

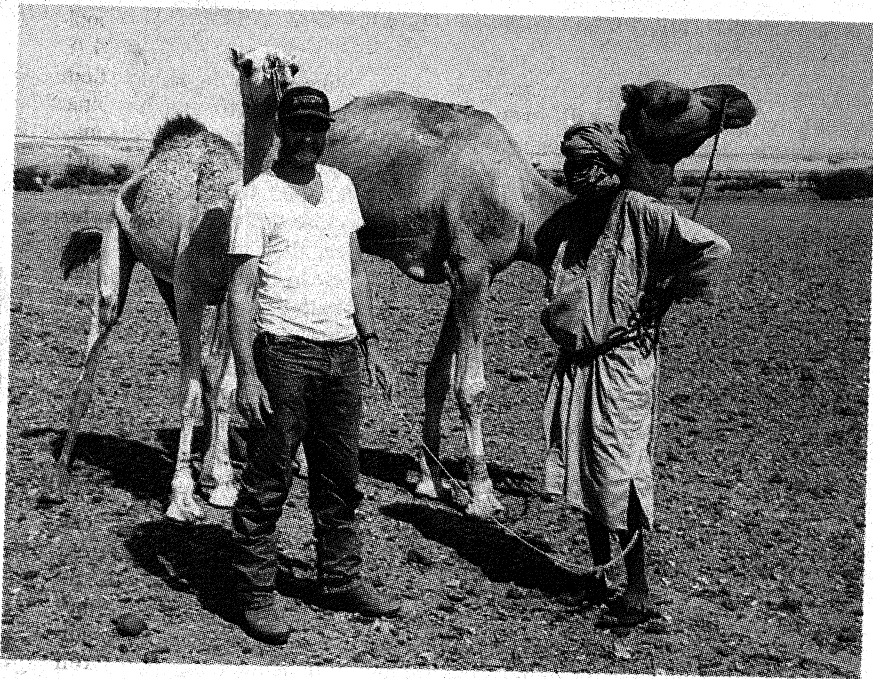
Health Science

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Medical Help Wanted
Deaths
Weather

C +
C2
C6
C8

Prospectors, scientists vie for rocks more precious than gold



Marvin Killgore (left), who gave up his job as a plumber to become a meteorite prospector. He works with nomads in the Sahara who have developed a keen eye for the valuable rocks.

By Joshua Brown
GLOBE CORRESPONDENT

Meteorites are hot rocks. This month, collectors at the Tucson Gem and Mineral Show in Arizona were bidding nearly \$5,000 per gram for slivers from some rare ones. Whole meteorites that exploded from the moon or Mars can have a price tag in the millions.

Because of the market value, an expanding number of private hunters are scouring deserts around the world — where the dry climate preserves meteorites — and the global supply of meteorites is being harvested rapidly.

This worries some scientists who study meteorites for clues about the early life of our solar system. They wonder how many new finds they'll get access to before the space rocks are sliced into collectible fragments and disappear into private collections.

"I've seen huge changes in the past five years," said Dante Lauretta, a meteorite scientist at the University of Arizona. In

1991 there were five major meteorite dealers in the world; earlier this month there were dozens at the Tucson show alone, he said, and Internet sites are packed with meteorites for sale. "The



MARVIN KILLGORE PHOTOS

Scientists prize meteorites like this one found in the Sahara for their clues about the solar system.

commercial meteorite business has absolutely taken off."

But instead of competing with the commercial dealers, Lauretta and meteorite prospector Marvin Killgore have come up with a way to for the dealers to solve the scientists' problem — while the

scientists solve one of the dealers' problems.

Last month the Killgores set up the Southwest Meteorite Center at the University of Arizona. In exchange for getting a piece of a dealer's meteorite to study and add to their lending library, the center's scientists will verify and classify the dealer's rock so customers will know what they are buying.

"Dealers want to have an official meteorite as recognized by the nomenclature committee of the Meteoritical Society," Lauretta said. But now, with so many specimens to examine, it can take months or years before a qualified researcher can make a positive identification using a mass spec-

trometer and electron microscope. The center promises to cut that verification time down by hiring staff whose only job is meteorite identification.

