



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> <b>Logan J. Creighton</b>	<b>Project Number</b>  22693
<b>Project Title</b> <b>Can a Thermosyphon be Used Effectively as a Passive Heating and Cooling System?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> To test a thermosyphon to see if it will effectively heat and cool a house without using any form of energy other than the heat of the sun which is preexistent. It is intended to be simple to build so as to meet the need of heating and cooling a house without using energy created by burning nonrenewable resources. <b>Methods/Materials</b> Two 12x18 inch shed style houses were built. A tank and a copper coil, consisting of 11 vertical 1/4 inch pipes, were installed on one of the houses. Three thermometers with remote sensors were attached to the houses to record the interior temperature of both houses as well as the ambient air temperature and the coil's temperature. The temperatures were recorded every hour from 9:00 A.M. to 8:00 P.M. for one test. Ten tests were made with the tank full of water and another ten with the tank full of ammonia (I ended up with a total of over 1,500 individual recordings). <b>Results</b> The thermosyphons had a total average temperature variation of 36.27 degrees Fahrenheit compared to the control's 46.81 degrees Fahrenheit variation and the ambient air's 38.25 degrees Fahrenheit variation. <b>Conclusions/Discussion</b> Based on my results I can conclude that my hypothesis was correct. A thermosyphon can be used effectively as a passive cooling system. It can heat although it is not as effective. Through both experiments the thermosyphons had smaller temperature changes than both the control and ambient air.	
<b>Summary Statement</b> This project proves that solar power, through the use of a thermosyphon, can indeed be used effectively to cool a house, reducing or eliminating the need for active cooling which depends on energy made by burning nonrenewable resources.	
<b>Help Received</b> Mother and sister proofread and father supervised.	