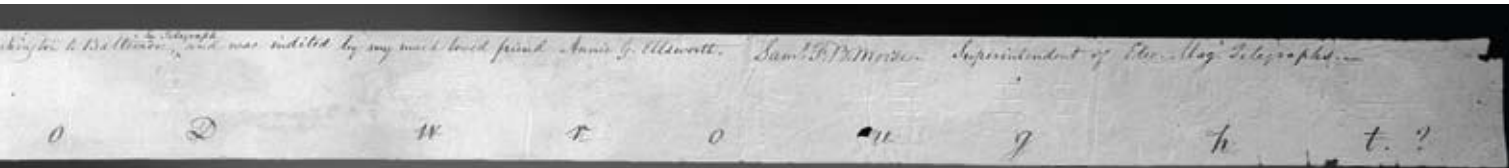




**LIGHTNING  
WIRELESS**

**LILY COX-RICHARD**





Across the top of the telegraph, Morse gave credit to Annie Ellsworth, the young daughter of a good friend, for suggesting that he send this quote from Numbers 23:23.

Telegraphy, the long-distance transmission of written messages without the physical transport of letters, is as ancient as smoke signals and as modern as email. The first electrical telegraph line in America was established between Washington DC and Baltimore on May 24, 1844. The line officially opened when Samuel Finley Breese Morse transmitted the message “What hath God Wrought?” Morse’s early system produced a paper copy with raised dots and dashes, which were then translated by an operator.<sup>5</sup>

In 1851, Western Union was founded, and

quickly became the first communications empire. Within ten years, the company had completed the first transcontinental telegraph line. Western Union dominated the American telegraph industry during the peak years.

In 1929, 20 million telegrams were sent. By 2005, the number of telegrams sent dropped to 20,000. Western Union sent its last telegram on January 27, 2006. The final messages included birthday wishes, condolences on the death of a loved one, notification of an emergency, and several people trying to be the last to send a telegram.<sup>6</sup>



top: “First telegraphic message” *The Samuel F. B. Morse Papers* at the Library of Congress. U.S. Govt. Retrieved April 2, 2008. [www.loc.gov](http://www.loc.gov).

far left: Engraving 1787, Delbourgo, p 73.

above left: Example of modern telegraphy.

above right: Wireless Infrastructure: Antenna concealed in church steeple. From Stealth Concealment Solutions, Inc. [www.stealthsite.com](http://www.stealthsite.com).





## The Tower

In March 1901, Nikola Tesla began work on his Wardencllyffe Tower and adjacent laboratories. This “World Telegraphy Center” would transmit across both Pacific and Atlantic Oceans.<sup>7</sup> J. Pierpont Morgan, who was the financial backer for the project, encouraged Tesla to take things one ocean at a time. When it became apparent that the Tower’s immediate profitability was not a

concern for Tesla, Morgan refused to release the remainder of the funds promised, and blackballed his efforts to secure funding from anyone else.<sup>8</sup>

Tower construction slowed and Tesla’s plans were ambushed.<sup>9</sup> On December 13, 1901,<sup>10</sup> Guglielmo Marconi sent the first trans-Atlantic radio transmission: three taps, Morse Code for the letter S.<sup>11</sup> The Tower was never completed. During World War I, it was dismantled and salvaged for raw materials.<sup>12</sup>

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7. In addition, the tower would employ the ionosphere to provide free wireless electricity to the world. Tesla also thought it would be possible to use the tower to end war (with his macroscopic particle beam weapon, also called the “Peace Ray”), control the weather, and light the ocean. Seifer, pp 189, 416. Nikola Tesla, “The Wonder World to be Created by Electricity,” *Manufacturer’s Record*, September 9, 1915.

