



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Philip M. Dettinger	<b>Project Number</b>  22162
<b>Project Title</b> Do Liquid Objects Travel Farther than Solid Objects when Thrown?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The success of this project depended on building a catapult, with the help of a parent. Using algebra to calculate the system of weights, and levers needed to throw a water balloon the optimum distance. Then make 28 water balloons that were the same size and weight. Freeze three of them and flung them one after the other.</p> <p><b>Methods/Materials</b> On average, the frozen water balloon went as much as 9 feet farther than the unfrozen water balloon.</p> <p><b>Results</b> This happened because as the liquid water balloons flew through the air they changed into a shape with a lot of resistance.</p> <p><b>Conclusions/Discussion</b> The intent of this science fair project is to find out whether liquids could cover a larger distance than a solid object when thrown with equal force. The success of this project depended on building a catapult, with the help of a parent. Using algebra to calculate the system of weights, and levers needed to throw a water balloon the optimum distance. Then make 28 water balloons that were the same size and weight. Freeze three of them and flung them one after the other. On average, the frozen water balloon went as much as 9 feet farther than the unfrozen water balloon. This happened because as the liquid water balloons flew through the air they changed into a shape with a lot of resistance. The persons that helped me with this project are: Michael Dettinger and Robin Rierdan.</p>	
<b>Summary Statement</b> This project was started to find out if the fact that liquids don't retain any shape makes them travel farther than solid objects when they are thrown with equal force.	
<b>Help Received</b> Father helped build catapult	