



Into the Heart of Darkness



Searching for Minerals in the Democratic Republic of the Congo

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Intrepid adventurer and mineral dealer Rock Currier traveled to Darkest Africa (The Congo) in 1997, searching for malachite, carrollite, cobaltoan calcite, uranium minerals, and other treasures. Here is his report on the condition of some of the famous Congolese mines at that time, what he was able to obtain there, and what he had to go through to get it.

In the 19th century, Africa was called “the dark continent,” and only its general outline and the mouths of some of its rivers were known. “In its interior dwell dark people and the unknown,” wrote Joseph Conrad in his novel *Heart of Darkness* (1902). As Conrad’s protagonist Marlow was drawn to the giant Congo River, rumors of lost African cities and treasure have drawn men for centuries to Africa’s “dark” interior. I am no different: my own distant drummer marched me to this fabled land, where fabulous specimens of malachite, carrollite, torbernite and cuprosklodowskite abound. Of course, the imagining far outstripped any possible reality, but I knew that if I could just get there I could find the treasures! As the comedian Judy Tenuta loudly and indignantly proclaims, “It could happen!”

In early 1997 the longtime president of Zaire, Mobutu Sese Seko Koko Ngbendu wa za Banga [translation: “The all-powerful warrior who, because of his endurance and inflexible will to win, will go from conquest to conquest leaving fire in his wake”], was forced to flee, after years of brutal, iron-fisted rule. During his dictator-

ship he had amassed a great personal fortune at the expense of his country. Now he had at last been replaced by (U.S.-backed?) Colonel Laurent Kabila. Was now the time to visit this legendary place?

“Oh, but honey!” my distraught mother wailed, “why Zaire?! They just had a war there. And the diseases!”

“Well, you see, Mom, I have always wanted to visit the place and I know this guy who says he can show me around.”

“But honey, do you know him well? Who is he? Can you trust him?”—still worrying about the heart, body and soul of her delicate little 300-pound, six-and-a-half-foot, 57-year-old baby boy.

“Well, his name is Sam Benatar and he deals in malachite and I have been buying it from him for the last fifteen years or so. During that time he has always treated me well. He says that Americans are welcome in Zaire now because they helped the new guy kick Mobutu out. I only want to visit the mines in the copper belt, in the south, near Sam’s hometown. Only about 200 or so were killed

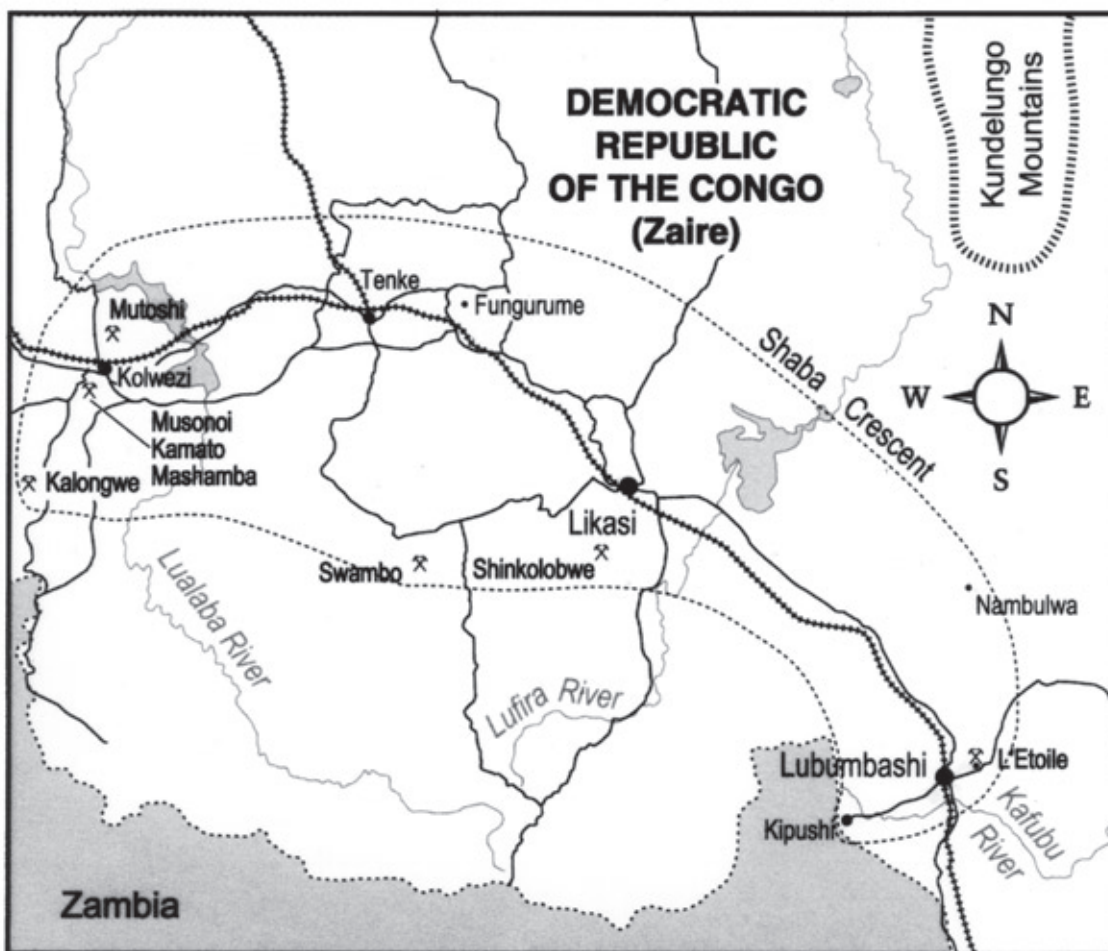


Figure 1. The so-called “Shaba Crescent” in the Congo, wherein many copper, cobalt and uranium mines are located.

during the fighting around Lubumbashi and it’s all peaceful there now.” Somehow this last part did not seem to calm her fears, so I hurried on. “Sam says that all the army roadblocks where money was extorted from people are gone, and that all we have to do is go to the border, get a visa, and drive through to his place in Lubumbashi.”

