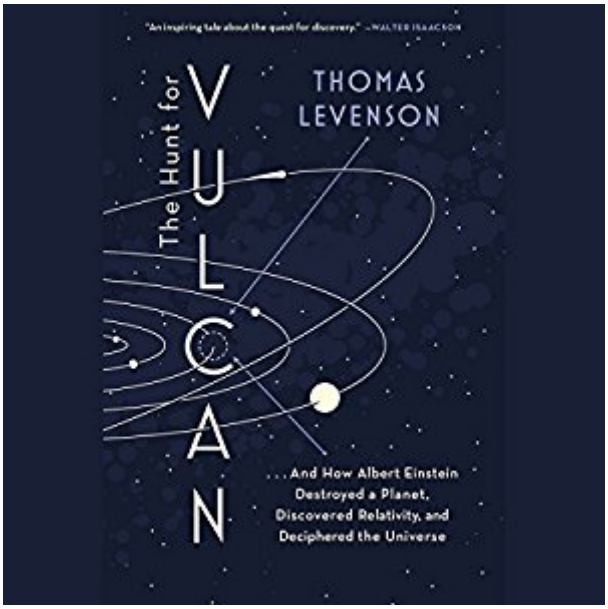
The Hunt For Vulcan: ...And How Albert Einstein Destroyed A Planet, Discovered Relativity, And Deciphered The Universe



Synopsis

The captivating, all-but-forgotten story of Isaac Newton, Albert Einstein, and the search for a planet that never existed For more than 50 years, the world’s top scientists searched for the "missing" planet Vulcan, whose existence was mandated by Isaac Newton’s theories of gravity. Countless hours were spent on the hunt for the elusive orb, and some of the era’s most skilled astronomers even claimed to have found it. There was just one problem: It was never there. In The Hunt for Vulcan, Thomas Levenson follows the visionary scientists who inhabit the story of the phantom planet, starting with Isaac Newton, who, in 1687, provided an explanation for all matter in motion throughout the universe, leading to Urbain-Jean-Joseph Le Verrier, who, almost two centuries later, built on Newton’s theories and discovered Neptune, becoming the most famous scientist in the world. Le Verrier attempted to surpass that triumph by predicting the existence of yet another planet in our solar system: Vulcan. It took Albert Einstein to discern that the mystery of the missing planet was a problem not of measurements or math but of Newton’s theory of gravity itself. Einstein’s general theory of relativity proved that Vulcan did not and could not exist and that the search for it had merely been a quirk of operating under the wrong set of assumptions about the universe. Levenson tells the previously untold tale of how the "discovery" of Vulcan in the 19th century set the stage for Einstein’s monumental breakthrough, the greatest individual intellectual achievement of the 20th century. A dramatic human story of an epic quest, The Hunt for Vulcan offers insight into how science really advances (as opposed to the way we’re taught about it in school) and how the best work of the greatest scientists reveals an artist’s sensibility. Opening a new window onto our world, Levenson illuminates some of our most iconic ideas as he recounts one of the strangest episodes in the history of science.

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Customer Reviews

This short book has two parts, the first being about the prediction of and then failure to find the Planet Vulcan. The second is about Einstein’s development of the General theory of Relativity, and how it explained why there was no need to hypothesize a new planet. Despite the piece of the subtitle claiming "How Albert Einstein Destroyed a Planet", Vulcan was gone before before Einstein arose.After the fortuitous discovery of the planet Uranus, careful tracking of its orbit suggested there was an unaccounted for gravitational influence on it. Astronomers has gotten very good at using Newton’s law of gravity to calculate the influences the planets had on each other, and thereby predict their orbits. But Uranus’ wasn’t quite right. The brilliant, ambitious, and cunning French astronomer Urbain-Jean-Joseph Le Verrier predicted the orbit of another planet, and at his request the Berlin Observatory observed it. (Alexis Bouvard has earlier predicted the existence of another planet, and John Couch Adams also predicted an orbit for it. But it was Le Verrier who convinced someone to actually look for it based on his prediction.)Successfully predicting the location of the planet Neptune made Le Verrier’s career. Then another opportunity arose. His calculations of the orbit of Mercury didn’t match observations. He postulated another planet within Mercury’s orbit, "Vulcan", and predicted where it might be seen.Unlike the case of Neptune, where there was initially little interest in actually looking for it, many people wanted to be the first to see Vulcan. And several did, or so they thought. But it could never be found again after any of those observations. Eventually it became clear that there wasn’t another planet within Mercury’s orbit.

This isnâ ™t the kind of book I would normally pick up. Science, especially physics, isnâ ™t my strongest suit. I was, to be honest, a bit afraid of not understanding the math and science and, hence, not understanding the book. To some extent, that fear proved well-founded â “ there was a lot of the specific science and supporting math which I couldnâ ™t get my head around. But there is more to this story than just the specific math and science concepts. On a more general level, this book is about how science works, both in theory and in practice, using the story of the search for a non-existent planet as the vehicle to convey that message. Itâ ™s a bit like turning an episode of â œCosmos: A Space-Time Odysseyâ • into a book. Even if you donâ ™t understand all of the technical points that Neil DeGrasse Tyson explains, you still understand the wonder of the story he tells.The story is told in three parts. The first begins with Sir Isaac Newton and his quest to develop

a system of laws that governs everything in the universe, from the trajectory of a thrown baseball to the propulsion of a fired cannonball to the motion of the planets and stars. In modern times we take such laws for granted, but in Newtonâ ™s time the very idea was revolutionary.This section goes on to explore a seeming problem discovered with Newtonâ ™s laws: the motion of the planet Uranus didnâ ™t appear to conform with them. A single negative empirical example can disprove the entire theory, unless something else can be found to explain the anomaly. The French scientist Le Verrier, fully believing in Newtonâ ™s laws (as nearly all scientists of his time unquestioningly did), did some calculations and determined that there must be an eighth planet beyond Uranus whose mass was affecting Uranusâ ™ motion.