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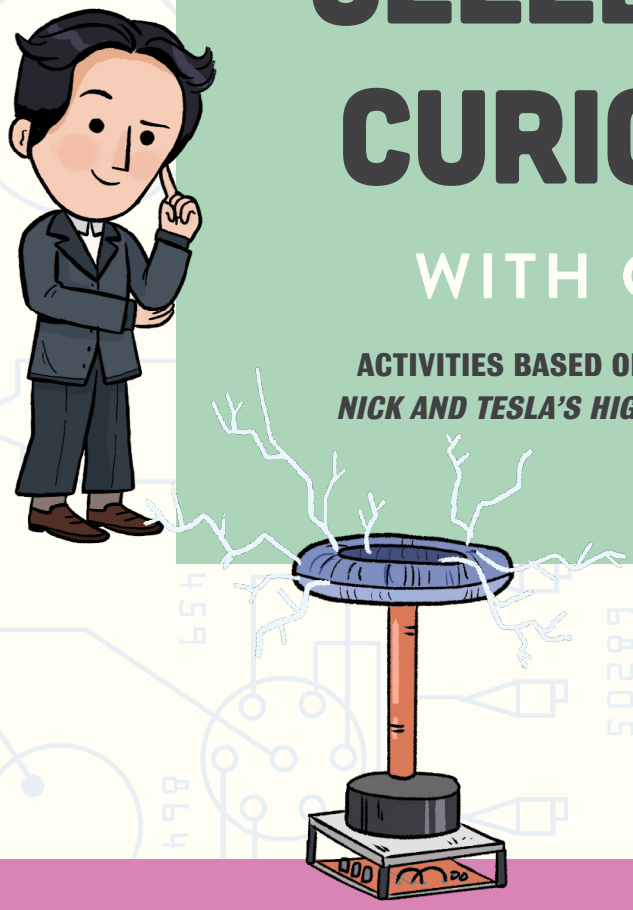
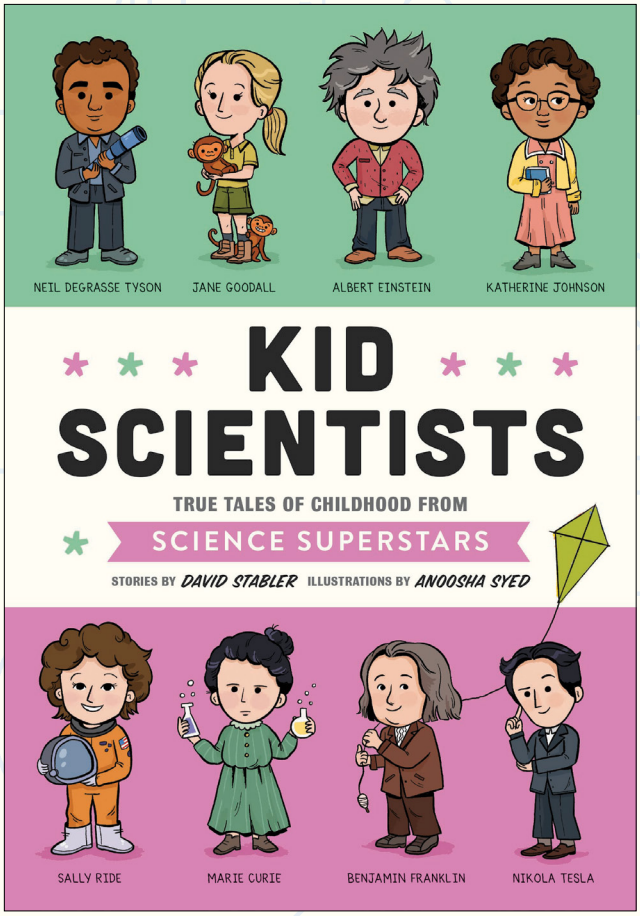
WITH QUIRK!

ACTIVITIES BASED ON *KID SCIENTISTS* AND *NICK AND TESLA'S HIGH VOLTAGE DANGER LAB*



Curious minds will be able to comprehend and explain how Nikola Tesla's childhood contributed to his eventual career in the sciences and engineer a basic electromagnet, analyzing various coil alterations and their effects.