Hearing this same information, my buddy Bob Bartsch, a mineral collector and experienced traveler, merely said “Are you completely out of your mind?”

Well, I counseled myself, newspapers, like wrestling promoters, are not well known for their sense of proportion. War and strife, not peace and tranquility, sell newspapers. I had been in Peru when the *Sendero Luminoso* [“Shining Path” guerillas] were active, yet when I reached home and read about it I wondered if the news was really about the place where I had just been. There seems to be an unwritten law prohibiting news people from reporting things in perspective. In the case of Zaire, I chose to believe someone whose judgment I trusted and who actually lived there.

So, on August 15, 1997, I met Sam Benatar and his son Victor at Jan Smuts Airport near Johannesburg, in the Republic of South Africa. Victor had formerly been involved in the malachite trade, and he thought that now might be a good time to get active again. At least he was going back to his hometown to see what was going on; car dealers might describe it as “kicking the tires.”

The Air Zambia flight boarded two hours late, and for another two hours we sat in the plane on the tarmac. Then it was back off the plane to the terminal because of mechanical problems. After

another two hours we reboarded and took off. Our original plan had been to meet Sam’s people and his truck at the Ndola airport, drive immediately to the border, and cross into the Congo before the border closed for the day at 5:00 p.m. No such luck. I sensed that there would be a lot of “no such lucks” on this trip.

The immigration, baggage claim and customs inspection facilities at Ndola, Zambia were in an old airplane hangar. We and all the rest of the “civilized” passengers who left the plane were transformed instantly into something resembling a rugby scrum as we tried to get our luggage and leave the airport. It was clear that the English tradition of forming an orderly queue had not survived the change from colonial to home rule. I admired the way that Victor bulldozed his way through the mob and got us out in a reasonable time. This was not a place for the run-of-the-mill tourist. Left to myself, I would easily have been spotted as a mark, and it would have cost me several hours and probably a hundred dollars just to get out of the airport. When we finally emerged it was 10:00 p.m., and there was no one to meet us.

To make amends for the long delay, the airline put us up for the night in the Mukuba Hotel on the edge of Ndola. There was a small herd of slightly tame Springbok antelope on the hotel grounds. Ndola is at the southern end of the copper belt which stretches 500 kilometers northwest to Kitwe and Chingola, across the border into Katanga province, Congo (Shaba province, Zaire), and west through the towns of Lubumbashi (Elisabethville), Likasi and Kolwezi.

The next morning there was still no truck. Since there were no such things as taxis or rent-a-cars here, we caught the hotel van into



Figure 2. Border crossing from Zambia to Zaire. A rich source of income for locals and officials alike.

town, where we finally found a guy willing to drive us the 75 miles to Kasumbalesa on the border for \$100. But only to the border. What we would do when we got there was unclear. With all our bags, the car was more than fully loaded; it made me think of one of those little cars in a circus that a clown drives to the center ring, and from which 20 more clowns then emerge.

Border crossings in Zambia and the Congo are looked upon by the locals as prime opportunities to squeeze money from travelers. The locals have the squeeze down to a science, and are always working to improve it further. If you are unfamiliar with the process and are spotted as a mark, God help you. The Zambia/Congo border crossing is marked by welded iron barriers, with a no-man's-land of several hundred yards between them. At each border the traveler encounters a crowd of husky, aggressive black men eager to "help" with the bags, even if they have to be carried for only a few feet. One man per bag or briefcase is the rule, unless the traveler rants and raves in protest. Across no-man's-land, Victor spotted Sam's little Japanese pickup truck and two of Sam's employees. We got our passports stamped, and twenty dollars proved sufficient gratuity to allow Sam's truck to cross the no-man's-land to the barrier at the Zambian border. All we'd have had to do was lift our bags from our car and over the barrier and put them into Sam's truck, but Sam was wise enough to pay the squeeze and let the locals fight over who was going to transfer the luggage. Anything less would have caused a riot.

We drove across no-man's-land and stopped at the Congo barrier. Sam seemed to know everyone, and professionally schmoozed us through the visa-acquisition process; each visa cost \$60, but only because Sam knew the ropes. My vaccination

certificates were found to be not in order, even though they were correctly stamped and barely two weeks old. Of course, vaccination certificates are always found to be not in order. But not to worry, they said: they could give us the required vaccinations right there! Immediately, visions of an unlabeled vaccine bottle in a dirty drawer and an AIDS-contaminated hypodermic needle wiped on a shirtsleeve sprang into my head. There followed more ranting and raving between squeezer and squeezee. We had heard horror stories of tourists camping for days in their cars because of "irregularities" in their documents. Then came the customs-inspection gauntlet, and the inevitable discovery of "not permitted" items. We protested. We spoke English and they spoke French. We spoke French and they switched to Swahili. But when it came to extracting payment, they all spoke dollars.

Sam, who speaks Swahili and many other languages, is an old pro at this kind of stuff, and got us through it smartly. Even he was not completely immune to the squeeze, but they had to work hard to get anything from him. It was wonderful to watch him, and I tried hard to learn his technique; it was like watching a good high-bar gymnast, knowing that if you tried it yourself you would crash and burn. The many locals who knew Sam had given him the nickname "Kambeketi." The word means a little bucket, or more specifically the bucket that is often used to carry corn meal—"the man who brings food" was the general sense.

Once across the border, we began our penetration into the heart of darkness, which actually didn't look very dark. It was pretty smoky, though, as in places there were uncontrolled fires burning beside the road. At this dry time of year they burn the brush, but the process does not appear to be agriculturally related. Its purpose is



Figure 3. Specimens of pink cobaltoan dolomite, malachite and chrysocolla spread out for inspection and sale.



