from the vertical attraction of mountains, etc., what their horizontal attraction, and the resulting deflection of the plumb line must be.

"(6.) Although in laying out the plan of a geodetic survey the relative utility of the knowledge of different quantities ought to be taken into account, and such account must be favourable to pendulum work, yet it is true that nothing appertaining to such a survey ought to be neglected. The knowledge of the force of gravity is not a mere matter of utility alone, it is also one of the fundamental kinds of quantity which it is the duty of a geophysical survey to measure. Astronomical longitudes and latitudes are determinations of the direction of gravity; pendulum experiments determine its amount. The force of gravity is related in the same way to the latitude and longitude as the intensity of magnetic force is related to the magnetic declination and inclination, and, as a magnetic survey would be held to be imperfect in which measurements of intensity were omitted, to the same extent must a geodetic survey be held to be imperfect in which the determinations of gravity have been omitted."

These reasons for the prosecution of pendulum determinations were given by Mr. C. S. Pierce before a conference on gravity determinations held in Washington in May, 1882. This conference was attended by the Superintendent of the United States Coast and Geodetic Survey, Major Herschel, R.E., Prof. C. S. Pierce, Prof. Newcomb, and Messrs. George Davidson and C. A. Schott. But what was true in 1882 applies with equal force in 1914, and especially in a country such as Canada where a geodetic survey is only in its infancy.

CONCLUSION.

In concluding this report the writer desires to express his gratitude for assistance which he has received from Mr. William Bowie, Chief of the Computing Division of the United States Coast and Geodetic Survey, from Mr. W. H. Burger in his article on "The Measurement of the Flexure of pendulum supports with the Interferometer", and from Dr. W. F. King, Chief Astronomer, who gave many valuable suggestions.

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