8. Financial difficulties set in even earlier. The project was impossible to budget because Morgan himself had wreaked havoc on Wall Street: in order to regain majority holdings in his own company, Northern Pacific Railroad, he issued an order to buy back the stock at any price, effectually crashing the stock market and skyrocketing the price of steel. The cost of materials rose two to three times more than originally estimated. Meanwhile, Tesla had redesigned his tower to be twice as tall (refusing to “take it one ocean at a time.”) Seifer, pp 264-265.

9. Besides financial difficulties, the project’s architect, Stanford White (the man behind the Niagara Falls Power Plant and one of the architects of the 1893 Chicago World’s Fair), was distracted by his daily courting of Evelyn Nesbit, a 16-year-old artists’ model and showgirl. Seifer, p 270. (White had outfitted one of his Manhattan apartments as the ultimate bachelor pad (despite being married) with a red velvet swing, with which to “entertain” such young women. Seifer, p 258) The affair would lead to his murder in 1906. A famous crime of passion, White was shot in the face three times, by Nesbit’s sadistic (horse whips!) and cocaine addicted husband, Harry K. Thaw, while attending a musical premiere at Madison Square Roof Garden, which White himself designed. Wardencllyff would be White’s last project. Seifer, p 322.

10. The messages were sent from Cornwall, England and received in Newfoundland on December 12 and 13, 1901. In Mark Seifer’s biography of Tesla, there is emphasis on the messages being received on Friday the 13th (during a lull in an especially miserable hail storm). Fridays and the 13th day of the month were Tesla’s favorite days (in defiance of superstition), making the news even harder for him to bear. Seifer, pp 255, 274, 315.

11. Marconi won this race by pirating Tesla’s inventions and patents. In 1904, the patent for radio was reversed and awarded to Marconi. Tesla immediately began his fight to re-acquire the patent, but it wasn’t until shortly after his death in 1943 that the U.S. Supreme Court acknowledged that Marconi’s work wasn’t original, and the patent ownership was given back to Nikola Tesla.

12. The salvaging was ordered by George Boldt, who held the deed for Wardencllyffe. Boldt was the proprietor of the Waldorf-Astoria Hotel, where Tesla lived. Tesla had temporarily signed it over to him as a kind of “I owe you” for back rent. Boldt, increasingly impatient with Tesla’s strange behavior (odors emanated from his room, and he had a disturbing propensity to bring home sick and injured pigeons) demolished the tower to make room for more viable enterprises. Seifer, pp 381-87. According to an article in *The Electrical Experimenter*, the federal government suspected that German spies were using the tower and thus ordered the demolition. “U.S. Blows Up Tesla Radio Tower” *The Electrical Experimenter*, September 1917, p 293.

