

NOTES FROM THE RESEARCH LABORATORY,
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CANDLE-POWER MEASUREMENTS OF SERIES GAS-FILLED
INCANDESCENT LAMPS.

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THIS paper is an extension of one presented before the Illuminating Engineering Society (*Transactions of the Illuminating Engineering Society*, 11, 187-91, March 20, 1916).

The customary rating of incandescent lamps in mean horizontal candle-power is not satisfactory for gas-filled lamps, and is being changed to spherical candle-power, or lumens. The simplest way of doing this is to measure the mean horizontal candle-power and multiply by a suitable reduction factor. Small variations in the form of the filament, however, render this method inaccurate. Measurements have been made to show the variation in reduction factor for different filament positions. Four filaments of the customary spiral form, and having as nearly as possible the same spacing, diameter, leads, and number of turns, were mounted in different positions—vertical, horizontal, diagonal, and V-shaped—and were run at the same average temperature of 2825° K. The mean horizontal candle-power was determined by taking measurements about the stationary lamp at intervals of 10° . Curves showing the candle-power distribution are given. The reduction factors obtained for the four filaments were 0.74, 1.01, 0.78, and 0.82 respectively, showing the very marked effect of variation in filament form. It is concluded that gas-filled lamps should be rated in terms of watts per spherical candle-power, as the variation in this value with change of form is very small.

The method of measuring the filament temperature by color match, and of photometering with the standard lamp running at low temperatures compensated by blue-glass screens, is outlined.

* Communicated by the Director.

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