CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S1907

Project Title
How Does Temperature Affect the Heart Rate of Crickets?

Abstract

Objectives/Goals
To establish the relationship between temperature and the heart rate of crickets.

Methods/Materials
By gluing a rare-earth magnet to a cricket#s abdomen and using a Hal Effect Transducer (HET) capable of reading movement in the .5 micron range. The movement of the insect#s heartbeat was measured by observing voltage variations dependant on the distance between the magnet and the HET. The heartbeats were recorded by feeding the HET output voltage to the audio line-in input of a PC. To raise the temperature a heat lamp was used, and a thermometer recorded the change.

Results
For an increase of 4.4 C, the cricket#s heartbeats increased by 44%.

Conclusions/Discussion
The cricket#s heart rate went up with the environmental temperature. Perhaps the cricket#s circulatory system is also a cooling system in which blood must go through a heat-radiating element (possibly its wings).

Summary Statement
The effect temperature has on the heart rate of a cricket.

Help Received
My father helped me build the amplifier.