Figure 4. Baskets full of botryoidal chrysocolla specimens that no one wanted.

to clear the brush and to keep down the snakes and insects. The smoke stayed with us throughout the trip; it was just something we got used to and eventually ignored. Sam had told me that the roads were terrible, but all the way to Lubumbashi we had a good asphalt road, barring a few scattered large potholes and swarms of small ones. I had imagined that the roads would be as terrible as the ones in the Peruvian and Bolivian Andes, but these were a piece of cake (even though people kept assuring me that some of the roads in the Congo were among the worst in the world).

Our road was mostly free of traffic, except for occasional tractor-

trailer rigs carrying big metal cargo containers or heavy loads of copper ingots. There were also a few smaller stake-bed trucks heaped with goods and sometimes comically overloaded with people hanging on every which way, pincushion style.

Along the road grew high scrub, and ubiquitous termite mounds of red earth, some more than 30 feet high. I was told that the earth from these termite mounds makes fine bricks. From high points in the road we could see similar countryside stretching to the horizon. The thatched native huts didn't look very different from those in some parts of rural India. Frequently the road ran past tall high-

tension lines that were bringing electricity from the big dams on the Lualaba River. This part of Africa might be short on many things, but electricity is not one of them.

Every few kilometers we would come upon big (4 feet high) bundles of charcoal shaped like conga drums and propped upright with sticks, sometimes 15 or 20 in a row paralleling the road. We passed men pushing bicycles loaded with up to five of these charcoal bundles. Less frequently we saw rubber-wheeled carts, loaded with many more bundles, being pulled and pushed by fit, whip-thin young men. During our entire trip we did not see a single draft animal. These charcoal bundles cost about 600,000 Zaire dollars (\$4 U.S.), and seem to be a staple of the economy.

One hour from the border, although there had been no road signs or other advertisements to mark its proximity, we were suddenly in Lubumbashi, a city of about 1.5 million people. Lubumbashi is the commercial hub of the southern part of the country, and the capital of Katanga province (known before the revolution as Shaba—"copper"—province). Most truck drivers refuse to drive into the Congo further than Lubumbashi.

Sam owns a sizable commercial building in the center of town. In his large apartment on the second floor, his staff of servants greeted us. If the supply of electricity was not a problem, the supply of water was. The water was always off during the day, and we learned to consider ourselves lucky if a little water had run into Sam's holding tank during the early hours of the morning. Some mornings, we had to make do with only a few cups of water. The sewer system was in even worse shape than the water system, and it took a long time for sinks and tubs to drain. The other main source of irritation were the mosquitoes that gained entrance to the apartment at night through the bullet holes in some of the windows. These holes had been made during the celebration of Mr. Kabila's victory in the recent revolution. Sam had a small satellite dish, and we could watch CNN and other familiar programs. Ladies were soon at the back door offering fresh vegetables for sale. Damn! this was almost civilized. The dark heart of Africa was looking brighter all the time.

As a householder and businessman here, Sam routinely dealt with problems that we in the west would never dream of. Upon our arrival, he found that the workers in his malachite factory had staged a mini-revolt and had thrown his manager out of the factory—that was just one of the things Sam had to deal with at once. Many of the problems happen because the people are so poor that they are forced to try to work any angle they can. The cook, for instance, would always insist on cooking huge meals, because that way there would be leftover food to take home. Foodstuffs and supplies vanish quickly; a kilo tub of margarine lasts less than a week. Also it was interesting to see how many of Sam's friends tended to show up at dinnertime unannounced. On the sidewalk outside, a guy sat all day waiting to sell lengths of used metal strapping for packing crates; many of the rusty lengths had been pieced together with homemade brads.

The next day, we went to visit Sam's malachite factory near Ruashi, a suburb of Lubumbashi, which was formerly the site of an old mine and mission. His operation was a walled compound with several buildings, including a large one housing the grinding and polishing wheels that turn chunks of rough into items that show the beautiful vibrant green bulls-eyes and flower patterns typical of high-quality malachite. Runners showed up every day, offering rough lapidary-grade malachite and mineral specimens.

The Congo produces more than 99% of all the lapidary-grade malachite available today in the world. Container-loads of the stuff are shipped/smuggled from Lubumbashi into Zambia, then sent by sea to Hong Kong. Quite a bit of the good cutting-grade malachite is sidetracked in Ruashi and worked into finished goods. Along the

main road there is a long *palapa* (open-air thatch-roofed pavilion) where many malachite vendors sell their goods. The sales tables are covered with polished malachite beads, carvings, boxes, eggs, spheres, chess sets, cabochons, hearts, letter openers, etc. About 10% of the table space is used to sell mineral specimens.

In Ruashi there are many small, one and two-man lapidary workshops. They are mostly built outdoors, adjacent to the proprietor's house, and they use the most rudimentary machines. In this neighborhood the sounds of grinding wheels and diamond saws are constantly in the air, and here and there the telltale green sludge of waste malachite can be seen splashed on the rutted dirt lanes. It is hard to imagine that the beautiful finished products sold in the pavilion come from these primitive operations. Malachite is not a pleasant material to work. Long-term exposure to its toxic dust is unhealthy, and without proper precautions the dust leaves a terrible lingering metallic taste in your mouth. These shops would make any O.S.H.A.-like agency go ballistic.

In recent years the quality of the rough malachite available to the lapidaries in Zaire has been declining, and lower-grade malachite is now being used. The material is still beautiful, but it has more holes in it. To compensate, the workers have learned to fill the holes with fragmented and powdered malachite mixed with a green-tinted epoxy resin. When done skillfully, this treatment is difficult to detect. The trick in buying malachite is to choose pieces with no fill, or at least a minimum amount of fill; the larger the object, the greater the chance that some fill is present. Nowadays it is almost impossible to find a newly made malachite object larger than 6 inches that does not have some fill.



Figure 5. Finished malachite objects offered for sale in a roadside market near Lubumbashi.



Figure 6. Friendly soldiers at a typical roadblock.

