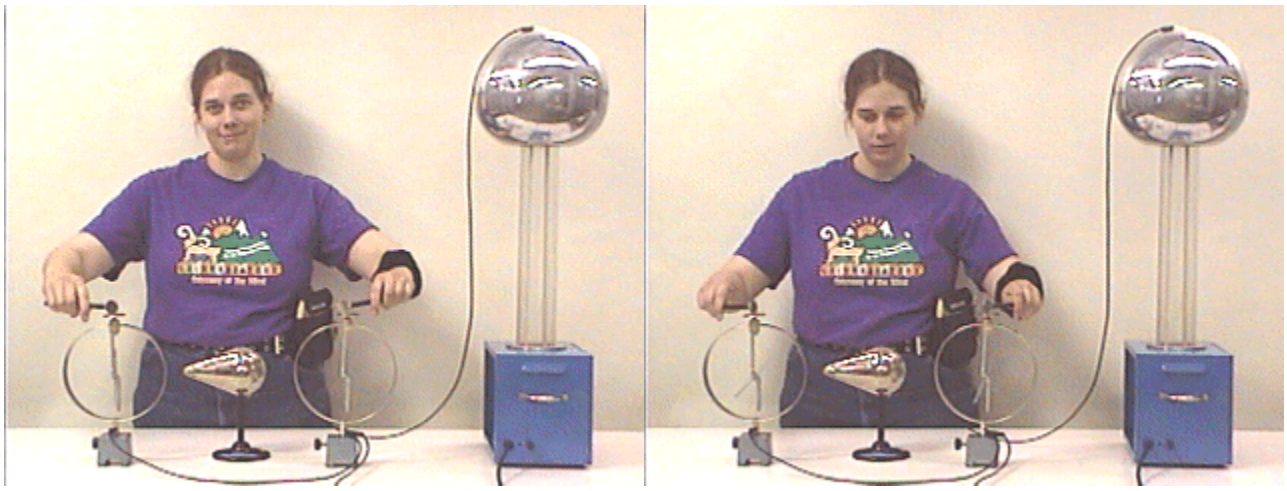
Answer #178

The answer is (a): the electroscope at the left will have a greater potential, as indicated by the greater deflection of its electroscoe in the photograph at the right. How this was accomplished is shown in an mpeg video by clicking your mouse on the photograph at the right.



The condition that no electric field can exist within a conducting material results in an uneven charge distribution on the surface of an asymmetric conducting object such as the ellipsoid here. In the case where the conductor has regions of different curvature, those locations having a smaller radius of curvature will have greater charge density and therefore create a greater electric field just outside the metal surface. It is from these points that an electrical discharge is most likely, a fact that is fundamental to the construction of a lightning rod. The paddle will pick up more charge from a location with a smaller radius of curvature.

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For questions and comments regarding the *Question of the Week* contact
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given on the Lecture-Demonstration Home Page.