

MINERALOGICAL RECORD

MARCH-APRIL 2003 • VOLUME 34 • NUMBER 2



Recollections



OF MINERAL COLLECTING AND DEALING IN INDIA

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Prior to 1972, fine collectable specimens from India were virtually unknown in the West. Today they comprise a prominent share of the international mineral market. Yet the hobby of mineral collecting still remains almost non-existent in India itself. This first-person account by a native son, who began as a field-collecting hobbyist and later became a mineral dealer, recalls the flavor of amateur mineral collecting in India from the 1940's and 1950's, then illuminates the development of a feisty, fiercely competitive mineral specimen market in India during the decades that followed.

INTRODUCTION

Several bullock-cartfuls of fresh river gravel delivered and spread on my uncle's driveway in Poona provided my entry to a lifetime with minerals.

In 1945 I was spending the Christmas holidays with my cousins in Poona. World War II had ended some months earlier, triumphantly for Britain, whose Raj in India would come to a close in less than two years, much to the surprise of the politically naive adults of my Indian family. But such topics barely impinged on the mind of an eleven-year-old boy whose eye darted curiously from one chunk to another in the gravel, until it was caught and held by a bright yellow stone with the most incredible pattern of sharp parallel bands of various intensities surrounding a sparkling center.

"Quartz crystals," declared my know-it-all uncle, "with agate surrounding them. That's nothing," he continued dismissively, "In Cambay, agates come in all colors of the rainbow. And they are cut and polished into astonishing jewels for rings and necklaces. Once, I saw . . ." But I was no longer listening. I was already excitedly off hunting for more "jewels" in the driveway gravel . . . my first mineral collecting trip. When I had finished I had an array of gaudily colored stones to accompany my initial yellow treasure . . . red, green, translucent milky blue . . . with all sorts of inexplicable marks and shapes within them. Why did they have such a variety of colors? And what produced the strange indentations and exquisitely fine patterns? And what were some of the other stones I had

picked up that didn't look at all like the agates? No one seemed to know the answers.

After I returned to my hometown of Bangalore, in South India, I hopped on my bicycle for a trip to the museum. In a corner section of the upper floor I found a couple of display cases labeled "Rocks and Minerals of India." Though the collection would most aptly be called shabby in light of what I know today, they were fantastic beyond belief to my then untutored eyes. Something glassy black: "Samaraskite," labeled "radioactive," no less. Another piece, sparkling bright emerald green: "Fuchsite quartzite." A chunk looking polished and as transparent as glass: "Muscovite mica." Hey! Mica! That's the stuff in the window of Mother's kerosene kitchen stove! Here was my introduction to mineralogy and geology. I was off and running. And when I stumbled across an article with full color photographs of wulfenite and other American specimens in the Smithsonian Institution, authored by the associate curator of the U.S. National Museum (Switzer, G. S., Nov. 1951, "Rockhounds" Uncover Earth's Mineral Beauty, *National Geographic Magazine*, v. C [100], no. 5, p. 631-660), my enthusiasm for minerals was set on fire.

But my questions about the agates remained unanswered until, in New Delhi, my father took me along to meet an old friend of his, Professor Darashah N. Wadia, whose home was filled with curious and beautiful pieces of natural materials the venerable gentleman had collected during field trips across the length and breadth of India. With convincing authority "Darashah Uncle" (for that is the way Indian boys are expected to respectfully address an elder man) instantly answered each and every mineral-related question I could think to lay on him. My very first specimen, the bright yellow one from the driveway gravel in Poona, Prof. Wadia said, was a pretty piece of "fortification agate." I was still too callow to grasp how significant a figure he was when Father informed me that he, Dr. D. N. Wadia, was the first Indian ever to be appointed Director General of the Geological Survey of India, and that he was the author of *Geology of India*, a seminal book on the subject.

BANGALORE

Thereafter, whenever Dr. Wadia's work brought him to Bangalore he would invite me to join him and his G.S.I. colleagues on any field trips they undertook. That was how I learned about an occurrence of monazite. As we zoomed along a dirt track in a jeep, Dr. Wadia pointed off to one side at a waste pile of white clayey material, saying, "You should take a look at that during the monsoons. If you persist, you'll find interesting crystals of monazite . . . that's a rare-earth/thorium phosphate." After that, during the late 1940's and early 1950's, I made it a practice to visit this occurrence on my red Jawa motorcycle after periods of heavy rain. It turned out to be a thoroughly kaolinized pegmatite pit, surrounded by fields, on the outskirts of Bangalore, near a barely discernible hamlet called Yediyur. The rains would expose crystals of red to brown fragments and crystals of monazite up to 5 cm across, as well as less well-crystallized black columbite, which could be spotted and picked up on the surface. Over 2 or 3 years, my school buddy, Vijay Kumar, who joined me for the fun of taking outings rather than for the mineralogy, and I managed to collect a dozen or so pretty decent specimens, plus myriad broken crystal pieces.

On one memorable visit to Yediyur, accompanied by Kumar riding behind me on my motorcycle pillion, I observed that the surrounding fields had been recently plowed where a score or so of cattle browsed placidly. It was a bumpy ride across the fields to the kaolinized pegmatite, but well worth the discomfort, because on that lucky day we hit the biggest crystal yet encountered at the site. After an hour or two of careful picking, we stashed our specimens

in our pockets and reluctantly turned to leave. Celebrating our good fortune, we were pitching and bouncing our way across the ploughed furrows when suddenly Kumar screamed out, "Hit it hard, man! Go! Go!" I swung my head around in alarm to catch sight of an Indian steer, long curved horns all the way down, charging at us at full speed. Clutching the handlebars like a vise, I gunned the accelerator. The red motorcycle bucked and heaved like a crazed bronco. The steer, the tips of its horns barely a meter from Kumar's rear end, was not about to give up the chase. Bellowing reflexively at the angry beast, clinging desperately to the Jawa, we barely held our lead and kept our balance as we shot forward. Then, suddenly, we were out of the furrows and back on the dirt track. We kept going. The steer stopped. He had done his stuff by chasing off the intruders and their noisy red machine.

Today, Yediyur and the kaolinized pegmatite are long gone, having been overtaken by Bangalore's rampant urban growth. Some of the monazite specimens I donated to the Harvard Mineralogical Museum, one went to Dick Bideaux in an exchange in 1957/58, and the rest went to Prof. John Anthony, who conducted research on monazite at the University of Arizona for his Harvard doctoral dissertation.

Following Dr. Wadia's tip on the monazite location, I realized that personnel of the GSI, as well as of state geological surveys, could be invaluable sources of information on mineral collecting leads. Though their main interests and work leaned heavily toward minerals and rocks with potential commercial or industrial value, I found that the survey geologists were invariably happy to help. Amateur collectors like me were as rare as proverbial hen's teeth. To the geologists' way of thinking, mineral specimen collecting could be no more than a personal indulgence, not a serious endeavor. Even so, whether they were amused or bemused, most Indian geologists I encountered were pleased to discuss localities where they might have observed unusual or exotic mineral occurrences during their work in the field.

Another mode I stumbled upon for pinpointing interesting mineral locations was to find and burrow into the dumps of discarded mineral and rock specimens that invariably accumulated in the compounds of geological survey departments. Once I located a piece of some material that showed some collecting potential, I would take it in my open palm into the offices from whence it had been thrown out. With luck, a bit of asking around would identify the very field officer who had originally brought that particular piece or something similar back from the field. Thereafter, the rest was easy.

In this manner, and always roping in a friend for company, I undertook increasingly distant forays on my motorcycle from Bangalore in order to find several mineral locations in the state of Karnataka: bladed epidote crystals with calcite and quartz near Seringapatam (now Srirangapatna); fuchsite flakes up to a cm across in quartz from Krishnarajasagar; ruby corundum crystals in alluvium between Channapatna and Maddur along the Bangalore-Mysore highway; copper mineralization in an ultrabasic dike at Sowanahalli, 12 km east of Nanjangud; chromite and magnesite deposits around Kadakola and Dodkanya, some 15 km south of Mysore city.

MADRAS

Step by step, from gazing avidly at every chance encounter with a rock or mineral display, no matter how shoddy or mislabeled, I gained a fair ability at mineral identification. At the University of Madras, though I was a chemistry major, and minerals remained no more than a hobby, I had the great good fortune to make friends with a geology undergraduate, Asif Ashraf. Unlike most of his fellow geology students, Asif was genuinely enthusiastic about the

esthetic qualities of minerals. We became collecting buddies. Asif would pick up some lead from a geology professor or graduate student about something worth collecting; then, with the mindset of treasure hunters, we'd take off on weekends to discover what we could turn up.

On an early trip Asif and I set out to collect beryl crystals from the well known muscovite-bearing pegmatites at Saidapuram in Nellore district (since 1956 part of Andhra Pradesh). A train ride some 125 km northward from Madras brought us to Gudur. From there it was a 12-km trudge westward along a dirt road to Saidapuram.

Along the way, the road crossed some north-south trending low hillocks composed of staurolite-kyanite schist. I was astonished to find that I could simply pick up from the ground impressive crystals of staurolite, which had weathered out of the schist. The crystals, dark reddish brown in color, were the largest and best formed I've ever seen. They had the classic form of a textbook diagram of staurolite, up to 8 cm in length and 5 cm across. Unfortunately, the luster was subvitreous to dull, so I didn't see enough commercial potential in them to revisit the locality after I became a mineral dealer 20 years later. The specimens collected there I also donated to the Harvard Museum. Kyanite from that location commonly occurred in thick blades 3 cm in width and up to 30 cm in length, with a rich royal blue color, but none would qualify as specimens worthy of exhibit by American collectors.

Arriving unannounced at one of Saidapuram's several mica mines, Asif and I were invited to make ourselves comfortable overnight at the mining company's simple but adequate mine rest house. The mine superintendent was wonderfully welcoming, even providing us with meals prepared by his servants. It was typical of the hospitality I've invariably encountered in out of the way places in India: a generous mode of treating friendly strangers that persists to the current day. He gave us free rein to wander with our picks around the open pit excavation and dumps of the main pegmatite deposit, so it was easy pickings to collect fist-size cleavage pieces of richly green amazonstone and well formed hexagonal crystals of beryl up to 10 cm in width and 20 cm long. But these were completely opaque, so the staurolite and kyanite specimens turned out to be the prizes of the Saidapuram excursion. An entirely satisfying experience!

But when we later set our sights on Kambakkam, another mineral locality, we had no idea how radically different our feelings would be after that collecting trip was over.

KAMBAKKAM

"It's easy to find," said Prof. Kasturi, the geology faculty member who had tipped off Asif about glassy clear quartz crystals that were there for the picking, "right off the ground. It's not that far, just a day trip, back by evening. Our group went in a chartered bus. But you can take a train, get off at Tada, then walk westward . . . there's just one road . . . until you get to the fish research station at Kambakkam. You'll find thousands of beautiful, sharp quartz crystals."

So we caught an early morning train north from Madras Central Station, and got off 65 kilometers away at the tiny wayside stop of Tada. So far, so good! Fortunately, Asif had roped in a geology classmate, Sri Ram, to join our expedition, not least because his native tongue was Tamil, the local language, in which neither Asif nor I was proficient. Off we started on foot from Tada toward the "Fish Research Station" after ensuring that we were headed in the right direction on the dirt road to Kambakkam. We walked, and walked. "How far to Kambakkam?" we queried the few locals we encountered. "Not very far," each one assured us in turn. It started to rain, just as we crossed an Irish bridge (the name used by the

British in India for a roadway, constructed of stone and boulders, which dips down into a river bed and then up again on the opposite bank: a ford, in other words). Just then a lone lorry clattered up behind us heading in the same direction we were going. Graciously the driver stopped and offered us a ride in the tarp-covered rear, which was piled high with gunnysacks stuffed with fish meal, or so we inferred from the overpowering stench that assaulted our nostrils. By then it was pouring rain, not a time to quibble. Gratefully, we perched ourselves atop the fish meal bags. The lorry rumbled on for what seemed like an hour before slowing to a halt. On our right, some hills loomed through the driving rain. We jumped off when the driver pointed to a jeep track leading toward the hills. "Kambakkam," he said, with a friendly wave.

Wet to the skin, we trudged onward. But it was warm rain, typical of tropical coastal regions. The downpour began to abate, and with that our spirits rose. Since it was past 2 p.m. we realized we wouldn't be returning to our college dormitory that evening. No problem; we had packed some sandwiches, boiled eggs, and fruit. And surely we'd find a cup of hot tea in the cafeteria of the Fish Research Station. Finally, the rain stopped. A few shafts of sunlight cut through the cloud cover, revealing everywhere the freshly washed rocks in all their colorful glory. Hard, clean, uniformly grained Precambrian quartzites, my geological companions informed me, in multiple hues of red, mauve, and green. Even more eye-catching were the features dramatically displayed on virtually every rock surface: ripple marks, rill marks, swash marks, cross-bedding, as clearly and sharply defined as they must have been when they were originally created on an all but lifeless sandy beach several hundreds of millions of years ago. Observing a large exposure of quartzite on a joint plane, Asif pointed to our left. "You can tell from the slopes of the cross-beds and the asymmetry of the ripple marks that the currents came from THAT direction!" Several hundred million years ago? I began to wonder if a life spent cooped up in a chemistry laboratory could beat this.

Another kilometer or two found us in a forest. A short distance further, at the base of a steep hill, we stumbled upon the first sign of human habitation since the Irish bridge: a small thatched hut, surrounded by a half dozen rectangular ponds, no more than half an acre in total extent. Here the jeep track stopped. As we looked around, puzzled, a lone figure emerged from the hut, a wizened man, bare-footed, with shockingly scrawny legs showing beneath a simple *dhotti* tied around his waist.

"We're looking for the Fish Research Station at Kambakkam," Sri Ram said in Tamil.

