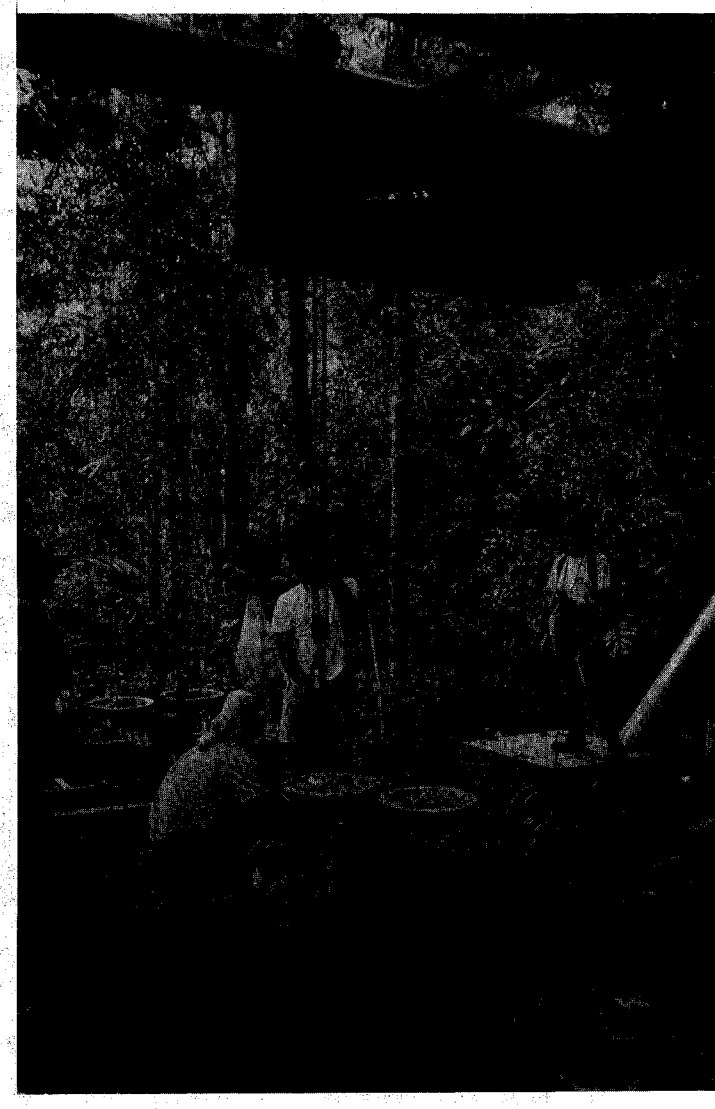
The Molinete flows out of the virgin forests of Braulio Carrillo National Park and through Dosel's property. The pristine river is crystal clear, full of fish, aquatic plants and freshwater crabs, as well as the birds and mammals that feed on them. This is characteristic of untouched Neotropical jungle.

Roberta brought in a crab claw from a specimen whose carapace must have been seven inches across. We had no idea they grew so large, and we became reluctant to sit still for very long in the deep pool in front of El Toro. Tapir, however, enjoyed sitting there. One lounged in the pool for about an hour, allowing many photographs to be taken. Often, we find heaps of tapir dung on the river bottom. Even though the water is boiled, worrisome thoughts always came to mind over a cup of coffee at the ranch.

A back-country Costa Rican once told me an amusing water story. He was hiking with two other people in the rain forest and after several hours they were good and hot. It was the dry season, and they had no drinking water with them. Every stream they passed was dry, but finally they came to a place by a running stream where they were able to quench their thirst.

The water, it was said, had an off-yellow tint. Curiosity compelled one of the travelers to climb a small embankment to examine what was upstream. On a flat area of the meandering stream, he saw mounds and mounds of tapir feces through which the water trickled to gain its amber hue. Fortunately, the stercoraceous brew caused no ill effects.

Sometimes river otter raced gracefully along the Molinete, their sleek bodies alternately jumping from rock to rock, then diving into the water. Rock-hopping up streams is also a good way for people to hike in the rain forest (although the rocks are extremely slippery when wet) for it avoids the tangle of plants, as well as noxious animals such as ants and snakes on the forest floor. On our river excursions, we often came across ot-



Construction crew at the end station.

ter scats on top of the rocks. A few visitors riding the web have told of excellent photo opportunities when sunbathing otter were spotted beneath them.

