

Benjamin franklin: the kite experiment and the invention of the lightning rod ass...

[History](#)



One can only speculate as to the thoughts running through Benjamin Franklin's mind as he pondered the awe and power of lightning during some long ago summer storm. Franklin suspected that lightning was an electrical current in nature, rather than the wrath of God, and he wanted to see if he was right. One way to test his idea would be to see if the lightning would pass through metal. He came upon the idea to use a metal key and looked around for a way to get the key up near the lightning.

As you probably already know, he used a simple toy, a kite, to prove that lightning is really a stream of electrified air, known today as plasma. No direct account of this event was ever written by Franklin, however, the manuscript of Joseph Freely documents the events as follows: " As every circumstance relating to so capital a discovery (the greatest, perhaps, since the time of Sir Isaac Newton) cannot but give pleasure to all my readers, I shall endeavour to gratify them with the communication of a few particulars which I have from the best authority. The Doctor, having published his method of verifying his hypothesis concerning the sameness of electricity with the matter of lightning, was waiting for the erection of a spire [on Christ Church] in Philadelphia to carry his views into execution; not imagining that a pointed rod of a moderate height could answer the purpose; when it occurred to him that by means of a common kite he could have better access to the regions of thunder than by any spire whatever.

Preparing, therefore, a large silk handkerchief and two cross-sticks of a proper length on which to extend it, he took the opportunity of the first approaching thunderstorm to take a walk in the fields, in which there was a shed convenient for his purpose. But, dreading the ridicule which too

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commonly attends unsuccessful attempts in science, he communicated his intended experiment to nobody but his son” ??? then twenty-one, not a child as in the traditional illustrations of the scene ??? “ who assisted him in raising the kite. The kite being raised, a considerable time elapsed before there was any appearance of its being electrified. One very promising cloud had passed over it without any effect; when, at length, just as he was beginning to despair of his contrivance, he observed some loose threads of the hempen string to stand erect, and to avoid one another, just as if they had been suspended on a common conductor.

Struck with this promising appearance, he immediately presented his knuckle to the key, and (let the reader judge of the exquisite pleasure he must have felt at that moment) the discovery was complete. He perceived a very evident electric spark. Others succeeded, even before the string was wet, so as to put the matter past all dispute, and when the rain had wet the string he collected electric fire very copiously. This happened in June 1752, a month after the electricians in France had verified the same theory, but before he heard of anything they had done. Correspondence by Franklin to his friend Peter Collinson, (whom started this madness by sending Franklin a glass rod which had produced “ static” electricity), describes in detail how his kite was constructed. The kite consisted of two strips of cedar the width of an extended silk handkerchief, with the corners of the handkerchief tied to the cedar frame. Silk was used so as not to be as easily torn as paper. To the top of the front cedar cross member he attached a one foot metal wire approximately one foot in height.

The standard hemp twine was used as a lanyard, and to the end of the lanyard was attached the infamous metal key. When it came time for the experiment, Franklin showed the intuition to conduct his experiment indoors, or at least under cover, and the string not touching the window or doorframe. Given this set-up, and a passing thunder cloud, he was able to observe the fibers of the hemp lanyard pulling in opposite directions. This is where I, knowing what we all know now, would conclude the experiment.

Not Ben Franklin. He waits for it to rain and get every thing wet. At that point he places his knuckle against the metal key and voile he got shocked, a lot I think, thus proving his theory of current (plasma) and electricity. While Benjamin Franklin will always be famous for his kite in the storm, he continued with his electrical experiments, even originating terms still used today such as battery charge, condenser, conductor, positively, negatively, and armature.

One must wonder what the world would be like today without one man that would undertake such an endeavor. Sources: " Benjamin Franklin" Carl Van Doren, 1938 Franklin Institute Ben Franklin Portrait of the Man ushistory.org The Electric Ben Franklin His famous stormy kite flight in June of 1752 led him to develop many of the terms that we still use today when we talk about electricity: battery, conductor, condenser, charge, discharge, uncharged, negative, minus, plus, electric shock, and electrician.