QUIRK BOOKS



Kid Scientists: True Tales of Childhood from Science Superstars

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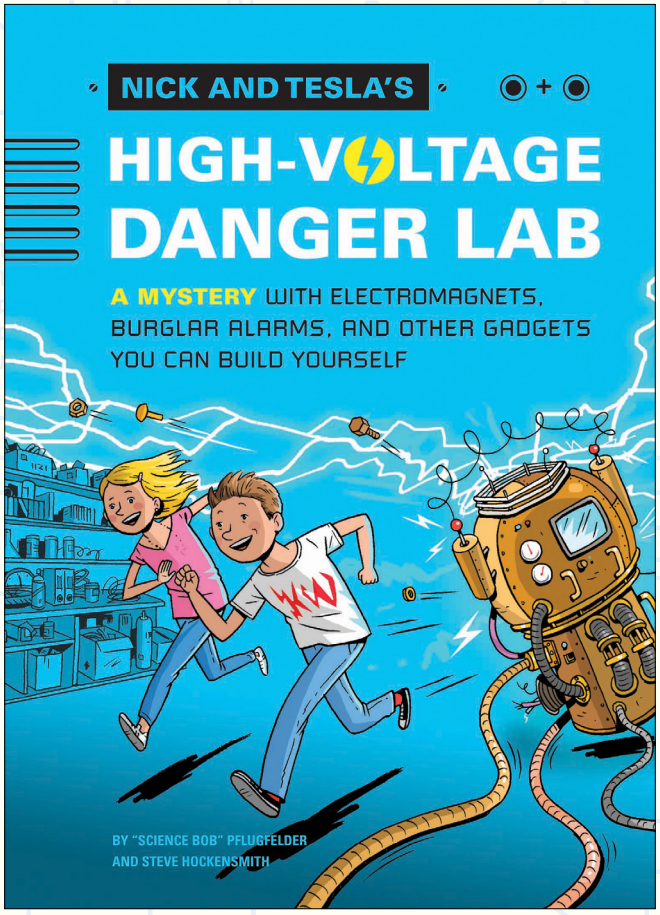

Nick and Tesla's High Voltage Danger Lab

By "Science Bob" Pflugfelder
and Steve Hockensmith
Ages 8–12
Available now
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Nikola Tesla

Like Mother, Like Son

The "mad scientist" who brought neon lights and AC power to the world was born in the middle of an electrical storm. Inspired by his mother's example, Nikola Tesla used his scientific genius—and his head for solving problems—to earn a place in the history books as one of the world's most creative inventors.

On a rainy summer night in 1856, in the small village of Smiljan in present-day Croatia, Djuka Tesla gave birth to her second son and the fourth of her five children. Nikola Tesla took his first breaths just as a bolt of lightning struck.

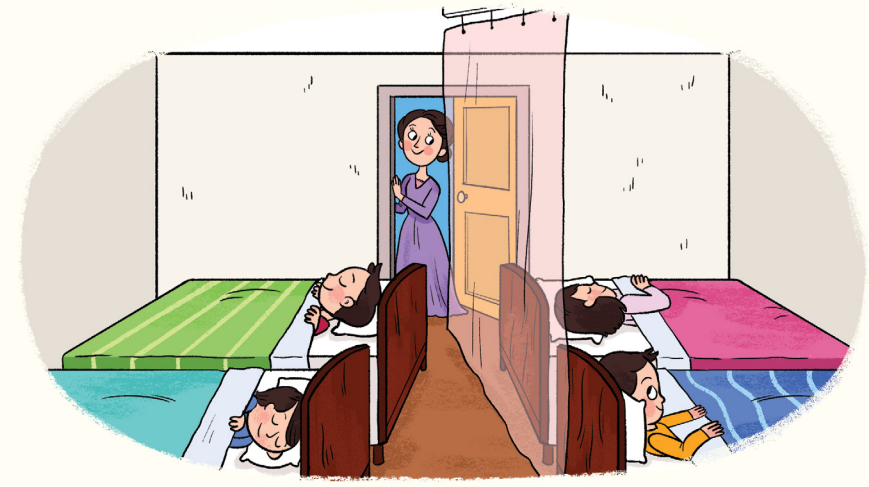
"Your new son is a child of the storm," remarked the nurse who helped deliver him. No, Djuka replied:

