

My them with even
more glorious profits.



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My great grandmother was born on September 30, 1895 in Strum, Wisconsin, and used to tell us the most important invention for the home, in her lifetime, was the clothes washing machine.

Now history always seems to make the present era seem more civilized, when in fact, it is probably only cleaner, thanks to my grandmother's favorite invention. But, I wonder if it is easier. Certainly, there were many patents issued in the 1880's for inventions that truly would change the lives of future generations, and a handful of these amazing contrivances would have a great impact on that which is truly important to an industrialized nation: the machinery that speeds business, business being the true backbone of a country, but to a country girl whose family depended on farming, the clothes washing machine still stands out as the one that saved her the most time. So this essay will delve into the era of the 1880's and focus on one of the most important inventors that ever lived, Nikola Tesla. Many business machines were patented before Nikola Tesla patented the alternating-current "electromagnetic motor" in 1888 (while the popular Thomas Edison was stubbornly clinging to direct-current motors), but soon more and more inventors were realizing this new source of harnessed power could bring glorious miracles to business, thus providing them with even more glorious profits. But first, the washing machine, truly in honor of my great grandmother, who will be 105 years old this year.

Before the days of washing machines, people got dirt out of their clothes by pounding them on rocks and washing the dirt away in streams. Sand was used as an abrasive to free the dirt. Soap was discovered at Rome's Sapo Hill where ashes containing the fat of sacrificial animals were found to have good

cleaning powers. The earliest washing “ machine” – the scrub board – was invented in 1797. In 1874 William Blackstone, a Bluffton, Indiana merchant and manufacturer of corn planters, built a birthday present for his wife.

It was a machine that removed and washed away dirt from clothes. It consisted of a wooden tub in which there was a flat piece of wood containing six small wooden pegs. The inner mechanism looked something like a small milking stool. It was moved back and forth by means of a handle and an arrangement of gears. Dirty clothes were snagged on the wooden pegs and swished about in hot soapy water. Mr.

Blackstone began to build and sell his washers for \$2. 50 each. Five years later he moved his company to Jamestown, New York where it is located today and where it still produces washing machines. Competitors moved in quickly – there have been more than 200 washing machine manufacturers in the U. S. in the past century. Competition has kept keep prices down. Many early washing machines cost less than \$10.

A wringer, invented in 1861, was added to the washer. Metal tubs replaced wooden types around 1900. Drive belts made possible use of steam or gasoline engines in the early 1900s and electric motor power for the first time in 1906. A rotary handle and a flywheel underneath operated Maytag’s first washer, built in 1907. In 1875 there had been more than 2, 000 patents issued for various washing devices. Not every idea worked, of course.

One company built a machine designed to wash only one item at a time. What may have been the first “ laundromat” was opened in 1851 by a gold miner and a carpenter in California. 10 donkeys powered their 12-shirt

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machine. Earliest washers were hand powered by means of a wheel, pump handle, or similar device. One was driven by twisted ropes that powered the washer by “unwinding” somewhat like the use of a rubber band to power model airplanes. One washer contained rollers that were pushed back and forth by hand to squeeze out dirt.

Several featured “stomping” devices and one – called a “Loca-motive” was moved rapidly back and forth on a track washing the clothes by slamming them against the walls of the tub. Now, a little about that inventor, Nikola Tesla: Nikola Tesla was born in Smijlan, Croatia in 1856. He had an extraordinary memory and spoke six languages. He spent four years at the Polytechnic Institute at Gratz studying math, physics, and mechanics. What made Tesla great, however, was his amazing understanding of electricity. Remember that this was a time when electricity was still in its infancy.

The light bulb hadn't even been invented yet. When Tesla first came to the United States in 1884, he worked for Thomas Edison. Edison had just patented the light bulb, so he needed a system to distribute electricity. Edison had all sorts of problems with his DC system of electricity. He promised Tesla big bucks in bonuses if he could get the bugs out of the system.

Tesla ended up saving Edison over \$100, 000 (millions of dollars by today's standards), but Edison refused to live up to his end of the bargain. Tesla quit and Edison spent the rest of his life trying to squash Tesla's genius (and the main reason Tesla is unknown today). Tesla devised a better system for electrical transmission, alternating current, or AC. AC offered great

advantages over the DC system. By using Tesla's newly developed transformers, AC voltages could be stepped up and transmitted over long distances through thin wires. DC could not (requiring a large power plant every square mile while transmitting through very thick cables). Of course, a system of transmission would be incomplete without devices to run on them. So, he invented the motors.

This was no simple achievement – scientists of the late 1800's were convinced that no motor could be devised for an alternating current system, making the use of AC a waste of time. After all, if the current reverses direction 60 times a second, the motor will rock back and forth and never get anywhere. “ If Edison had a needle to find in a haystack, he would proceed at once with the diligence of the bee to examine straw after straw until he found the object of his search.

” “ I was a sorry witness of such doings, knowing that a little theory and calculation would have saved him ninety per cent of his labor.” – Nikola Tesla
Tesla solved this problem easily and proved everyone wrong. He was using fluorescent bulbs in his lab some forty years before industry “ invented” them.

At World's Fairs and similar exhibitions, he took glass tubes and molded them into the shapes of famous scientists' names – the first neon signs that we see all around us today. I almost forgot – Tesla designed the world's first hydroelectric plant, located in Niagara Falls. He also patented the first speedometer for cars. Word began to spread about his AC system and it eventually reached the ears of one George Westinghouse. Tesla signed a

contract with Westinghouse under which he would receive \$2.50 for each kilowatt of AC electricity sold. Suddenly, Tesla had the cash to start conducting all the experiments he ever dreamed of.

