

## THE COAST AND GEODETIC SURVEY MAGNETOMETER.

BY L. A. BAUER.

The source of error complained of by Dr. Morize has been eliminated in the present form of magnetometer used by the Coast and Geodetic Survey.

The above cut will show how this has been done, viz., the glass window in the front end of the box has been removed entirely, and there is used instead a cloth hood, fastened to the box and fitting snugly by means of a ring over the observing telescope. The window in the back end of the box can be turned aside, on a pin, when observing on the mark. It may also be pointed out that the azimuth mirror, which constitutes the weak part of the Kew magnetometer, is replaced in this form of instrument by a special theodolite attachment (as shown on the right of the cut) fitting on the same base as the magnetometer, the alt-azimuth method for determining the meridian being used. By this method the observer is independent of the longitude of the place, and the need of great accuracy in the times of observation.

THE EFFECT OF GLASS COVERS IN MAGNETIC INSTRUMENTS.<sup>1</sup>

BY E. G. FISCHER.

Some time in the winter 1896-7, while determining index corrections of the compass declinometers belonging to the Coast and Geodetic Survey, Assistant G. R. Putnam observed motions of the magnetic needles of such nature as to leave no doubt that the glass covers of these instruments carried strong electrostatic charges, caused by atmospheric conditions, which at the time were especially favorable, the weather being dry and cold.

In two of the declinometers, in which the glass covers were afterwards replaced by brass plates, with only small pieces of glass covering the openings through which to observe the points of the needles, no erratic movements were noticed, and repeated determinations of their index corrections agreed with each other within the error of observation; while, before, nearly all observers using these instruments reported occasional discrepancies in their results, which could not be accounted for.

These experiences naturally lead to the question as to what may be the effect of the same phenomenon upon the magnetic needle in other instruments.

<sup>1</sup>The following suggestions as to some improvements in magnetic instruments were made in the form of a letter in 1898, to the Assistant in Charge of the Office of the United States Coast and Geodetic Survey, and are published here with the permission of the Superintendent.—ED.