



ISTOCK PHOTO

# Romancing the stones

The passage of time is etched in the cliffs of the Bay of Fundy and the Minas Basin like the bands in agate. Even for rockhounds seeking the lustre of gemstones, this visible spectacle of Earth's history may prove the greatest treasure

by JOE FITZGERALD

**W**hile traversing the Minas Basin, the mythical Mi'kmaq hero, Glooscap, admired the purple amethysts encircling the cliffs of the Blomidon peninsula. He built his lodge there, and the amethyst, agate, and other semi-precious stones became his mother's jewelry. In 1604, ages after Glooscap's epic exploits, Samuel de Champlain, the famous French explorer, landed at Partridge Island, directly across the water from the peninsula. His men must have stumbled onto Glooscap's mother's jewelry box, because they found the beaches sparkling with amethyst crystals. Champlain took the gems back to France, where it is said they became part of that country's crown jewels.

Today you can still find amethyst on the beaches of the Minas Basin and the Bay of Fundy, along with a multitude of other mineral treasures. Although amethyst is generally one of the more popular, well-known jewelry stones, agate is actually the official gemstone of Nova Scotia. Both are types of quartz. Agate has a milky, almost waxy appearance and is famous for its concentric bands and fanciful patterns. It was used as a talisman in ancient times and was thought to quench thirst and protect from fevers. During the Renaissance, it became popular when European royalty collected finely crafted agate bowls and ornaments.

Amethyst is a transparent quartz crystal that ranges in colour from pale lilac to deep purple. Because purple is the colour of royalty, amethyst is featured prominently in many crown jewels. In ancient times it was believed to protect against drunkenness, and therefore many wine goblets were carved from it. Both agate and amethyst are usually found together because of the unique geology that created them.

More than 200 million years ago, in the Triassic period, the supercontinent Pangea began splitting apart. "As North America pulled away from Africa, volcanoes along what is now the Eastern Seaboard produced many lava flows," says Ronnie van Dommelen, the president of the Nova Scotia Mineral and Gem Society and a dedicated rockhound. "These lava flows poured onto the sand plains. Once the Atlantic Ocean formed, it filled in the Minas Basin and began eroding the shoreline, leaving the resistant volcanic rock, or basalt."



The lava flows carried steam and gases trapped in the lava, and, as the lava cooled, they formed bubbles within the rock. "This steam was incredibly superheated and corrosive, and it dissolved a lot of minerals in it, so as the steam cooled, these dissolved minerals started settling out and lining the cavities of these pockets and voids," says van Dommelen. "The temperature, how quickly the rock is cooling, and the pressure determine what minerals form. Usually when you find agate and amethyst, you'll find the agate forms first, on the outer part of the pocket, and if the pocket doesn't fill up with agate, sometimes you'll find quartz in the middle of the pocket, and sometimes that quartz will be amethyst."

"Mother Nature scatters a little bit here, a little bit there, and she hides a lot of it in cavities and veins. She makes you work for it. You can't get it all in one day. You've got to go back and appreciate old Mother Nature. She hid this for millions of years, and I'm lucky to find a piece."

One day George got lucky when he suggested that his wife look over some clay that might contain loose crystals. Feeling multiple facets on a piece she thought might be worthwhile took it to the shoreline to wash it off. "It was absolutely beautiful," says George. That piece of amethyst was destined to become a ring for the Anglican Bishop of Nova Scotia. "I cut and polished the stone, made the setting and the whole works," says George. "Everywhere the bishop went, he got a lot of comments on it."



A few simple tools, a sharp eye, determination, and luck are enough to find agate and amethyst

**E**ldon George, the proprietor of the Parrsboro Rock and Mineral Shop and Museum, has been collecting Bay of Fundy agate and amethyst for more than half a century. George appeared in the August 1957 issue of *National Geographic* as a guide for its story on the Fundy tides. He put Parrsboro on the map in 1984 when he discovered fossilized footprints of the world's smallest dinosaur, and later this year he will be featured on CBC's *The Nature of Things with David Suzuki*.

A few simple tools, a sharp eye, determination, and luck are enough to find agate and amethyst. "All you have to do is recognize the characteristic colours that are found on the outside of the rock," says George. "You should have a maul [rock hammer] and a chisel. You really want a chisel about a foot long and three quarters of an inch in diameter, because anything shorter than that is too damn hard on the hands. You should always wear goggles when you're pounding agate, because it's very sharp. Over the years I've had several people come into my shop that had chunks of sharp points sticking in their face close to their eye. You also want to go careful around the banks because they're dangerous, and look out for the tide. She's the boss."

George walks along the beach looking for veins of agate; usually any wide vein will carry amethyst in the centre. Sometimes he finds pieces just lying on the beach; they can be green on the outside, black, or a chalky white. "Most of the amethyst we get has a brown coating on the outside," he says.

