

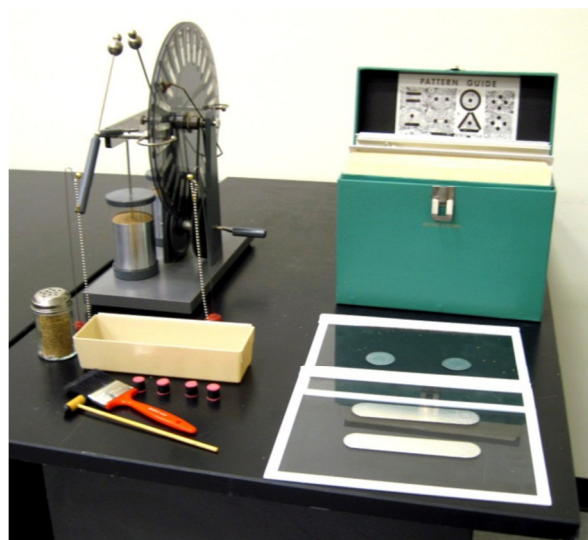
Electret Scientific Co.

E-19 Electrostatic Lines-of-Force Kit

A. Description

The kit consists of the following:

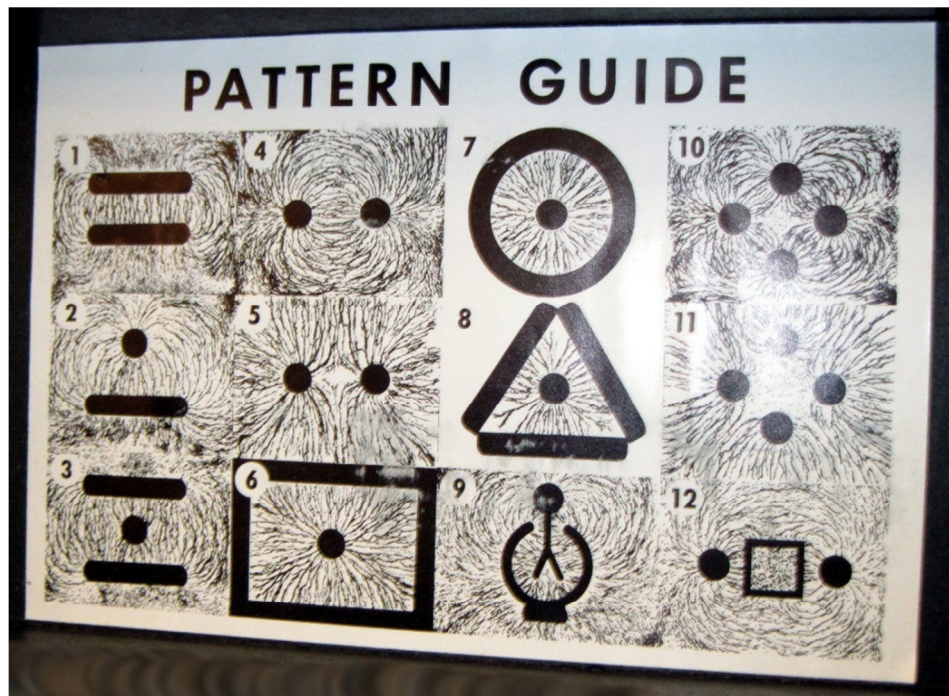
- 1 carrying and storage case with pattern guide,
- 10 glass plates with various electrodes arranged to show the 12 field patterns reproduced in the pattern guide,
- 4 small rubber feet and 4 large rubber feet for positioning the plates at a desired height on an overhead projector,
- 4 connecting posts,
- 2 long and 2 short chains for connecting the electrodes to a Wimshurst static electricity generator,
- 4 aluminum strips for making conducting edges on the plates,
- 1 small mallet for tapping the plates,
- 1 can of grass seeds,
- 1 shaker for sprinkling the seeds onto the plates,
- 1 tray for collecting the seeds from the plates,
- 1 brush for sweeping the seeds from the plates,
- 1 small jar of polishing compound for treating the plates,
- 2 pieces of cloth for applying the compound and buffing the plates,
- 1 control plate.



