

**Hallwachs-effect in Selenium.** G. ZOLTÁN. (*Phys. Zeitschr.*, xiii, 454.)—Selenium was melted on a metallic disk and cooled rapidly. Some preparations were annealed at  $217^{\circ}$  C. to convert the selenium into the gray crystalline modification. The metallic plate was made the negative plate of an air condenser and was illuminated by a mercury lamp and charged by a water battery. The other plate of the air condenser was connected with a quadrant electrometer. The Hallwachs photoelectric current was measured by the angular speed of the electrometer needle, recorded on a chronograph. The results show, (1) in the case of crystalline selenium, that the photoelectric sensitiveness increases after the time of preparation, especially if kept in the light; the sensitiveness is increased by positive electrification at ordinary or low pressures, but reduced by negative electrification in the open air. (2) In the case of amorphous selenium, the sensitiveness is reduced by light and recovers in the dark. Negative electrification diminishes sensitiveness, while positive electrification increases it.

**Efficiency of Illuminants.** C. P. STEINMETZ. (*Electrician*, lxx, 346.)—It is pointed out that besides the efficiency of the illuminant such questions as the distribution of light, intrinsic brilliancy, and color are important. But practically any distribution curve can be obtained by suitable shades and reflectors, etc., although with some loss of light. A bad natural distribution curve is therefore a disadvantage, and so is a high intrinsic brilliancy. In correcting either of these defects a loss of from 10 to 30 per cent. may be incurred. Color has a direct influence on efficiency; bluish-green light is probably the most efficient radiation at low illuminations. A diagram is given showing the efficiency in candle-power per watt, plotted against the energy and consumption of various illuminants. The highest figure recorded for the titanium arc and yellow flame-arc is about 5 candle-power per watt.

**High Tropical Winds.** W. VAN BEMMELLEN. (*Nature*, xc, 250.)—Observations of pilot balloons in Batavia confirm the existence of a high *westerly* wind above the trades and anti-trades, and immediately below the persistent easterly winds which are peculiar to the tropics, and which carried the dust from the Krakatoa eruption of 1883 many times round the earth at a level of about 30 kilometres. The order of the currents is as follows: (1) Shallow local breeze; (2) southeasterly trade wind to 3 kilometres; (3) northeasterly anti-trade to 17 kilometres; (4) upper southeasterly trade wind to 18 kilometres; (5) high westerly wind to 23 kilometres; (6) easterly Krakatoa wind to at least 30 kilometres. The velocities of the currents numbered (2), (3), (5), and (6) are about 5, 16, 12, and 35 metre-seconds respectively.