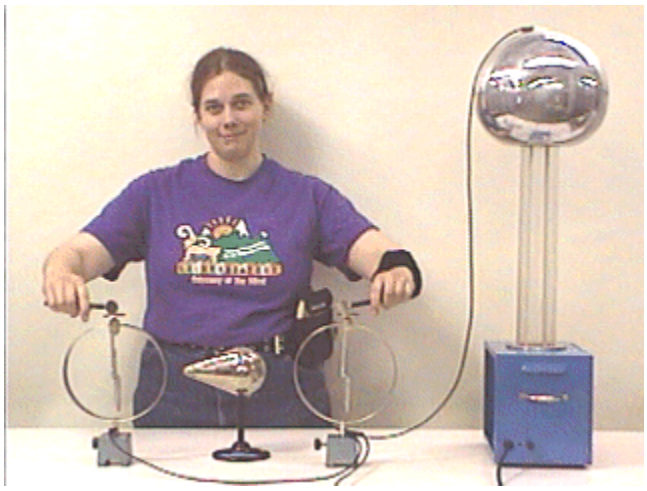
Question #178

Suppose that the ellipsoidal conductor, seen in the photograph below, is charged by connecting it to the dome of a van de Graaff generator and running the generator. For a review of how these electroscopes function, see Question #128.



Two small "paddles" consisting of insulating handles with little metal plates at the end, will be used to transfer charge from the ellipsoidal conductor to the electroscopes seen at the sides of the ellipsoid. Gwen will carry out this transfer of charge by touching the paddles to the ends of the ellipsoid and then to the respective electroscope. By repeating this process, the charge of the pointed end is transferred to the electroscope at the left in the picture and the charge of the larger end is transferred to the electroscope at the right. As the electroscope is charged, addition of more charge causes the needle to deflect, indicating greater charge or potential on the electroscope. The question regards how much charge will be transferred to each of the electroscopes.

After several transfers of charge,

- (a) the electroscope at the left will have a greater deflection.
- (b) the electroscope at the right will have a greater deflection.
- (c) both electroscopes will have the same deflection.

Click here for Answer #178 after March 8, 2004.

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For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.