B. Demonstrating Electrostatic Lines-of-Force

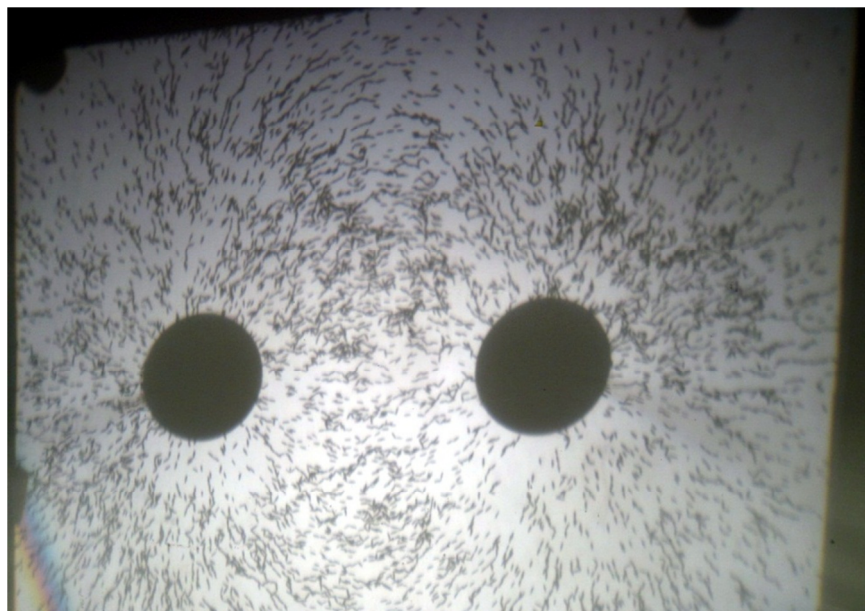
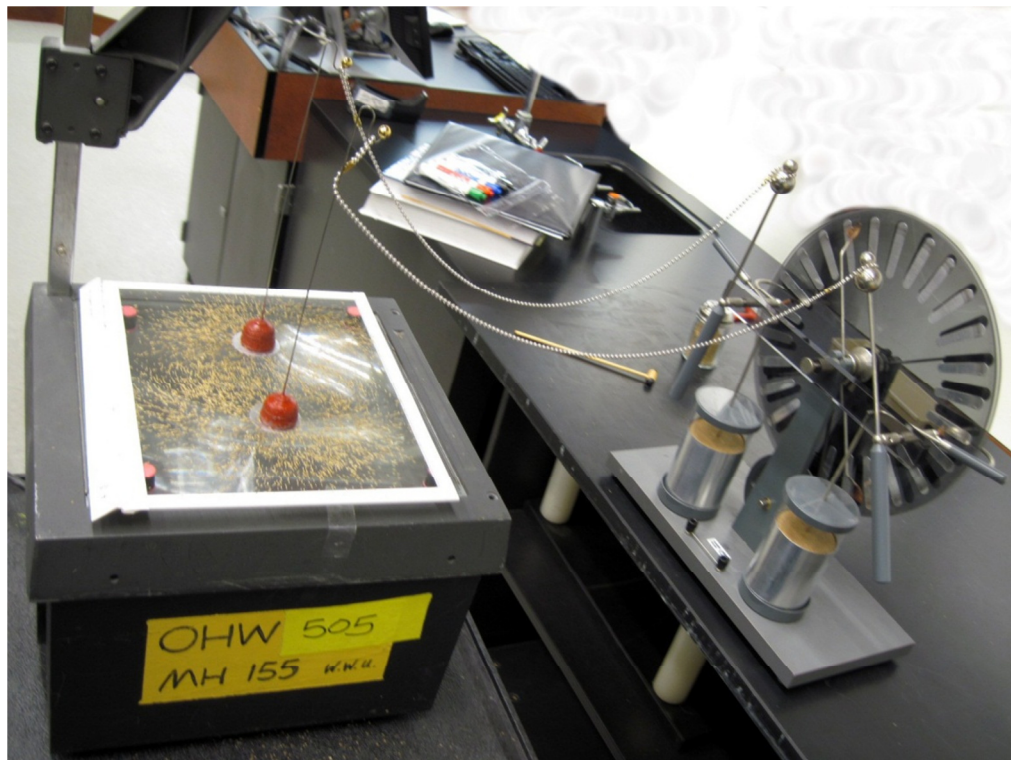
Note: Fingerprints may harm the plates.

Practicing this before demonstrating before the class is highly recommended. It takes some time to figure out where everything needs to go, so you are not bumbling around in front of the class!



1. Place the desired plate on an overhead projector using the four small feet or the four large feet (which ever works best with your projector) to support the plate at the corners. To show patterns 5 or 11, lay the four aluminum strips along the edges of the plate and place the four remaining feet onto the strips at the corners of the plate; ground the strips by touching one of them with a finger, or otherwise.
2. Position the connecting posts on the electrodes. Two posts are needed for Patterns 1 – 9 and 12; four posts are needed for Patterns 10 and 11.
3. Connect the posts to a high-voltage source by means of the two long chains. Use the short chains for making connections between posts when you want to show Patterns 10 or 11.

4. Sprinkle the grass seeds onto the plate.
5. Turn on the high voltage and lightly tap the plate with the mallet to facilitate the formation of the lines-of-force. Add more seeds where needed.



