

*Pendulum observations.*—The pendulum operations instituted for ascertaining vertical attraction near the Allegheny Mountains, and commenced in 1878 by Assistant C. S. Peirce at Allegheny Observatory, have been completed by occupying a station at Ebensburg in Cambria County, Pennsylvania, and a station at York in the same State. In careful determinations of the difference of longitude between Ebensburg and Allegheny, Assistant Peirce was aided by an observer who acted at the last-named place under the supervision of Prof. S. P. Langley, director of the Observatory.

For the purposes of the pendulum experiments, time was telegraphed daily, and thus the observations made for time at Ebensburg were supplemented. The latitude of the station there was determined by observations with a sextant. At that station Mr. Peirce was aided by Messrs. Henry Farquhar and Marcus Baker. The first-named aid made the observations at York under the supervision of Assistant Peirce.

At both of the stations in Pennsylvania extensive series of observations were recorded for the purpose of studying the statical and dynamical flexure of variously modified pendulum supports, and the influence of these modifications upon the period of oscillation of the pendulum. The results will be given hereafter in a separate paper by Assistant Peirce. In the course of the season experiments were made by substituting for the ordinary knife edge of the pendulum small steel cylinders. This method, proposed in a previous report by Assistant Peirce, had been independently recommended by M. Yvon Villerceau, but the trials made by Mr. Peirce proved that the friction was increased by that method of swinging the pendulum.

The measurement of the acceleration of gravity made by Assistant Peirce at Paris, France, revealed a disagreement with the measures obtained by Borda and Biot. For the investigation of the discrepancy, Mr. Peirce again visited Paris, with the sanction of the honorable Secretary of the Treasury, and by theoretical and experimental studies demonstrated from principles not known in their times that the results obtained by the two celebrated physicists were subject to certain very large corrections. These, when properly applied, brought their results into perfect accord with results already reported by Assistant Peirce, who read a memoir upon the subject before the Academy of Science of the Institute of France. The paper was printed in the *Comptes Rendus* for the 14th of June, 1880, and on its reference to a committee the conclusions of Assistant Peirce received the approval of the Academy.

Operations for the comparison of the meter with a wave length of light have been provisionally completed, yet certain parts of the work require verification—in particular the comparison of decimeters with the meter has been only partly made. In connection with this subject Assistant Peirce has published, with my approval, in the *American Journal of Mathematics*, a memoir upon certain apparitions which appear in diffraction spectra. These were shown to be consequences of eccentricity in the screw used in ruling the diffraction plates. By another observer the subject was treated in a paper presented to the American Association for the Advancement of Science at their last meeting in Boston.