

Air and Space this Week

Item of the Week

L'Aigle: Rocks DID Fall From the Sky!

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April 6, 1803, was a banner day in the advancement of science, one that exemplifies Carl Sagan's adage that "Extraordinary Claims Require Extraordinary Evidence." [However, even strong extraordinary evidence might not be enough without someone (like you) to engage the audience with it.] It was also a day that proved that Chicken Little was Right. Sort of.

The prevailing state of our understanding of the Solar System was pretty primitive 225 years ago. Uranus had been discovered a few decades previously, but Neptune was unknown, and the discovery of the first asteroids was still a few years in the future. Halley had shown the orbital nature of comets, but they were largely unknown objects.

Comets had been portents of ill for centuries; meteors, too. Because a meteor or two can be seen by any normal-sighted person after a few tens of minutes of observing a cloud- and Moon-free night, meteors were known to pretty much everyone, but understood by pretty much no one.

Things started to change in the 1790's. An astronomer by the name of [Ernst Chladni](#) published a book in 1794 in which he hypothesized that meteors were small objects from Space burning up from frictional heat when they hit Earth's atmosphere. That's quite a big idea to accept; astronomers from the early Greeks through Newton believed that interplanetary space was empty and that there were no "large" bodies other than planets and their moons in the Solar system (except for those pesky comets). The very word, "meteor," as in "meteorology," indicates that shooting stars were considered an *atmospheric* phenomenon, not an *astronomical* one.

But Chladni had some good evidence. People had reported that they had seen rocks fall from the sky before. Now people reporting strange and unusual natural phenomena was not new, but with the prevailing communications technology (nil) of the day, someone popping up with a "I saw a rock from the sky, really I did!" got the Chicken Little treatment. Chladni was a little better off, as the [Barbotan meteor fall](#) on July 24, 1790, produced two eyewitness accounts, a number of anecdotal reports, and an estimated 100 kg of stones from the sky falling on six different sites. But this evidence, and/or Chladni's skill as an informal science educator, were insufficient to change prevailing beliefs.

In the Normandy section of northwestern France lies the little town of L'Aigle. On that fateful April 6 in 1803, over 3000 stones fell from the sky, seen by hundreds of villagers from all walks of life. Their reports did get spread broadly, and gained some traction because a number of reports were from very reputable citizens. Further, credence was high because nobody believed that so many people from different walks of life would coordinate their stories so closely.

The French Academy of Science sent [Jean-Baptiste Biot](#) to investigate. This guy was the “Mr. Science” of the day in France. He was a physicist, astronomer, mathematician, and explorer. The Biot-Savart Law (describing the magnetic field associated with a constant electric current – important in electric motors and power generation) was named for him. He conducted important studies of polarized light and demonstrated that light could not be exclusively a wave phenomenon. A common mineral, [biotite](#), was named for him, too, even though he wasn't strictly a geologist (this particular mineral was named for Biot in 1847 in recognition of his early research into its optical properties). And what would make him even more famous with the French public came late in life, when he worked out the physical properties of potassium tartrate, aka [Cream of Tartar](#), soon to become popular in French cooking.

But Biot was not just a crackerjack multi-disciplinary scientist, he was a gifted public communicator. The perfect guy to lead the investigation of what happened at L'Aigle.

Chladni did not personally interview any of the eyewitnesses to the Barbotan fall. Biot talked to many of the L'Aigle villagers. He also collected a number of the [stones](#) purported to have fallen from the sky (BTW: L'Aigle is an [ordinary \(L6\) chondrite](#)). He compared his samples to outcrops of different rock types in the region surrounding L'Aigle. They were radically different. Based on the sheer number of reports, the inclusion of similar reports made by upstanding citizens, and the lack of a source of similar stones in the region, led Biot to report that, yes, stones do fall from the sky! His report was written more as a human-interest story rather than a scientific report, and it generated a LOT of attention.

The first few asteroids had been discovered just a few years before (well after Chladni and Barbotan). A planetary object was suspected to exist between Mars and Jupiter, but we were just starting to understand that there were going to be a number of small objects in that area, not one large body. We've made a number of amazing advances in meteoritics and in understanding the formation and evolution of our Solar System in the 220-some years since, and in all cases, it was *extraordinary evidence* (and *proficient explanation*) that carried the advance throughout our society.

So the next time you see a pretty falling star, know that it's an ambassador of science from afar!

And it's our collective task to “spread the word.”

Last Edited on 27 Jun 2020