We had to obtain permits to take pictures, visit the mines, and buy malachite and mineral specimens. According to *The Lonely Planet Travel Guide*, the photography permit should be available free from the Ministry of Culture and Arts. The Ministry had moved, but with a little perseverance we managed to find it at approximately Ave. de Chutes #630—"approximately" because there were no house numbers or street signs. Such signs, taken for granted in more affluent countries, are often missing in third-world countries. The Provincial Division de la Culture et des Arts was located in what had once been an elegant colonial home with spacious grounds, but now resembled a busted-out crack house. Plaster was missing in places, water had stained the ceiling and walls, and many floor tiles were missing. The lighting fixtures had long since disappeared, and light bulbs dangled from wires. I wondered what sort of cultural and artistic activities were ministered to by this organization. Anyway, its director, a Mr. Mwiya-Kahozi Jean Pierre, politely received us in his office. He was seated behind a battered metal desk, and I gingerly sat down on a bent tubular metal chair that had seen much better days. We were informed that the cost of a photography permit would be \$100. Obviously they needed the money to fix up the place. I explained that we did not want to make a Hollywood movie, only to take snapshots, as any other tourists would do. After a prolonged discussion we settled for about \$50.

Back at Sam's apartment I read over the permit and discovered an appended list of things that could not be photographed; these included official residences, army installations, border posts, government buildings, police stations, post offices, jails, mines, and downtown Kasangani. Rather than do battle again at the Ministry, we decided that any permit was better than none; we would make do with what we had.

Next, we needed a permit from the Ministry of Mines to visit the mining region. Here we had better luck. The secretary told us that the permit would cost \$100 and that we could pick it up later in the

day. When we returned, we were told that the director wanted to see us. I gave him a copy of the Peru Issue of the *Mineralogical Record* and, stretching the truth just a bit, I told him that I hoped to write a similar article about the mines in Zaire. This colorful publication seemed to impress him. When I told him about being charged \$50 for a photography permit, he expressed outrage, and I then asked him why he was charging us \$100 for *his* permit. He promptly chewed out the secretary, and we got our permit for \$15. Would wonders ever cease? But Victor's malachite-buying permit was more difficult to get, and the skirmish about it held up our trip to Kolwezi for an extra day.

One of the great places to visit in any third-world country is the local marketplace in a town. Here, in a very short time, you can experience the heart of a culture and get a pretty good feel for how things work. When Sam's cook needed to visit the market to buy a few items, I sensed that I had an opportunity to go with him and take some pictures. The market was everything I'd hoped it would be: a hive of humanity, with all kinds of strange foodstuffs and local products for sale. But as soon as I took out my camera the people became agitated and began yelling, and a riot nearly ensued. We jumped into our car and fled. I was later told that Mobutu had told his people that foreigners who took pictures were spies and did so in order to show the rest of the world how poor the people of Zaire are; therefore, people should not allow foreigners to take pictures. This is an experience I have had nowhere else, and I think it may be unique to Zaire.

After the market, we cruised around town. We looked at the upscale Karavia Hotel and at its high-priced residential neighborhood, where we saw Mobutu's relatives' homes which had been pillaged during the recent revolution. We stopped at Sam's malachite factory before heading back to his apartment, and there we found a mob of about 20 runners milling around in front of the little office building.

Spread out on the ground in front of the building were hundreds

of mineral specimens. Several hundred specimens of drusy cobaltoan dolomite made a glittering pink carpet. The most sought-after specimens of this kind are flat plates covered with rose-red, intensely glittery microcrystals. The recent fashion of making jewelry from sparkling drusy minerals has doomed these specimens to the cutter's wheel. Many of the offered lots had already been picked clean of potential jewelry pieces, so that only "color rock" remained.

Next to the cobaltoan dolomites was a green carpet of sparkling malachite specimens, and then came a blue swath of bubbly chrysocolla and cornetite from the nearby Etoile mine. The chrysocolla and malachite were mostly botryoidal, but a fair proportion of the malachite consisted of druses of microcrystals to a millimeter or two. The only lusts aroused would be those of micromount collectors. Most specimens would not be worth the cost of the airfreight. Sam sat in the office directing traffic, and it was endless fun to rummage through the various lots as they were offered. Once in a while there was something worth buying, and, of course, there was always the chance that something great would show up.

There are no vehicle-rental agencies in Lubumbashi, so it was fortunate that Sam had a small but serviceable pickup truck which we could use to visit the mines. In our trip supplies we included about 20 gallons of gasoline, as we could not count on finding any unadulterated fuel along the way.

At last we were off to see the mines of the Shaba Crescent portion of the copper belt. Victor and I rode in front while Sam's main malachite buyer and two other helpers rode in the small camper shell in the back. On the outskirts of Lubumbashi we ran into our first army roadblock. Victor's gift of gab, plus a small gratuity, got us past with minimal delay; truck and bus drivers who would not or could not pay the squeeze were not so fortunate.

On the outskirts of Likasi, an old colonial mining center, we encountered a more serious roadblock. A soldier who looked about 15 years old pointed the muzzle of his machine gun up my left nostril, and other soldiers pawed through our luggage. During this procedure, Victor kept good-naturedly jabbering at the soldiers in French, and just as they were reaching for the last suitcase a deal was struck that allowed us to go on our way. That was most fortunate, because that last suitcase contained a large amount of local currency, and if the soldiers had discovered it there would have been God knows what problems. A suitcase is needed to carry several thousand dollars in local currency: the highest denomination of bill we could get was worth about five U.S. dollars.

Leaving Likasi we hit yet another roadblock—one of ten in all we encountered during our trip. These roadblocks are simply a way for the soldiers to get enough money to eat, and for an occasional beer (the soldiers receive very little salary, and must sometimes wait months to be paid). These roadblocks should be thought of as tollbooths where you must negotiate fees, understanding that if your negotiations are unsuccessful the toll collectors can rob, beat or shoot you. We even came upon little impromptu roadblocks put up by the natives. One enterprising crew pretended to be volunteer road repairmen, filling in potholes and requesting contributions. Army roadblocks provided great opportunities for the locals to crowd around the car and thrust all manner of things to eat in our faces. We were offered some large rats (?), the haunches of small antelope (?), and bunches of sparrows dangling on strings which were shaken to make the sparrows flap their wings so that we would know that the birds were still fresh. Some offerings were even more gruesome.

