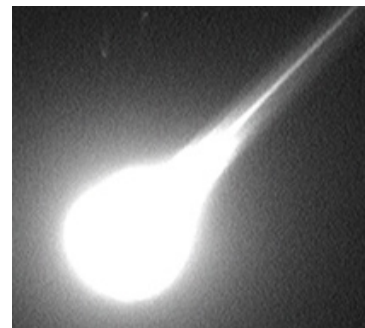


The Zarkah Stone: The Park Forest Meteorite Case

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Part I—Night Falls

Sarah Zarkah was driving home from O’Hare Airport, located in a suburb outside of Chicago, Illinois, just before midnight on March 26, 2003, with her son, Jake, when suddenly a blue-white light filled the sky. She swerved slightly on the empty road as she hunched over the wheel to look up. Immediately, the sky was dark again, except for a sparkly ball falling towards the distant horizon.

“What was that?” she cried as she slowed down, white-knuckling the steering wheel. Jake rolled down the window of the SUV and poked his head out to get a better view. An icy current of air coiled around the inside of the cab.

“I don’t know. A plane?” Then a wave of sound broke over them, rattling the vehicle and everything inside. Sarah pulled over onto the shoulder of the road and waited until the rumbling stopped. They sat in silence.

“Close the window, Jake. It’s freezing in here,” Sarah said, shivering.

Meanwhile, back at her house in Park Forest, Jon Zarkah was peering through the Venetian blinds, looking for Sarah and Jake. The clearest view down Indiana Street was from their youngest son’s second story bedroom. Neil was asleep, sprawled out on his bed like a starfish. There was no sign of the SUV, so Jon tiptoed out of the boy’s room and into his own. They’d be home soon enough. He was tired and had to get up early. He undressed, got into bed, and squirmed until he found the comfortable depression that years of peaceful sleep had made on his side of the mattress. All of a sudden a dog outside started barking. Jon opened his eyes to see a brilliant flash of light. He had to wait many seconds for the sonic boom to hit, and many more for it to stop.

The rumbling didn’t wake Neil, but he was jolted to full consciousness by what sounded like the crack of a rifle and the ricochet of a bullet in his room. Instinctively, he curled up into a fetal position and started yelling for his father. Jon had heard it, too, and had come running.

“Neil!” He flicked on the light as he raced to the boy. “Neil! You all right?” He had to pry Neil’s arms away from his face and head.

“Umm..., yeah,” Neil said, hiding the fear in his voice. “I’m fine. You?”

Jon nodded as he sat down next to the boy. He looked at the window where moments before he had been standing: one pane was smashed, the Venetian blinds were shredded, and the windowsill was dented. Fifteen feet across the room, a full-length mirror was splintered in a spider web pattern. It was a miracle Neil wasn’t hurt.

Jon thought to himself, *Gunshots? Was someone trying to break in?* He saw bits of plaster and wood on the floor and looked up. On the ceiling he saw two big holes and through one of them he could see clear

through the roof. Near his bare left foot lay a dark rock about the size of a softball. He reached out to touch it but then jerked his hand back quickly, fearing it would be searing hot. He didn't actually make contact until his third try. Surprisingly, it was cool. He picked it up. It felt heavy. Jon looked up at the hole in the ceiling again, down at the rock, shook his head, and began to laugh. Neil looked at his father like he was crazy.

Questions

1. What is the difference between meteoroids, meteors, and meteorites?
2. What is ablation? What causes the light phenomenon of the meteor? What is a fusion crust and how does it form?
3. What are the major classes of meteorites? What are their physical and chemical characteristics? What are the origins of these different types of meteorites?
4. Meteors have been viewed as omens in many cultures throughout history. In suburban Chicago in 2003, what might the average person think of such an event? What would be your first thought?
5. Why did Jon Zarkah expect the meteorite to be hot? Why wasn't it hot?



Part II—The Morning After

Jon flicked on the TV when he entered the house and went straight into the kitchen to make a second pot of coffee. The anchorman was talking about last night's meteor:

Thousands across the Midwest were awakened around midnight last night as a fireball—a huge meteor—streaked across the sky and then exploded, showering neighborhoods in south Chicago with meteorites. Scientists say the original meteoroid could have weighed thousands of pounds and been about the size of a compact car before it hit the atmosphere at over 40,000 miles per hour.

Sarah heard the TV and shuffled down the stairs into the kitchen. “What are you doing here?” she asked groggily. “I thought you left for work an hour ago.”