I saw the Zopilota — a stout, black snake that can measure up to eight feet — swimming across the Rio Molinete several times. These are pretty snakes that flee when approached. Although they possess venom glands, they are not known to bite as a defense. They use both constriction and slow-acting venom, a rare combination, to overcome their main prey: other snakes, including the deadly fer-de-lance.

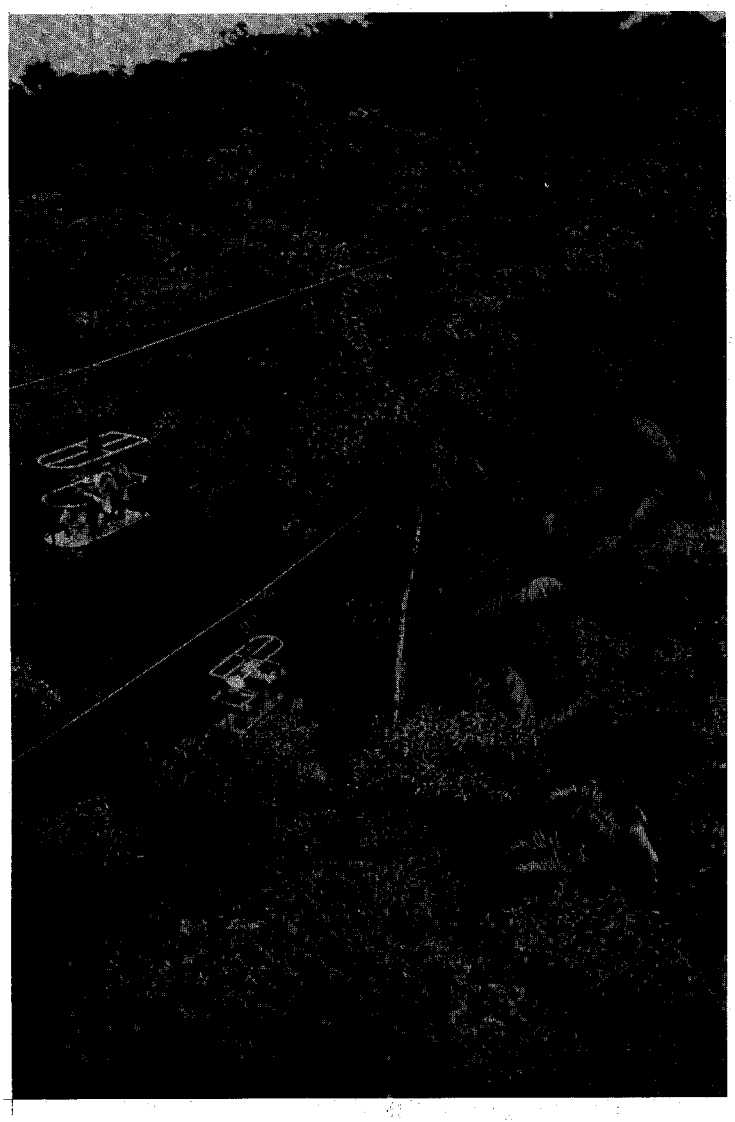
During the tower installation I noticed a red, black, and yellow-striped body sticking out from under a log. I grabbed and pulled. One of our workers shook his head in caution. It was a coral snake.

Handling wild animals can be dangerous if one isn't careful. While cutting grass outside El Toro with a machete, I came upon a large, beige, tennid spider, four inches across including the legs. And hairy. Roberta teased me to pick it up. "Why not give her a little scare," I said to myself, relishing the thought of a scream. I grabbed one leg to toss it at her and in a split second I was screaming myself. The animal had sunk its chelicerae (mandible) into my finger and the bite drew blood. Roberta just laughed, even when I said it could be poisonous!

THE JOURNEY

The Tram opened for business in October 1994. At that time, we had just completed the engine room that houses the diesel generators. One of our biggest worries was that the diesels would make too much noise. The building was soundproofed to an obsessive degree to ensure that the Tram would run quietly.

One embarks on the incredible journey at the boarding station. With a slight hum reminiscent of warp-drive on the Starship Enterprise, the car floats out among the leaves like a boat on a glassy sea, then climbs in silence to the hanging gardens of the rain forest roof.