The man looked befuddled. After considering for a moment, he said, "Yes, this is Kambakkam. But there's nothing here other than what you see."

"But what about the Fish Research Station? Where is that located?"

"I don't know anything about a fish research station. Perhaps you could enquire about it in Madras, because it's definitely not in this region."

"But what are these ponds for?" Sri Ram persisted.

"Oh, these are for raising fingerlings," the old man explained. "Twice each year a government jeep comes. They empty a few barrels of baby fish into the ponds. Then many months later they return to net the same fish, grown bigger by then, and carry them away somewhere. I'm the watchman here to ensure that no one but the government staff carry away the fish"

So this was Professor Kasturi's "Fish Research Station"! Hot tea would have to wait till our return home.

With daylight starting to fade, we focused our attention on finding Kasturi's "thousands of quartz crystals." After a frustrating attempt to elicit information about quartz crystals from the kindly

but nonplussed watchman, we simply headed into the hills along a visible pathway. There, barely a couple of hundred meters up, we spotted quartz crystals strewn along the track. The source was immediately apparent. Hundreds of quartz veins crisscrossed the quartzite alongside and above us. Eagerly we scooped up handfuls of the loose crystals. They were indeed glassy clear, and yes, they were indeed sharp, but search as we did for a couple of hours, we didn't find a single one that was longer than 5 cm. Perhaps there were larger crystals in cavities where the quartz veins might have widened, but discovering them would have to await another day and another trip. Darkness was closing in on us and it had begun again to rain heavily. Clutching our dripping knapsacks laden with crystals, we stumbled our way down to the watchman's hut.

He was expecting us. Courteously he invited us in to escape the downpour. "You, sirs, will need to spend the night in my hut," he said simply, "for there's no other shelter within reach." We could discern almost nothing in the gloom of the hut's interior until our host produced a kerosene lantern and lit it. The room was floored with dried cow dung, a common and sensible practice in rural India. The "walls" were constructed of palm leaves tightly woven and bound together. A thick thatch of palm leaves comprised the roofing, through which myriad discrete streams of rainwater dribbled onto the floor. He placed the lantern on an ancient rectangular table adjoined by two long bench seats. A couple of coir lines were strung across the room at eye level. Apart from those meager items, the hut was bare. In our youthful inexperience, never dreaming we'd be spending a rainy night in the jungle, we had no apparel or covering other than what we wore. Our host sized up the situation. Realizing he could offer us no further help, he gently excused himself and went to the door, leaving the lantern behind. "Oh," he said, "The bus to Tada usually goes past the Kambakkam intersection around 11:00 each morning. It's the only one."

"Where are you going? Where will you be sleeping?"

"I'll manage," he answered quietly. "I'm used to this." Then he disappeared into the darkness outside.

By now, we three college boys were shivering in our drenched attire. The downpour intensified. Stripping down to our undies, we wrung out our clothes and hung them on the lines in the forlorn hope that they might dry overnight. Virtually naked, we felt a lot warmer not wearing our dripping garb. Glumly, we gobbled down most of our remaining food by the flickering light of the watchman's lantern.

It would be a distressing night, for sure, lying almost nude on hard wooden surfaces. But at least we'd be dry, I thought, as long as we could dodge the trickles of water dribbling from the thatching. We cast lots for sleeping spots. I won. I chose the table; its width promised the least degree of discomfort. Sri Ram and Asif got the long benches. The flame of the lantern was turned down low. Then we stretched out to await the slow coming of daylight.

"Ouch! Damn! What was that?"

"What was what? What are y- . . . Hey! Bloody hell! I'm being attacked!"

"What's going on? Hey! Aaaaagh! Something stung me! Ouch! Ouch! Turn up the light, damn it! Quickly!"

The room flooded with light as the lantern was lifted to view the table and benches, just in time to catch glimpses of veritable armies of insects scurrying for cover underneath the wooden tops of the table and benches. Enormous bed bugs! Dozens and dozens of them, driven to a voracious frenzy by the proximity of fresh, healthy, college-boy flesh. Manna from heaven, after subsisting for months or years on nothing but shriveled watchman!

For an hour or two we attempted various ploys to keep the bed bugs at bay. None succeeded. We dared not permit any physical

contact between our exposed skins and the wooden furniture. The only option left was to put on our shoes, squat on the floor with feet drawn in close under our bodies, bowed heads cradled in arms folded across our bent knees, and wait the miserable night through. All the while the rain gathered strength to become a steady, thunderous deluge, which left no dry spot larger than a dinner plate inside the hut.

Dawn broke. The rain ceased abruptly. Gorgeous arrays of clouds punctured by brilliant beams of light decorated the eastern sky. To the west, a vivid rainbow promised that our travails were behind us. We bid adieu and expressed our thanks to our host, who had reappeared magically from the jungle. We donned only our trousers and footwear as we embarked on our return journey, using our bare shoulders as drying racks for our still wet shirts. By the time we reached the road to Tada the sky was clear blue. The morning sun had done its job; our shirts were dry enough to wear again. I began, once more, to feel lucky. Promptly at 11:00 a.m. the bus showed up.

Under ordinary circumstances in the early 1950's, Indian peasants preferred to travel on foot, not least in order to save their sparse funds. But the previous night's rains had persuaded many to opt for the bus. The vehicle was already packed beyond imagining with rural folk, standing and sitting, male and female, adults and children, who good-naturedly squeezed tighter together in order to make space for Sri Ram, Asif, and me. Curious but friendly stares followed our entry, accompanied by a barrage of comments and questions. Sri Ram smoothly handled the queries about us, obvious strangers that we were. Besides the human beings, the bus accommodated four bamboo strip containers stuffed with a dozen or so chickens apiece, five uneasy bleating sheep on rope leashes, and a lone goat whose calm demeanor served to keep the sheep from becoming uncontrollable. With a roar from its engine and black clouds of exhaust belching from its rear, the bus lurched forward toward Tada. As is customary in rural South India, the passengers returned to their several loud conversations.

At a *paan-beedi* stall that had escaped our attention the previous day, the bus was hailed to a stop. More passengers. They clambered over the chickens, the animals, and their fellow riders, to find whatever cramped perches could still be had. Two uniformed and mustachioed policemen prepared to board the bus, securely holding an unhappy-looking wretch handcuffed between them. In order to accommodate the trio, those riders occupying seats closest to the door were dislodged, and obliged thereafter to ride clinging precariously to the outside railing of the bus. The handcuffed miscreant alternated between angrily yelling at his captors, loudly protesting his innocence, and pleading with his fellow passengers to intercede on his behalf. The police constables coolly ignored him. Some of the passengers chuckled and threw back rude comments at the fellow. "Where are you taking him?" someone asked the cops.

"We're taking this criminal to jail, of course! Where else?"

"Very good!" Murmurs of approval circulated among the occupants. Apparently, the captive was a known but unbeloved figure in the area. The two cops smugly savored the approbation.

Onward barreled the bus, till it was brought to a halt at the Irish bridge we had crossed on foot the day before. From bank to bank a swirling torrent drowned all signs of the sturdy stone ford we had previously observed; all signs, that is, except for the upper segments of a line of vertical 2-meter high poles intentionally implanted in cement to mark the upstream margin of the roadway during times of flood. Just a few meters down-current of the line of poles, a standing wave gave clear evidence that part of the submerged stone pavement had already washed away. No bus would be able to cross even after the water receded. And that, of

itself, could take days. No alternate route existed to Tada, or even to far-off Madras.

The bus disgorged most of its passengers. They milled around helplessly, wondering what to do next. The handcuffed prisoner finally fell silent; a glimmer of hope seemed to lighten his expression.

On the far bank of the rampaging stream a bus traveling in the opposite direction to ours pulled to a halt. Its passengers too disembarked, then looked disconsolately at us across the rushing waters. A high-decibel interchange of yelled conversation engaged the groups on opposite banks. The verbal exchange seemed to fix the realization that neither bus could hope to ford the stream for a long time to come. A few of the bus riders appeared crestfallen, but most seemed stoic. Three college boys had no idea what to do. Only the two cops, furious at the turn of events, acted with deliberation. Apparently, they were determined not to give up on safely carting away the prize they had captured. Now they took up a conversation of shouts with the driver of the bus on the far side. After several minutes of bellowing, the policemen had made up their minds. They would cross the flooded stream on foot. The driver across the way agreed to wait for them before turning his bus back to Tada. It would be risky, they knew, but if there were others who were willing to literally add their weight to the crossing, it could be accomplished without too much peril. "Any takers?" one of the cops enquired in a Tamil expression. Three college boys, too raw and too stupid to know better, volunteered to join them.

Realizing, finally, that his captors actually intended to attempt crossing the rushing water, the prisoner, still handcuffed, began screaming and caterwauling as though his life were at stake. Which, indeed, it was!

"You can't do this to me. I can't swim," he screamed.

"You won't need to swim, unless you continue to carry on like an idiot. You only need to hold on to us tightly and walk!"

The handcuffs were removed from the captive's wrists as he was dragged into the stream by one of the policemen.

"I'm going to drown!" he shrieked.

"Indeed, you will . . . I'll see to that myself if you don't shut your mouth and cooperate with us during the crossing," the lead cop said. "And stop your damned blubbing, this instant!" Shaking with fear, held tightly by both cops, the arrestee meekly complied with their commands thereafter.

Then the more assertive of the two cops turned to the three of us. "Take your shirts off to lessen the water's drag. Tie your shoes on tightly. Keep your haversacks as high as possible on your backs. And no matter what, don't let go of one another. Or of us!"

Arms tightly wound around each other in a human chain, the six of us edged into the torrent, searching deliberately one step at a time for firm footholds. The current tugged fiercely at our lower bodies, but at those times when one or another of us lost our footing, there were the others, firmly rooted, to keep us together. Fascinated and fearful, the crowds of dislodged bus passengers that were gathered on each bank shouted encouragement and directives. Eventually, after an eon of racing heartbeats, the water's depth began to decrease until we found ourselves, knees shaking, struggling up the far bank of the river: three college boys, two police constables, and one putative criminal, united by the common cause of saving our own skins.

Silently, almost willingly, our reprobate-in-arms permitted handcuffs to be snapped around his wrists again. As we clambered aboard the bus that would take us to Tada railway station, we three college friends said nothing. There was nothing to say.

But when I gazed, thereafter, at those small, sharp, limpid Kambakkam quartz crystals in my mineral collection, I would always see a jostling cavalcade of vivid images whose value remains beyond reckoning.

BOMBAY

In 1955, a degree in organic chemistry led me to a job with Lever Bros. manufacturing soap and margarine in industrial Bombay.

During slow intervals at the plant I'd enjoy staring down into the enormous open vats in which soap was being liquefied by heat applied from below. The sight of half a dozen or more convection cells, always transient, roiling the molten soap, forming and breaking up, shifting, dispersing, and then forming again, would transfix me. The cells would surge and recede, pushing up against one another, then withdrawing, in a constantly mutating dance-like pattern. Upwelling convective currents would bring fresh hot goo to the surface, where it would cool through contact with the air to form lighter, flaky, floating crusts. These crusts would crown each cell during its transient existence, only to ultimately be dragged down and consumed by one or another of the ever-shifting convective down-currents.

I had no way to realize then that the vats of molten soap were a nearly perfect model for how the crust and mantle of the earth had behaved, albeit at an almost infinitely slower pace, over the vast span of geologic time; nor that I was an infinitesimal speck perched on a basaltic segment of the earth's floating crust that owed its origin directly to a giant convective current, which had welled up off the western margin of India some 65 million years ago. But by then I had absorbed enough Indian geology to know a good deal about the nearly horizontal outpourings of ancient basalt lava flows, one atop another in layer-cake fashion, more than fifteen hundred meters in vertical extent, which spread north, east, and south of Bombay for hundreds of kilometers. These basalts hosted an extraordinary variety of secondary minerals, mainly zeolites, which occurred in vugs and other cavities that were routinely exposed in the course of quarrying, as well as during tunnel and road construction.

My job permitted me just one day of leave per week. But I still had my red Jawa motorcycle, so almost every day off from work became an occasion for mineral collecting.

The years 1955 and 1956 were a time of unparalleled opportunity to collect minerals wherever I chose in Maharashtra. All I needed to do was to spot a quarry and make my way to it on my Jawa. Then, after checking with the foreman if active operations, such as blasting, were in progress, I was always freely permitted to wander around with my pick looking for vugs and other pockets in the quarry faces. Such frills as mining safety, legal liability, or accident insurance were nonexistent concepts. It was implicit that I was taking full responsibility for my own safety. If I got injured, well, too bad!

The greatest problem I experienced was in trying to provide satisfactory responses to persistent questions as to why I was so interested in the *gaar*, the white or light-colored zeolitic material in cavities. This was the very material that quarry operators hoped to avoid, because it reduced the value of the basalt for purposes of filling and construction. My early attempts to explain to simple illiterate quarry workers concepts such as a mineralogical collection, or esthetic appeal, or scientific interest, met with utter incomprehension, if not downright suspicion.

"Is the *gaar* worth money?" I would be asked in Hindi or Marathi.

"No," I would answer with complete candor, because I myself did not know, and would not have believed, that there were actually buyers in other countries who would be more than willing to pay real money—*weird idea!*—for these specimens that I was collecting without restriction!

Finally, I stumbled upon a satisfactory, if not completely factual, way to explain to the curious quarry workers my fervent enthusiasm for mineral collecting. It was a simple explanation, fully comprehensible within the scope of their cultural milieu.