Near the large village of Fungurume we stopped at the roadside home of a local chief who sometimes had specimens to sell. He had a handful of stones to show us: blebs of melted green glass that he



Figure 7. About \$2000 worth of the Zaire currency.

called peridot, little pieces of azurite that came from a local hillside dig, and a tiny piece of gem silica. However, his *pièce de résistance* was an incredible hexagonal emerald crystal, 3 x 8 cm, that was mostly clean except for a few internal fractures. It would have cut at least 200 carats of high-grade gems. The only problem was that this fabulous piece of "gem" rough had striations on the prism faces normal to the *c*-axis, just like a quartz crystal. In fact, it *was* a quartz crystal. What in the world had they done to it? Close examination indicated that most likely it had been thermally cracked and the green color introduced by allowing green oil to seep into the cracks, which were then covered with a mixture of epoxy resin, dirt and small mica flakes.

As we neared Kolwezi, roadside vendors appeared, offering fish for sale from nearby Lualaba Lake and the Lualaba River. The Lualaba River, originating just a few miles southwest of Kolwezi, is the largest tributary of the Congo River. At Kasangani [Stanleyville] the Lualaba River becomes the Congo River. Lake Lualaba was created in 1952 when the Union Minière mining company dammed the river to produce hydroelectric power. The big power lines from the hydroelectric plant, which carry a direct current of 500kV, and use the river for one leg of the circuit. A number of other dams on the river generate large amounts of electricity that is sold to Zambia. Tall high-tension lines parallel much of the road to Kolwezi. Under the power lines, at a pit stop, I spotted a vein of malachite cropping out in the ground. I pointed it out to my companions, who just shrugged it off, saying that it



Figure 8. Rush hour in downtown Kolwezi. No parking problem here.

was normal for that part of the country. Jules Cornet, one of the first geologists to visit Katanga, called its great (almost obscene) amount of mineral wealth a “geological scandal.”

We seemed to be always giving people rides. Three guys whose car had broken down needed a lift into Likasi to get parts. Some officials at roadblocks wanted rides into town. It got pretty crowded in our camper shell, and I couldn’t help but think of the slave ships of yesteryear.

Soon after crossing the Lualaba River we were in Kolwezi. The place where 30 or 40 of Mobutu’s soldiers had been killed some weeks before was pointed out. We drove to the home of one of the few white expatriates still in town, and he took us to the local office of Gecamines (Generale des Carrieres et des Mines), the national mining company that was created when the mines were nationalized in 1967. Gecamines also controls thousands of square kilometers of mineral-rich concessions in the Shaba Crescent. We soon arranged for rooms at the little company hotel, and for a tour of the mines. We were introduced to the chief geologist, shown the map room, and given the basic rundown on the mines and the Precambrian sedimentary strata in which the ore is found. The map room contains hundreds, if not thousands, of maps of the various mines, going back to Belgian colonial times.

Our “hotel” was like a run-down motel with 12-foot ceilings. My room had no electric light in the bathroom and, of course, no hot water. You definitely would not want to drink the water that did come out of the tap. Complaining to the management quickly brought an anxious servant to try to please the big foreigner who, for his \$40 per night, was making unreasonable demands. The servant produced a large metal bucket which he filled with brown water and attempted to heat with a large immersion heater. Mosquitoes, at least, were available at any hour of the night, and I was glad for the insect repellent in my ditty bag.

Kolwezi has 250,000 people but no gas stations. The streets were almost empty of traffic. On some street corners men were selling little bottles of what I at first thought was cooking oil, but was actually gasoline: these were the local gas stations. The bigger “stations” boasted a five-gallon plastic jug or two along with the

smaller bottles. All of the downtown buildings, even the churches, had heavy metal grills on their windows. Of the few restaurants in town, the best is the Florianna, a little second-story place run by a couple from Switzerland who have been there since 1949. They have a ranch near town where they raise chickens and rabbits for their restaurant. You can even get frog legs, but the rabbit has to be ordered a day in advance. We found ourselves eating at the Florianna almost every evening: it was much better than the second-best place.

Men from the mayor’s office had spotted us at the roadblock on our way into town, and Victor said that we definitely needed to tell



Figure 9. A cluster of quartz crystals too heavy to be worth the air freight to take it to market.



Figure 10. The Komoto cobalt mine in Kolwezi.

the authorities what we were up to. The mayor had a fancy office and was gorgeously dressed in a well-fitting suit. He had been trained as a surgeon in Switzerland and in trauma care in South Africa. We had a pleasant chat, he seemed amenable to our visit, and he stamped our documents. Then we visited the police chief and came away with more stamps.

Our little pickup was going to be busy hunting malachite in the concessions with Sam's men, so we had to hire another vehicle to visit the mines. Gecamines could not spare a vehicle to show us around. One car we tried to rent looked as if it had barely survived a car bomb: the back seat was patched with all sorts of stitched-together fabric, and patches on the fabric had holes in them in turn, which were covered with cardboard. Pavement could be seen through the car's floorboards. There was no reverse gear; to back up, the driver had to get out and push the car backward. The driver took one look at me and moaned, "This is the last day for my poor car." We ended up renting an old van for \$100 per day (with driver) in which to visit the concessions.

The concessions are large mining claims, some of which have villages on them. Our first visit was to the KOV pit. KOV is an acronym for Kamoto (the name of the orebody), Olivera (the Portuguese operator of the pit from 1950 to 1960) and Virgule (the French word for "comma," in reference to the shape of the orebody). When we drove down into the mine it was evident that production was at a very low level. The big power shovel appeared to be loading only two 150-ton trucks, and 20 or 30 men were standing around with nothing in particular to do (in well-run open pit mines it is rare to see many men on foot). Copper mineralization could be seen in many places. One wall of the pit had big boulders covered with small pink crystals of cobaltoan dolomite. There was not much in sight worth picking up, but I would dearly love to have

the specimen-collecting concession in this mine if a lot of ground is to be moved. The Musonoi mine, famous for its fine torbernite specimens, is part of this pit, but is now mostly backfilled with waste from other mining operations. We walked a kilometer down into the Musonoi on the backfill, and saw bits of malachite and black bubbly heterogenite scattered everywhere.

