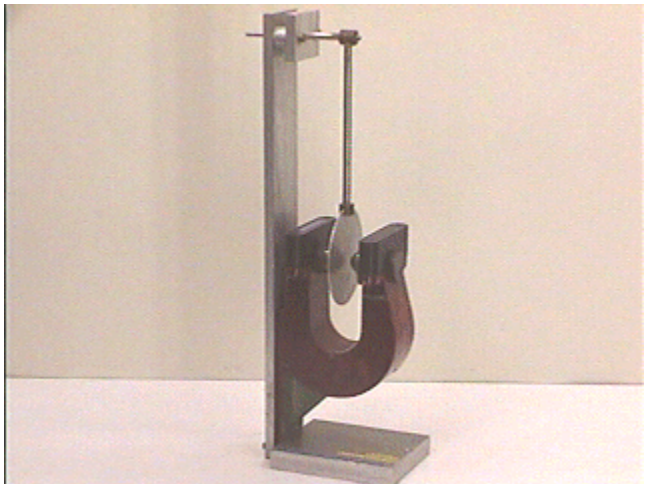
# Question #136

A pendulum with a large copper plate bob, like the aluminim bob shown in the photograph below, swings on a low-friction pivot.



In the first experiment the pendulum can be started into motion by lifting it to a horizontal position and releasing it, so that it will swing back and forth between the poles of a strong permanent magnet. A second experiment is to cool it down to liquid nitrogen (LN) temperature and *then* swing it through the magnet. A third experiment is to use an identical pivot on the rear of the magnet support and allow the pendulum to swing back and forth out of the influence of any magnetic field. The question is in which of these cases the pendulum motion will cease most quickly and in which the motion will persist the longest.

Rank the three cases above in order of the time it takes for the motion of the pendulum to stop, with the first the longest and the third the shortest:

- (a) pendulum in magnet.
- (b) pendulum with no magnetic field.
- (c) pendulum at LN temperature in magnet.

Click here for Answer #136 after January 27, 2003.

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Question of the Week

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given on the Lecture-Demonstration Home Page.