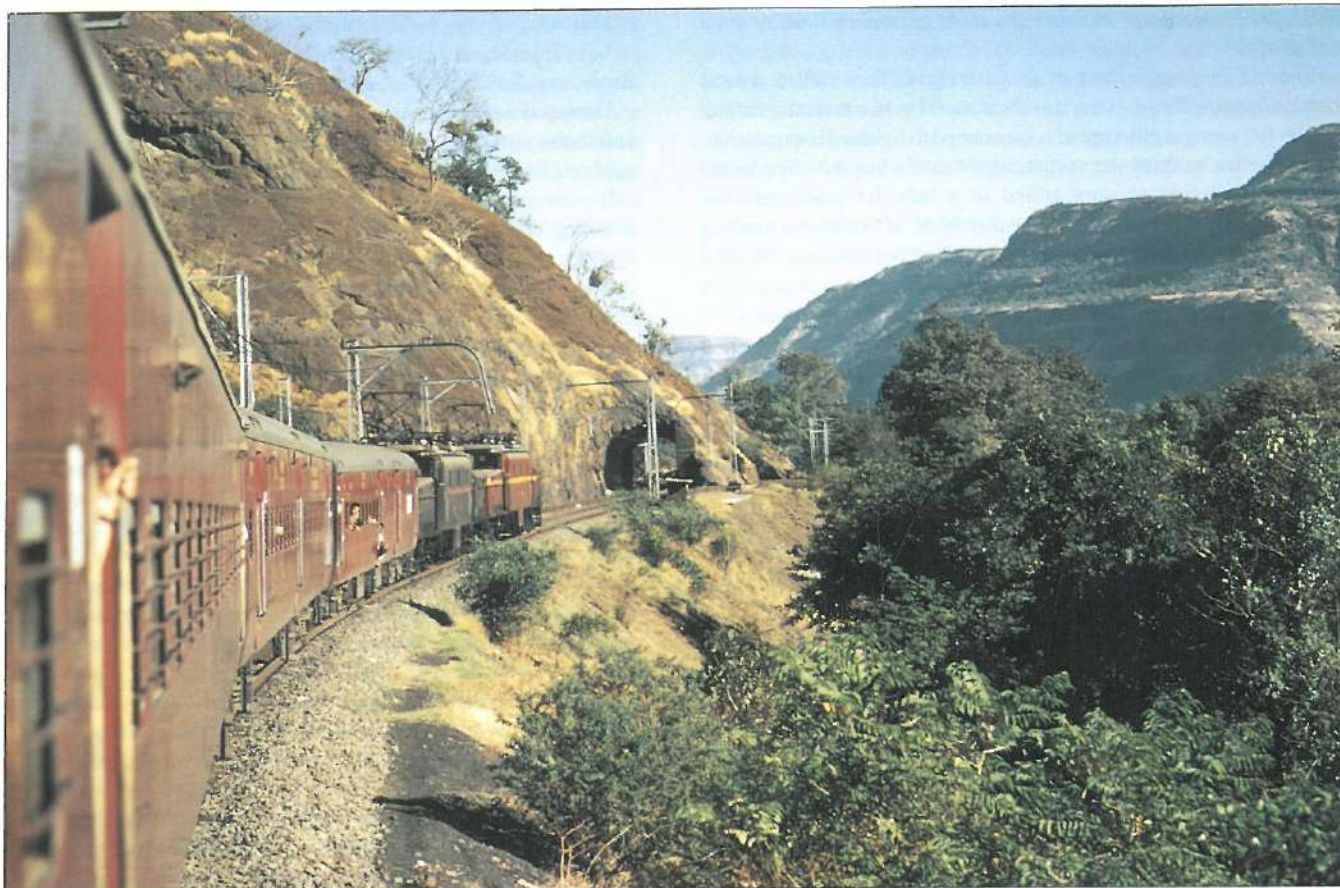


Figure 1. On the Indian Railway between Poona and Bombay, about to enter one of the 26 tunnels. Rock Currier photo.

"I'm collecting these different types of *gaar* in order to investigate which ones, if any among them, might possess healing properties," I would say. Prescient shades of the American crystal-healing fad that would bloom in the 1980's!

My interlocutors knew about materials, such as ochre, and wood ash, and medicinal earths, which served a variety of practical purposes in the life and culture of traditional India. "But if the *gaar* has beneficial qualities, how is it that no one seems to know about its usefulness?"

"Because such knowledge is gained only through systematic investigation!" I would say to them with genuine respect for their interrogation. "Which is why I am making an effort to study these different types and shapes of crystals."

That was an explanation that made sense to the laborers. They welcomed the novel experience of guiding me, someone from an obviously different socio-economic and educational background, into their lowly daily realm. Some would take pleasure in pointing out to me things that I myself might otherwise have missed.

It was from them that I learned with astonishment that cavities containing laumontite crystals, which are hard, pink, and translucent when first exposed, sometimes actually contain water too, which streams out when the cavities are breached. Equally surprising to me was the rapidity with which the laumontite crystals then turned opaque and white in a few hours. After some days at home the laumontite crystals would inevitably fall apart into a white powdery material, leonhardtite. I learned sadly that my magnificent specimens of laumontite were "pulverulent on exposure," as my well-thumbed copy of *Dana's Textbook of Mineralogy* by W. E. Ford (1932) stated, esoterically but accurately.

Lacking any other authoritative teacher in Bombay to whom I

could turn, it was Dana's book that served as my sole available reference for macroscopic visual identification of unfamiliar mineral species I encountered. In hindsight I'm gratified to recognize how many minerals, new to me, I was able to identify correctly using just that one book. I made mistakes too, of course. Not until some years later did I realize that I had misidentified scolecite as thomsonite!

JEWEL TUNNELS

In less than a year my weekly forays to quarries, near and far, around Bombay had provided me with a better collection of zeolites and related minerals than I had seen at any of a half dozen mineral displays I had visited till then. But that was not unexpected.

College and university geology departments, as well as state and national geological survey departments, had display collections, of course, though these were heavily weighted toward petrological, commercial, and ore specimens. Specimens of minerals considered "not useful," such as zeolites, were commonly misidentified, if indeed they were labeled at all. Zeolites, to the extent they were displayed, leaned heavily toward huge specimens, up to a meter across, commonly covered with large, lumpy crystals of stilbite, heulandite, and apophyllite. These specimens could be considered impressive, perhaps, but by no linguistic stretch could they be called fine. Many of them had come from enormous crystal-covered cavities encountered during tunnel excavation in the steeply inclined section known as Bhor Ghat, between Khandala and Karjat, when the Bombay-Poona railway line was first constructed during the 1860's. The name 'Jewel Tunnels' came to be applied to this location.

It was my old mentor, Darashah Wadia, who had first fired my imagination by mentioning the term 'Jewel Tunnels', and by

describing to me the cavities he had himself examined on the Bhor Ghat section of the railway line. Now that I was living in Bombay, I simply had to see them for myself. By a stroke of luck, my old hiking buddy, Vijay Kumar, was also posted to Bombay. So, during the monsoon season of 1956 we made a plan to walk the Poona-Bombay railway track from Khandala at the top of the ghat to Karjat at the bottom, a distance of approximately 21 km, in order to traverse the 'Jewel Tunnels' and inspect them for ourselves, en route.

We caught a train from Bombay to Khandala, alighted, and began our trek down the railroad tracks' one drizzly morning. I don't recall precisely how many tunnels we trudged through with flashlights and pick during that endeavor, but Fasi Makki, one of the longest-standing mineral dealers in Maharashtra, assured me in a recent personal conversation that there are a total of 26 railway tunnels on Bhor Ghat. Almost all the tunnels, long and short, exhibited cavities, though their abundance and size varied dramatically between individual volcanic layers (flows). Many, but by no means all, of the tunnels contained crystals of zeolitic minerals of imposing size.

One cavity, about 6 feet wide, was just a few feet higher than the railway track. Kumar and I were able to actually climb into it while a couple of trains thundered past in the tunnel's darkness. Though the crystal surfaces were entirely covered with a sooty coating, a century in the making, from the smoke of coal-fired locomotives, it was still easy to identify the prismatic and pyramidal faces on blocky apophyllite crystals up to 8 cm across, accompanied by equally well-developed stilbite sheaves. When broken open with a pick, the larger apophyllite crystal interiors proved to be pale glassy green in color. The stilbite exhibited a creamy to salmon-pink hue. Only a few smaller, narrower, deeper cavities had escaped the ravages of engine smoke sufficiently to reflect our flashlight beams from facets of crystals . . . the original "jewels."

But this turned out to be one of those rare mineral outings in Maharashtra that did not yield even a single specimen worth keeping. As we caught the train home from Karjat, I had nothing to show for the trip except our experiences. It would have struck me as wildly, hilariously improbable that more than 25 years later, my verbal description (to Phil Scalisi) of this very excursion of ours would one day provide the evidential basis for a description of *The "Jewel Tunnel" in Classic Mineral Localities of the World: Asia and Australia* (Philip Scalisi and David Cook, 1983).

Fortunately, it was not necessary for me to depend on self-collected material from the 'Jewel Tunnels' to get an idea of how the zeolites appeared in their original pristine state. Hundreds of large plates from these railway tunnel cavities were saved, most rather carelessly, in displays in the geology departments of almost all the older established universities and colleges, where the "zeolite" crystals on matrix were, and perhaps still are, a common sight. Since that first slew of specimens appeared in the 1860's, periodic new railway construction and tunnel excavations, notably around 1890, through several sections of the Western Ghats, have provided a vast outpouring of ungainly specimens studded with oversized zeolite crystals. Almost none of these would qualify as collecting material by today's Western standards. But it was the fashion in those days, influenced by notions of the Indian Geological Survey personnel, to consider bigger to be better. Size almost always dominated over quality in the preserved specimens I have inspected from cuts and tunnels of the Poona-Bombay and other railway lines.

TUCSON

The thrill I derived from my collecting jaunts around Bombay soon made it obvious that I infinitely preferred minerals to

margarine. Even though I had never taken a course in mineralogy or geology, I decided to leap for a master's degree in geology in America.

To my everlasting good fortune, my mid-year application for admission to a program in geology was immediately accepted by the University of Arizona in Tucson. There I studied introductory mineralogy with Professor John Anthony. But then, like so many amateur mineral collectors who enter the geological sciences, I found my interests quickly shifting to "more serious pursuits," such as economic geology and geochemistry. Mineral collecting seemed too frivolous an activity for anyone with a significant interest in science. But happily for me, bridge with Bideaux in Tucson prepared my salvation, more than 14 years later, from my self-engendered folly. I'm referring to contract bridge (the card game), and Richard A. Bideaux, distinguished mineral collector, mineralogist, and co-author (with John Anthony, *et al.*) of *Mineralogy of Arizona* (1977) and (1975).

Richard (Dick) Bideaux was an undergraduate in geology when I arrived at the U of A in January 1957. But for the fact that we were both avid habitués of the ongoing bridge games in the student union cafeteria, we might never have discovered our mutual interest in mineral collecting. Over the card table I shared snippets of my collecting experiences with Dick. Soon I was pleasantly surprised to be invited by Dick to talk about mineral collecting in India before a dozen or so Tucson collectors who had recently constituted themselves into a group called '*The Tucson Mineral Society*'. I think the words '*Gem and*' were added later. It turned out to be a friendly evening in a U of A classroom with people, such as Millie and Bill Schupp, and Clayton Gibson, who would, in just a few years, be running the best and biggest mineral and gem show in the world—to their own profound surprise, I'm sure!

A short while later, Dick astonished me a second time when he asked me to write up the essential features of my Indian zeolite presentation for some Arizona publication. This piece of mineral-related writing (Kothavala, R. Z., 1958, "With Pick and Knapsack," *Brewery Gulch Gazette*, Bisbee, Arizona, Dec. 4) was something I completely forgot about until I saw it cited in 1976 in a professional article by Rock H. Currier ("The Production of Zeolite Mineral Specimens from the Deccan Basalt in India," *Mineralogical Record*, 7 (5), 248–264).

Shortly, I set off to earn a Ph.D. in geochemistry at Harvard, and mineral collecting became an abandoned part of my past . . . or so I thought. It was well beyond the capacity of my imagination to foresee that those personal connections I made in 1958 in Tucson would prove to be an immeasurable boon to me 14 years later in a new career: mineral dealing.

HARVARD

Harvard proved to be the most stimulating, all-encompassing intellectual and social environment I had yet encountered. I became so enraptured with the pervasive interplay of ideas and activities within the university community, and with the constant challenge to achieve excellence in whatever realm one chose, that the years shot by with the swiftness of an arrow's flight. Teaching captured my fancy. During a decade in which the passage of time barely registered on my consciousness, I gained my doctorate, then went on to become a dean of students and tenured lecturer in geology. Most intoxicating of all, I became a citizen of the United States of America.

But any intoxication in life seems to lead to some sort of hangover. Was mine brought on by the repetitious cycle of teaching semesters, one forever following upon another? Or was it the bleak New England climate, which chilled my tropical blood to gluten for five months of every year, from November to April? Perhaps it

was the unmistakable signs I began to see in the mirror each morning that forcibly reminded me of life's fleeting passage. Or perhaps it was an atavistic siren song from deep within my being calling out for once familiar sights and smells and sounds that could be encountered nowhere else but in my native India? Or was it an unquenchable yearning for a more earthy, iconoclastic, exuberant existence than a salaried position in the ivied halls of academe would ever permit me? Whatever the reasons, by 1971 I began to consider ways of creating a fresh life and professional career that could and would encompass both India and America. And by then I had gained a life mate, Toby Marotta, also a Harvard graduate, who was bold enough to throw caution to the winds and embrace a life of high adventure with me (Andrew Tobias, 1998, "Gay Like Me," *Harvard Magazine*, v. 100 (3), 53–54), if only some means to do so would manifest itself. Soon that happened.

During a brief family visit to India in the winter break of that year I happened to run across a display case of mineral specimens in Bombay's Taj Hotel. With them, a card: "Burjor Mehta, Geological Specimens—India," giving a local address.

