CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J0216

Project Title
The Workings of an Ancient Trebuchet

Abstract

Objectives/Goals
The purpose of my experiment was to determine the impact on the distance a projectile is thrown from a trebuchet by changing the length of the throwing arm and the mass of the counterweight.

Methods/Materials
I built a 1/7 scale model trebuchet out of popular wood, PVC pipe and metal "L" brackets. I tested the my trebuchet by varying the thowing arm length and counter weight mass to determine what effected the distance the projectile was thrown.

Results
Data from multiple tests indicated that the longer the distance between the axle and the projectile holder (throwing arm length) the greater distance the projectile is thrown. Also in second test, the weight of the counter balance was varried to test the impact on the disance the projectile was thrown. In this second test greater the weight of the counter balance the greater the distance the projectile was thown.

Conclusions/Discussion
The results supported my hypotheses. The further out along the arm you place the release point, further the projectile will be launched. The more weight placed in the counter balance the further the projectile will be propelled. It is possible that there may be a point at which this is no longer is true, and the distance declines, but I didn#t test with enough weight and/or long enough arm to reach that point.

Summary Statement
The purpose of my experiment was to determine the impact on the distance a projectile is thrown from a trebuchet by changing two things, first the length of the throwing arm and second the weight of the counterweight.

Help Received
Mom purchased materials and tools, Dad helped with a small tinker toy model. The staff at Roberts Hardware in Woodside help on material selection.