

Lightning's Hits and Myths

Actually, your odds of getting hit by lightning are pretty good

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Cue thunder. Dr Frankenstein, the mad scientist, cobbles together his Bride's purloined parts under a canopy of metal kites roofing his lab. "It's going to be a terrific storm!" he gloats. Cue smoke, flashes, sparks, electrical arcs, a big whirling clunky generator.

Most of all, cue lightning. Bolts of it hit the Bride, waking her. As far back as this—1935 and *The Bride of Frankenstein*—it's been a Hollywood staple that lightning brings life.

Better yet, it brings insight, and arcane powers.

"You know how lightning alarms me," trills the character Mary Shelley in the Frankenstein film. But of course it doesn't, not really. Neither does it alarm John Travolta decades later, in *Phenomenon*. Instead, he gets visionary once he thinks he's been hit by a bolt from the blue. Even Mel Gibson was eager to tell us last year, during the making of *The Passion of the Christ* outside Rome, that his Jesus, Jim Caviezel, got hit by lightning twice. "I'm about a hundred feet away," said *Passion's* producer, "when I glance over and see smoke coming out of Caviezel's ears."

Real life hits are more prosaic. Lightning can strike the same spot twice, yes—and more often. But about a quarter of lightning victims die, and survivors may never be the same again. Wisdom has little to do with it. With foresight, we might all stay safe.



In 1963, lightning brought down a jet over Maryland, killing all 81 on board . Windsor Ont is Canada's lightning capital.

The American writer Gretel Ehrlich was hit twice in the plains of Wyoming where she lives. The first time was nice enough, "as though sequins had been poured down my legs." The second time wasn't nice at all. It took her five years to recover from broken ribs (she was thrown), and from burns, cardiac arrest, and paralysis. She got back home by lifting her legs with her hands.

Physicians have counted 92 discrete ailments resulting from lightning strikes. NASA says comprehensive data is scarce, but the morbidity is serious. Survivors can suffer heart damage and loss of consciousness with brain damage and amnesia. Temporary paralysis, inflated lungs, and burns snaking the trunk in S-patterns are common.

Many people don't realize they've been hit, and strike damage can be misdiagnosed as a cardiac problem of other origin. Some people feel they've conducted energy to the ground. In these cases, most of the charge is theorized to have flashed down the skin, with a minimum entering the body through the eyes, ears, nose, and mouth. Male victims benefit from having their feet together, since it's better to complete a circuit to ground through the toes than the testicles.

Other people know they've been hit, or are about to be, when they tingle and their hair stands on end, or when they hear the crackle of a static build.

Lightning is static electricity run amok, a discharge between negative and positive particles in the electrical field of the sky, or the earth and the sky. The discharge can be within a cloud, between clouds, or between cloud and ground—unless you're in a plane, that's the one to watch out for. It can look like a jagged streak (forked lightning), a vast flare (sheet lightning), or even a brilliant ball (St Elmo's Fire, or ball lightning). A single stroke is usually three or four miles long, can travel 100,000 miles in a second, can carry 100,000 volts (a million times more than a household current), and be five times as hot as the sun's surface. It can heat the air to 30,000° C, exploding hydrogen molecules in shock waves that boom as thunder.



Lightning jolts the sky above the already brilliant Las Vegas. Physicians have counted 92 discrete ailments resulting from lightning strikes.

In Canada, we'll get a lot of thunder and lightning this summer, as usual. Our lightning season runs from June to September, peaking in July (though we have winter lightning too, mostly off Nova Scotia near Sable Island). Our lightning capital is Windsor, according to Environment Canada, with 251 strikes annually. The runner-up, with 200 strikes, is Toronto. Dead last are Yellowknife and Inuvik, with two and one respectively. Regional hotspots are in parts of the Prairies, Ontario, Atlantic Canada. Except in its northern forests, British Columbia has almost no lightning.

In Canada, lightning flashes nearly 3 million times every year, once every three seconds during the summer, and lights 60% of our forest fires. It kills six or seven people and seriously injures about seventy more. Your odds of being hit by lightning, and being killed by it, are far higher than your odds of winning the lottery.