Mehta's office was a scene of organized chaos. Bulky specimens, mostly Deccan trap zeolites, crowded open shelves near the ceiling. The perimeter of the room was piled high with stacks of wooden trays overflowing with jumbled mineral specimens, some sitting higher than the trays were designed to accommodate. No labels, no price tags, but lots of dust.

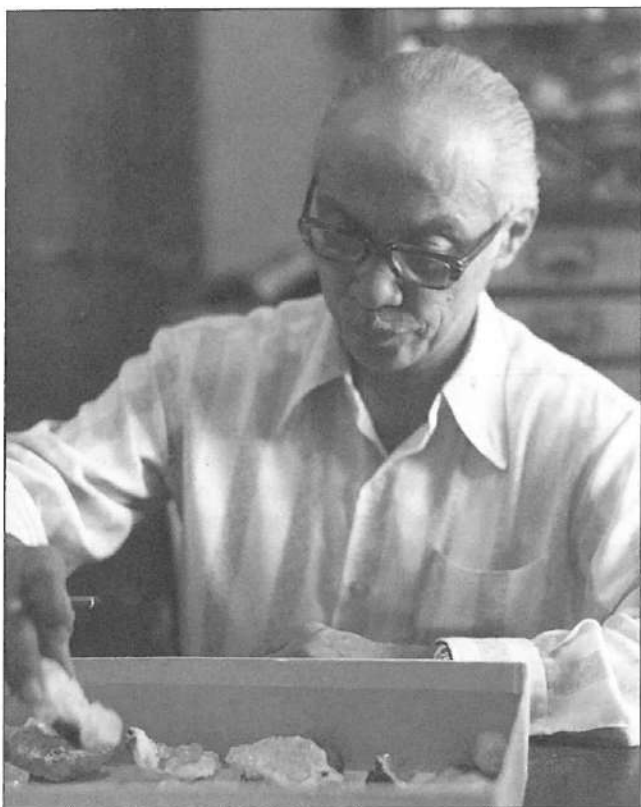


Figure 2. Burjor F. Mehta in his Bombay office, 1977.

Mehta, his short, wiry body taut with confined energy, sat up straight as a ramrod behind a great wooden desk in the room's center. I judged him to be about 15 years older than I. His penetrating eyes took in every nuance of my expression and body language. Once we had danced our way through fifteen minutes of getting-acquainted conversation, Indian to Indian, he bluntly asked me what was on my mind. He was a man with whom I could talk squarely, I felt.

"I'm wondering whether it might be possible for me to make a business out of acquiring mineral specimens in India and selling them in America. The trouble is, even though I'm pretty good at identifying minerals by sight, I know nothing, absolutely nothing, about the mineral market in the USA, or how minerals are sold or at what prices. I've never even attended a mineral show!"

A sparkle in his eye told me that Mehta approved my candor. He asked me to poke around his stock and pick out any twelve specimens that attracted me. When I was done choosing, he lined up the specimens on his desk and wrote prices for each one on slips of paper. My heart sank. Having myself picked up such pieces, and better, for free at Maharashtra quarries, I considered Mehta's prices to be usuriously high. But I swallowed hard and agreed to pay the amount he wanted. "But I'll need to know the precise localities," I insisted. "Otherwise they're just pretty rocks, not mineral specimens."

Mehta wrote the location names on the price slips accompanying each specimen. Some of those quarries I knew from my collecting days. The specimens and the names of the quarries matched my personal knowledge, so he wasn't faking me. "I've given you a break on the cost," he said, "because I want you to come back and do much bigger business with me hereafter. Sell these pieces for as much as you can in America. I'm sure you'll make a handsome profit. Then you can judge if that's enough for you to make a business out of it."

The spring semester of 1972 was my last one at Harvard. My faculty colleagues were dumbfounded when I announced out of the blue that I would be leaving the university. "To go where?" they asked, "To do what?"

And when I responded tentatively that I was now thinking of making a living as a mineral dealer, one of my foremost Harvard mentors, an eminent invertebrate paleontologist, said what many others were probably thinking: "Rusty, sad to say, I think you've gone off your rocker. You're leaving a secure position at Harvard in order to schlock rocks? That too, without ever having had any kind of business experience! Young fellow [I was 37], you've lost your marbles. Tell me, have you ever sold even one rock before?"

Truth to tell, I hadn't. That was what I would have to accomplish next.

It awed me to count among my departmental faculty colleagues at Harvard two Olympian figures whose stature in mineralogical science had been known to me while I was yet a teenager in Madras, by virtue of their authorship of definitive mineralogy textbooks. I speak of Cornelius S. Hurlbut, Jr. (*Dana's Manual of Mineralogy*, 1955), and Clifford Frondel (with Charles Palache and Harry Berman, *Dana's System of Mineralogy*, vols. 1, 2, & 3, 1944, 1951, & 1962). Because my scientific interests at Harvard had led me far afield from minerals, I had not worked closely with either of these two giants of science while I had been a graduate student. Nevertheless, later departmental work engendered warm relationships with both of them.

Having cleaned my dozen zeolite specimens from Mehta, I placed them on a tray and marched into Cliff Frondel's office one afternoon. He already knew enough of my situation and plans for me to simply say, "Cliff, I want you to help me price these specimens."

"Hell, Rusty, I can't tell you about prices. You'll have to visit mineral shows to learn that." He looked intently at the specimens in my tray. "But if you can figure out right now, how much you think you might want for those two stilbite bow-ties, I may want to buy one of them for the museum's study collection." He waited for my response.

I swallowed hard and said, "Fifty dollars for each one."

"Done!" he said. "I'll take 'em both." Cliff and I had played poker together over several years. Clearly, he was pleased to have

snagged a bargain. "If you can make money selling those specimens at that price, you might actually make a go of dealing in minerals." He grinned. "Heck, Rusty, those are the nicest stilbite bow-ties I've seen in a long time."

But it was Clifford Frondel's graduate student assistant, Phil Goodell (for many years now a professor of mineralogy at University of Texas, El Paso), who really commenced my training in the market aspects of mineral dealing. Though he was several years my junior, he took me under his wing as my seasoned guide. With a generosity of spirit that still leaves me flabbergasted, Phil stinted neither time nor patience to answer my questions, which, I see in retrospect, were often absurdly ignorant, naïve, and just plain stupid.

Phil knew all the regional shows, the most active New England collectors, and enough tales of triumph, disaster, and skullduggery to enliven many a gab session over a bottle of wine. A step at a time, he opened doors for me to the Greater Boston mineral collecting community. In a couple of months, all the specimens from Mehta had been sold, and at a handsome profit, just as the Bombay dealer had foreseen. Best of all, I myself actually began to believe that my blind leap into the future just might actually work out.

There is nothing more terrifying to someone who has always counted on a monthly salary than to turn one's back on the prospect of ever getting one again. On June 1, 1972, as had happened for thirteen years, my monthly remuneration from Harvard was deposited automatically into my bank account. It was the last paycheck I would receive.

But Harvard continued to support me in surprising ways I had not foreseen or even imagined. Less than a month before my official position at the university ended, Cliff Frondel and Connie Hurlbut invited me into the mineralogy laboratory for a chat.

"Rusty, we know you're going to be off on your own now, making millions as a treasure hunter," Cliff chuckled. "But maybe you can still use a little bit of help. Connie and I have talked it over, and we'd like to offer you a nook of your own in the lab here, where you can just keep your microscope and such.

"And, eagle-eyed though you may be," he chuckled again, "surely you'll want to confirm identifications of some of the stuff you'll be bringing back from India, no? So you're also welcome to use the X-ray machines and cameras, while they're not in heavy demand."

I could barely believe my ears. But there was more to come.

"Now everyone knows that, by any measure of decency, mineral dealers are several rungs lower than con artists and pirates." My two very senior colleagues were thoroughly enjoying themselves. "But since you seem to have made up your mind to become one of them," Cliff paused for effect, "it might enable you, Rusty, to hang on to just a few shreds of respectability if you retain some slight connection with Harvard. Don't you agree?"

"So, unless you don't want to accept it, I propose to appoint you as a field representative of the Harvard Museum." He looked at me with a twinkle. "That may make it easier to open a few doors in India." Then, typically, Cliff added, "Naturally, I'll expect you not to skin the Museum when we want some specimen you may bring back."

After that, no one could have felt luckier than I did.

But just a month later, a dark and frightening cloud engulfed my brightening prospects. En route to scouting a mineral show in Washington D.C., Toby and I stopped off in New York City to visit with Phil Goodell, who had moved there. Phil was as free as ever with information. In an even voice barely tinged with amusement, he said, "It's an odd coincidence, I know, but I have a friend here in New York who's planning to do exactly what you're doing." My

heart skipped a beat. "He too has quit his job in order to start a business importing mineral specimens from India."

Bam! A hammer blow to my forehead couldn't have struck me harder! A cruel joke, I first thought. But that wasn't Phil's style.

The news got even worse. "He's one of the best known mineral collectors and mineral photographers in the Greater New York area. Rock Currier. Everyone around here knows and likes Rock, even though he's from California, where he began collecting as a kid."

Apparently the horror that clutched my breast wasn't discerned, because Phil blithely continued. "I've told him about you, and he said he'd like to meet you. So, if it's all right with you, we can all get together this evening at Rock's place, the Wildcliff Museum in Westchester. That OK? You'll enjoy Rock, I think."

"Yeh, sure!" I thought, "Like I enjoy a double dose of cyanide!" What a calamity! What could save me now, I wondered? My mind leaped to snatch at straws. Diarrhea and dysentery would hit him, maybe! With luck, he'd fall victim to culture shock when he went to India!

As though reading my mind, Phil calmly continued, "Rock has a good friend in India, you know, in Bombay."

If he observed it, Phil ignored the shocked expression that must surely have manifested itself on my face. "Several years ago, in Los Angeles, Rock's parents served as volunteer hosts to this Indian guy while he was a foreign student getting a business degree at UCLA. Turns out he's now running a mineral specimen business. I think his name is Tyebjee . . . or something like that."

"Oh, bloody hell!" I thought, "What a fell blow from Fate! To be shot down in smithereens before I've even started!"

I had already heard of this Tyebjee in Bombay, from Burjor Mehta, who regarded the man as an untrained, untutored imitator, who, over cards at the Willingdon Club, had learned of Mehta's successful vocation, then followed suit himself. But the copycat knew little or nothing about minerals, Mehta had said.

Meeting Rock Currier that evening pushed me further into the mangle. He was a huge man, at least 6'4" tall, younger than I was, who talked in a hearty, sweeping style about an unending array of topics: his take on India (his mother had enjoyed the country and its culture when she had stayed with the Tyebjees, and, no, she had experienced no health problems); the Tyebjees (generous hosts, who had come to consider all the Curriers as members of their own family); mineral collecting and mineral shows in America (he had participated widely in both since he was in grade school).

Why was he giving up his job? I asked Currier.

"It's leading nowhere," he said. "So when Hussein Tyebjee suggested that I collaborate with him in exporting Indian mineral specimens to America, I saw it as a golden opportunity. Even though he's running a specimen business, he's not very technically qualified, you know. That's mainly where I plan to contribute my experience."

If this human colossus intended to intimidate me that evening, which is what I sensed behind his bluff manner, he had succeeded far better than I was willing to admit.

Then, as though to deliver the coup de grace to this upstart and nascent competitor facing him, he pulled a small specimen out of a box and flashed it at those assembled; it was brilliant deep emerald green. Then he handed it to me, saying, "What d'ya think of that? Ever seen anything like it?"

It was a miniature specimen of green apophyllite with white stilbite. "Frankly," I told Currier, "I have never ever seen an apophyllite with that intense a green color. It is far better than any apophyllite I've ever encountered before. Where'd you get it?" Rock Currier was pleased.

"It came from a collector, Nell Roe," he said, "who lives in India."

With the focused determination of a man whose entire future lay in remembering it, I etched the name "Nell Roe" instantly and indelibly in my memory. And with equal durability, the form and appearance of those yet unmentioned white bladed stilbite crystals associated with the apophyllite became fixed in my mind. Thanks to my amateur collecting jaunts in Maharashtra, the pure white color and distinctive form of the stilbite crystals had already told me that Rock Currier's astonishing specimen had derived from somewhere around Poona. Now I'd just have to find that location for myself.

India's mineral specimen export market to America was still barely in its infancy in 1972. The battles to determine which one of the two of us would dominate that market began that evening. To me, it seemed unlikely that Rock Currier and I would both survive the contest for very long.

THE MAKING OF A MINERAL DEALER IN INDIA

I would not have survived my first year in international mineral dealing if I had started as just another innocent American hobbyist, regardless of how much I might have known about minerals or specimens.

No sooner had I begun to seriously engage mineral purveyors in Maharashtra than I realized I would need to call upon every skill I had ever acquired during many years of playing poker at the University of Arizona and Harvard. Those late-night card games proved to be an unforeseen godsend. They had provided me with the most appropriate training I could have wished for acquiring minerals from Indian peddlers. Cliff Frondel's humorously outrageous remark lumping mineral peddlers with pirates and con artists had more than a kernel of truth to it.

It was a huge advantage that I was Indian by birth and could speak Hindi. Also, I was intimately familiar with Indian ways, so I already knew, as a purchaser, that virtually nothing I was told necessarily bore any resemblance to reality. Asking about the locality of a specimen, for example, I knew I'd be given answers that might be engendered by ignorance, or deceit, or fear, or greed, or perhaps even truth; certainly nothing I could rely upon, except from Mehta and a few others. Unsurprisingly, I saw I had no alternative but to scout out and visit producing quarries for myself.