**N**ova Scotia amethyst is not highly valued on the world market because it tends to be paler in colour than the deep-red and purple stones prized by jewelers. However, valuable amethyst does occur in Nova Scotia. "Ross Creek in Kings County has amethyst just as dark as any you'll find anywhere," says George. "Over the years I've found quite a bit of it. It's beautiful-quality stuff, but you can't go out and get a hundred pounds of it. It doesn't come that way."

That's the reason there isn't a commercial mining operation for agate or amethyst in Nova Scotia. Some of the Bay of Fundy islands were acquired at the turn of the 20th century by jewelry companies as a possible source of raw material, but it became apparent that the prevalence of gemstones didn't warrant commercial operations such as those in Brazil or on the north shore of Lake Superior, near Thunder Bay, Ont. However, for the individual or small rock-and-gem operation, the area surrounding the Bay of Fundy can be a veritable treasure chest. "I supply shops all over the country with jewelry that I make," says George. "It makes a lot of work, and I employ two or three people at a time in the summer months."

Hans Durstling grew up near the Bay of Fundy and is a renowned lapidary, a craftsman trained in the cutting and polishing of gems and stones. "Amethyst is an orthodox stone," he says. "Agate is much more of an idiosyncratic, one-off, design-

er-type stone. You can get some really wild patterns, and it can come quite large, so it can be cut in fist-sized pieces for people who like large flashy jewelry.”

Durstling was captured by the lure of gemstones while scouting the cliffs and beaches around Parrsboro as a youngster. “As a twelve-year old,” he says, “it appealed to my sense of treasure hunting.” From finding quartz crystals behind waterfalls in Truro’s Victoria Park to discovering a glittering cubic metal crystal of galena from a nearby lead-and-zinc mine, Durstling’s passion for stones followed him on several trips to Europe during the late 1980s. Returning from one stint with enough money to purchase a diamond saw and a simple polishing machine, he began slicing and polishing the stones he had collected from around the Bay of Fundy.

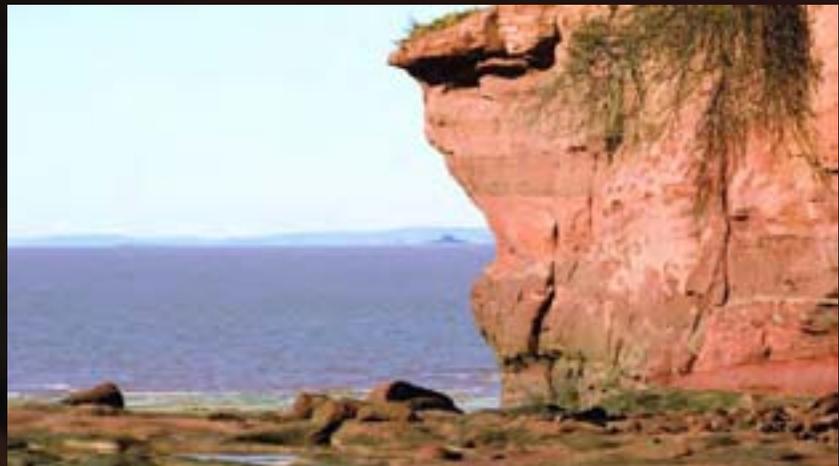
**R**ound top stones such as agate, opal, and star sapphire are called cabochon stones, as opposed to facet stones such as diamonds, which have multiple flat faces. Using his diamond saw to cut cabochon stones, Durstling found that he had to broaden his skills to earn a living. “Cabochons of agate are industrially cut in places like Thailand, and you can buy a cabochon agate for 17 cents,” he says. “There’s a satisfaction in having done it yourself, but there ain’t a real big market for it.”

In 1991 Durstling returned to Europe and trained under a German goldsmith, learning the trade of silver work and jewelry making. However, today he continues to create jewelry from Bay of Fundy agate and expounds on its world-class quality. “There is a very popular type of agate in the U.S. called Montana agate that is found in a clear, translucent, uncoloured, almost glassy matrix,” he says, “and then you have these black spots, branches, and plumes standing against this almost transparent background.”

These same types of patterns are found in Bay of Fundy agate. “It rivals some of the best Montana agate I’ve ever seen,” says Durstling. “It looks like you’re looking in an aquarium. You find these black spots drifting among fronds and plumes. It’s really quite dramatic.” In *Gemstones of North America*, John Sinkakas’s authoritative tome, 13

Bay of Fundy localities are mentioned for finding quartz gemstones, those being agate and amethyst.

“I stand around the beaches at the foot of the basalt lava cliffs in April, when the snow is gone,” says Durstling. “After every winter, there are rock falls that deposit new stone on the beaches. You mainly get flat slabs of stone on the Bay of Fundy.



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Very rarely do you find the rounded potato shaped geodes.” These flat slabs are sections of agate vein that have broken out, typically about the size of the palm of your hand. Since they form in veins, they grow from the walls toward the centre of the vein as the vein slowly fills in, creating a matching pattern on each side of the vein.