Nikki, as he came to be called, was born into a brilliant and distinguished family. His father, Milutin, was an Eastern Orthodox priest who knew the entire Bible by heart. His older brother Dane was considered a boy genius and was expected to one day bring fame and honor to the Tesla family.

But the person Nikki took after the most was his mother. She spoke four languages, despite never learning to read or write. Djuka's father and grandfather were inventors, and she followed their example. She used her ingenuity to invent small appliances and useful contraptions to help in her work around the house as well as the care of her family.

When the children complained about the amount of effort it took to climb onto their high four-poster beds, she designed a bed without legs that was much easier to get into.

When they bemoaned their lack of privacy, she devised a screen with hinges that separated their beds from one another.



Fed up with scrambling eggs by hand, Djuka also created a mechanical egg beater out of a pair of wooden forks tied together with string. But the device made her wrists ache from the constant churning. If only she could find a way to power it, she lamented, then she'd really get somewhere.

Through it all, young Nikki looked on, wondering if he could figure out a way to improve his mother's inventions. Someday, he thought, he would come up with a way to power that egg beater!

When Nikki was five, Dane was killed in a horse riding accident. Nikki was now the oldest boy in the Tesla family, and he was expected to follow in his older brother's footsteps. In the aftermath of the tragedy, he vowed to be as good and as smart as Dane had been, bringing honor to the family name. But how?

The more he thought about it, the more Nikki felt that inventing things was his ticket to fame and fortune. He started small, fashioning his first inventions out of everyday objects. He carved swords from scraps of wooden furniture. When he had one carved to

his liking, he headed into a nearby cornfield and spent hours "mowing down my enemies in the form of cornstalks." But there was a downside: he ruined the year's corn crop and earned a severe scolding from his mother.

Next, Nikki set his sights on a more practical invention. One day, when he was playing outside with some friends, a boy showed up with a hook and fishing tackle. Nikki was excited at the prospect of using it to catch frogs. But then he got into a fight with the boy who owned the gear and was disinvited from the fishing expedition. The other boys trundled off to the creek without him.

Left to his own devices, Nikki decided to make his own fishhook. He found a piece of iron wire, hammered the end to a sharp point using two stones, and fastened it to a sturdy string. Then he cut a rod, gathered some bait, and headed down to the creek. There he found a frog sitting placidly on a stump.

Nikki dangled the hook in front of the frog. The curious creature's eyes bulged in anticipation. Puffing up to twice its normal size, the frog made a sudden snap at the bait. The second the frog bit down, Nikki reeled it in.

It was the first of many frogs Nikki caught that day, to the amazement of his friends, who had returned from their trip empty-handed.

For a while, Nikki kept his invention secret. But when his anger had cooled, he let them use it too. "The following summer brought disaster to the frogs," he later wrote.

Nikki had won the respect of his friends and seemed well on his way to establishing himself as the town's resident inventor. But an unlucky accident threatened to turn the people of Smiljan against him.

Nikki had taken a job as the bell ringer in church. One Sunday, after services were over, Nikki hurried down from the belfry and accidentally stepped on the gown of the wealthiest lady in town.

"It tore off with a ripping noise which sounded like a salvo of musketry," Nikki later remembered. After she gathered up her tattered train, the outraged woman demanded that Nikki be punished. Nikki's father was reluctant to do so, but the townspeople had already judged him reckless and irresponsible. It would take a heroic feat for Nikki to regain their favor.

A short time later, such an opportunity arose. The citizens of Smiljan had raised money to buy a new fire engine, and the entire town came out to see its unveiling. When the ceremony was complete, the city leaders gave the order to pump water through the mighty hose. The crowd held their breath in anticipation, but not a drop of water squirted from the nozzle. A group of professors came forward, but they could not determine the cause of the trouble.