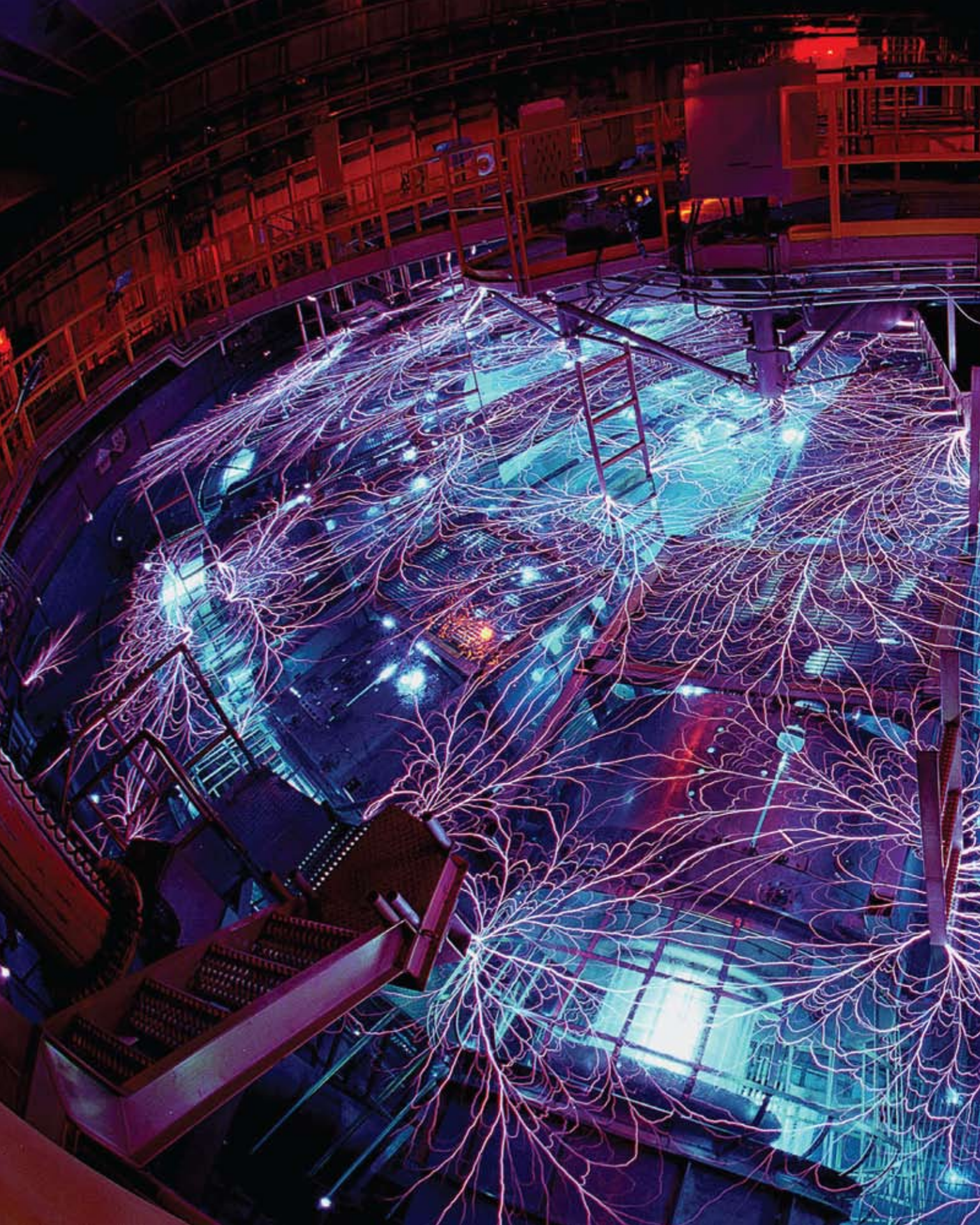
**left:** How the Wardencllyffe Tower would have looked when completed. (Drawing by Frank R. Paul; Smithsonian Institution) Seifer, p 370.

**over:** News release from Sandia National Laboratories: “Image of Sandia’s Z machine firing. The ‘arcs and sparks’ formed at the water-air interface travel between metal conductors, generating temperatures hotter than the interior of stars.” Photo by Randy Montoya.

