

A Visit to Two Canadian Craters  
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Early in 1973, I attended a meeting of the Hamilton Centre of the Royal Astronomical Society of Canada at which one of the members told of his summer travels. He told of his journey into Northern Ontario to visit two ancient meteorite craters, the Sudbury Crater and the Brent Crater. This idea fascinated me as the usual astronomical object is located at the far end of a telescope, beyond our Earth's atmosphere. But here ~~was an~~<sup>were</sup> astronomical phenomena<sup>a</sup>, namely the traces of a fallen meteorite, and not only that, they were within comparatively reasonable access to my home.

When July arrived, I decided that the time had come to see these craters for myself. The Sudbury Basin would be the first on the agenda. Sudbury is a full day's drive from Hamilton, but when you are travelling with a wife and seven-year-old son, you have to stop and see some of the tourist attractions along the way. Therefore, we arrived in Sudbury at the end of the second day's travel.

Sudbury is an interesting city, being located in and around a series of rocky ridges some 300 feet high. It is a modern city having all of the facilities that you would expect in a region of 100,000 people. It was these ridges, however, which interested me most, for I thought of some lunar craters that I had seen. Many of them have concentric ridges around them, outside of the main rim of the crater. I began to look around for further signs that this basin might, indeed, be the remains of the impact of a large meteorite in prehistoric times.

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"The best laid plans of mice and men gang aft agley". Mine certainly did, for wife and son spotted a sign advertising "The Big Nickel" and "The Big Nickel Mine". These, they informed me, were a must before going to look at some old hole in the ground! Being a gentle soul, I gave in, and off to the "Big Nickel" we went.

The "Big Nickel" is just that. A "nickel" is a Canadian coin, twelve-sided, with the Queen on the front and a beaver on the back. This is generally the pattern for all Canadian nickels except that of 1953, which had a picture of a nickel smelter on the back, temporarily replacing the beaver. This coin was issued to commemorate the 100th anniversary of the discovery of nickel. Now, since the majority of the world's supply comes from Sudbury, some enterprising businessman had the bright idea of having a gigantic nickel smelted, some 12 feet in diameter, and placing it on a hilltop within sight of the smelter which is depicted on the coin. Hence, the Big Nickel. Since then other large "coins" have been added making this hilltop a real numismatic museum. Further, a working nickel mine is located in the hill, and tourists can take a walk through it, for a fee of course.

After a morning of touring the Big Nickel and looking off at the smelters of the International Nickel Co. through binoculars, I had to put my foot down and say that it was time to get on with looking at the real attraction, the Sudbury Basin.

Sudbury, The Big Nickel, and Inco all lie on the southern rim of this basin which is some 38 miles long and 17 miles wide. The contrast is quite startling <sup>as</sup> ~~and~~ you drive over the rim. All around

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the basin, the land is hilly and rocky, but here was a very flat expanse, filled with what looked to be very good farmland. Where the rest of Northern Ontario is covered with coniferous trees at this latitude, there were very few trees in the basin, and what were there seemed to be a mixture of coniferous and deciduous trees, as we have in Southern Ontario. What really impressed me, however, was the flatness of the land, and again my thoughts turned toward lunar craters, such as Plato. Could this crater have a central peak, like those on the moon?

A simple calculation showed me that the central peak, if it were to be central, would have to be about 7 or 8 miles from the south rim and an identical distance from the north rim. Reference to a map showed that this would have to be near the village of Chelmsford.

On arrival at that town, I spied, much to my joy, a ridge of rock, much like those on the exterior of the basin! It was about 200 feet high, a half mile in length and a quarter mile in width. Now I was really excited! This indeed had to be a crater, and not just a glacial basin as supposed by the experts. There is no doubt that this area was covered by glaciers in the Ice Ages, but there was also no doubt that this is a meteorite crater!

After a pause to photograph the central peak, we were off again to visit the north rim. It is similar in structure to the south rim, with the low concentric ridges. We ate a picnic lunch on the rim of the crater, near a magnificent waterfall, where the Vermilion River tumbles down into the basin.

While eating, I tried to imagine what had happened on this site, long

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ago, before the dawn of recorded history. Perhaps the sky darkened. Then, with a rush of flame, a giant rock, the size of a small mountain, plummeted from the sky. A dazzling flash filled the air as the meteorite dashed itself to destruction by burying itself deep in the crust of the Earth. The surrounding ground trembled and ~~bucke~~ buckled from the impact, throwing up these rims. Molten lava seeped up from the cracked crust of the Earth, solidifying in pockets under the ground and partially filling the crater above the ground. A great plume of dust, and perhaps smoke, hovered in the air for days afterward, blotting out the sun, and causing great rains. What a colossal impact!

But enough of daydreaming! We had some more to see. We re-traced our steps back to the south rim for a closer look as we had hurried through it in my anxiety to find the central peak.

What a wasteland! For miles, the southern rim is completely denuded of vegetation, and it remains merely a vast jumble of rock. One might as well be on the Moon for it is highly reminiscent of what the lunar landscape looks like. In fact, Apollo 16 astronauts, John Young, and Charles Duke trained in this area for it is so much like the moon. There are no trees, no bushes, no shrubs, and in many areas, no grass. It is dead!