With nothing to lose, Nikki pushed to the head of the crowd. "I can fix it!" he declared, and he proceeded to feel around for the point where the suction hose had collapsed, choking off the water supply.

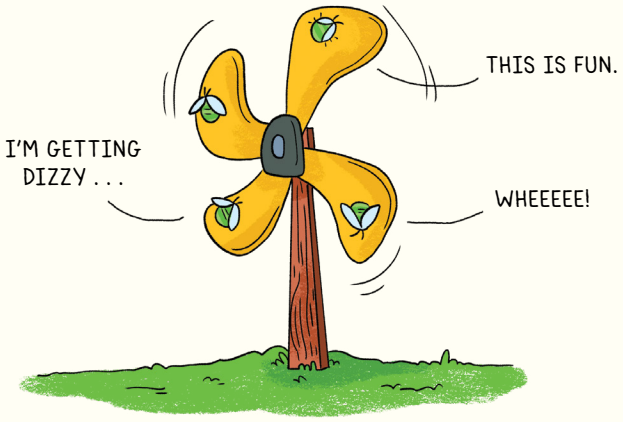
In a few seconds, Nikki had opened it up and the water rushed forth in a torrent, drenching some of the onlookers. But no one minded. They were so happy to have their fire engine in working order, they lifted Nikki on their shoulders and carried him through the town square in triumph.

Nikki's quick thinking had won the respect of his neighbors, but he still had one piece of unfinished business to take care of. He was determined to come up with a way to power his mother's egg beater.

The more he thought about it, however, the more impossible it seemed. Then one day, Nikki was playing with his pet dog by the creek when an idea occurred to him. What if he could harness the power of running water and use it to turn the gears of the egg beater?

Nikki spent the next few years perfecting what he called his "water wheel," an early example of what would later be known as a "Tesla Turbine." The gadget generated power, but Nikki knew he could do better. Once again, he found inspiration in the world of nature.

After watching junebugs fly around his yard on a summer day, Nikki began to wonder about their ability to stay aloft for long periods. He caught four of them in a net, and then glued one to each blade of a homemade propeller. When the bugs beat their wings, they caused the propeller to turn. To Nikki's amazement, they whirled for hours and never seemed to get tired.



Just as Nikki was about to declare his experiment a success, one of his neighbors dropped by. The boy had an appetite for insects—and an appalling lack of table manners. One by one, he plucked the bugs off Nikki's propeller and popped them into his mouth.

Nikki was repulsed. "That disgusting sight terminated my endeavors in this promising field," he remembered later. He never touched a junebug again, "or any other insect for that matter."

When he was fourteen, Nikki left home to attend high school in the faraway town of Karlovac. He was determined to become an engineer, but his father was dead set against the idea. "One inventor in this family is enough!" he declared, urging Nikki to study for the priesthood instead.

After completing high school, Nikki returned home. He hoped to persuade his father to change his mind. Shortly after he arrived, however, he contracted cholera. He was confined to his bed for nine months and nearly died. Mr. Tesla was so distraught that he made a promise to send him to the best engineering school in the land if he recovered.