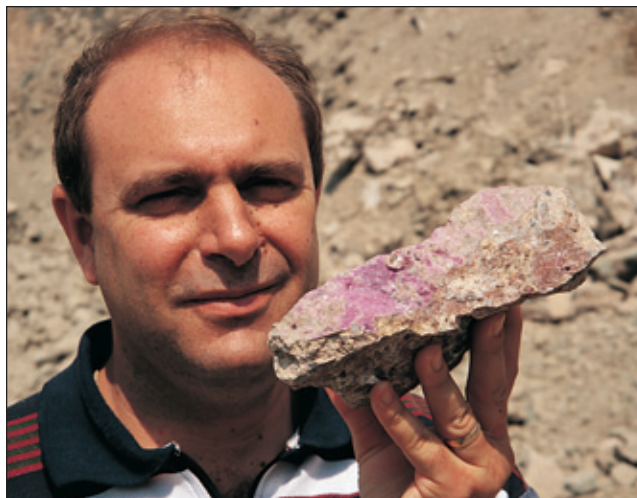
We then visited the Kamoto cobalt mine, perhaps best known for its remarkable carrollite crystals. In fact, carrollite is the main cobalt ore at the mine. This is an underground mine, still operating but fallen on hard times. Cobalt, a high-value export, was always a ready source of cash for Mobutu. Needing money, he ordered increased production but without making the additional investment in equipment to make it possible. When management chose to rob ore-rich pillars to meet the production quotas, big sections of the mine collapsed. Current production is about 10% of its former level. I was invited to go underground, but figured that my time would be better spent talking to the geologists. My calculation was that my chances of locating specimens would be much better outside than if I spent a day in a mostly collapsed mine, trying to find a place where the miners and geologists had overlooked something. Even taking up full-time residence in the mine probably would not pay. Sure enough, one of the geologists asked me if I could use some single carrollite crystals. Matrix specimens would have been better, but I accepted his offer. Unfortunately for me, the great discovery of the great carrollite crystals on calcite at the Kamoya II mine took place *after* my visit to Kolwezi.

We drove past big junkyards full of rusting equipment that was slowly being overgrown by brush and scrub. It must have taken a long time for so much of this old equipment to pile up. Finally we came to the Mashamba mine, which is also a big open pit, but abandoned, with a lake in the bottom which marked the local



Figure 11. The KOV pit at Kolwezi. Copper ore is being loaded into a truck.

Figure 12. Victor Benatar with a typical specimen of cobaltoan dolomite picked up in the KOV pit.



groundwater level. The absence of tire tracks showed that there had not been any recent vehicular traffic, but a narrow path of smooth powdery dust along the access road showed that there had been a lot of foot traffic from nearby Kapata village. We wound down and around into the pit, and ended up on a bench dotted with small mounds of waste rock from many small round shafts that the locals had dug. The shafts went down about 50 feet in the bench to reach a horizon where gem-quality malachite was found. There were about a dozen two-man and three-man teams working the place, and they were initially fearful that we were from the mining company and therefore a threat to their rice bowl. They warmed up to us when they realized that we were foreigners interested in what they were doing, and potential customers as well.

The men had only shovels and small iron bars to dig with, and buckets to remove the waste. For fine work they used valve stems from internal combustion engines sharpened on one end to chisel points. They worked very hard for a small reward. They had only a few 2 to 3-inch pieces of malachite to show us.

Victor said he had never been down in the mines, and I did my best to explain the geology and mineralogy around us, as well as the techniques that were used in the mining process. He had often come to the area to buy malachite, but had always bought it in Kolwezi, except for one time in the nearby village of Kapata.

The story of Victor's visit to Kapata is worth telling: He was taken to Kapata by his trusted malachite buyer, and he bought a lot of good malachite from the miners. Usually he bought it from the

African matriarchs ("mamas") who controlled much of the malachite production in Kolwezi. The mamas, hearing about his visit to Kapata village, feared that he would cut them out of the trade by buying directly from the miners; they barged into the mayor's office screaming, yelling, removing all their clothes, and complaining that *mutoto* (baby) Benatar was going to ruin the malachite business. In the face of this avalanche of feminine outrage the mayor did the only thing any sane man could do: he caved in to their demands. The next morning the mayor called Victor into his office and told him to buy his malachite in Kolwezi and stay out of Kapata village, or go to jail.

The next stop on our tour was the Mutoshi mine, which in the past was perhaps the greatest producer of gem-grade malachite. Pieces weighing in excess of 200 pounds were found here. In 1903 gold had been discovered near Mutoshi village by prospectors of



Figure 13. Young mineral dealers offering libethenite specimens for sale.

the Tanganyike Concessions, Ltd. The site was operated as a gold mine at various times, and more recently as a copper mine. When this played out, too, the mine was abandoned, with a good-sized lake in its bottom. We descended into the pit along another powdery little footpath, and once again came upon a crew of men digging for malachite. They had dug a pit that extended below the water level, which a little gas-driven pump was working hard to drain. Chips and crumbs of cutting-grade malachite were everywhere, weathering out of the floor and walls of the earthy white bench. Unfortunately they didn't have much to show us.

Our Gecamines guide took us to the site of a mini-gold rush going on near the mill and near the Musonoi "River." There were several hundred people digging up a hill and carrying the dirt down to a stream, where other men panned out the gold. There was even a small impromptu village of fast food stands that had grown up along the dirt track that led to the river. Circulating through the throngs were local gold buyers who were conspicuously more prosperous-looking than everyone else.