During my first mineral-business foray to India in October 1972, I gave myself enough time to spend limitless hours dickering and gabbing with mineral people in and around Bombay: first, the established dealers like Mehta and Tyebjee, then the Johnny-come-latelys and fly-by-nighters who, hearing about me through some grapevine, would literally hunt me down to my abode and appear unheralded at my doorstep. I picked up a scattering of decent specimens from these hucksters, but gossip was the major payoff from engaging with them. Indian mineral dealers loved to talk about others in the same game, usually disparagingly, with dire warnings to me of sad consequences if I permitted myself to be hoodwinked by a rival. Sifting through their stories, comparing their often-conflicting accounts of people, places and events, keying their specimens to alleged localities, I enjoyed playing my role of investigative mineral detective with cheerful patience. After operating for 16 years in America's antiseptic milieu, I reveled in being inundated once more by the loud, messy, smelly, chaotic, unruly scene that is India.

At that time, the Cold War was at its height. Any English-speaking foreign resident in India stood out like a beacon, attracting the curiosity and attention of all segments of Indian society, including the authorities, of course. Long before I left Bombay to continue my explorations in Poona, I had already learned a great deal about the fabled Nell Roe and her pastor husband.

The Roes, husband and wife, were doing a stint as missionary

teachers in India at Spicer College, a Seventh Day Adventist institution situated in the countryside just a kilometer or two from several quarries at Pashan, outside Poona, on the road to Khadakvasla.

One morning I drove a car borrowed from one of my uncles in Poona over to the Roe residence. Mrs. Roe invited me to be seated on the verandah. I told her I was there to see her about green apophyllite. Instantly, she seemed to turn tense. Nevertheless, she politely proceeded to cross-examine me. Calmly, and without hesitation, I answered her questions about my antecedents and intentions. As it happened, one of my many nieces was enrolled as a student in Spicer College. Eventually, Nell Roe grew sufficiently at ease to begin talking about herself. Our conversation continued for an hour or more.

It turned out that she had been an amateur mineral collector in America and had actually attended a mineral show or two. When the Roes stumbled across bright green apophyllite from one or two of the several Pashan quarries, they immediately realized that they were on to something very unusual. The green color approached that of the finest emeralds.

Ingenuously seeking to derive some benefit from their fortuitous find, I gathered from her comments that she and her husband had shown their apophyllite specimens to as many domestic and foreign mineral folk as they could turn up in India, among them Mehta, Tyebjee, Kela, and the young Makki brothers, as well as my *bete noire*, Rock Currier in the USA. And once a specimen or two was seen by a handful of American collectors, a veritable gold rush had begun! It was becoming an embarrassment to her husband at the College.

Mrs. Roe rose to open a wooden cupboard standing a few feet away, then returned with two flats neatly filled with eye-blowing specimens of vivid green apophyllite. My heart skipped a beat. All the specimens were small, mostly miniatures or thumbnails. Many made Rock Currier's specimen in New York look like a poor relative.

I gasped, then told her they were incomparable, and said I would like to acquire all the pieces she possessed.

Nell Roe told me she knew little or nothing about valuation of mineral specimens and had had no previous exposure to the cutthroat business of commercial mineral dealing. I said I was in a precisely analogous situation myself, that I too was very much a newcomer to the concept of putting a monetary value on mineral specimens.

She said that relatively little material had actually changed hands until then. One reason was that the amount of specimen material being extracted at the quarries in those early days was small.

Another reason, which had been repeated to me *ad nauseam* by those who had already dealt with Nell Roe, was that no matter how high a price was offered to her by a mineral buyer, she ditheringly held back, unwilling to sell more than one, or at most two, of her pieces to any one buyer, apparently out of fear that she was being suckered. Frustration reigned. I had already heard that several enraged mineral buyers, after wasting many hours courting her, had stormed away from the Roe residence at Spicer College, vowing never to come back. But they returned, of course, drawn inexorably by the uniquely beautiful green apophyllite crystals.

I figured that perhaps it was the tension generated between cupidity and retaliation that had, at least until then, kept one or another of her disappointed Indian solicitants from blowing the whistle on her to government authorities. Surely Nell Roe knew that engaging in business in India, especially for a foreign missionary teacher, was an illegal activity! Perhaps that was why she had appeared so edgy at first. And perhaps, too, that was why she presently asked me what I intended for the specimens if she were to sell them all to me.



Figure 3. Muhammad B. Makki (1900–1981).

Historical Notes on the Commercial Mineral Specimen Industry in India

Without question, the founding father of commercial mineral collecting as a business enterprise in India was Burjor F. Mehta in Bombay, during the early and mid-60's.

Mehta, a trained geologist, had worked as a field officer with the Geological Survey of India during his younger years. In that capacity he had traveled widely in the hinterlands of India and had thereby observed a wide range of esthetically attractive crystallized and massive minerals, and ornamental rocks. In mid-life Mehta opted to leave the Survey and apply himself to his family's metal fabricating business in Bombay. Since he and his wife, Amy, were gregarious people who enjoyed travel, and were fortunate enough to possess the means to indulge that interest, they periodically visited Europe, in time establishing friends and contacts centered around Idar-Oberstein. Mehta started to export significant quantities of agate, fossilized wood, and a wide array of ornamental rocks and minerals to Germany, Italy, and other European countries for cutting, polishing and display, thereby establishing himself as the prime, perhaps sole, commercial exporter of Indian rocks and minerals, under the name "Geological Specimens—India."

The mineral specimens Mehta exported tended to be ornamental pieces, some as large as a meter across, resembling those he had encountered from the Bombay-Poona railway tunnel excavations and in departmental collections of the Geological Survey of India. They tended to be large ("bigger is better") and expensive, which was acceptable to European collectors. But such specimens found little favor in USA. (Ronald Romanella was probably the first American dealer to import Indian specimens to USA. Another American mineral dealer, whose name was Harry Sering, if I recall correctly,

visited India in the 60's, returning with a shipment of such specimens. He was still stuck with much of this stock when I visited his shop in the Midwest in 1972.)

As a result of his success in the European market, however, Mehta became well known in the Bombay, Poona and Nasik regions of Maharashtra as an acquirer/purchaser of unusual or interesting mineralogical and geological material. Every month or so he would drive his jeep to any operating quarries where he had learned that zeolitic minerals were turning up. Until Mehta's appearance on the scene, these had usually been discarded! He would offer to buy from the quarry workers whatever crystallized minerals they could arrange to deliver to his depot in Bombay. Thus began the system of "runners," which soon became an institutionalized aspect of the commercial mineral-collecting scene in Maharashtra.

Inevitably, his business drew the attention of others who attempted, with greater or lesser degrees of effectiveness, to replicate Mehta's profitable operation. His would-be competitors, however, lacked two of Mehta's key assets, namely, professional geological training, and a cosmopolitan sophistication that permitted him to operate with ease outside India. Only a few of Mehta's imitators survived, let alone thrived. Among those few were Hussein Tyebjee in Bombay and, until the early 1980's, B. H. Kela in Nasik.

Another notable pioneer in establishing India's fame in the realm of zeolite specimens was Muhammad Makki in Poona, whose sons Fasi and Mujahid went on themselves, after their father's demise, to quarry and extract some of the most spectacular specimens ever seen. Makki Sr., an unpretentious schoolteacher who lived in humble circumstances on the city's outskirts, was a rarity in India: a born naturalist with an

abiding fascination for the wondrous beauty of crystals he encountered during his rambles in the Poona region and elsewhere in Maharashtra. Motivated more by love of India and minerals than by aspirations of profit, Makki had been scouring basalt quarries for collectable specimens for many years. Hearing of Burjor Mehta's appetite for specimens, Makki, carrying a box or two of his self-collected mineral specimens, traveled to Bombay to seek out this man who was reputed to be channeling Indian mineral specimens to foreign collectors. It was a meeting that would dramatically change the lives of both men and their families, and establish once and for all India's pre-eminent position as a source of superb zeolite collector specimens for the world market.

The conjunction of Mehta's professional geological knowledge, financial resources and European connections, with Makki's painstakingly accumulated knowledge of collecting sites and his eye for beauty, ensured that Indian zeolitic

minerals would no longer be unknown or out of reach to European collectors. But their introduction into the American collectors' market would await the simultaneous entry in 1972, of two new mineral dealers, Rustam (Rusty) Kothavala and Rock Currier, into the Indian mineral field. First, as fiercely competitive rivals battling for turf in India, then as uneasy but mutually accepting colleagues, and finally, as easygoing friends, these two men strove over the next 20 years to outdo each other in discovering astonishing finds in India and bringing back spectacular specimens that have found their way into every major mineral museum in the world. Kothavala introduced American collectors to Indian mesolite (previously misidentified for decades as "natrolite"), mordenite, cristobalite, and powellite. Currier did likewise with goosecreekite and yugawaralite; he also brought to America quantities of superb specimens of okenite, and pseudomorphs of prehnite after laumontite.

"The best ones will go to the Harvard Mineralogical Museum," I said. "I'll dispose of the rest as circumstances permit, in order to defray my operational and travel expenses."

"Why the Harvard Mineral Museum?" she enquired.

I showed her Professor Clifford Frondel's letter, on Harvard Museum stationery, appointing me Field Representative of the Museum in India. She handed it back to me and began talking prices.

God bless Cliff Frondel, I thought silently.

The very next day after purchasing the flats of green apophyllite from Nell Roe, I drove to the Pashan Hills, intending to examine the quarries, one by one, in order to determine which of them had produced the choice specimens now in my possession. But my investigation ceased to be necessary after I reached the second quarry and encountered a young fellow in blue jeans performing some sort of inspection. He appeared to be in his 20's. We introduced ourselves.

"I'm Mujahid Makki," he said.

"I've heard a good deal about you already. And about your father and brother," I said, offering him a handshake. "I'm Rustam Kothavala. And one of my central purposes in coming to Poona was to find you and make your acquaintance." I was grinning with delight. "I've been wondering how I was going to locate you."

The young man grinned back. "I've been trying to find you too."

That circumstantial meeting at Pashan Quarry No. 2 began a mutual collaboration in marketing green apophyllite that continued until quarrying was shut down by government edict in 1989.]

THE MAKING OF A MINERAL DEALER IN AMERICA

It's self-evident that one cannot establish a successful mineral dealing business without securing a reliable, continuing source of mineral specimens that are desired by the mineral collecting community. But that is only half of what's essential. The other essential task—and in my view the much dicier one—is to establish a presence which collectors are aware of, attracted to, and trust.

Even a cursory survey of Tucson, Arizona, during the first two weeks of February each year forces an awareness of the tens of thousands of outsiders who descend on the city.

An untutored newcomer encounters a milling, motley horde of wheeler-dealers, some appearing respectably ensconced in endless arrays of booths or motel rooms, others hawking on the streets or freelancing out of briefcases and even just bags, each attempting to

peddle something, anything, even vaguely related to rocks, minerals, or gems. Add to that the tens of thousands who might be genuine or potential buyers, mixed indistinguishably with gawkers and unidentifiable fingersmiths. The great majority of sellers purvey something that some segment of the public would like to purchase, if it's priced right. But amidst this vast, competitive throng of sellers and physically exhausted buyers, all with limits on their time and budgets, what magical ingredients could conceivably enable an utterly raw, untested, aspiring mineral dealer, even if he has desirable mineral specimens, to be even acknowledged, let alone discovered or searched out, during the melee of show time? Granted, that was in 1973, when the show crowds were just a fraction of what they are now. Even so, the magical ingredients, then as now, were, first, experienced mentors and actively engaged well-wishers; second, incomparable specimens; and third, incredible luck!

Soon after I returned from my mineral gathering trip to India in the fall of 1972, every mineral aficionado who saw my specimens in Cambridge, Massachusetts, repeated the mantra: "You've got to take these to Tucson!" accompanied by extravagant tales of how the best American collectors would draw blood and empty their wallets in order to snag a piece that they considered really choice. Since none of them had seen specimens like mine before, my East Coast well-wishers could only offer guesses about the prices that these specimens might fetch. To me, the figures they hazarded had the ring of drug-induced fantasies. Could a mineral specimen really command a price of a thousand dollars and more? I was unwilling or unable to suspend my disbelief.

But a solution was at hand. I recalled my Tucson friends, chief among them Dick Bideaux. Shrewd, calculating bridge player and mineral collector *par excellence* that he was, Dick would have answers, for sure! Several long telephone calls between me in Cambridge and Dick in Tucson followed. The essence of Bideaux's advice: "Get here as much ahead of the Show as you can. Let's take a look at your specimens, then go from there."

Upon reaching Tucson I rang up Bideaux, who told me in a typically abrupt way, "First things first. Get yourself a room at the Desert Inn. That's where the top mineral collectors and dealers congregate. And don't let any grass grow under your feet! When you've unpacked, I'll come over and take a look at what you've got.

"You've got your specimens priced, I presume," he added. "No? Well, put some prices on them."

Figure 4. The author's first formal appearance as a show dealer, in his "Crystals of India" booth at the 1974 Tucson Gem and Mineral Show.

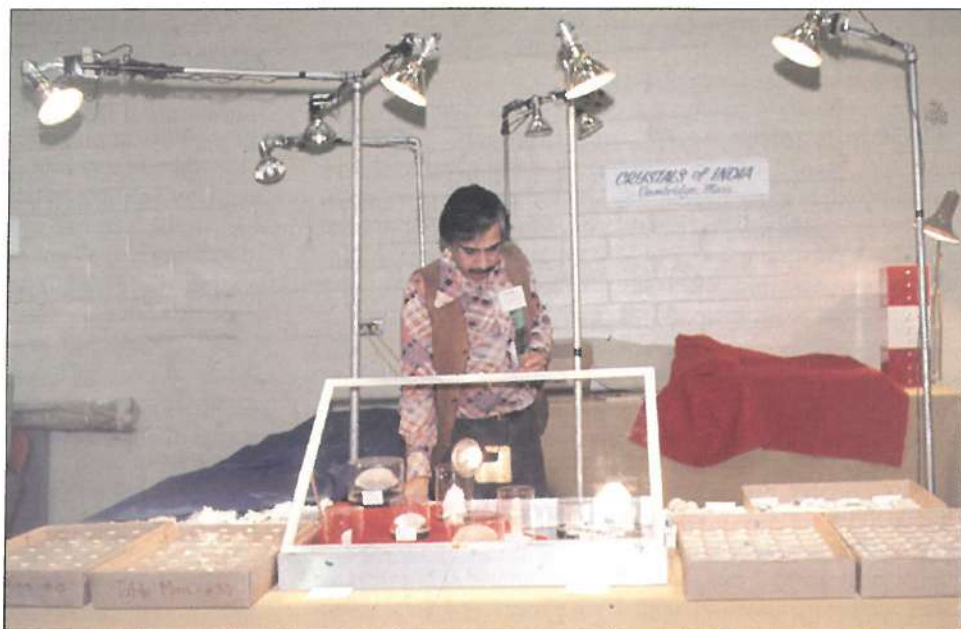


Figure 5. Smiling but serious rivals, Rock Currier (left) and the author at the Tucson Gem and Mineral Show, 1975.



