

A strong magnet is used and it is provided with an adjustable shunt so that the intensity of the field in the air gap can easily be varied over a considerable range.

With the period adjusted to 10 seconds and the field strength adjusted so as to make the external critical resistance 20 ohms the sensitivity is approximately 20 mm. per micro-volt, with the scale at a distance of 1 meter.

As compared with the most sensitive "low resistance" galvanometers on the market, taking the mean of the operating constants of three instruments of different designs, we have, approximately—external critical resistance 65 ohms—period 6 seconds—and sensitivity 2 mm. per micro-volt.

It is probable that further experience with this design will suggest minor changes in the construction.

BUREAU OF STANDARDS,
WASHINGTON, D. C.

THE CONTROL OF THE WAVE-LENGTH-SENSIBILITY CURVES FOR SELENIUM.¹

By E. O. DIETERICH.

AN investigation of the conditions governing the shape of the sensibility curves for selenium led to the production of several new types of cells, which may be classified into two general groups; those that have a maximum sensibility for wave-lengths longer than $640\ \mu\mu$, and those that show very little sensitiveness in this region, but have a maximum for wave-lengths shorter than $640\ \mu\mu$. The location of the maximum for the different types produced thus far is as follows: $440\ \mu\mu$, $500\ \mu\mu$, $550\ \mu\mu$, $700\ \mu\mu$, $720\ \mu\mu$, and $800\ \mu\mu$. Those that show a maximum in the red also have a pronounced minimum at $640\ \mu\mu$, and a broad maximum at the shorter wave-lengths. Some, however, have two well-defined maxima; those that have a maximum at $440\ \mu\mu$ also show one at $700\ \mu\mu$ or $720\ \mu\mu$, and a minimum at $640\ \mu\mu$.

The location of the maximum seems to be determined entirely by the method of "annealing" the cells. The samples annealed at 210°C ., or higher, all show a maximum below $640\ \mu\mu$, and no maximum at all in the longer wave-lengths. Those annealed at lower temperatures, 180°C ., all show a maximum at wave-lengths greater than $640\ \mu\mu$, which is higher than the broad, undefined maximum in the shorter wave-lengths. When the samples are annealed at temperatures between 180°C . and 210°C ., the height of the maximum in the red, relative to that in the blue, becomes less and less, until at about 210°C . it disappears. Further work, to determine more accurately the governing conditions, is in progress.

THE PHYSICAL LABORATORY,
STATE UNIVERSITY OF IOWA.

THE TESTING OF POTENTIOMETERS.¹

By FRANK WENNER AND ERNEST WEIBEL.

FOR precise measurements with a potentiometer the errors in the adjustment of the resistance sections or coils in the apparatus must be known.

¹ Abstract of a paper presented at the Washington meeting of the Physical Society, April 24-25, 1914. To be published in the Bulletin of the Bureau of Standards and reprinted as Scientific Paper No. 223.