The gold had a rather unusual origin: it came from sandstone near the bottom of the Mutoshi orebody. The sandstone ore had been processed in big rod mills. During the grinding process the gold tended to concentrate in the bottoms of these mills and even stick to the iron. Periodically the mills were cleaned out and the residue dumped in a pile which ultimately became a hill. The locals eventually discovered that this hill had a substantial amount of recoverable gold, and the rush was on. Here was a chance, I thought, to document photographically a little gold rush in progress. Out came my camera, and I got two or three shots before a great hue and cry arose from the locals. Photo! Photo! were the only words I could make out. Our guide suggested that we calmly leave so, just as we had in the market, we made a nervously wary retreat.

It was one of the few times in my travels when I have felt really threatened.

Our geologist guide was good and helped to keep us out of trouble, but I had wrongly assumed that his services were free. When our visits to the mines were over he said we owed him \$75. Of course we negotiated a more modest price. In the Congo you must assume that people are going to hit on you for anything they can, and you must be careful to nail down the cost of everything in advance.

One evening we went to the little home of a geologist and were offered a small table full of specimens. They were all of low quality, good only for study or reference purposes. There was a small lot of poor secondary uranium minerals that I was told came from the Musonoi Extension mine. Most interesting were several small specimens covered with tiny dark green libethenite crystals; I bought these for less than a song, and two days later the geologist showed up at the hotel with about 200 more libethenite specimens. Most were less than two inches in diameter, and the largest was a hand-sized sandstone fragment with one side covered with isolated two to three-millimeter crystals. "How much?" I asked. "Seven dollars each," I was told. Well, if you don't know what things are worth and are dealing with a dumb, rich foreigner, you might as well start high. Raised voices and expressions of outrage followed on both sides of the negotiation. I told him that I thought a few dollars per kilogram would be all I would pay for such rubbish. If he wanted more money, I told him, he should bring me centimeter-sized crystals like the ones they had in Zambia. Indignantly he wrapped the specimens and took them away rather than throw them away for a nothing price to an unappreciative foreigner. Two days later, he was back, and the price negotiated for the libethenite was much closer to my view of their worth than to his. Even if you are able to buy some things at a throwaway price you must keep in mind the high cost of getting the specimens out of town, and then out of the country. Even to take malachite and specimens from Kolwezi you must pay the local government its due. Officials normally assess a huge tax, which you must negotiate down to a price you can live with.

After a few days it became generally known that foreigners were buying malachite and mineral specimens, and most evenings and some mornings miners and runners would bring us things to buy. Most of the material was rubbish and not worth the cost of export. The geologist from the Kamoto mine came one evening with several hundred loose carrollite crystals. Many were not worth buying, but I was able to get about 200 crystals at a modest price. Those crystals and the libethenite specimens were the best things I was able to buy on my trip to the Congo, but their sale would cover only a small part of the cost of the trip.

During our negotiating sessions, I had a chance to talk to many of the young men who made their livings entirely or partly by selling specimens and malachite. They were not dummies. They could sight-identify all of the minerals produced in the region, including the more obvious uranium minerals. They certainly knew what exceptional specimens looked like, even if they could not place an accurate value on them. They were all fascinated by the Peru Issue of the *Mineralogical Record*, and looked carefully at each mineral photo, wanting to know what each mineral was and how big the specimen was. They used their fingers to give reality to the dimensions, and they compared notes with their friends. Some talked enthusiastically about the big red 7-cm cuprite crystals growing on blue chrysocolla that they were going to get from the KOV pit when it mined down to the next level. These have yet to materialize, but I am sure that we will eventually see some of these young men at the Tucson show, or see their specimens offered for sale on the Internet.



Figure 14. Author and malachite boulder in the Musonoi mine, with the KOV pit in the background.

Figure 15. A superb cuprosilodowskite, 4 cm across, from the Musonoi mine, Kolwezi, Congo. Currier photo.



One of these dealers visited me at my warehouse just before the 2001 Denver Show and tried to sell me 2-inch carrollite crystals that would have been spectacular if all the faces had not been ground and polished. One European dealer/collector experienced in such things said about them, "I think they are all crooks. Some are very skillful at gluing together fake specimens . . . remember the fake stalactitic malachite specimens?"

Victor was not getting much malachite, and what he was getting was not of the best quality. One reason was that there had just been a big malachite heist. Some guys drove into Kapata village and said that they had buyers for cutting-grade malachite at a price considerably above the going rate, but that the deal had to be done quickly. They convinced the mamas to take a ton of malachite out of hiding; the material was weighed and loaded onto the truck. The mamas got into the truck too, to go along and get paid, but were instead driven out into the country and ordered off the truck at gunpoint. The truck and the malachite disappeared. I wanted to find a few large pieces of malachite from which I could make some 12 to 15-inch bowls like the one I obtained some years ago and that several of my friends have lusted after. I could not even find a piece suitable for an 8-inch bowl.

The malachite is there in the ground, but most of the mines were either closed or operating at vastly reduced capacity. We were told that in 1980 there had been a fleet of 140 big mine trucks, and 50 more 150-ton trucks had been purchased. In that same year,



Figure 16. Metatorbernite, 7 cm, from the Musonoi mine, Kolwezi, Congo. Forrest and Barbara Cureton collection: Wendell Wilson photo.



Figure 17. The Mutoshi mine, now abandoned, was a great producer of gem-grade malachite. Now a few locals dig in its benches for malachite.

450,000 tons of copper and 12,000 tons of cobalt were produced with the labor of 36,000 Africans and 1200 expatriates. Today, two trucks are running, and 30,000 tons of copper and 2000 tons of cobalt are being produced by 28,000 Africans and 100 expatriates. The mines have been going downhill for years, not because of any exhaustion of the ore, but because of the political situation and the corruption of government officials.

The government is apparently trying to privatize the mines, since it has become clear that the government itself cannot run the mines at a profit. The situation is very similar to that in Peru, Bolivia and

Chile, where many mines were nationalized, milked for many years by the governments, and finally bankrupted by mismanagement and/or corruption. At this point, generally, new outside investors are invited to bid on properties and then operate them. One wonders if this will eventually lead to yet another round of nationalization when the mines become profitable again.