Ignoring my protestations of inexperience, he stated bluntly, "It doesn't matter if you don't know prices. Nobody really does! Just put down whatever you think they're worth, or whatever you think they need to be worth in order for you to make a living as a mineral dealer. If they sell, you've priced 'em right. Or, maybe, too low."

Although I had made no reservation, I encountered no difficulty getting a second floor room at the fabled Desert Inn, a circumstance that became unimaginable just a year or two later. That fabled watering hole, unknown to the current generation of mineral people, was located at the northwest corner of Freeway and Congress. Becoming seedy as the years passed, the Desert Inn was finally condemned and torn down by the city of Tucson, circa 1993.

After I had priced and laid out my score or so flats of minerals, Bideaux arrived. Brief greetings were followed by a rapid survey of my wares. Expressionlessly, as is his wont, he then took a more careful second look. His only comment: "Rusty, you've got to understand, there really is no such thing as a ten-dollar specimen in Tucson."

That began my education in marketing fine minerals. Other nuggets followed.

"Some sellers give a 20% price discount to other dealers, on the assumption that the specimen is being bought for resale, even though that's often not the case. But if your specimen is exceptional, then don't hesitate to stick to the price you've quoted, even if the buyer is another dealer.

"When a dealer buys several specimens from you, he usually expects to buy them keystone. But you can set your own rules about that, if you wish."

"Keystone?" I asked, puzzled.

"Yes. Keystone means 50% off the marked price. That's to give the buyer sufficient margin to make it worth his while to buy and then resell your specimens."

"Oh! Well what do you think of my pricing, Dick?"

"You don't show enough price differentiation to reflect differences in specimen quality. Your best specimens are priced way too low compared with the average ones. When an otherwise choice specimen has an obvious flaw or ding on it, it doesn't lose just 20% of its full value. It loses closer to 80%." That came as a shocker to me, but Dick followed with a reassuring pat. "In general, I'd say the quality of your specimens is pretty good." Coming from Dick Bideaux, I knew that was lavish praise.

He was struck, I presumed, by my specimens of green apophyllite from Pashan. Those, and some sparkling mesolite sun-bursts, were the eye-catchers in what I had spread out, even though some of the best ones had already been picked out in Cambridge by the Harvard Museum.

"Now, where's that powellite specimen you talked about over the phone? Did Harvard get that too?"

"No, Dick." I reached into a box to get the specimen. "I put a price tag of \$1000 on it, as you suggested. But Cliff thought that was outrageously high. He said only a doddering old lady, with more money than brains, would buy it at that price." I handed the powellite specimen to Bideaux. He had already told me weeks ago, when I returned to Cambridge from India, that if my verbal

description of the piece over the phone was anywhere near accurate, then this was by a long way the choicest powellite specimen ever to have been discovered.

"You're absolutely positive this is powellite, and not scheelite?" Bideaux examined the 6.5 cm specimen intently. It contained pyramidal, striated, pale greenish honey-colored transparent crystals of powellite in parallel growth, perched on pink pseudocubic apophyllite crystals. (The circumstances surrounding the acquisition of this astonishing specimen, and the hunt for its source, have already been described in Kothavala, R. Z., 1982, "The Discovery of Powellite at Nasik, India," *Mineralogical Record*, 13 (5), p. 303-309).

"Yes, the X-ray identification was done at Harvard by Dave Cook. That fit with the optical study I performed myself. It's powellite, no doubt about that."

"And Harvard passed it up! Well, Rusty, this is so superior to any known powellite that I wouldn't hesitate to raise the price to \$1,500, or more!"

When Bideaux turned the subject to the people and politics of the mineral world, I saw that my pricing tutorial was over. One after another he ticked off several key players—curators, collectors, dealers—and described the circumstances that made them so. Among dealers, one personality, and Dick's tale of how this dealer came by his flamboyant reputation, left me with an indelible impression. David P. Wilber, or just plain Dave. I had already heard the name mentioned several times, even on the East Coast. He was a fairly young man, who was already widely known across America.

Bideaux told me that Wilber had once spotted a morganite beryl specimen that struck him as being the best one in existence. The owner wouldn't put a price on it, so Wilber made the man an offer of exchange, one which Wilber's associates and friends thought was way too high. But the man turned it down. After some months, Wilber hunted up the owner again, and offered an exchange worth almost twice as much. Again the offer was shunned, and again Wilber's colleagues thought he had lost his moorings for making such an absurdly high offer. Still obsessed with acquiring that specimen, Wilber, I was told, tried a third time with an offer that was simply astronomical by the standards then prevailing. This time the owner melted. And Wilber got the specimen. His associates' derisive chuckles and guffaws followed Wilber like a vapor trail everywhere he went.

But time proved the circumstances leading to the acquisition of that morganite specimen to have been the most effective feat of self-promotional publicity performed by any mineral specimen dealer until then. And, like Liberace, Wilber ultimately laughed his way to the bank on that specimen transaction.

The next evening after I had set up my sales display, a man entered my Desert Inn room trailed by a gaggle of curious followers. He wore a diffident, almost self-deprecating smile. His excessively loud voice struck me as mere cover for an underlying unsureness.

"I'm Dave Wilber," he said. "I understand you have a powellite specimen for sale."

Word spreads fast here, I thought. I reached behind my display case and handed the piece to Wilber. He stared at it intently, turning it over several times. A crowd of young fellows, craning their necks, had gathered around Wilber and the powellite specimen. They were aspiring mineral dealers, with names like Victor Yount and Wayne Thompson, and others who have long since dropped from sight. Pin-drop silence in the room.

"You're absolutely certain this is powellite?" said Wilber.

"Yes. Absolutely," I said. A pause. "You can check with Harvard if you wish."

"How much do you want for it?" Now, finally, Wilber looked me directly in the eye.

"Fifteen hundred dollars," I heard myself say in as firm a voice as I could muster, not quite believing what I had just said.

Lowering his voice a notch, Wilber said, "I'll take it."

Talk about luck! That was a record-shattering specimen, no doubt. But if anyone other than Wilber had purchased the powellite, it would probably have quietly disappeared into some museum or collector's cabinet and rarely been heard about again. But Wilber! He carried it around with him through most of the Tucson show, displaying it to all and sundry, trumpeting the tale of how he had swagged it. Within days, he had sold it, of course, for more than twice the price he paid me. But everyone who was anyone in the mineral world had learned about a new dealer named Rusty Kothavala, with fabulous mineral specimens from India. Including, naturally, a very cross fellow named Rock Currier.

Before the show ended I had sold every last specimen I had brought with me.

I was certain that word about powellite, passed on by Rock Currier, must already be spreading like small-pox among mineral sellers in India. In that presumption, my fears later proved to be accurate and well-founded. But I still held a trump card. No number of precise descriptions and colored photographs of powellite given by Currier to his Indian henchmen could ever substitute adequately for a direct view of the real thing. And since there was only one known specimen, by now safely in the collection of Ed Swoboda in California, there was virtually no chance that an Indian would get to see it.

Currier, I felt sure, must have had ample opportunity to handle and study Wilber's powellite specimen at the Tucson show. He, of course, would know exactly what to look for in India. But to do that, Currier would necessarily need to spend lots—*really* lots—of time in Maharashtra. I felt secure, almost smug, in my conviction that India would surely get him if he tried. India was my native country, after all. I spoke the language. I had close family members located in several places around Maharashtra. If Currier wanted to compete with me in a treasure hunt for powellite in India, I felt confident I could wallop him. As long as I moved fast!

With that in mind, I rushed back to Cambridge. Then Toby and I dashed off to India as soon as we could in early 1973. But I failed to bear in mind a cardinal precept, namely, India abhors haste. And I did not yet have enough wisdom or experience to foresee that I was setting myself up for the biggest financial and emotional disaster of my life. It never crossed my mind that India was about to get me, rather than Currier. But that part of the story has already been told (Kothavala, R. Z., 1982).

INTERCONTINENTAL MINERAL DEALING

By the mid-1970's, Rock Currier's mineral business, Jewel Tunnel Imports, and mine, Crystals of India, had become comfortably established. Each had evolved an individual form and structure that best utilized the strengths and aspirations of its owner.

Currier's business had turned largely wholesale, and had begun to extend its reach to disparate parts of the world beyond India. J.T.I. was dealing in huge quantities of minerals, rocks, polished stones, and novelties. It had become a fixed entity in Southern California, with warehouses, a payroll, and permanent staff who continued to smoothly operate the home office when Rock was off on his world-girdling travels.

Based in Berkeley, California, and then Oakland, mine was a one-man operation, although I was helped at mineral shows by Toby when his own work permitted, and by others. I was exceedingly fortunate to enjoy the incomparable assistance of Liz Van Horn (now, Taylor) at myriad shows, and also on a couple of exploratory expeditions to Afghanistan, Nepal, and India (see Kothavala, 1982). I carried a small stock of hand-picked mineral

specimens, which I carried to a half-dozen shows each year, to museums, or to collectors' homes. I traveled light. Twice or thrice in most years I would spend a month or two at a time in India. Having been taught a brutal lesson once, I had now learned to deal with India at a respectful, sensible pace. No rushing. No dashing about desperately from one location to another. For me it became a dream come true: an intercontinental life blending India's chaotic eternal verities with America's dynamic and inspiring vision of the future.

During my Indian sojourns I would look in on my regular mineral-dealing colleagues in the vicinity of Bombay, Poona, and Nasik. I'd check out particular quarries and favored collecting spots around Maharashtra. Time and weather permitting, I would set aside a few days or a week to explore new localities as and when I picked up a whiff of something fresh or unusual. In that manner, I located and examined the source of ruby corundum crystals in a microcline gneiss matrix, from Budipadaga, in southern Karnataka, which I introduced to American mineral collectors at the California State Mineral Show in Pleasanton in 1976. Equally interesting to locate and explore were pyrolusite crystals pseudomorphic after manganite, from Sandur, Karnataka; small glassy green uvarovite crystals in schist, from near Maddur, Karnataka; and impressive euhedral crystals of zircon in pegmatitic diopside-syenite, virtually on the border between Tamil Nadu and southernmost Kerala, at the village of Puttetti, not far from Kovalam. None of these, other than the Budipadaga ruby corundum specimens, proved to be financially worthwhile materials for me to develop further, but at American mineral shows they added cachet to the name of my mineral business: Crystals of India.

The diverging directions of our businesses gradually wore down, then eliminated, the sharp rivalry between Rock Currier and me. An unmarked boundary seemed to quietly establish itself, geographically separating our spheres of activity in India. Rock's business centered on Bombay, because of close ties to Hussein Tyebjee and his energetic son Salim, who soon came to assume central responsibility for conducting the affairs of the Tyebjee enterprise. My business focused on Poona, with the Makki brothers, and on Nasik, where I once conducted my own quarrying operations for powellite, and also dealt with B. H. Kela, an established local dealer. Outside Maharashtra, in South India, I pursued igneous and metamorphic minerals. Like the United States and Canada post-1846, the relationship between Rock and me evolved from competitive to neighborly to warmly cooperative, propelled primarily, I must recognize frankly, by Rock's generosity of spirit.

Poona, the Makki brothers, and green apophyllite, turned into one of the mainstays of my business in America. All through the 1970's, Fasi Makki and Mujahid Makki provided me with a stream, albeit a fluctuating one, of green apophyllite and mesolite specimens from their two Pashan quarries, as well as occasional superb calcites and stilbite bow-ties from neighboring quarries. These I offered to museums and the mineral collecting public, receiving from them in return a decent standard of living, wide recognition, and wonderful friendships.

One of these friendships was with Paul Desautels, renowned steward of the Smithsonian's mineral and gem collection, expert specimen appraiser and buyer, celebrated raconteur, and an object of the admiration and approbation of a vast segment of the American and international mineral community. I doubt that anyone would dare claim to have examined more of the world's greatest specimens than Desautels. While he was alive and active, no one else even began to match the stature that Paul Desautels achieved in the mineral community. Having admired and acquired many Deccan trap mineral specimens from me, Paul expressed a

wish to see for himself the best mineral collecting localities in Maharashtra.

Accordingly, we arranged for Paul to join up with Toby and me in India in December 1978. Before he arrived, I had already made my routine rounds of mineral sources near Poona, Bombay, and Nasik. I had drawn a complete blank. There was nothing of note to be seen or purchased in any of the three main mineral districts. With Paul about to land in Bangalore, my heart sank. All I could do was hope and pray that something of interest would show up to justify Paul's 36-hour-long flight from Washington D.C.

After a couple of days in Bangalore to overcome his jet lag, Paul flew with Toby and me to Bombay. There, at the Victoria Terminus railway station, we caught the "Deccan Express" to Poona. Along the way, I drew Paul's attention to the "Jewel Tunnels" through which we passed. Seeing nothing but darkness in the tunnels, he was clearly more attentive to the magnificent ghat scenery, with its step-like traps, through which we were passing. Fasi and Mujahid Makki were awaiting our noon arrival at Poona railway station. Their expressions and body language radiated wild excitement.