6. After demonstrating a lines-of-force pattern, remove the chains and connecting posts from the plate and sweep the seeds with the brush into the tray.

C. High-Voltage Source

The best results are obtained with a small Wimshurst generator. A high voltage power supply will not give the perfect symmetric patterns if one of its terminals is grounded. The voltage should be at least 5 kV. Some patterns require higher voltages than others. For safety, use only a low current supply (1 mA or less).

D. Control Plate

The control plate is made of untreated glass and carries the electrode arrangement No. 4 (the four aluminum strips are attached to that plate for shipping and storage). The plate is used for checking the condition of the regular plates. If the lines-of-force pattern obtained with the regular No. 4 plate is not much better than that obtained with the control plate, then the regular plates must be restored by using the procedure outlined under “Care of Plates”.

E. Care of Plates

Shortly before shipping, the plates were specially treated in order to reduce friction and cohesion between the seeds and the glass. However, if the plates become exposed to extreme conditions of dryness or humidity during shipping or storage, they may lose some of their desired properties. As a result, the lines of force will appear less prominent than they should (lines of force of average quality are shown in the pattern guide). To restore a plate, apply a very thin coat of the E-19 Glass Polish to the plate with the white cloth, covering uniformly the entire plate, including the electrodes.

Then buff the plate with the red cloth (the plate may be used immediately after buffing, even if the plate is not completely dry). Note: Fingerprints may harm the plates.

F. Grass Seeds

For best results use fresh seeds. We do not recommend the use of seeds that are over one year old. The kind of grass seed is a matter of personal preference. Try Kentucky Blue Grass (our standard seed) and Redtop Grass (produces very delicate patterns, but the lines of force appear to be somewhat thin).

