

### Media Contact

Lauren Ball lauren@booklaunchers.com 407-718-4309 Rigorously researched, historically and scientifically accurate, and filled with quirky anecdotes, *The Lightning Tamers* will provide you with a greater understanding of how our electric world works. Whether you're a history buff, a science lover, or someone who just likes to know more about the world around you, *The Lightning Tamers* is the entertaining read for you.

Title



True Stories of the Dreamers and Schemers Who Harnessed Electricity and Transformed Our World

## Author

# KATHY JOSEPH

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## TOPICS COVERED







Science

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You flick on a light without thinking about it. But what about the fascinating and bizarre stories hidden behind that simple action? Fortunes were made and lost, ideas stolen, rivalries pursued, dogs electrocuted, beards set on fire, arms amputated, and decapitated human heads reanimated all with the invention and evolution of electricity.

In this physics and engineering chronicle disguised as an electric time-travel adventure, Kathy Joseph, physicist, educator, and creator of the popular <u>Kathy Loves</u> <u>Physics</u> documentary channel on YouTube, shares the story of electricity through the linked breakthroughs of men and women in science.

Go on a wild journey covering over 400 years of history to discover for yourself the unlikely yet true stories of the characters who paved the way for modern electricity. From the assistant who invented the electric light 140 years before Edison to the severed ear that led to the telephone, follow the chain of experiments, inventions, and discoveries through time. Beginning with Queen Elizabeth's bored doctor naming electricity after jewelry, the winding road that leads to you to charge your phone at night will enthrall you.

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Available From











Kathy Joseph splits her time between writing her next book, making documentary videos based on her books for her YouTube channel, and giving talks about the history of science and the importance of context for learning science.

Kathy attributes her novel's depth and breadth partially to her YouTube channel, *Kathy Loves Physics*. She uses her channel to test out her ideas in documentary form and learn from her brilliant



viewers, making this book an interactive experience. Despite her simple video format, Kathy has hit a nerve, and her channel has over six million views and over 98,000 subscribers. Kathy also puts all of her scripts on her website and dives into other fascinating scientific topics on her blog, spanning a broad range of topics like the history of the Nobel Prize, the birth of wireless, and the early history of quantum mechanics.

Kathy has earned four higher education degrees in physics, engineering, and science education, but she feels as if her real education came from spending 12 years as a public high school physics teacher. She is an alumnus of the University of Chicago, Penn State, and the University of Utah.

Kathy lives near San Francisco with her fabulous husband, Mike, her amazing children, Alicia and Alex, and one very cranky cat aptly named Brutus.

Learn more at www.KathyLovesPhysics.com.

To download a high-resolution author photo and book image, click here



Talk to Kathy Joseph about the fascinating stories behind everyday technology and be shocked, entertained, and educated irrespective of your scientific background. Kathy has the unusual ability to speak at length and in startling depth on a myriad of science history topics with no extra prep, so interviews run smoothly and can follow wherever interests the interviewer has on the subject. Just a small sample of possible stories are:

- Why the World's Electricity is either Around 110 Volts or Around 220 Volts.
- The Father of Electricity and the World's Most Influential Feather
- How Fancy Electricity
  Parties Led to Our Modern
  Electrical World
- The Twitching Dead Frog, the Battery, and a Real Life Dr. Frankenstein
- Why the Public Perception of Nikola Tesla is Totally Wrong and How that Stifles Invention
- Why Ohm's Law, the Backbone of Electrical Engineering and Physics, Almost Ruined Ohm's Life
- Why STEM Needs Stories: Both for Education and for Cutting Edge Research



### Preface

The spark for this book was lit around eight years ago when I was at a dinner party and told a story of how I asked my students where electricity comes from and one of my students confidentially told me, "The wall." This response, while technically correct, wasn't exactly what I was hoping for. A woman at the table chuckled and then admitted that she, too, would have responded with, "The wall." She added that even if she'd thought of generators or different kinds of power stations, it wouldn't have mattered, because she felt that she understood none of it. Although she used electricity every day and was completely dependent upon it, it was an utter black box. After I gave her an impromptu physics lesson, she seemed excited to understand the world a little better. This made me realize that there was a desire for people to understand where electricity comes from, and this is ultimately what inspired the audacious thought of someday writing a book on the subject.