Once Durstling has collected specimens of agate, he goes to work at his shop, slicing the rock on the diamond saw to about a quarter-inch thick, which is when he can really see the pattern. He then marks out with a pencil a ring stone or pendant stone size, saws around the outline before grinding the stone to shape, working finer and finer. “It’s basically like woodworking,” he says. “You start with coarse tools, move to finer sandpaper, and then apply the final finish.”

The consensus of most collectors of Bay of Fundy agate and amethyst is that there will never be a commercial mine for them, but the cliffs and beaches from the Glooscap Trail around Blomidon and down to Digby lure numerous amateur rockhounds and lapidary enthusiasts. “People love collecting this stuff,” says Durstling. “It’s a very accessible hobby; anybody can do it. The transformation from a rough stone to what really is a gemstone is quite entrancing. From that point of view, from a tourism and nature perspective, the area has a great resource potential.” ■

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— Hans Durstling

# Depth potential

*With worldwide metal prices rising, Acadian Gold is focused on promising mineral properties in Nova Scotia*

**M**ining companies have to go to where the ore is, which has led many a miner to the far corners of the Earth, into dangerous terrain and sometimes dangerous political territory. As metal prices rise, however, and as the risks of doing business overseas become a more frightening prospect for investors, some miners are turning their attention back to territories closer to home.

"You won't see us venturing off to Africa," says Will Felderhof, the president and CEO of Halifax-based Acadian Gold ([www.acadiangold.ca](http://www.acadiangold.ca)). "There's a lot of political uncertainty offshore, and if you're a shareholder in a small company like Acadian Gold, you don't want to wake up one morning and find out a government has pulled your mining licence. That's your principle asset, and if that's gone, the shareholders have nothing."

With 33 years in the mining business, and plenty of overseas experience in places such as Indonesia, Felderhof has decided instead to focus his attention on potential mining properties right here in Nova Scotia. With rising worldwide metal prices, new technology, and a fresh vision, he's convinced that he can profitably mine here for metals that were long considered depleted: gold and zinc.

"It started around 2001, when I recognized that gold prices, which were around \$260 dollars an ounce, were not sustainable," says Felderhof, "and the gold market would have to rebound." At the time, few people would have suggested that a commercial gold mine could be viable in Nova Scotia. The province has had its share of gold rushes, and many of the small communities still celebrate the history of prospectors and the "boot-and-hammer" operations of the last century and a half. However, large-scale modern mining operations have been minimal over the past century. "These vein deposits, notorious for their narrow rich pay zones and spectacular course-grained nuggety gold specimens, proved to be 'pockety' in nature and prone to major dilution problems," reported *The Northern Miner: The Global Mining Newspaper*.

Still, Felderhof believed that while much of the surface gold in Nova Scotia has long since been mined, there was still "lots of depth potential," and through his mining connections he was able to raise enough money to acquire a half-dozen properties around the province that he felt could yield profitable amounts of gold. "I think the perception outside of Nova Scotia is that the gold mines are generally small and narrow veined," says Felderhof, "but I see the potential here in Nova Scotia not only for narrow-veined gold mining underground but also for bulk-tonnage open pit."

As bulk-tonnage open-pit mines come online, Felderhof believes the attitude toward the Nova Scotia gold camp from mining peers



Will Felderhof

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across the country will change dramatically. One of Acadian Gold's properties, Beaver Dam, appears to have bulk-tonnage open-pit potential for gold; it is in the final stages of metallurgical tests it hopes will confirm its suspicions. "If things go according to plan and the numbers come up correctly," says Felderhof, "we expect a new resource announcement on Beaver Dam by the end of the year."

Felderhof turned his attention to Nova Scotia gold when the prices seemed unrealistically low. More recently, he has turned his attention to Nova Scotia zinc, when the prices climbed higher than they had been in years. "Zinc hit \$1.88 recently, which I think is an all-time high," he says. "Zinc prices had been so low for so long that there has been virtually no new exploration. China and India are now desperate for zinc, but you can't just go out and get more quickly."

Unless, of course, you're in Nova Scotia and you know there's a working but abandoned zinc mine that could be resurrected much more quickly than finding and establishing a new one. In the 1970s, Esso joined the rush of major oil companies getting involved in mining at the time, opening the Scotia Zinc Mine at Gay's River between Halifax and Truro. After a brief operating period, the mine was shut down due to falling zinc prices. Acadian Gold recently acquired the mine from HudBay Minerals and is planning to getting it up and running by the second quarter of next year (the facility will produce lead as well as zinc). The ease of refurbishment and start-up costs, combined with a revitalized zinc and lead market, bodes well for the operation. "Our studies completed by independent consultants show that we should be able to produce zinc there for about 35 cents a pound, which is very good considering current zinc prices are around \$1.52," says Felderhof. "Both zinc and lead prices have basically tripled over the last few years." — J.F.