But Edison had too much money invested in his DC system, so Tommy did his best to discredit Tesla around every turn. Edison constantly tried to show that AC electricity was far more dangerous than his DC power. ‘George Westinghouse was, in my opinion, the only man on this globe who could take my alternating-current system under the circumstances then existing and win the battle against prejudice and money power. He was a pioneer of imposing stature, one of the world’s true nobleman of whom America may well be proud and to whom humanity owes an immense debt of gratitude.’ – Nikola Tesla Tesla counteracted by staging his own marketing campaign. At the 1893 World Exposition in Chicago (attended by 21 million people), he demonstrated how safe AC electricity was by passing high frequency AC power through his body to power light bulbs.

He then was able to shoot large lightningbolts from his Tesla coils to the crowd without harm. Nice trick! When the royalties owed to Tesla started to exceed \$1 million, Westinghouse ran into financial trouble. Tesla realized that if his contract remained in effect, Westinghouse would be out of business and he had no desire to deal with the creditors. His dream was to have cheap AC electric available to all people.

Tesla took his contract and ripped it up! Instead of becoming the world’s first billionaire, he was paid \$216,600 outright for his patents. In 1898, he

demonstrated to the world the first remote controlled model boat in Madison Square Garden. Tesla had a dream of providing free energy to the world.

In 1900, backed by \$150,000 from financier J. P. Morgan, Tesla began construction of his so-called “Wireless Broadcasting System” tower on Long Island, New York. This broadcasting tower was intended to link the world’s telephone and telegraph services, as well as transmit pictures, stock reports, and weather information worldwide. Unfortunately, Morgan cut funding when he realized that it meant FREE energy for the world. Tesla ran into financial trouble after Morgan cut funding for the project and the tower was sold for scrap to pay off creditors.

The world thought he was nuts – after all, transmission of voice, picture, and electricity was unheard of at this time. What they didn’t know was that Tesla had already demonstrated the principles behind radio nearly ten years before Marconi’s supposed invention. In fact, in 1943 (the year Tesla died), the Supreme Court ruled that Marconi’s patents were invalid due to Tesla’s previous descriptions. Still, most references do not credit Tesla with the invention of radio.

(Side note: Marconi’s radio did not transmit voices – it transmitted a signal – something Tesla had demonstrated years before.) At this point, the press started to exaggerate Tesla’s claims. Tesla reported that he had received radio signals from Mars and Venus.

Today we know that he was actually receiving the signals from distant stars, but too little was known about the universe at that time. Instead, the press had a field day with his “outrageous” claims. In his Manhattan lab, Tesla

made the earth into an electric tuning fork. He managed to get a steam-driven oscillator to vibrate at the same frequency as the ground beneath him the result? An earthquake on all the surrounding city blocks. The buildings trembled, the windows broke and the plaster fell off the walls. Tesla contended that, in theory, the same principle could be used to destroy the Empire State Building or even possibly split the Earth in two. Tesla had accurately determined the resonant frequencies of the Earth almost 60 years before science could confirm his results.

Don't think he didn't attempt something like splitting the Earth open (well, sort of). In his Colorado Springs lab in 1899, he sent waves of energy all the way through the Earth, causing them to bounce back to the source. When the waves came back, he added more electricity to it. The result? The largest man-made lightning bolt ever recorded – 130 feet! – A world's record still unbroken! The accompanying thunder was heard 22 miles away.

The entire meadow surrounding his lab had a strange blue glow, similar to that of St. Elmo's Fire. But, this was only a warm-up for his real experiment! Unfortunately, he blew out the local power plant's equipment and he was never able to repeat the experiment.

At the beginning of World War I, the government desperately searched for a way to detect German submarines. The government put Thomas Edison in charge of the search for a good method. Tesla proposed the use of energy waves – what we know today as radar – to detect these ships. Edison rejected Tesla's idea as ludicrous and the world had to wait another 25 years until it was invented. His reward for a lifetime of creativity? The prized (to

everyone but Tesla) Edison Medal! A real slap in the face after all the verbal abuse Tesla took from Edison. The stories go on and on. Industry's attempt (obviously very successful) to purge him from the scientific literature had driven him into exile for nearly twenty years.

Lacking capital, he was forced to place his untested theories into countless notebooks. The man who invented the modern world died nearly penniless at age 86 on January 7, 1943. More than two thousand people attended his funeral. In his lifetime, Tesla received over 800 different patents. He probably would have exceeded Edison's record number if he wasn't always broke – he could afford very few patent applications during the last thirty years of his life. Unlike Edison, Tesla was an original thinker whose ideas typically had no precedent in science. Unfortunately, the world does not financially reward people of Tesla's originality.

We only award those that take these concepts and turn them into a refined, useful product. Bibliography: BibliographyCheney, Margaret, Tesla: Man Out of Time (Dell Publishing, 1981)Tesla, N., Electrical Experiment (1919)Tesla, N., The Strange Life of Nikola Tesla (unknown publishing date or place used) Book actually red on web page: [www. neuronet. pitt. edu/biodam/tesla/tesla. pdf](http://www.neuronet.pitt.edu/biodam/tesla/tesla.pdf) Web Pages: [www. neuronet. pitt. edu/bogdam/tesla/bio. thm](http://www.neuronet.pitt.edu/bogdam/tesla/bio.htm)[www. neuronet. pitt. edu/bogdam/tesla/chicago. htm](http://www.neuronet.pitt.edu/bogdam/tesla/chicago.htm)[www. neuronet. pitt. edu/bogdam//tesla/niagara. htm](http://www.neuronet.pitt.edu/bogdam//tesla/niagara.htm)[www. neuronet. pitt. edu/biodam/tesla/tesla. pdf](http://www.neuronet.pitt.edu/biodam/tesla/tesla.pdf)