At around the same time, I showed my students a clip from a Public Broadcasting Station (PBS) documentary called *Einstein's Big Idea*. The video showed an actor portraying a young Michael Faraday and his dramatic rise from binding books to being an assistant to England's most famous chemist and to eventually discovering the electric motor. After watching the same clip, year after year, for five classes in a row, I became fascinated with the history of science. It started to hit me that discoveries didn't come from thin air but were developed by real people with real stories and real trials and tribulations.

As Marie Curie once elegantly wrote, "The life of a great scientist in their laboratory is not, as many may think, a peaceful idyll. More often it is a bitter battle with things, with one's surroundings, and above all with oneself. A great discovery does not leap completely achieved from the brain of the scientist, as Minerva sprang ... from the head of Jupiter." Inspired by that video, I thought it would be interesting to write a book that explained how electricity was discovered through the personal history of the men and women who discovered it. Something that described not only how electricity works but how we got electricity to work. However, it was only several years after I had this idea when I had the time to try my hand at this project.

While researching the history of electricity, I made three important realizations. The first discovery I had was that Faraday wasn't the only one who had an interesting life story. Every scientist I encountered had a fascinating life with twists and turns and amusing anecdotes. Despite our image of a scientist being only a certain type, I found a wide range of personalities: some were quiet and studious, while others were flamboyant, artistic, cruel, romantic, or even totally insane!

The second surprising realization I made from my investigations is that no discovery, no matter how much it changed our understanding or our daily lives, was dramatically different from what was known before. For example, a shoemaker and retired soldier named William Sturgeon discovered the electromagnet in 1824 when he put current in a wire wrapped around an iron bar and found that it acted like a strong bar magnet. However, Sturgeon only did that because he was copying a French scientist named André-Marie Ampère who had discovered that wires could work like weak magnets if they were wrapped in a spiral around a glass bar.

Similarly, Ampère only conducted that experiment because a Danish scientist and philosopher named Hans Christian Oersted discovered that current in a wire would move a magnet, which made Ampère believe that he could make magnets out of electricity. Of course, Oersted was only able to conduct his experiment because Volta invented the battery first. Following the pattern, Volta only invented the battery because he was in a philosophical debate about the nature of "electrical fire" with a doctor named Galvani who discovered that two different metals would make a dead frog jump, and on and on. Every idea, every invention, is linked in a human chain of discovery. Nothing is completely new.

The third surprising realization I made as I read about these discoveries was that the words of the original scientists led me to have a deeper understanding of the science itself. I feel honored to have "met" all the great scientists and inventors in this book and am grateful to have learned more about the science of electricity from them.

My hope is that you, irrespective of your scientific background, learn something new from the amazing, delightful, and at times, infuriating people who are profiled in this book.

#### Chapter 1: Small Beginnings (1600–1733)

[Do not] despise the small beginnings—they precede of necessity all great things. Vesicles make clouds; they are trifles light as air, but then they make drops, and drops make showers, rain makes torrents and rivers, and these can alter the face of a country.

#### - Michael Faraday (1858)

There used to be an odd commercial on late-night television for "the amazing static duster." What made it so amazing, and why I was a little obsessed with it, was how, after you removed a plastic sleeve, dust would fly toward the duster. The people in the commercial would gasp with amazement as dirt, stray paper, feathers, and even parts of their hair would zoom toward the duster like magic (although I still don't know why you want your duster to attract the hair on your own head).

Of course, the people who sold these devices were aware that this was static electricity in action, which is why they named it "the amazing *static* duster." What they might not have known was that the first glimpses of modern electricity started with the study of this same strange, amazing power. It was this seemingly inconsequential study that was to form the foundation of our electric universe.

Ready to learn about folks rubbing objects and then staring intently at floating feathers and pieces of fluff? Let's go!