Lauretta said it makes more sense for scientists to continue to partner with

METEORITES, Page C4

Rocks more precious than gold

► METEORITES

Continued from Page C1

dealers and hunters — which they have done since the 19th century — rather than fight them.

"I don't think of them as my competition," Lauretta said, "because they're out there pounding the hot desert ground, making new discoveries, when I don't have time to do that."

Once, meteorites were literally very hot rocks. After some 4.5 billion years in space, most meteorites are lucky bits of asteroids that didn't completely burn up as they whizzed through Earth's atmosphere. Their minerals, metals, and trapped gases provide astronomers and geologists with unique insights about our solar system.

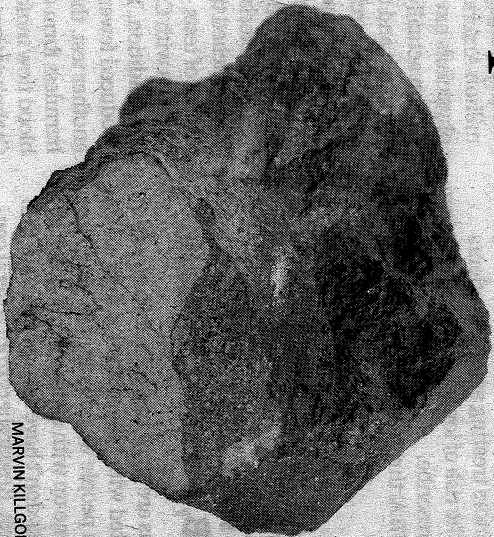
Lauretta specializes in the study of primitive chondritic meteorites, pieces of asteroids that have been floating around since the beginning of the solar system and finally got captured by Earth's gravity. These are "the oldest rocks we have. They predate planet formation," he said. "These give us a glimpse into the very first materials that formed the solar nebula, this giant disk of dust and gas that surrounded the protosun."

Lunar meteorites provide rock from places on the moon not visited by the Apollo missions.

Meteorites also provide the on-bits of Mars found on Earth. A recent NASA study of carbon found inside one of these martian rocks has reopened the highly controversial debate over whether meteorites might hold the residue of microbial life on the red planet.

Perhaps 30,000 meteorites have been identified worldwide, but only about 40 are from the moon and about 30 from Mars, probably blasted off the surface by collisions with comets or asteroids.

In the Sahara Desert, nomads have developed a keen eye for meteorites and a profitable trade with



MARVIN KILLGORE

Slices of this meteorite found in the Western Sahara in 2000 have sold for a minimum of \$10,000 per gram.

Moroccan merchants. Since 1995, Gold Basin, the first big meteorite field found by prospectors in Arizona, has yielded thousands of fragments from one asteroid that exploded in the atmosphere 14,000 years ago. And since 2000, a spate of rare lunar meteorites have been found in Oman in the Middle East — but only some of these have been available to researchers. And now the stream of finds is slowing down.

"Around 2000 until 2003 there was a huge influx of meteorites from the Sahara," said Anne Black, president of the International Meteorite Collectors Association, "but the supply is leveling off. We're at the end of an amazing once-only gold rush."

They are "not a renewable resource," said Harold Connelly, a meteorite expert from the City University of New York, who was in Tucson to buy rare meteorites for the collection at the American Museum of Natural History. He believes that a major portion of the meteorites on Earth, which took millions of years to accumulate, may be harvested in a few decades.

Killgore said he hopes the new meteorite center will make that harvest as fruitful for the scientists as it will be for the hunters and

dealers.

In 1995, Killgore gave up his job as a plumber to become a meteorite prospector. He now has one of the world's premier private collections, including one lunar specimen valued at \$8 million that he located with the help of Bedouin nomads.

"I guess I'm one of the guys who's good at finding meteorites," he said.

But over the years he has also become deeply interested in meteorite science. Instead of breaking his collection into tiny pieces for maximum cash, he will put it on permanent loan to the Southwest Meteorite Center and become the center's curator.

The new center also hopes to raise an endowment to purchase meteorite collections, said Killgore. "We're going to be able to purchase material from collectors like myself. If they want to sell their collection, it doesn't have to go one bit at a time. They can have the whole collection sold at one place, and it will carry their name as a legacy and it will be displayed."

"This is a scientific project that is seeking an open and constructive relationship with the commercial meteorite community," Lauretta said. "We can work together."