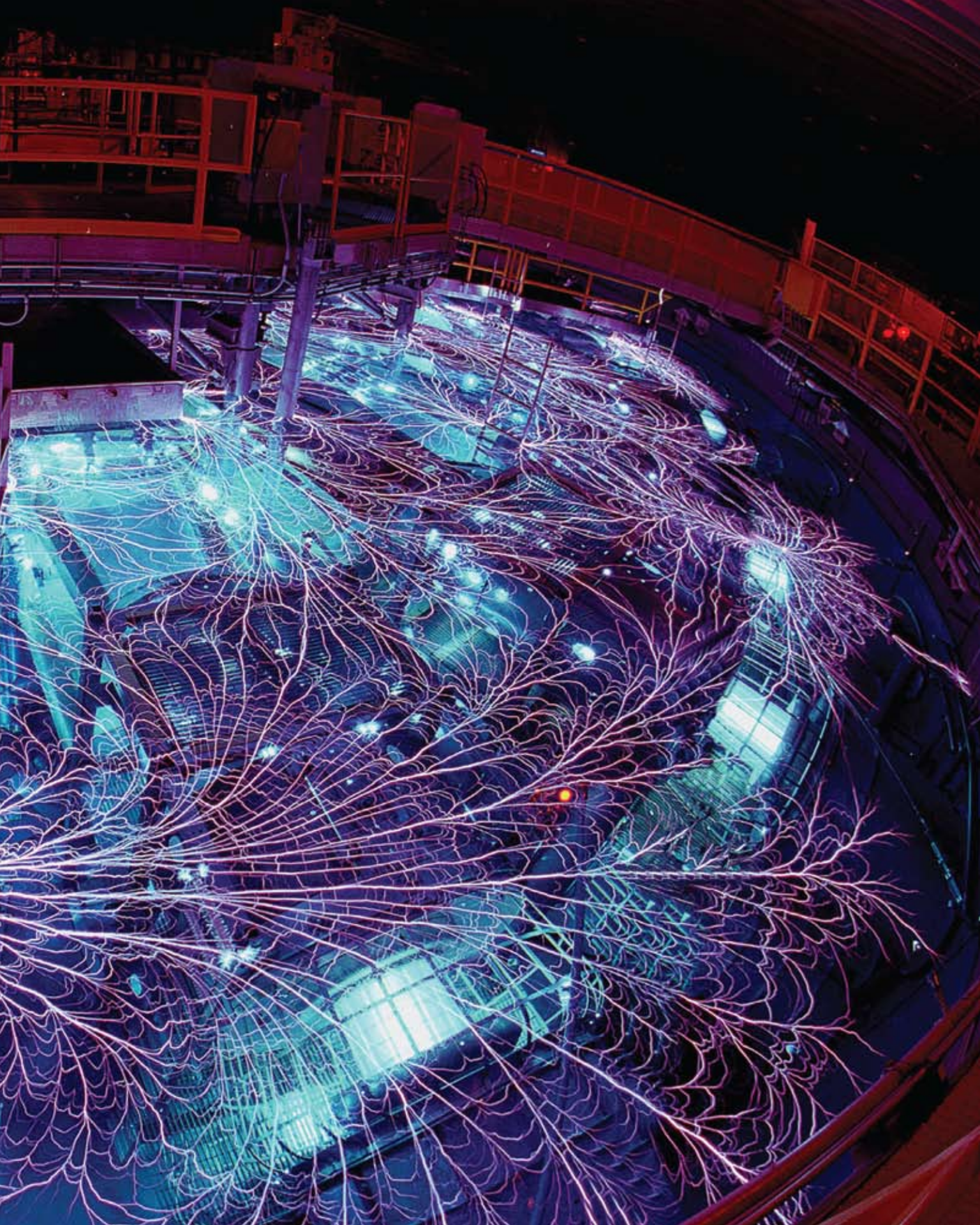
**page 38 left:** Image from a 1936 Washington Post article, *National Lightning Protection Company Sales Manual and Textbook*, St. Louis, MO, p 22.

**page 39 right:** Nikola Tesla’s improved lightning protector, *United States Patent 1,266,175*. Issued May 14, 1918, p 1.











