

## THE METERING OF PROJECTION PRINTING

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A simple photometer for accurately metering the intensity of various parts of the negative image is a very useful dark room adjunct in making projection prints from miniature negatives. The one shown in the orthographic projection has proved to be accurate to .01 candle meter.

This drawing (fig. 1) shows the elevations with front and side removed and the top view with the top partially cut away. There is a small room containing a 5-watt lamp and switch, light shielded from the rest of the case except for a small window in the side wall (shown shaded in the drawing). This window is covered with white paper as a diffusing matt, and is shuttered by a variable disc (A) turned by a knob graduated in candle meters on the right hand side of the case. The light may be varied from zero to the upper limit, which may be varied by changing the size of the window or by changing the baffling on the sides of the case (not shown in the figure). These baffles are simply pieces of black, white, and blue paper on the inner walls to change the amount and color value of the light that illuminates the plate B that covers half of the field of view. Usually 1 candle meter is sufficient range for amateur photographic enlargement. The intensity of B may thus be varied from zero to 1 candle meter without changing the color of the light. A rheostat control is not practicable because of color change and lack of constancy of the rheostat with temperature changes. The sight tube directs the vision thru an aperture stop C, which is adjustable as indicated, onto a field of view one-half of which is covered by the plate B, and the other half covers a portion of the negative image being metered. This limitation of the field of view is essential in visual comparisons of brightness. A blue filter placed over this aperture makes it possible to work with a bright red light on all the time, and completely corrects any color differences.

In use, it is necessary to have a fair notion of the sensitometry of the paper.

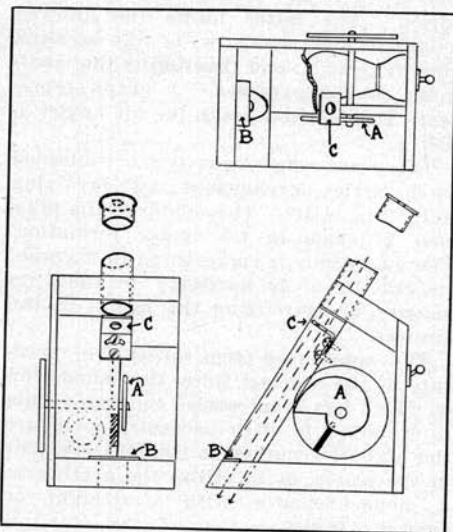


Fig. 1.

For example, a contrast grade of bromide paper has a lower threshold at about 0.5 candle meter second (c.m.s.), a middle grey exposure of  $1\frac{1}{2}$  to 2 c.m.s., and an upper threshold of 7 c.m.s. Suppose that the negative is projected and a portion selected in the middle grey, that in the artist's judgment requires 1.5 c.m.s. exposure. The photometer may be set at .10 candle meter and the projector diaphragm adjusted until this portion matches in the photometer field. Then 15 seconds exposure should be correct for the entire negative.

Differently exposed negatives will require other photometer settings. It is interesting to meter other spots in the shadows and highlights and calculate the exposure these portions will receive. Thus a grade of paper may be selected that would bring out the full merits of the negative.

The photometer has been used for measuring brightness of dimly lighted rooms, absorption of wall papers, etc.

Sufficient detail is included in the figure so that any one may construct the apparatus for his own dark room.