On the 30th of June, 1908, an object from space hit the Tunguska region of Russia, producing 2 - 3 megatons of energy, thousands of times stronger than the nuclear bombs dropped on Japan in World War 2. The Tunguska event was the largest impact in recorded history. The only known human casualty was a farmer who supposedly died from being thrown into a tree due to the power of the wind blast from the impact, some shockwaves like that were able to knock people on their feet. Residents of the area said that the explosion was felt from 40 miles away and that shaking was felt from 50 miles away, that’s like if I were able to notice a blast from my hometown of McMinnville from where I live now. The native Tungus reported having their tents thrown up in the air, but the most significant injuries were bruises. People of the area say the object was column-shaped. The shape of it has made some conspiracy theorist believe that it wasn’t just a meteor, but possibly aliens or government experiments. Either way, we’re lucky that it didn’t hit a densely populated area or else it could have been the greatest disaster in human history. Throughout history after the Tunguska event, scientists have made a multitude of interesting findings of the properties of the object and how a lake in the area was possibly formed by debris.

We know that from historical evidence that the event brought down more than 80 million trees, 75% of the area of Rhode Island. A part of the area is still flattened to this day (insert photo). The hypothesis for why most of the area is only flattened is that most of the meteor broke up before impact and debris flattened and stripped those trees through findings at burn sites, that’s why there was no impact crater. People have described the trees near ground zero as looking like telephone poles on their sides. For this to happen, fast-moving shock waves that break off a tree's branches before they can transport the impact momentum to the tree’s stem are
required. Scientists agree that the best theory for this is that a 120 feet long space rock entered the atmosphere and blew up before hitting the ground. The rock was traveling at 33,500 mph, weighed 220 million lbs, and heated the air surrounding it to 44,500 degrees Fahrenheit. At 7:17 a.m. (local Siberia time), at the height of about 28,000 feet, the pressure and heat caused the asteroid to fragment and destroy itself, producing a fireball and releasing energy equivalent to about 185 Hiroshima bombs (with some estimates coming in even higher). Scientists have been able to find out what the contents of the object were through a new hypothesis that believes that the resin in the trees’ and the growth rings can determine what was in the trees and when it happened. The hypothesis used a scanning electron microscope to find what particles were in the trees’ resin and found 7163 particles in the branches of the Tunguska tree and two control trees. The time distribution from 1885 to 1930 shows a sharp incline of particles from when the Tunguska event happened. The particles found were iron, calcium, aluminum, silicon, gold, copper, sulfur, zinc, chromium, barium, titanium, nickel, carbon, and oxygen amongst many others. These particles were all related to the object. These findings work with other findings that have shown that the Tunguska object’s body could be an average density stony asteroid. The Smithsonian found a loss in air transparency two weeks after the explosion several million tons fell off the meteor, 100 times more than the yearly average of meteorite fall on earth.

Despite the mountain of evidence, some people choose to believe other things are at play. Some of these conspiracy theories are that Nikola Tesla accidentally started it by testing his death ray or that it was a secret military weapon that used antimatter or atomic energy. Radioisotopes were searched for but not found. However, tiny green globules of green dust called trinitite (insert photo) were discovered and looked a lot like the ones found at the nuclear
test sight in New Mexico. Several Russian scientists have been looking for carbon 14 and other radioactive materials. The hypothesis is that hydrogen would heat up to create a fusion reaction which would produce neutrons that would be absorbed by the nitrogen in the air and form carbon 14. No carbon 14 was found, but there was, in the resin of the trees, unusual concentrations of high Z metals which have a large number of protons, copper, gold, and nickel, and were present in quantities ten times more in the time of the explosion than before or after. If the device were radioactive, then more people would have died from radiation. Furthermore, researchers from a 1958 expedition to the site discovered tiny remnants of silicate and magnetite in the soil. The researchers later found that they were high in nickel, a known characteristic of meteoric rock. At the time of the weapon conspiracy, there was no visible crater, but they did later find a point of impact. Scientists from the University of Bologna theorize that a lake filled the crater because they found evidence of the particles left behind by the object. They think the object had a piece about 10 meters wide split off after the explosion and kept going in the same direction. It bounced off the soft swampy soil and then melted the permafrost layer releasing carbon dioxide, water vapor, and methane that broadened the hole, hence the irregular shape and size of the basin. Furthermore, the idea that the device’s inventor would have been able to keep it a secret through both world wars is not likely. K. Florensky, the author of a 1963 report on the Tunguska event, was driven to put some of these conspiracy theories to rest: They were more concerned with bigger asteroids that might cause global extinctions "While I am aware of the advantages of sensational publicity in drawing public attention to a problem, it should be stressed that unhealthy interest aroused as a result of distorted facts and misinformation should never be used as a basis for the furtherance of scientific knowledge." said Florensky.
A similar astronomical event also in Russia occurred in 2013. The Chelyabinsk event was when a relatively small meteor, around 62ft (19m) wide, created visible disruption. This event surprised researchers like Gareth Collins of Imperial College London, UK. Collins’ models had predicted the meteor would not cause as much damage as it did. "What's challenging is that this process of the asteroid disrupting in the atmosphere, decelerating, evaporating and transferring its energy to the air, is a very complicated process." says Collins “We would like to understand it more, to better predict consequences of these events in future." Scientist used to believe that Chelyabinsk size meteors occurred roughly every 100 years, while Tunguska size events had occurred only once a millennium. The data on this has since changed. Meteors like Chelyabinsk could be happening ten times more frequently, says Collins, while Tunguska style explosions could occur as often as once every 100 200 years. Sadly, we are and will remain defenseless against similar disasters says Victor Kvasnytsya of the National Academy of Sciences of Ukraine. If a Tunguska like event happened in a densely populated area like New York or Tokyo, then possibly millions of people can die in a matter of seconds.

Although, not all hope is lost. The probability of an event like that happening is minimal, especially since 71% of Earth is water. "When a Tunguska-type event happens again, the overwhelming probability is that it will happen nowhere near human population," says Collins. All in all, we should regard the Tunguska event as a much larger piece of history than most historians and scientists grant.
Work Cited

Websites


where

Books

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Editors.