**JUST ONE OF LIGHTNING'S WASTED EFFORTS TO DESTROY THE WASHINGTON MONUMENT**





## Lightning Rods: Pointed vs Blunt

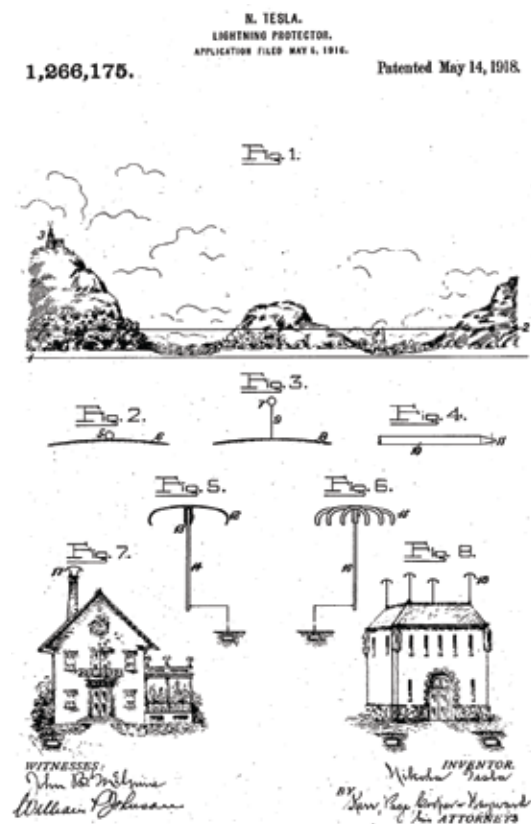
*He snatched lightning from the sky and the scepter from tyrants.*<sup>13</sup>

The debate between pointed-tip lightning rods and blunt-tips was a political one: Benjamin Franklin advocated for the pointed rod, while his English colleagues favored blunt-tips. In 1776, while Britain and the colonies were making another kind of thunder, scientists in London were busy trying to prove the superiority of blunt-tipped lightning rods. Although the results of the experiments now seem moot, they were enough to convince King George III to switch out all his pointed conductors for blunt ones.<sup>14</sup>

When Franklin learned of this royal decree, he seems to have been amused, “I have no private interest in the reception of my inventions by the world, having never made nor proposed to make the least profit by any of them.” (Franklin considered it an act of philanthropy not to seek a patent for his lightning rod. This response did prove profitable: the French contributed one million livres to aid in the harassment of their longtime enemies.)<sup>15</sup> In the United States, the lightning rod is commonly understood as a symbol of American ingenuity and inventiveness, but more specifically, the pointed rod was also a symbol of American Independence.<sup>16</sup>

Franklin’s earliest lightning systems were actually quite dangerous. By 1762, Franklin had improved his design, and this one remains the basis for all modern lightning protection codes

in the world today.<sup>17</sup> Nikola Tesla thought that it was inviting danger to encourage lightning to strike with a lightning rod, even if the charge is almost always carried safely to the ground. Tesla’s improved system for lightning protection avoids points. Unlike Franklin’s system, which was designed to draw lightning from the clouds and carry it safely to the ground, Tesla’s system acts as a kind of lightning repellent, protecting the structure by not being struck at all.<sup>18</sup>



13. Famous epigram on Franklin, said by the late 18th century French economist, Anne-Robert-Jacques Turgot. Philip Dray, *Stealing God's Thunder* (New York: Random House, 2005) p 139.

14. Dray, pp 134-136.

15. Dray, p 137.

16. Dray, pp 129-136.

17. Krider, p 42.

18. Nikola Tesla, “Lightning Protector,” *United States Patent 1,266,175*. Issue Date: May 14, 1918.

## Blitzfunk

February 9, 2008: Before traveling by plane from Richmond, Virginia to Berlin, Germany, I sent myself a telegram through itelegram.com. A telegram from the US to Germany costs \$29.95 + 0.89 per word, and is usually delivered within 24 hours. According to the website, my message would be transmitted by a cable to an office close to its destination, printed and delivered.

Other than the novelty of it, why would someone send a telegram in an age of email and super-cheap long-distance calling? According to the FAQ section: “Naturally, telegrams are much faster than airmail. And unlike a phone call or e-mail, telegrams can be sent nearly anywhere - from the busiest city to the tiniest remote village. Telegrams are an excellent way to communicate with people in remote places with poor telephone service, because telegrams are hand-delivered. [Unlike email, telegrams are legally binding documents] People use them for canceling contracts, contacting government officials and VIPs, social milestones such as weddings and graduations—or just to say “hello” in a unique way.” My reasons for sending a telegram were simple: I had never sent or received one, and I wanted to know what it was like.

