ELECTROSTATICS - Electric Fields

A hollow conducting sphere/bucket with an orifice in the top is charged with the electrophorus. An insulated ball is used to remove charge from the inner surface of the sphere and transfer to an electrometer, but no charge is picked up. The same process is repeated on the outer surface of the sphere. This time, charge is found to reside there. This demonstration can also be done with a bucket.

Ref: hb x13, x15; wtape 1-01:36:23
1. We charge up the covered bucket (hole in Al cover) with the small vdG (with a connecting
cable). Hold the two conductors (on insulated rods), touching each other, near the bucket; then
separate them to charge them inductively. Show that they hold opposite charge by approaching
the projected electroscope. This exp did not work well in 1984 because sparks flew over. We
charged the bucket too much. Repeat the same exp with the balls touching (and separating)
inside the bucket; they will be uncharged. **Dry run needed.**

2. Spoon charge off the bucket, inside (no charge) and outside. Touch the spectrocope
(projected) with the "spoon" to show how much was taken off. **Dry run needed.**

(from Lewin 88, lett #5)
ELECTROSTATICS - Electric Fields

A teardrop shaped conductor on an insulating stand is charged with an electrophorous. Charge is "scooped" up from various points on the surface of the conductor with a proof plane and transferred to an electroscope. It is demonstrated that the charge density is greater at the areas of greater curvature. This demonstration can also be done with a bucket.

Ref: hb x20; wi tape 1-01:46:26
X20. Charge Density on Equipotential a Function of Curvature - 3W

**Purpose:** Show that charge density is greater on surface of a metal at places of highest curvature and vice versa.

**Equipment:** Ice-cream-cone shaped metal on insulated stand, electroferous, scooper, electroscope

**Procedure:**
- Charge cone with electroferous
- Scoop charge off rounded (pointed) end.
- Touch e.s. to get measure of charge density.
- Difference very pronounced.

Ref: w1 video V15, tape 1, 01:46:31 (used VdeGraaff and cooking pan.)