The Rain Forest Aerial Tram

An advantage of the design is that the cable can travel at any speed up to almost two miles per hour. Two miles per hour may sound slow, but we've found that this is the perfect speed for most visitors to see, smell, and really experience the canopy. A guide with a walkie-talkie rides in each car, and when something interesting is seen, the occupants can call for a stop that allows them to take videos or photographs. Subsequent cars are told where to stop so they can look, too.

On one of my first trips I was joined by two tour agents. At tower ten there were two lattice-tailed trogons perched on a rotten stump. They were magnificent birds. Trogons are colorful, living jewels of the rain forest. Emerald-green with blue-gray shoulders, they appear to be wearing a jacket over a radiant, orange-red vest. We approached noiselessly, and I came within an arm's reach of one. It flew twenty feet away and watched us disappear through a tunnel in the leaves.

During twenty years of exploring the rain forest canopy, this was the closest I had ever come to a trogon. The experience was repeated several rides later near tower eleven. Roberta spotted the slaty trogon. We didn't stop. The car rounded the end station and began the return trip. The bird was in the same spot. It flew as we approached, then landed two branches lower with a large caterpillar in its mouth. Trogons are common at the site.

I accompanied my friend Barry Hammel on a Tram ride. He works with the Missouri Botanical Garden where, besides publishing numerous scientific papers, he is one of the experts

preparing the "Flora of Costa Rica," a handbook that will describe all of Costa Rica's plants. Given that there are an estimated 6,000 species of plants in Braulio Carrillo National Park alone (we are contiguous with this forest), this is a monumental undertaking.

I enjoy finding food plants in the rain forest and I've been looking for *Vanilla* for quite a while. Now I had the opportunity to ask Barry to help me find this orchid. First, we walked the gravel loop trail where he told me the names of some plants I had tagged. I noted that orchids are not common at the ground. To see orchids one must find a fallen limb, or visit the canopy.

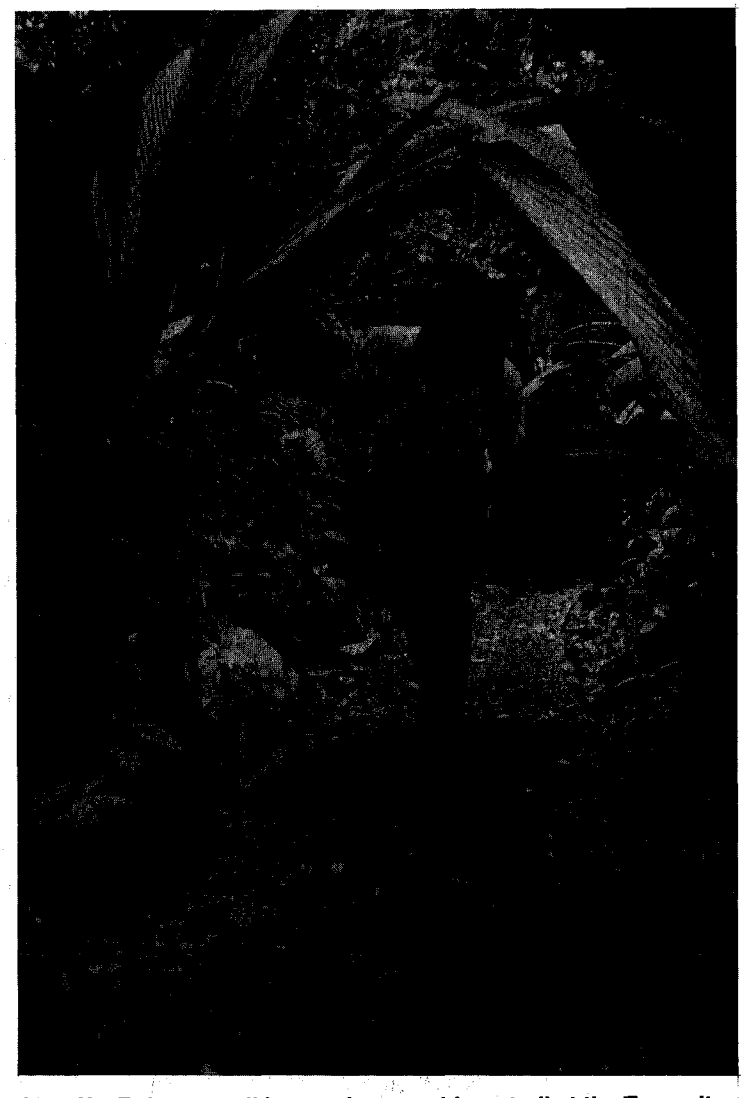
Later, as we glided though the humid understory between towers five and six, Barry whispered, "There's *Vanilla*!" Several hours of hunting on the ground had resulted in not even one terrestrial orchid. Now, ten feet in front of us, a *Vanilla* vine rooted in the ground had climbed twenty feet up a small tree.