The introductions completed, we found ourselves being rushed off in the Makkis' jeep. No invitation to lunch! No offer to let us freshen up or drop our baggage off at The Blue Diamond hotel, where we were booked! Very surprising! And very un-Indian too! The jeep was tearing off toward Pashan, I could tell. We pulled up at Quarry No. 2. The scene looked barely different from the way it had when I had visited just 3 weeks earlier. Except that the quarry workers were just standing around idly. And except, also, for one small feature that could be seen high up on the fresh quarry face. Just above a sloping pile of rock waste, this feature appeared very dark, roughly the size and shape of a laundry basket. Scrambling behind the Makkis, to the top of the waste pile, we saw that the ebon shape was a hole in the rock face. Behind the hole, nothing but black!

Fasi Makki invited Paul to kneel down in front of the opening and push his head forward into it. With some slight hesitancy, Paul did as he was asked. Mujahid, who was crouched behind, produced a hand mirror from somewhere. He held it in position to reflect a beam of intense sunlight over Paul's shoulder and into the darkness beyond. A muffled sound escaped the cavity's mouth. It was Paul, letting out a gasp. Then he fell silent, but I could see his chest rise and fall again with each deep breath he took. After what seemed like an age, Paul moved. He straightened up and tried to say something, but couldn't find the words. He motioned to me and said softly, "Take a look."

Since I was far more familiar with Indian quarry features and green apophyllite *in situ* than was Paul, I was pleased by his reaction, but I hardly expected mine to be of similar intensity. In went my head into the cavity's mouth. On flashed the beam from Mujahid's mirror.

A blinding spot of reflected sunshine shone on a low ridge of crystals inside the hollow's opening. It took a few moments for my eyes to adjust to the intense contrast between that and the less discernable cavern beyond, lit only by diffused illumination.

Oh, my God! Oh! Oh, sweet Heaven on Earth! Nothing, nothing, had ever before looked this gorgeous! Flashing deep green facets covered every square inch of the cavity's floor and walls. They looked like . . . like what? Like nothing else my eyes had ever beheld. But I couldn't stop my racing mind from searching for analogies. Like Scheherazade's imagination must have conjured up Ali Baba's jeweled cave. Like a marine reef of emerald gems, spotted here and there with sea urchins symmetrically displaying thousands of brilliant glassy white spines, each delicate needle tipped with its own magical pinpoint of incandescence. Like luminous fairy pincushions perched on glittering carpets of se-

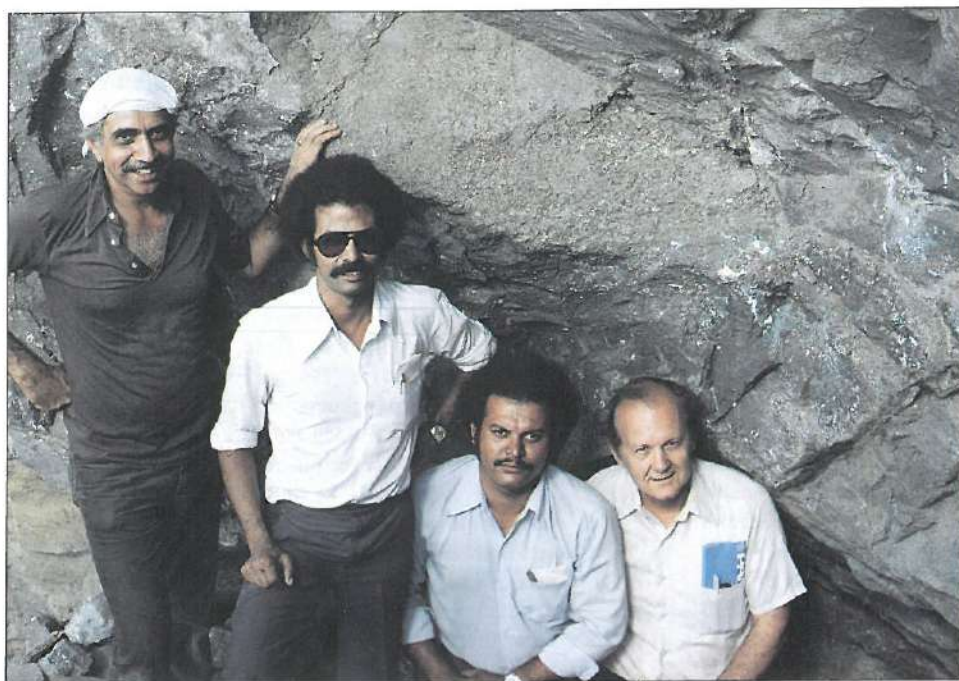


Figure 6. In front of the entrance to the cavity that yielded spectacular green apophyllite and mesolite at the Pashan quarry in December 1978; from left: the author, the brothers Fassi and Mujahid Makki, Paul Desautels. Photo by Toby Marotta.

Figure 7. The big apophyllite/mesolite packed on the floor of a Dodge pick-up truck for the trip from Boston to Washington, DC, December 1978.

quined verditer. Like green and white fireworks, frozen, crystallized, and captured at the peak instant of their detonation.

Time ceased. Then gradually inched back to life again. The scene before my eyes began to look less unfamiliar. Lining a cavity, whose farthest reaches remained in darkness, radiating sunbursts of colorless transparent mesolite needles, each one individually about 8 cm long, sat amidst crowds of vitreous green apophyllite crystals, most of them single, but here and there in bow-tie shaped clusters.

"Rustam," I said to myself silently, "Don't ever let this sight fade from your mind. Carry it with you like a talisman, all the way to your end." Then carefully, reluctantly, I withdrew my head from the cavity. Like Paul, I could say nothing. It was Toby's turn to be enchanted.

Having stared, and stared again, at this ephemeral masterpiece of nature's art, we stumbled our way down the talus slope to the jeep. Of course, I took photographs. But never before had I wished so intensely that I were a professional photographer of National Geographic caliber.

Paul remained uncharacteristically silent for a while. Then he spoke. "That was far and away the most fantastic mineral experience I've ever had."

"Seriously, Paul?"

"Yes, I really mean that."

Coming from Paul Desautels of the Smithsonian Institution, that was quite an accolade for Pashan Quarry No. 2, the Makki brothers, and Indian green apophyllite and mesolite.

Next morning we were taken to a house where about 20 specimens, extracted just days before from an adjoining cavity, were laid out on a table. One enormous piece . . . it might have weighed 20 kilos . . . sat on a large stool separately. It was stunning. An oval-shaped dome of rock, more than 30 cm across, was entirely crusted over with green apophyllite crystals 4 cm or more in length, perched on which were sporadic bow-tie shaped clusters of the same mineral. Standing upright on the apex and flanks of the piece were sunbursts, more than 10 cm in diameter, of glassy mesolite crystals identical in appearance to the ones we had seen in the cavity at Pashan Quarry No. 2. Amazingly, for its size, weight and delicacy, the great specimen showed no damage. I had never before seen a more impressive piece from India. Obviously, it caught Paul's interest.



After 20 minutes of looking and small talk, Paul pulled me aside. Looking directly into my eyes, he said, "Rusty, I want that specimen for the Smithsonian. You are going to have to figure out a way to get it to me there."

"How much are you ready to pay me for it once I get it to Washington?" I said.

Paul didn't hesitate a moment. "Ten thousand dollars."

That was a lot of money in 1978. Not yet knowing how I would ferry the huge but delicate piece with its fragile mesolite sunbursts from India to USA, I now asked Fasi Makki to take a walk with me outside.

"Paul wants me to pick up that great green apophyllite, with the mesolites on it, for the Smithsonian. It's magnificent." It was pointless for me to even think of trying to pull any wool over Fasi's eyes. He knew better than I did that the piece was far and away the most splendid green apophyllite display specimen to appear out of Pashan since quarrying for zeolite specimens began five years earlier. "How much do you want for it?"

Fasi knew he had me in a lock. Calmly he said, "Seven thousand dollars. Nothing less."



Figure 8. Smithsonian curators Paul Desautels and John White with the big apophyllite/mesolite, December 1978.

That was, I figured, about 14 times as much as I had ever paid in India for a single specimen. I did not feel confident that the crystals, particularly the upright mesolites, would survive the rigors of surface transportation to Bombay, then customs inspection, followed by several flights and stopovers to the USA. No, I decided, it was just too risky, unless I could work out something for insurance. Feeling certain that Fasi would stick to his figure of \$7000, because that would be a new benchmark price for a zeolite specimen in India, I tried another tack.

"I know you'd like to see this specimen of yours on display at the Smithsonian, Fasi," I said. "But getting it there undamaged is going to be almost impossible. I could end up with virtually nothing, perhaps actually nothing, if the great green is expropriated by customs authorities, or if the mesolites are destroyed. What then?"

I noticed Fasi's expression instantly harden. But before he could say anything, I continued my monologue. "So I agree to pay you \$7000 for the 'Great Green.'" He waited for me to finish. "But you've gotta help me with some sort of a cushion so things don't go terribly wrong."

Immediately, his facial muscles relaxed. "What do you mean?" Fasi said.

"Well, first, I have no means to get the piece to Bombay. So you're going to have to deliver it to me there, to my garage-workshop, in your vehicle."

"No problem. I can easily do that."

"Second," I said, "If I get anything for it, I won't get paid until after I deliver it to Paul's office in Washington. It'll take some weeks after that for the Smithsonian to issue me a check. So it'll be a month, maybe two, before I can remit your money to you. Will that be OK with you?"

"That's not an obstacle," he said. "We've had similar arrangements before. They've worked without difficulty."

Now for the kicker, I thought. "As I said, I may end up with nothing but a \$7000 loss in this deal. So I've gotta have some insurance." I paused to let my words sink in.

"What do you mean?" said Fasi, a little uncertainly.

"I want you to throw in the rest of the specimens on the table for free. That'll be my insurance." With visions of his 'Great Green' on display in the heart of America's pre-eminent museum collection, and having already been honored with a personal visit to Pashan by the Smithsonian's mineral chieftain, I knew Fasi would not refuse.

His brow furrowed momentarily. Then he said, "OK. I agree to that." We shook hands on the deal. Then I measured the exact dimensions of the Great Green.

All that remained was for the Makkis to discuss the disposition of the specimen material in the cavity we had all inspected the previous day. Fired by their financial success and by the presence of Paul Desautels, the Makki brothers came up with an outrageously daring vision. They would cut out a complete intact cross-section of the cavity, they said, with all the crystals in place, naturally, and ship it under their personal care and supervision to Washington. Would Desautels buy the entire cross-section for the Smithsonian? Of course, Paul said he would, though neither he nor I had the slightest expectation of ever witnessing that reality.

Sure enough, after a couple of months, I learned that the effort to cut out an intact cross-section of the cavity had collapsed just like the cavity itself. Eventually, the remnant specimens were picked up by me and other foreign dealers for resale in Europe and the USA.

With Desautels homeward bound for Washington, my attention turned to how I would transport the Great Green across the planet. Packing it was out of the question. Any packing material would play havoc with the mesolite sprays. And customs inspections would add to the carnage. The specimen would have to be carried open and exposed. There was no other option.

To that end, in my Bombay garage-workshop, I cut a rectangle of thick plywood with dimensions that were just an inch wider on all four sides than the specimen, to serve as a base. Two loops of strong nylon strapping were firmly screwed to opposite edges of the plywood and taped together at the top to create a suspended horizontal pallet, which could be lifted by one hand.

Quarrying for Green Apophyllite at Pashan

Since no mineral species is more definitely identified in the public mind with Indian zeolites than the superb emerald green vanadian apophyllite (even though it is not strictly a zeolite) from the quarries at Pashan near Poona, a brief historical note about the discovery and exploitation of this material may be in order.

The Pashan quarries, which were shut down by the government more than 12 years ago, have long since been overtaken and engulfed by the fast expanding city of Pune (as Poona is now named). But in their mineral specimen heyday during the 1970's and 1980's the quarries dotted a line of bare hills overlooking a barren expanse of usually parched agricultural land. The only noteworthy nearby landmark on any map was the town of Khadakvasla, site of the National Defense Academy, India's "West Point," some 5 or so kilometers away. The name "Pashan" applies today to a favored suburb of greater Pune, but in 1971, when bright green apophyllite was "discovered" in a few of the quarries, the name Pashan applied to a smattering of *beedi* and *chai* stalls that vehicular passersby would barely notice.

An American couple, Nell Roe and her pastor husband, who taught at Spicer College, not far from the quarries, must be credited with first bringing Pashan green apophyllite to the attention of collectors, though Fasi Makki maintains that it was his father, Makki Sr., who first discovered the occurrence in the early 1960's. The green color, more intense than any seen before, was quite unlike the yellowish green hues that were commonly seen in blocky, pseudocubic apophyllite crystals from the Bombay-Poona railway cuts and tunnels. Another feature of the Pashan apophyllite crystals was their pronounced elongated tetragonal habit with well-developed pyramidal terminations.

Naturally, all the seasoned Indian mineral dealers tried to get specimens directly from workers at the quarries, but to their astonishment these hopefuls found that the workers exhibited uncompromising loyalty to Pastor and Mrs. Roe. The green apophyllite pieces encountered during quarrying were steadfastly saved for the American missionary couple. It turns out that the American missionaries had made a practice of regularly visiting the quarries for a long while, even before they stumbled onto green apophyllite, in order to provide the desperately poor workers and their families with aid and assistance in the form of food items, basic health care, and simple human concern. Any wonder the workers remained true to the Roes! (Makki, M. F., personal communication.)