In the US, according to NASA and NOAA, the National Oceanic and Atmospheric Administration, lightning hits every state, but mostly Florida, Arizona, and New York. The Empire State Building is struck about a hundred times a year. Up to 600 Americans are struck and killed yearly, immediately or as the eventual result of their injuries. That's many more than the casualties of U.S. floods and tornadoes combined.

Worldwide at any moment there are 2,000 thunderstorms happening. Lightning strikes at least a hundred times a second—nearly 9 million strikes a day and more than 3 billion in a year.

Lightning is always somewhere out there. Space probes have photographed it on Jupiter and sensed it on Venus, Saturn, Uranus, and Neptune.

Every language has a name for it. In French, it's *foudre*; in German, *blitz*. Electrical storms worldwide have their own names, and their own quirks. A *borasco* is a Mediterranean squall, while a *chubasco* brings violent lightning to the west coast of Central America. The prime shipping lanes of Indonesia, the Malacca Straits, have *sumatras*—some of the worst night storms and lightning ever.

DO

- Follow forecasts
- Get off the phone, unless it's a cordless or a cell. The U.S. National Lightning Safety Institute says 2.4% of victims are hit through phones
Clear the lake, the pool, the shower. Water is a great electrical conductor
- Get in your car, but don't touch
- Stay 15 feet apart if you're outside with others: a charge can jump
- Crouch and ball up. Don't lie flat—you're more likely to be hit through the ground than the air. And don't put your hands down, either; cover your ears instead
- Learn CPR. A lightning strike often stops the heart, and you'll have about a minute, not longer, to revive a casualty

DON'T

- Count on it. Forget formulas for judging the distance of lightning, like the 30:30 rule that says if you can count to 30 between lightning and the thunder ensuing, you're safe. You're probably not
- Blow dry, make a cake, do the dishes. Stay away from water and wires
- Surf the tv or the net, and don't rely on surge protectors
- Watch out the window. Stay well inside
- Shelter under a tree, in a phone booth, near a fence, shed, tractor, or a tent with metal poles
- Walk under power lines, beside highway guard rails, or on railway tracks

With thunderstorm season upon us in the west, what do we really know about lightning and how to avoid it? Here are some myths:

You'll be fine in your car. No, you won't. Rubber tires won't protect you anymore than rubber-soled sneakers will outside. The safest place to be is inside a building, whether or not it has a lightning rod. You're safe in your car only if it's hard topped and you don't touch any metal, so that charges dissipate to ground. Stick a toe or a finger in things and you become part of any electrical circuit hitting the vehicle.

That storm's not even close. It doesn't have to be. You're unsafe up to 15 miles from storm centre.

No rain, no pain. Wrong again. Most lightning victims are men outdoors—golfers, ball and soccer players, and boaters who all thought they had a little more time to get out of the path of weather. Many strikes have hit under bright sun. Still, it's bad to be in the clouds. History's most hapless victims were bell ringers, sent to their towers to peal storms away.

Lightning goes to the tallest thing around. Lightning goes wherever it wants—and it also travels on. Think you're trumped by something tall nearby, and still you may be hit directly. Worse, a side-flash can jump to you, or through the ground. Most hits are ground transmissions.

. The jury's out, and rods are meant to protect property and buildings anyway. For most people, it makes better sense during a storm simply to get inside—anywhere.

FAMOUS STRIKES

1763: a kite, a key, and Benjamin Franklin. Earlier he'd electrocuted a hapless turkey in his home laboratory and nearly killed himself. Ben isn't hit under his kite, but a Swedish physicist attempting a lightning rod experiment the following year is killed.

1963: Lightning brings down a Boeing 707 in Maryland, killing all 81 aboard. Though strikes originate as trigger lightning from airplanes themselves, this accident begins the research into prevention.

1971: Apollo 15 launches almost directly into one of the most powerful strikes on record, at 100,000 amps. Most strikes average 5,000 to 20,000 amps.

1977: A lightning cascade blacks out New York City for the second time in 12 years, and looting is widespread.

1991: In March, 15,443 strikes over six hours are recorded in storms stretching through Iowa, Missouri, Illinois, Wisconsin, Indiana, and Michigan. It's the most lightning ever observed at once.