Vanilla is extracted from the *Vanilla* bean. This plant had neither flowers nor beans. I am told they flower infrequently, little is known about their natural pollinator, and that domestic varieties must be hand-pollinated. This seems incredible and I'm going to keep an eye on that vine to discover its pollinator, which I would guess is a euglossine, or golden bee.

On a different day, Roberta and I saw four coatis, relatives of raccoons, clambering in the trees near the *Vanilla* vine and rooting for grubs in dead wood on the ground. It was remarkable that in the full light of day the coatis were difficult to see. They blended in so perfectly with the harsh shadows of the forest floor that had they sat motionless we wouldn't have seen them at all. This is true of all forest mammals. I've seen anteaters (tamandua) on limbs twenty feet away whose color pattern would have camouflaged them perfectly if they had stayed still.

One of my jungle fantasies is to make a wild chocolate bar. Chocolate originated in Central America where in ancient times it was traded by indigenous people as money. It was probably an exclusive drink of the upper class. There are three trees along the ridge trail beyond tower 12, which is the final tower where people can debark and hike through the forest to see an impressively large rain forest tree.

The Aerial Tram provides an opportunity to teach people about the rain forest and its products. Our forest has wild avocado trees, papaya, heart of palm and much more. Rain forests are a tremendous genetic storehouse and we must continue the fight to save them.



My wife, Roberta, walking on the gravel-loop trail at the Tram site.

RICHER THAN LA SELVA?

I asked Barry what he thought about our forest and he confirmed what I had been thinking for some time. On a per-acre basis our forest appears to be richer in epiphytes (plants that grow on other plants, *i.e.* bromeliads) than finca La Selva. This is a significant observation. La Selva has earned its name and attracted international research, in part, because it is recognized as one of the most-diverse rain forests on our planet. Its forest appears richer than those at Monteverde, Santa Rosa and the Osa Peninsula, all of which are in Costa Rica, and also Barro Colorado Island, a research center in the Canal Zone of Panama owned by the Smithsonian Institute.

Why might we have more epiphyte species per acre than La Selva? Studies have shown that water and elevation play important roles in species richness. At an elevation of about 100 meters, La Selva receives around four millimeters of rain per year. It is a half-hour drive

from our site. The Aerial Tram's elevation in the foothills above La Selva is 300-500 meters. Humid air blowing in from the Caribbean rises up the foothills, cools, and becomes heavy with moisture, on almost a daily basis. As a result, we receive between six and eight millimeters of rain per year, fifty percent more than La Selva. Our site is a mixture of highland and lowland plants, while La Selva has strictly lowland species.

STUDENTS

As the floral and faunal lists of the Tram site grow there will be many surprises. They have already begun. Ours is the first site that has recorded all three Costa Rican species of *Vochysia*, a canopy-tree genus. These were discovered by Rainer Thiele, a student from Germany. He studied their pollination biology for his Master's degree and also collected some samples of canopy trees at our site. One of these was a *Matayba* species, and it is *new* for Costa Rica!

In the summer of 1994 Jan Schipper and Schuyler Greenleaf, two mammology students from Colorado, studied the nocturnal mammals of our site on a daily, rigorous schedule that involved climbing tall canopy trees and tending their 50 live-traps. To my knowledge this was the first time such a study had been done. They found several species of rats and through observations, weights, measures and photos, they made new discoveries about arboreal rodents. They returned to school to write a paper, and both plan on another visit to continue these studies.

Last summer two high school students studied the activities of the largest mammal at our site — the tapir. They were documenting something I had noticed. Many of our tree ferns have been eaten by tapir. This in itself is noteworthy because Daniel Janzenís book, *Costa Rican Natural History*, contains an article that states: "no vertebrates are known to eat the leaf or trunk of tree ferns." As it turns out, tapir eat the trunks. These two students trudged through the tick-infested undergrowth (tapir carry a lot of ticks) mapping and measuring all the tree ferns in a study plot. They found that tree ferns were a favorite food, over fifty percent had been eaten, which adds to our knowledge of tapir diet.