“Morning!” Considering he got very little sleep the night before, Jon was exceptionally cheery. Or maybe just very caffeinated. “Nope. I called and said I wasn't coming in. I told Steve my house was clobbered with a meteorite and he said, ‘OK, but don't use that excuse again!’”

“Funny,” Sarah said flatly. Then yawning widely, she added, “Well, where'd you go then?”

“I took the two biggest meteorites to the police station for safekeeping. They bagged 'em and tagged 'em—just like CSI! The bigger one weighed in at a little over five pounds. Want some coffee?” As Jon leaned over the sink to grab another mug from the dish drainer, he glanced out the window. His neighbor was poking around his lawn with a man Jon had never seen before, talking and gesturing, occasionally picking up something and tossing it aside. Then the phone rang. Jon and Sarah both looked at the clock. It was only 7:15 AM.

“I'll get it,” Jon said, and picked up the phone. “Hello? Yeah, this is Jon.” He shrugged as he handed Sarah a mug and watched her pour her own coffee. “Yeah, that was me at the police station. That's right.” He walked to the fridge and got the skim milk for her. “Who told you? Boy, you guys are fast!” Jon watched as Sarah rummaged through the pantry, pulling out chocolate grahams—her favorite breakfast. “Right through the roof. Wrecked the room. You wanna see that, too?” Jon offered his cheek to Sarah and she pecked it as she shuffled past him with her coffee and cookies into the living room where the news was still on:

Officials are asking that residents bring their meteorites to the precinct house for safekeeping. Local museums are asking for meteorite donations for research. Meteorites are valuable to scientists and collectors, who might pay several dollars per gram.

By noon, the Zarkah's had lost track of how many people had called or stopped by to talk about meteorites. Among them were many neighbors, a few collectors and dealers, a museum scientist, and one professor of meteoritics who coincidentally lived in the neighborhood.

Jon was naturally curious, and milked them all for information. For all the hoopla over these meteorites, he learned that they were just “ordinary” stony chondrites—the most common class of meteorites. Still, they were valuable because they were “fresh” and uncontaminated and rare because their fall was witnessed. Some of the meteorites, like his, had fusion crusts, although some of the smaller fragments did not. Jon learned that many collectors were interested in meteorites that had hit houses, animals, or people (although no animals or people were hit the previous night).

By late afternoon, the streets of Park Forest were like an open air bazaar. Collectors, scientists, and the curious were out in full force. Packs of neighbors wandered from house to house, swapping stories and assessing damage. Collectors were interviewing people, examining meteorite specimens, and trying to make deals. A few suburban beachcombers scanned lawns with their metal detectors, digging up useless bits of

metal junk and leaving ankle-turning holes in their wake. The police were called a few times to remove rude trespassers and to quell arguments over meteorite prices, which escalated from a fair \$2 per gram to an outrageous \$20 per gram, and more.

The talk at the Zarkah family dinner table was all about meteorites. Sarah said that a neighbor on Durham Road just nearly missed being hit by a two-pound meteorite that crashed through her roof and into her computer printer while she was emailing a friend.

“A guy paid her \$12,000 for it!” Sarah said. “Twelve thousand dollars!” Her eyes bugged out. “That includes the smashed printer. They call it an ‘impactite,’ and it’s worth money, too.”

“Well, we’ve got plenty of impactites upstairs!” Jon laughed.

“Does that mean I don’t have to clean up my room for awhile?” Neil asked, looking pleased with himself. Then he added, “Hey, some kid at school said his neighbor in Olympia Hills found a six-pound meteorite in his laundry basket in the basement. It broke through the roof, the kitchen ceiling, and the kitchen floor to land down there. They were considering donating it to a museum! Not me, I’ll tell ya, I’d sell it!”

“I was talking to some of the neighbors today,” Jake said, “and some of them are gonna keep their meteorites—the small ones, at least.”

“Well, I’m keeping the big one long enough to show our insurance agent!” said Jon. “And then, I don’t know. What do you all think we should do with the ‘Zarkah Stone?’”

Questions and Activities

1. What is the cosmic history of the Zarkah stone? Recount the story of this ordinary chondrite from the solar nebula to its recovery by Jon Zarkah. Use a creative format (graphic novel, children’s storybook, news report, poem/rap song, charismatic sermon, talk show, etc.), incorporating all appropriate scientific concepts and vocabulary into your work.
2. What should the Zarkah family do with their meteorite? What would be the rationale if they decided to keep it? If they decide to sell it, what would be a fair price? Should they include any impactites? At what price? If they decide to donate it, where should it go?