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Meteorite-hunting in Minnesota entices and often disappoints, searchers say

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Shawn Meyer of Shakopee points to an area of a large rock he found that he cut off for testing in hopes of showing it was a meteorite. It's more likely a hunk of iron ore, a University of Minnesota professor said, a magnetic and dense rock often mistaken for meteorites around the state. Only a handful of extraterrestrial rocks have been found in Minnesota.

Photo by Dan Holtmeyer

The hunt for meteorites in Minnesota brings a handful of successes and tens of thousands more failures, but astronomy and mineral enthusiasts keep on searching.

Calvin Alexander, professor emeritus and curator of meteorites at the University of Minnesota Department of Earth and Environmental Sciences, said meteorite-seekers have come through his door with or sent him pictures of peculiar, interesting rocks for more than 40 years.

Only five were newly discovered rocks that zoomed through the solar system before plunging through Earth's atmosphere and landing in or near Minnesota. Nine confirmed meteorites have been found in the state in modern times, Alexander said.

"Minnesota is a lousy place to look for meteorites" because of vegetation, lakes and other obstacles to spotting them, he said. He likened the search to looking for an extraterrestrial needle in a haystack of terrestrial, or earthly, needles.

Yet meteorites are endlessly entrancing to Alexander and many others. They've been around for billions of years, since the sun ignited or even longer. A rare few found on Earth were knocked off of the moon or Mars.

Shawn Meyer of Shakopee last fall found a dense, reddish-black, soccer-ball-sized rock while hunting for agates in a local creek and was sure it was a meteorite. A fragment Meyer had chemically analyzed showed iron and also beryllium, an element that's rare on Earth, further convincing him the object came from elsewhere.

"It just fascinates me," Meyer said. "New things can be discovered every day."

But a second analysis found no beryllium. Alexander said he's certain Meyer's rock was jasper iron ore from Minnesota's Iron Range, maybe one of countless pieces pushed south by glaciers millennia ago. The rock's interior is speckled with black and red that in some spots line up in bands, a feature Alexander said isn't seen in meteorites.

Meyer said he was deeply disappointed; meteorites can be worth many thousands of dollars, and Meyer, who works as a painter, hoped to improve his house for his kids. He said he still wants to confirm what his find is, maybe with a mining company in the state, and might sell it to an interested collector or museum.

Rocks like Meyer's are probably the most common would-be meteorites Alexander sees, he said; in fact, he had replied to an email from someone else with such a rock just before he spoke with a reporter Tuesday. It's easy to understand with such heavy, magnetic, odd-looking specimens, he added.

The genuine article typically has a thin, black or rusty crust and isn't shiny, Alexander said. Inside will usually be either a grainy, concrete-looking interior or a rarer lattice of iron and nickel crystals that form only when molten metal spends millions of years cooling and solidifying off-planet.

"They have a very distinctive look to them that's hard to miss," Alexander said.

Scott Peterson, a meteorite hunter in New Hope, has found more luck in his search by focusing on the very small. He searches rooftops throughout the Twin Cities, with their owners' consent, for micrometeorites, specks of stardust less than a millimeter in size that fall to earth by the ton every day.

Peterson sifts through regular Earth dust and grit with magnets and other tools to find his prize — more than 1,000 micrometeorites in the past couple of years. An exhibition showcasing some of his finds will run through Sept. 8 at the Bell Museum in St. Paul.

The objects under magnification resemble seeds or grains of pollen, etched and pitted by their long journeys.

"It's in me now, I can't stop," said Peterson, a veteran and stay-at-home dad. "They're amazing little pieces of the cosmos. I love them."

They're also scientifically valuable flecks of the ingredients that went into the sun and its planets, Peterson and Alexander said. Peterson sends samples to scientists looking for chemical and physical clues about the solar system's history.

"There's plenty to be learned still," Peterson said.

Alexander knows this well, having studied moon-rock samples and other celestial rocks since the Apollo missions. He's been retired for five years but still keeps an office at the Minneapolis campus filled with rocky and iron-nickle meteorites bought from or traded with other collectors.

He pulled out one about the size of an avocado, dull black on the outside and sandy inside. Another, found about an hour away from the Twin Cities, was a rough dinner-plate-size hunk of iron far heavier than it looked — a farmer uncovered it while plowing. Extraterrestrial rocks generally belong to the owner of the property where they land.

It's a somewhat thankless task, identifying meteorites and letting down most of the people who reach out, Alexander said.

"I want them to find a meteorite," because he gets to write a paper about it and bask in the fun of it all, he said. "I would be delighted."

He added: "But most of them aren't."

If you go

City Stardust

What: Learn more about micrometeorites, tiny objects from space that land on Earth, at this exhibit of local citizen scientist Scott Peterson's finds and information about how he works.

Where: Bell Museum, 2088 Larpentour Ave. W., St. Paul

When: June 15-Sept. 8, 10 a.m.-5 p.m. Tuesday through Sunday

Source: Bell Museum

Dan Holtmeyer

Community editor

Dan Holtmeyer is the community editor for the Prior Lake and Savage papers. He grew up in Nebraska and worked as a journalist in Oklahoma, Missouri and Arkansas before coming to Minnesota in 2018.

Did you find a meteorite?

The most realistic answer is probably not. But there are a few questions that can help find out.

Is it magnetic? Most meteorites will attract cheaper magnets because they contain iron-nickel metal (Many Earth rocks are magnetic, too).

Does it have holes or layers? Most meteorites won't have either of these things.

Is it heavy for its size? The most common meteorites contain iron-nickel metal, which makes them more dense than most rocks found on Earth. However, there are some very dense terrestrial rocks.

Does it have a fusion crust? This thin, dark outer layer forms during the heat of entry into Earth's atmosphere. Fusion crusts have a dull, matte appearance and are not shiny. Rocks on earth can form crusts in other ways, too.

If you think you have a meteorite, send 3-5 clear pictures (including different angles and sides) with a detailed description to esci@umn.edu for identification. Please be prepared to send a sample if needed.

Source: Adapted from the University of Minnesota Department of Earth and Environmental Sciences, esci.umn.edu/meteorite.

The most common meteorites contain iron-nickel metal, which makes them more dense than most rocks found on Earth. However, there can be terrestrial rocks that are very dense for their size.