



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> <b>Audrey M. Halstead</b>	<b>Project Number</b> <b>J0814</b>
<b>Project Title</b> <b>Birth of the Battery</b>	
<b>Objectives/Goals</b> My goal was to determine if common household items can be combined to produce and store enough energy to power small electronic devices. Also, to compare the results of the various combinations and determine the most effective mix.	
<b>Abstract</b> <b>Methods/Materials</b> 1)Attach a wire to three of each type of coin with electrical tape 2)Place a penny and a different coin in the lemon juice 3)Attach the volt meter to the wires (one end to the penny and the other end to the other coin) 4)If the voltage reading is negative, switch the voltmeter ends. 5)Repeat steps 2-4 trying all coin combinations in the lemon juice. Don't use any single coin more than once. 6)Determine which two coins have the highest voltage. 7)Re-test these coins with each of the other substances. (salt water and phosphoric acid). Only use the two best coins and the best substance for the rest of the project 8)Cut the cork into pieces that fit in a plastic tube with holes on each end. Dip them into the liquid and put them aside. 8)Attach a piece of wire to one of each type of coin. Place one of the coins into the container, so the wire goes through the hole and sticks out of the end. Save the other coin with a wire attached to it for the top of the battery 9)Put a piece of cork on top of the coin. Stack one of the other type of coin on top of the cork. Continue this pattern until you've used up all of the materials(36 coins and 13 pieces of cork, so 39 layers total) 10)Put the lid on the tube. A wire from a coin should be protruding from each end of the container. 11)Attach the voltmeter to the battery and measure the voltage at 1 min. intervals for 30 min.	
<b>Results</b> To build the batteries, I followed an #a, c, b, c" pattern (a: penny, b: dime, c: cork w/lemon juice). It was able to produce enough current to be read on a voltmeter. Though I tried using each battery, then a combination of both, they didn't have enough current to light a small light bulb.	
<b>Conclusions/Discussion</b> My hypothesis was correct and I was able to create a battery that, when attached to a voltmeter, was able to show some form of electricity. The battery wasn't strong enough, however, to power even a small light bulb. This told me that it was impractical to power any devices due to insufficient current. If the	
<b>Summary Statement</b> This project involves using common household chemicals and U.S. coins to produce a battery able to generate enough electrical current to be read on a multimeter.	
<b>Help Received</b> Dad supplied materials and shed to do project in; Mom helped glue some pages to board.	