I found a 1922 New York Times article about “Lightning Wireless Service,” I immediately thought of cell phones and wireless Internet. But in 1922, the term “Blitzfunk” referred to an innovation in radiotelegraphy. This article seemed confusingly timeless, and just the right thing to send in a telegram to myself.

So, I arrived in Berlin on February 10. It was



Sunday morning and not much was open in my neighborhood, so I figured telegraph offices were probably closed too. I spent Monday morning half-expecting a knock on the door, and a delivery person in an official telegram uniform handing me an envelope.

That knock didn't come. On the evening of February 13, my telegram still had not been delivered. Unable to find a phone number for the local telegraph office, I emailed the iTelegram Customer Service Center. After several emails were exchanged, I finally received my telegram by post on February 16, exactly one week after I sent it.

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19. It seems that the Germans have an official uniform for every profession. Carpenters get to wear really cool black corduroys.

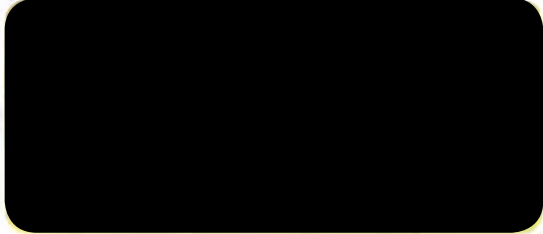
above: “Lightning Strikes,” *The Sydney Morning Herald*, November 1, 2005, retrieved April 2, 2008. <http://www.smh.com.au/>.

over left: Image adapted from *National Lightning Protection Company Sales Manual and Catalog*, St Louis MO, 1937.



Telegram Service

Postfach 1423 · D-64313 Pfungstadt



Deutsche Post	
Zurück 64313	
1	Empfänger/Firma oder der angegebenen Anschrift nicht zu erreichen.
	Empfänger verzögert Einlieferung, so Weitergabe der Sendung Ansehlich nicht möglich.
	Adressen verändert
	Empfänger soll Vorname sein
	17/02
Nr. Tag/Monat	

**TELEGRAMM**

Subject: Re: Order Confirmation # 22247281

On 2/13/08 4:58 PM, "iTelegram"  
<helpdesk@itelegram.com> wrote:

Dear Lily Cox-Richard,

Delivery was attempted 11 Feb and refused - no such person - returned to post office. We can attempt redelivery at your request, a charge of \$25 will apply. Please reply if you would like another delivery attempted.

Regards,  
Customer Service Centre  
iTelegram



"We Invite Inquiry"



2007-09-02 1221 EST

 Telegram

ZCZC YGK442 22247281  
DPXX CO CAMX 141  
VIRGINIA USA 141/129 09 1247

LILY COX-RICHARD  
ERIKSSON  
LYCHENERSTRASSE 12  
(10437) BERLIN

Berlin Starts Service of 'Lightning Wireless'

By Wireless to THE NEW YORK TIMES.  
BERLIN, Jan. 10.--'Lightning wireless service' was  
inaugurated today between Berlin and Hamburg.  
Technically termed 'Blitzfunk,' or 'lightning spark,'  
the dispatches are to take precedence at a tenfold  
rate over all other wireless traffic, and everybody  
handling lightning messages has orders to speed up to  
the limit Teutonly possible the personnel specially  
selected for the lightning service.  
The first message was files in the main telegraph  
office at Berlin at 9 o'clock this morning,  
transmitted at 9:03, receipt acknowledged at 9:05,  
and telephoned to addressee at 9:10.  
Unfortunately, American correspondents see no  
prognostications of lightning wireless to New York.

Copyright 1922, The New York Times

sent by  
Lily Cox-Richard

NNNN

SENDER'S COPY SENDER'S COPY SENDER'S COPY SENDER'S COPY