Of course, getting data has its exciting moments. At one point, the students heard a loud gnashing of teeth. This startled them, as it should, and they abandoned their work temporarily. The sound they described was probably the warning threat of peccaries.

MEDIA

Right away journalists began showing up at the Aerial Tram. Articles appeared in Costa Rica Today, *The Tico Times*, and *La Nation*. In 1994, articles appeared in the Sunday travel sections of *The New York Times* in October, the *Los Angeles Times* in November, in December the *Miami Herald*, *Der Spiegel* of Germany, and *MacLean's of Canada* (both compare to *TIME* magazine). The publicity has been wonderful. In February, 1995 some scenes from the movie "Congo" were filmed near Rancho El Toro. It was my first experience helping to make a few seconds of feature-film footage.

A Spanish film was made at the site, beauty contestants visit regularly (despite the incongruity of rain and make-up), another feature film is in the works for March '96, and several documentaries are planned. Even *Playboy* magazine asked if they could do a can-

Author (left) and cameraman from the movie "Congo" heading out to get some footage.

opy spread, we declined respectfully.

THE FUTURE

Old-forest destruction continues. Everyday I see huge tractor trailers straining to climb the mountains with their burden of gigantic rain forest logs. So far, whatever has been done to save rain forests appears to be having little effect.

Approaching rain-forest conservation on an innovative tack, the Aerial Tram is educating local youth on a grand scale. Each year we will donate thousands of seats to the students of Costa Rica. Last year, even though we were swamped with start-up tasks, 1,300 Costa Rican students rode the Tram and learned why the forest is more valuable standing than cut. Hillary Duffy is the director of this program. She teaches environmental studies at all grade levels, focusing on rain-forest conservation.

This year the number of visitors will approach about 50,000 people, making the Aerial Tram the most important rain-forest-canopy education center in the world. I expect the number of visitors to reach 70,000 next year. This will offer the resources to develop a fine canopy research center.

Among our visitors were the president of Costa Rica, members of the U.S. Congress, members of the General Council of the United Nations, executives of the World Bank and the International Monetary Fund, and many more. This list presents a new possibility. Never has such an influential group of people seen the magnificence of a rain forest canopy with their own eyes. Along with the citizens of Costa Rica, these are the people whose decisions will determine the future of this country's remaining rain forest. Our message reaches these people, and I believe this project will make a difference.

CONCLUSION

While gliding through the trees, I experience the same feelings that W.H. Hudson expressed in his book, *Green Mansions*, published in 1916. The forest is a towering world: floor upon floor, height above height, each with its own drifting cloud. Where writhing wisps of mist climb from each drying leaf; where earth and sky mate, mix and emerge as one.

Huge tree crowns are wondrous, mysterious, even foreboding. Forest jewels perch on green, leafy walls and flit among the canyons of limbs beyond. They are shimmering birds and insects of metallic hues. They are gaudy spiders, flashing dewlaps of anole lizards, and the blue, flickering, neon light of morpho butterfly wings. Broadcast in pools of humid air are the lingering, spicy-sweet fragrances of hidden flowers and fruit. Over there, the phallic philodendron flower releases a heady perfume while hiding its heat-producing urgency in a deep, scarlet heart. And there, anthurium's necklace of edible rubies beckons to be dispersed. *Symphonia* flowers striped with red and white are like peppermint candies, and *Siparuna* fruit erupt and evert their hot-pink, opalescent, interior walls studded with red, opulent seeds. The rich-green, pecan-sized fruit of a miniature avocado dangles from a ruby cup: it is *Ocotea's* supplicant offering that lures trogons, themselves the bejeweled king of birds. All bathe in the sun whose rays dance on the trickling surfaces of subtending streams. There, a dark shadow with reptilian scales of basaltic black hunts others of its kind. A kaleidoscope of blues, yellows, oranges, and reds in shattered rainbow spectrums: these are nature's priceless offerings displayed on a luxurious, verdant blanket.

The canopy, world above worlds, world within worlds, where the eye and mind become lost in a dream. Sadly, the dream is fading. ❑