The mines looked very rich to me, and I thought that money could be made just by reprocessing the dumps with modern mining and milling techniques. I was told that foreign mining companies would not even think of trying to mine anything here with an ore value less than 4% copper. At the big copper mine at Bingham Canyon, Utah, the mining company makes due with ore that runs only 0.3% copper. But even with rich ore, foreign companies are reluctant to get involved in mining in Katanga, and for many reasons. How do you estimate the cost of doing business in such a politically unstable place? How much of the infrastructure are you going to have to recondition or build from scratch? How do you get educated, well-trained people to work in a place like the Congo? How do you factor in the likelihood that the mine may be destroyed or nationalized during a revolution?

Our expatriate friend told us that there are 21 transformers in the electric house, but only half of them are working. Each transformer holds 1,200 liters of highly toxic oil. During the 1978 revolution, some of the troops used the oil for cooking, among other things, and when the oil level got low enough in one of the transformers it heated up and caught fire. Signs were posted that the oil was poisonous, but many locals still think that the signs are just a lie to discourage them from using the oil. Stories like that abound. Most



Figure 18. Shirttail miners digging for malachite at the Mutoshi mine.

people we talked to were optimistic that the Kabila regime would improve conditions in Zaire; however, another foreigner thought that things would continue to get worse, and that in another five years they would be putting biohazard stamps on maps of the Congo.

One Sunday when we had nothing much to do, we were taken out for a picnic to the Dengue Nautical Club. This is a little community of perhaps 30 vacation cottages built mostly by expatriates on the edge of the 80 kilometer-long Lake Lualaba. The community had been destroyed three times during revolutions, most recently in 1991. One cottage was being reconstructed for the fourth time. There used to be a clubhouse, badminton courts, and even a water system for the community; now, all the houses are shells without windows, doors or roofs. Locals had taken the ceiling beams and window frames. We had lunch on what had been the veranda of one of the homes. At this time of year the water in the lake was way down, and I could walk far out on the fingers of sand that stretched into the lake. I noticed that here and there were patches of black sand speckled with minute grains of malachite. I was told that the mill at the Mutoshi mine was set up to concentrate malachite. The ore was processed, the malachite was floated on top of magnetite sand, and the magnetite was removed by magnets, leaving the malachite behind. Some of the magnetite sand with malachite had been washed into the lake.

At this point we were growing acutely aware that our time on this trip was running short. In Kolwezi I felt as if we were out on the end of a long logistical rope that could break at any time. In this unpredictable country it would not take much to prevent us from making it to the upcoming Denver gem and mineral show. Anyway, on the way home I wanted to stop in Likasi to see the Gecamines museum, which I'd heard had some fine specimens, and to visit the famous nearby uranium mine of Shinkolobwe. This was the mine that had produced the uranium used to make the atomic bomb that was dropped on Hiroshima at the end of the Second World War.



Figure 19. Locals digging little shafts, looking for gem-grade malachite, in the Mashamba mine near Kolwezi.

The trip back to Lubumbashi through Likasi was disappointing. When we asked permission to visit the museum in Likasi and to visit Shinkolobwe we were told that we did not have the correct permits. We spent three hours running down the mayor of the town, but he gave us the same answer. I imagined that maybe during the recent revolution the collection had been pillaged, and they were not eager to have that fact advertised. If anyone knows the current status of this collection, I would be glad to hear about it.

After passing only a few more roadblocks we would be home. Roadblocks were always a source of worry—but Sam said that in Mobutu's time there had been twice as many. At one of the army roadblocks we got chummy with the soldiers, and I got a great photo of them brandishing their weapons. I tried to take some pictures in the rural market place at Fungurume, but again the hue and cry of the people drove us away. We made it back to Lubumbashi before 6:00 P.M., as was necessary, since the army closed off the city at night (those who arrived late got to spend the night at the roadblock).

After the Spartan conditions of Kolwezi it was nice to be back in the relative luxury of Lubumbashi. There was nothing much to do except to select items of cut and polished malachite and happily paw through boxes of specimens brought to us by the runners. There was one 12-kg lot of hematite crystals from the Kundelungu Mountains, a little to the north of Lubumbashi: these were interesting, but few would end up in display cases. All of the specimens we were offered were of low quality, and most were damaged. Malachite specimens accounted for about 80% of our total haul.

The Etoile is an abandoned mine just outside of Lubumbashi. Etoile is French for "star," so sometimes labels will give the locality as the Star mine, though the locals know it as the

Kalukuluku mine, named after the nearest village. It has produced a seemingly unending stream of chrysocolla specimens that no one seems to want—mostly breccia fragments coated with bright blue botryoidal chrysocolla that I suspect is a product of post-mining mineralization. I bought 50 kilograms of these specimens, and I think that when it becomes possible to export specimens from the Congo cheaply, these chrysocolla specimens will become common in the U.S. and Europe.

A new air service from Lubumbashi to Johannesburg had been inaugurated while we were in Zaire, and we decided to take advantage of its first flight. There was a mad rush to get all of our material packed up, and the paperwork generated and processed. We were up into the small hours of the morning. The negotiations for the permits, and the usual squeeze, made the whole process a real cliffhanger. Air freight costs, squeeze, brokerage, etc., can easily drive the cost of an air shipment to more than \$10 per kilogram.

The airport had suffered during the recent revolution: the glass in the terminal building doors was broken out, and all the chairs had been stolen, so there were no places for passengers to sit. On our way through immigration control we were informed that Victor and I were in the country illegally, because our visas were only good for a week (we hadn't noticed). It cost each of us \$75 extra to get onto the plane. Sam, being a resident, could come and go as he pleased. Even on the way out of the country, we were told that our vaccination certificates were invalid. We made a stop at the airport at Ndola, Zambia, apparently just so the officials could make us all get off the plane, go into the terminal building, and be charged a \$25 transit fee. But on the flight out of Zambia we had a fine view of the great Victoria waterfall. ☒