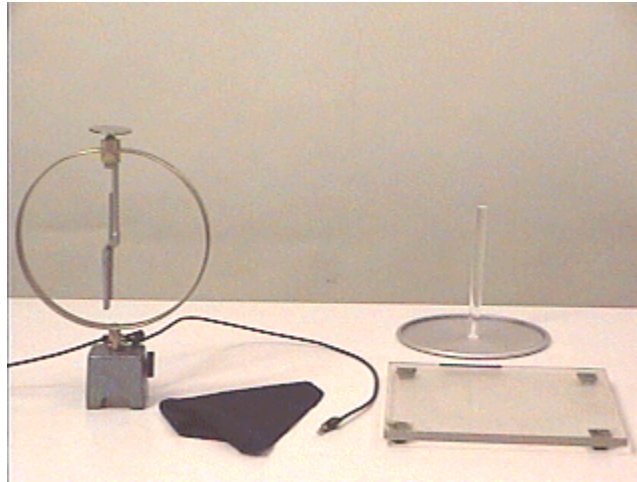


Question #190

The equipment shown in the photograph below includes a plastic plate called an electrophorus, a metal pie pan with an insulating handle, and an electroscope. When the electrophorus plate is rubbed with the black woolen cloth, also seen in the photograph, it acquires a charge. The initially uncharged pie pan can then be charged by placing it on the electrophorus and touching it with a grounded wire, as seen in an mpeg video by clicking your mouse on the photograph below. Notice that the video begins as Gwen is just completing rubbing the electrophorus plate for about 10 seconds.



So here is the question: Immediately after using the electrophorus to charge the pie pan and using the pie pan to charge the electroscope, as seen in the video, suppose that Gwen repeats the process. She will discharge the pie pan and the electroscope, place the pie pan on the electrophorus and ground it, and again touch the pie pan to the electroscope. Will it charge the electroscope again, or will it partially charge the electroscope, or is it necessary for Gwen to rub the electrophorus with the woolen cloth to restore the system to its original performance?

When Gwen repeats the charging process by touching the pie pan to the electrophorus and grounding it:

- (a) the charge on the electroscope will be about the same.
- (b) the charge on the electroscope will be considerably less.
- (c) there will be no charge on the electroscope.

Click here for [Answer #190](#) after September 20, 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](#).