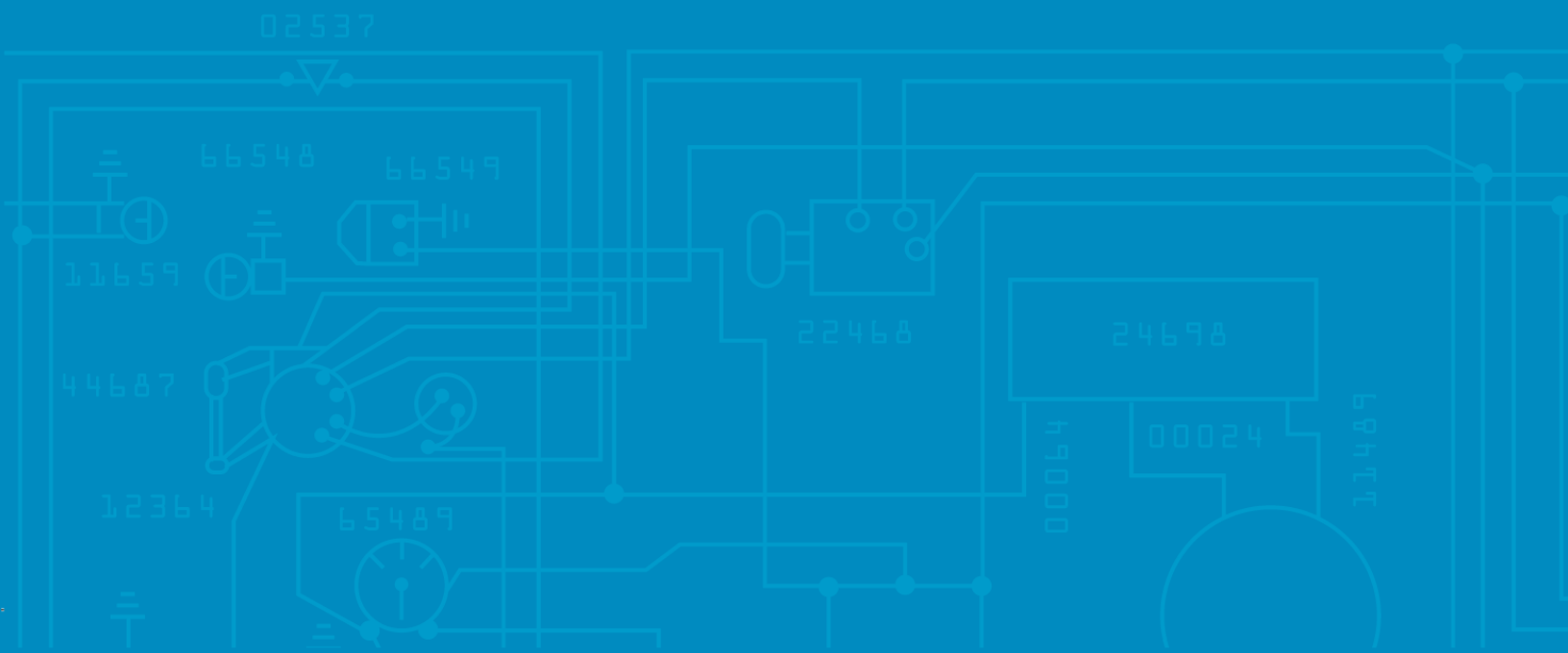
Milutin Tesla may not have been thrilled by his son's career choice, but he was a man of his word. As soon as Nikki recovered, he allowed his son to attend university on an engineering scholarship. Although Nikola Tesla never did complete his formal schooling, his inventive spirit could not be contained. Among the many creations he ushered into the world were the X-ray photo, AC power, radio waves, neon lights, radar detection, remote control, and the bladeless turbine.