Electret Scientific Co.
P. O. Box 4132
Star City, West Virginia 26505

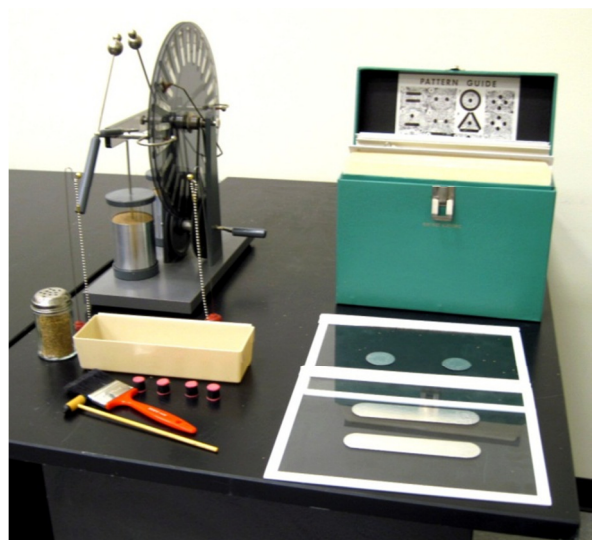
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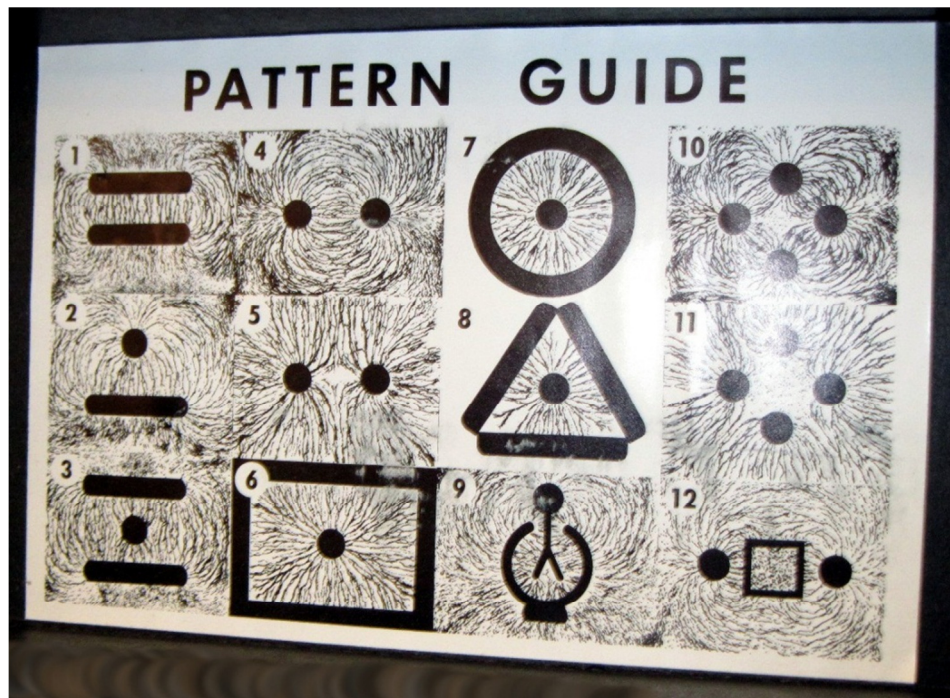
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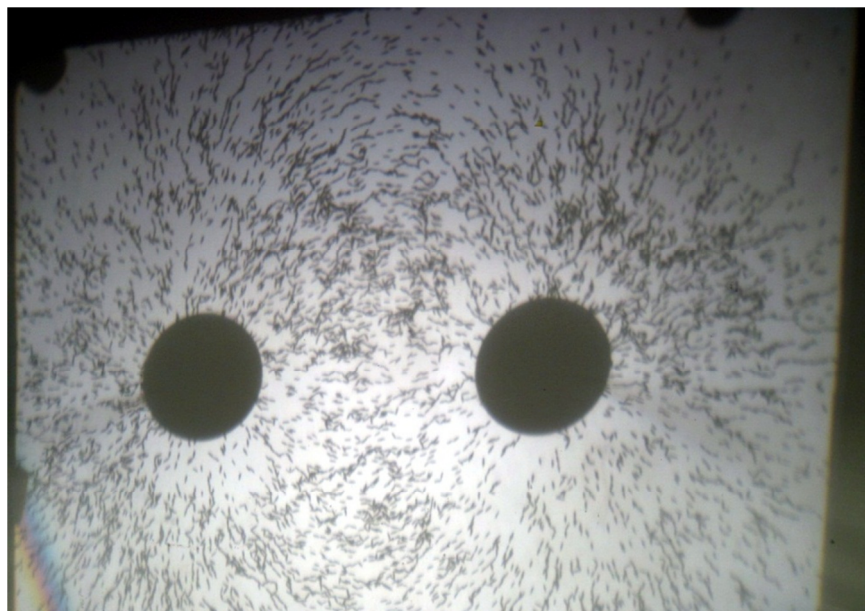
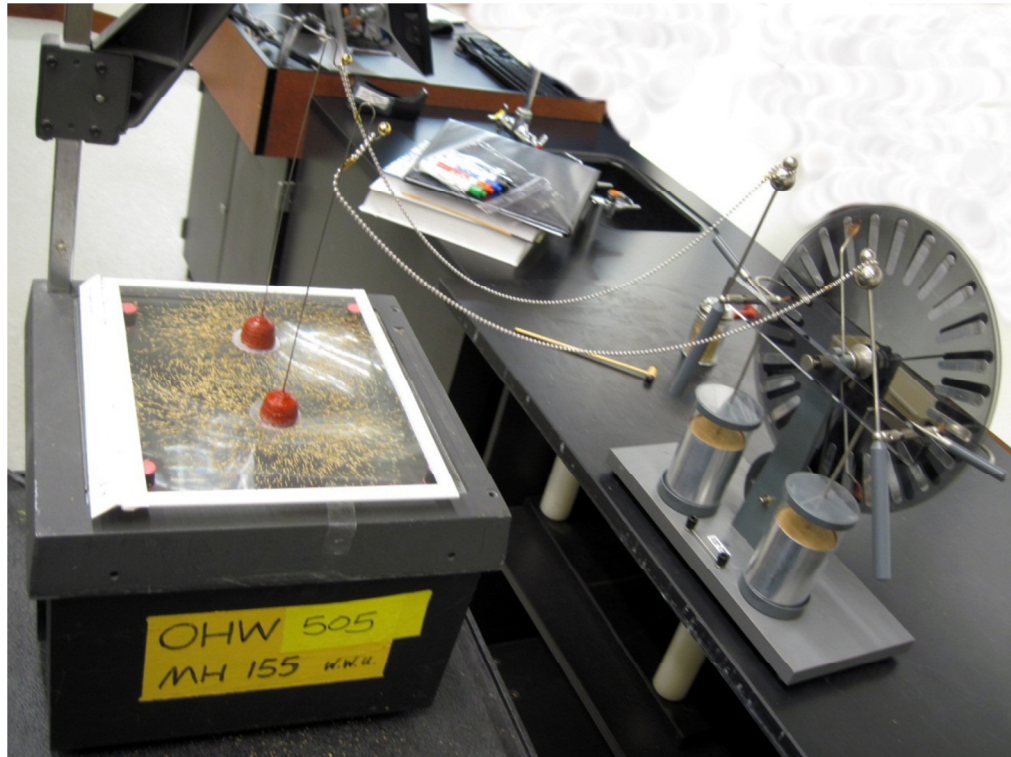
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