I am told that this ~~cease-free~~ is caused by the emissions from the chimneys of the great smelters. They pour out toxic gases and these kill the vegetation. I wonder what effect it has on humans! Nevertheless, there is only stunted vegetation for many miles down-wind from the smelters.

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In a way, the smelters are cashing in on the fall of the meteorite. It is thought by geologists that the falling object actually cracked the crust of the earth so deeply that some of the iron-nickel core was able to flow upward into the shattered area below the actual meteorite. It is these veins of nickel that are being mined today, far below the rim of the crater.

The next day was spent satisfying my two tourist companions before getting on with the visit to the second of the craters, the Brent Crater.

The Brent Crater lies in Algonquin Park near the community of Brent, after which, no doubt the crater was named. Algonquin Park is a wilderness area of 1,754,240 acres located about 100 miles north of Lake Ontario, and about 100 miles northwest of Ottawa. Originally, there was extensive logging in the district but this has been stopped and for the last 30 years or so, it has been the exclusive home of deer, wolves, beaver and other animals commonly associated with the northern section of Ontario. Even the average tourist sees very little of the area, unless he has a canoe with which to follow the rivers and streams, since the roads allow access to the southern perimeter only.

The Brent Crater, however, is located in the northern extremities of the park, some 25 miles from the nearest paved highway. It, and the community of Brent are accessible by what is commonly called a

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"bush road". That is a road created by going through the forest with a bulldozer which rips down the trees and pulls out the stumps. A truck follows and deposits loads of stones, ranging from mere pebbles to boulders 8 inches in diameter. This is packed down by the passage to and fro of the vehicles. Eventually, it becomes two parallel ruts with a ridge of stone between. I had been warned by friends to desist from trying to navigate this road, 25 miles back into the forest and 25 miles back, with no human habitation except at the very end.

Since I was driving a brand-new Volkswagen van of the camper variety, I had no trepidation. It is a sturdy vehicle, but if worse came to worse, we could always set up camp right in the middle of the road and wait until help came. My wife did not like this idea, but needless to say, nothing unfortunate happened. In fact, we did not even crack any of the eggs in our ice-box, though I drove as fast as practicable down this bush road.

It was not always practicable to make good speed, since I had to watch out for some very large rocks which the roadmakers had left in the track, and since the road goes uphill and down and from left to right with reckless abandon. Not only that, but we were caught in a traffic jam! It wasn't much of a traffic jam, but on a road like that, two vehicles constitutes a tie-up of traffic. I came up behind a car towing a boat on a trailer. These evidently were fishermen, and they were driving exceedingly slowly, so as not to damage their equipment. After what seemed to be an agonizingly slow pace for an eternal period,

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we arrived at a place in the road wide enough for me to get by. Within five minutes however, I came up behind another vehicle, this time, being an earth mover which was evidently trying to take the worst of the bumps out of the road. Since there was absolutely no place to pass, the driver kindly created one by pulling off into the forest, knocking down several small bushes and moving some rocks.

After nearly an hour of bouncing along this forsaken road, through very beautiful country, sprinkled with sparkling lakes and fast-running streams, we came upon what I first took to be a forest ranger's fire-watch tower, but as we rushed past, I noticed a plaque which proclaimed in gold letters on a blue background "The Brent Crater".

This was a "National Historic Site" marker, similar to many spread across this land, at points of historical interest. This marker contained a description of the crater and told something of the object which caused it. But to see the crater itself, you had to climb 60 feet up the tower.

Armed with cameras, we ascended to see the panorama which lay all around. The tower, it seems, is located on the east rim of the crater and we could look westward across the crater's central peak to the rim beyond.

The crater is about two miles across and is circular. It is partially filled with Gilmour Lake, but much of it is occupied by the central peak, which I would estimate to be about 400 feet high and about three-quarters of a mile in diameter. All of it is covered with dense coniferous forest.

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According to the historical marker, the crater is 1400 feet deep but has been filled up with 500 feet of sediment so that its present depth is about 900 feet. Strangely, it was not recognized to be a crater until 1951, when aerial photographs detected it. Further research by Canadian scientists, who drilled deep into the Earth within the crater, proved that this circular depression was indeed of meteoric origin.

At the time the crater was formed, some 450 million years ago, it was thought that the area was covered by a shallow sea. The meteorite struck with the force of some 250. megatons of TNT, but the explosive effects were somewhat lessened by the water.

We took several photographs, and I was anxious to get right down into the crater, but there is no way that anyone in his senses enters the bush of northern Ontario without an experienced guide. I had to forgo that particular part of the excursion.

The road out was the same as the road in, only in reverse order. We passed both the earth-mover and the party with the boat before returning to the relative civilization of a paved road.

For me, this was an interesting experience. To stand at a place where the earth had received a visit from a body from space is a bit awe inspiring. It makes one feel quite small, when you see the tremendous impact of these cosmic forces. There are other craters in Ontario, and it is my wish to visit them all. These two were the beginning.