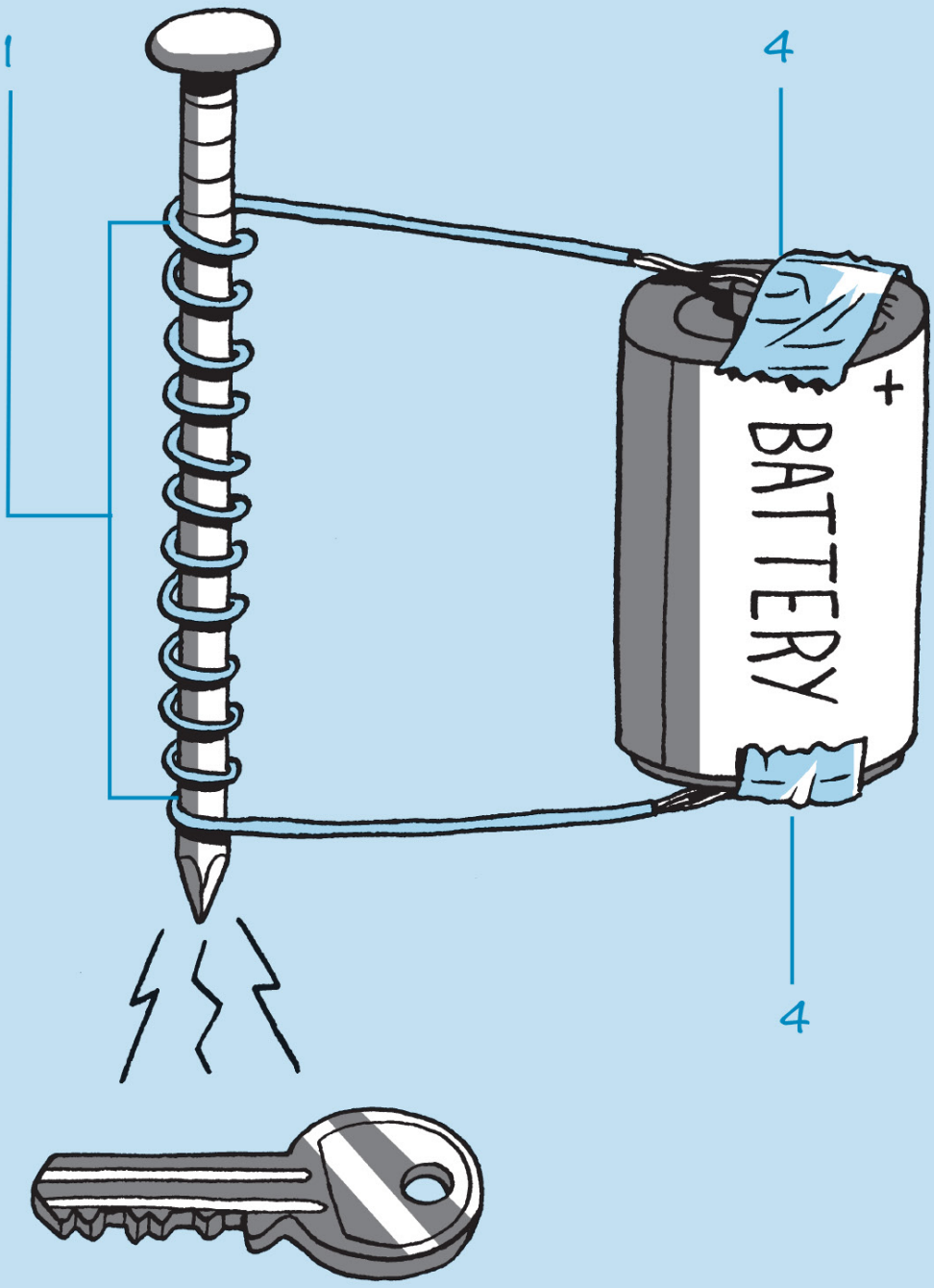
TESLA AND NICK'S

DO-IT-YOURSELF ELECTROMAGNET AND PICKER-UPPER

THE STUFF:

- 1 D-size battery
- 1 strand of 24-gauge plastic-coated wire
- 1 3- to 4-inch (7.5 to 10-cm) iron or steel nail
- Tape
- Wire strippers or scissors

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BATTERY
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THE SETUP

1. Wrap the wire around the nail, leaving about 8 inches (20.5 cm) loose at one end. Try not to let the ends of the wire overlap.

2. If necessary, cut the wire so that about 8 inches (20.5 cm) is loose at the other end, too.

3. Using the wire strippers or scissors, remove ½ inch (1.25 cm) of the plastic coating from both ends of the wire. Ask an adult if you have trouble with this step.

4. Tape one exposed end of the wire to the top of the battery and the other to the bottom.

THE FINAL STEPS

1. Once the battery's connected, the flow of electricity through the wires creates an invisible magnetic field. The nail is now a magnet, and you should be able to pick up small metal objects with it, such as paper clips or nuts and bolts. The more times you wrap the wire around the nail, the larger the magnetic field and thus the stronger the magnetic force.

2. Don't forget to disconnect the wires when you're done. The wires and nail will get very hot over extended use, so *never* leave the electromagnet assembled!