The entire scene at the Pashan quarries changed almost

overnight when the Roes, stressed out by trying to do business with hard-nosed mineral dealers, pestered by an unending series of mineral seekers and collectors, intruded upon in their primary work at Spicer College, suddenly relocated from India to USA. It was a circumstance and opportunity that had been foreseen, prepared for, and patiently awaited by two enterprising, energetic, and capable young college men, Fasi and Mujahid, the sons of Mohammad Makki. Unlike their unassuming naturalist father, the young Makkis were fired with aspiration to be players on the international stage. Taking full advantage of their intimate familiarity with Indian languages and customs, their willingness to engage in backbreaking labor themselves, and their canny ability to navigate their way through the shoals of arcane bureaucratic regulations, the Makki brothers embarked on a unique Indian enterprise. First, they gained unassailable legal license and lease from the government to conduct quarrying at two of the dozen or so quarries in the Pashan Hills. Then they designed their operations in such a way that their primary product of value would be mineral specimens. The basalt excavated in process (which was of poor quality, anyway, because it was shot full of amygdular fillings and cavities) would be disposed of for whatever it could bring. For the next 18 years or so, first the Makki brothers together, later Fasi Makki on his own, gained world renown for the name "Pashan" and for the spectacular specimens, many of extreme beauty and delicacy, which were extracted from the "Makki Quarries." These may be the only successful mining or quarrying operations in India that have been conducted primarily for mineral specimens. (The quarries at Jalgaon may be later examples of the same, but I am not familiar enough with that locality to comment on it.)

The two "Makki Quarries" have proven to be by far the most fecund producers of deep green apophyllite out of the several quarries at Pashan. Clearly, the Makki brothers did a creditable job of assessing the potential of their quarries. Other quarries, some within a distance of just a few hundred meters or less, and apparently on the same stratigraphic horizon, have also produced fine mineral specimens of mesolite, calcite, "mirror" apophyllite, stilbite, and heulandite. But none of the other quarries have produced the spectacular "greens" that have made Pashan world famous in mineral circles.

Ultimately, by September 1989, urbanization and population pressures from Pune's booming metropolitan expansion forced closure of all the quarries at Pashan (Wilson, W. E., "What's New in Minerals: Tucson Show 1990," *Mineralogical Record*, May-June 1990, v. 21, p. 255-256).

In his jeep, Fasi delivered the apophyllite specimen from Poona to Bombay, as he had promised. The great specimen fit perfectly on the pallet I had prepared. The base sat on the plywood without any rocking. It was heavy, very heavy, but I could manage to lift it with just my right arm. The administrative red tape had been cleared; the export clearance documents were in hand. The moment for flight had arrived.

Except for one small shoulder bag with our passports and tickets, neither Toby nor I carried any hand luggage. I would need every fiber of my strength to carry Great Green on its pallet. Toby would focus his entire attention on keeping the inevitable curiosity-driven gawkers at bay.

I knew from long experience in transporting mesolites that customs officials and other kinds of inspectors would find it impossible to keep from sticking a finger out to touch the mesolite sunbursts. To prevent anyone from inadvertently creating such a calamity, Toby's job was to literally grab any hand that strayed too close to Great Green. We had gone over this drill several times in Bombay. Good thing too. At every point en route, in airports and on the airplanes, there were gasps of wonder and disbelief, expostulations of "What IS that?," oohs and aaahs, from bureaucrats, functionaries, passengers, and crew members. We paid no attention to anything other than protecting and defending Great Green. Except for Toby's having to physically tackle several mesmerized but

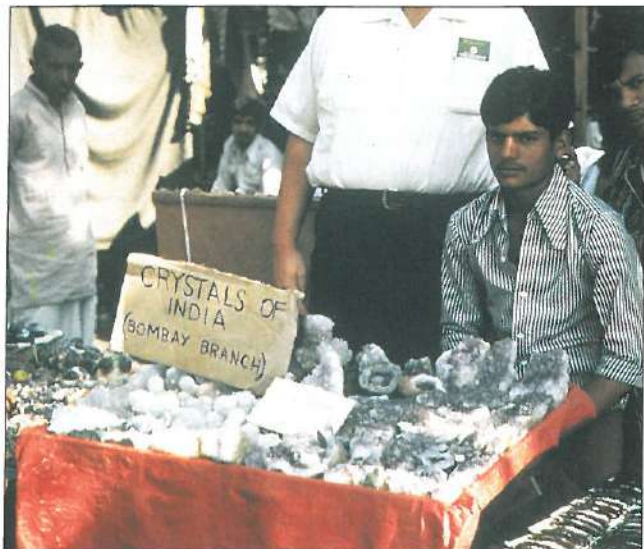


Figure 9. Amusing 1980 photo from India, staged for my benefit. The midsection of the person standing at the rear bears a suspicious resemblance to that of Rock Currier.

otherwise sensible security and customs officials en route, our journey went through without a hitch. Throughout, Great Green rested securely on the floor beneath the seat in front of me. I tackled the entire journey with my legs spread wide.

Finally, Great Green was delivered to its new home in Washington D.C. Cheers and kudos from Paul Desautels and his second-in-command, John White. Sighs of relief from Toby and me.

Some months later, when I made a return visit to the Smithsonian mineral and gem collection, Paul Desautels conducted me to the newly installed Gem Room. There, on public display, rested Great Green, cleaned and sparkling, looking utterly glorious, all gussied up against a background of blue-grey material, behind bullet-proof glass in a hi-tech security case. To its right was a case displaying the celebrated flawless 46-carat Blue Hope Diamond, out of India

circa 1642. In a case to its left, sat the regal Persian turquoise and diamond diadem of Empress Marie Louise of France, given to her by her husband Napoleon Bonaparte (Napoleon I). Great Green was keeping excellent company. Old man Makki, late father of Fasi and Mujahid, should feel very proud indeed.

CONCLUSION

My mind's eye flashes back to an earlier curator of Gems and Minerals at the Smithsonian Institution, George Switzer, pictured in that long-ago issue of *National Geographic* magazine, and imprinted in my memory while I was yet a boy. The mental pictures may have become a bit muddled after half a century, but they have yet to fade away. In one, a mineral collector in an underground mine, his knee bent in a right angle over a boulder to support his weight, a geological pick in his right hand as though preparing to strike, leans his face toward a pumpkin-sized cavity lined with crystals of wulfenite. In another, an impressively large specimen of orange-red paper-thin platy crystals, also of wulfenite, sits on exhibit in a display of colored minerals at the National Museum. The crystals on that specimen were so delicate, the article says, that the author carried it back to Washington D.C. in his own car; and in order to safely accommodate the piece of wulfenite, his personal gear and suitcases, we are told, were shipped back home as freight.

Even with my youthful imagination stretched to the limit, I could not have believed that another single glorious mineral specimen, this one of green apophyllite and mesolite from Pashan, India, would one day propel me on a similar mission to Washington D.C. and the Smithsonian.

Nor could I have fantasized that the intriguing crystals I picked up in the 1950's from basalt quarries in the Deccan traps of Maharashtra would provide me, in mid-life, with many opportunities to engage some of the most exceptional people on the planet.

Not in my wildest flights of fancy did I envisage that those bits of colored agate, collected from the gravel in my uncle's driveway in Poona in 1945, would lead me, the progeny of a comfortably well-off, but insular, Indian agricultural clan, to share slivers and slices of my life with so many individuals of scintillating intelli-



Figure 10. The last big batch of Poona apophyllite, collected in 1989 (offered by the author during the Tucson Show at the Desert Inn in February 1990).

gence, profound accomplishment, and exceptional skills; people of mind-boggling wealth, and awesome professional standing; folks exhibiting every level of integrity and moral courage, or the lack thereof. All because of boyhood mineral collecting!

I am even more moved by a question that's close to the core of my being. Had I not become a dealer in Indian mineral specimens, could I ever have come to know, respect, and admire as deeply as I do, those Indian people who occupy the lowest rungs of the economic ladder? They are the ones who toil in quarries, or tend their flocks, or gather wood, berries, and honey in the wilder regions of my native India. Ironically, I experienced the good fortune, rare among Indians of my generation and social stratum, of really getting to know the enchanting geographic and cultural aspects of the country where I grew up, years and decades after making my home in America. Exploring and prospecting for collectable mineral specimens in India gave me those gifts.

Thinking back, I ask myself, which of two memorable and distinct demonstrations of hospitality have left me with a more lasting sense of humanity's soaring spirit?

In one instance, at the opulent mansion of an illustrious American mineral collector in the western USA, I found myself dining with the former governor of the state, as well as a handful of millionaires and billionaires, in a banquet room two or three times as large as my entire Tucson home. The décor was exquisitely tasteful and super-expensive, of course. The sparkling conversation reflected the sophistication and worldliness of those assembled. The entire dinner, consisting of more courses than I could track, was utterly delectable. I wondered if I was dreaming.

In the other memorable instance, I was trekking with two companions at elevated altitudes in the Himalayas, intent on seeking out the storied source deposit of the renowned Kashmir sapphires of Sumjam. We paused for a rest break.

From one of two small huts alongside the track a Kashmiri man emerged. Without a trace of manipulation in his voice or manner, he said, "You appear not to have eaten today. It will take too long for you to prepare yourselves a meal. My wife is cooking some *daal-chappati*. We would be pleased if the three of you would grace our meal with your presence." Tired, and touched, we accepted gratefully.

Inside the smoky hut, two children in tattered apparel looked at us with shy curiosity. The younger one's nose dribbled; their mother didn't seem to notice. She smiled as she hustled to prepare extra *chappatis* over a wood fire for her unexpected guests. We seated ourselves on the floor with our host. We talked. The man looked proud and pleased to have three strangers, clearly outsiders, in his one-room home. Driven by ravenous appetites, we ate the plain meal with genuine relish. I couldn't keep myself from grinning delightedly at the open-hearted generosity that had fetched us there.

Without having lived the life of adventure permitted me by mineral collecting and dealing, would I now, in my senior years, remain as thrilled as I feel, to have been a guest at two memorable meals of such extreme contrast?

Finally, the impeccable beauty of minerals and their crystal forms, which are simply the external manifestation of perfectly ordered arrays of atoms arranged in meticulously repeated 3-dimensional patterns, continue to leave me in awe of Nature's capacity to organize. It's simply one more piece of evidence, amidst an overwhelming abundance of others, that compels me, whether or not I understand its workings, to trust that the universe, including humanity's infinitesimally miniscule place in it, is unfolding exactly as it should.

ACKNOWLEDGMENTS

This personal memoir, as well as the career that engendered it, would never have seen the light of day without blessed encounters with a number of key individuals along my life's path. Among them: Darashah N. Wadia, Toby Marotta, Clifford Frondel, Phil Goodell, Richard Bideaux, Elizabeth VanHorn Taylor.

Several others lent me abundant support or assistance, without which my mineral dealing enterprise could not have succeeded as well or as enjoyably as it did. Among them: my late uncles Perviz and Saros Kothavala of Poona, Cornelius S. Hurlbut, Jr., Burjor Mehta, Milly and Bill Schupp, Marge and Ray Dudley, Mary Lou Reed, Fasi Makki, Tony Worth, Nawshir and Roshan Khurody, Meher Jassawala-Spangberg, Sam Dennis, Paul Desautels, John S. White, Jeffrey Marotta, Wayne and Dona Leicht, Carl Francis, Bill Metropolis, Mike Miles, Marion and Hadley Stuart, Peter Embrey, Joel Bartsch, and, importantly, members of the annual Show Committees of the Tucson Gem and Mineral Society.

I owe a special debt of gratitude to my erstwhile rival and competitor, Rock Currier, who challenged me, at first, just to survive, and later, to reach for the top. But for the fortuitous circumstance of our simultaneous entry into the Indian mineral specimen market in 1972, I may never have pushed myself enough to discover as much about Indian minerals and their occurrences as I did.

I thank the several people who have aided me with preparation of this article by editing, proof-reading, making suggestions, ensuring veracity, and providing photographs. Among them: Rock Currier, Richard Bideaux, Elizabeth VanHorn Taylor, Fasi Makki, Wendell Wilson and Tom Moore. I appreciate the exchanges I've had with Berthold Ottens.

REFERENCES

- ANTHONY, J. W., WILLIAMS, S. A., and BIDEAUX, R. A., (1977) and (1975) *Mineralogy of Arizona*, The University of Arizona Press, Tucson.
- CURRIER, R. H. (1976) The Production of Zeolite Mineral Specimens from the Deccan Basalt in India. *Mineralogical Record*, 7 (5), 248-264.
- FORD, W. E. (1932) *Dana's Textbook of Mineralogy*. Fourth edition, John Wiley & Sons, New York.
- HURLBUT, C. S. (1955) *Dana's Manual of Mineralogy*. Sixteenth edition, John Wiley & Sons, Inc.
- KOTHAVALA, R. Z. (1958) With Pick and Knapsack. *Brewery Gulch Gazette*, Bisbee, Arizona, Dec. 4.
- KOTHAVALA [sic: KOTHAVLA], R. Z. (1982) The Discovery of Powellite at Nasik, India. *Mineralogical Record*, 5, 303-309.
- PALACHE, C., BERMAN, H., and FRONDEL, C. *Dana's System of Mineralogy* (1944, 1951 & 1962), vols. 1, 2, & 3, Seventh edition, John Wiley & Sons, Inc.
- SCALISI, P., and COOKE, D. (1983) *Classic Mineral Localities of the World: Asia and Australia*, 46-48, Van Nostrand Reinhold Company Inc.
- SWITZER, G. S., (Nov. 1951) "Rockhounds" Uncover Earth's Mineral Beauty, *National Geographic Magazine*, v. C [100], no. 5, p. 631-660.
- TOBIAS, A. (1998) Gay Like Me. *Harvard Magazine*, v. 100, (3), 53-54.
- WADIA, D. N. (1919) *The Geology of India*. MacMillan and Co., Ltd., London.
- WILSON, W. E. (1990) What's New in Minerals: Tucson Show 1990. *Mineralogical Record*, May-June, 21, 255-256. ☒