

elevations are compensated by a deficiency of density in the matter below sea-level, but that local topographical irregularities, whether elevations or depressions, are not compensated for, such irregularities being maintained by the partial rigidity of the earth's crust.

The residuals with Bouguer's reduction should then be interpreted as a measure of the deficiency of density, and on the other hand, the residuals with the reduction for elevation should be taken as a measure of the lack of compensation, after allowing for uncertainties of observation and the effects of local geological conditions. Developing the idea of M. Faye, observed values of g may be corrected for this lack of compensation by adding or subtracting the vertical attraction of a horizontal plain whose thickness is the difference in elevation between the station and the average surrounding surface. This correction may be expressed by $dg = 2g \cdot \frac{h}{r} \cdot \frac{3}{4} \frac{\delta}{\Delta}$, which represents the attraction of an indefinitely extended horizontal plain of thickness h and density δ . The correction is positive for stations below the average level and negative for stations above the average level. The average elevation may be secured from a contour map for the country within a radius of one hundred miles.

In the following Table I will be given the values for the periods of the pendulums at the different stations, and the deduced value of gravity in dynes. In Table II will be applied the corrections for elevation and topography according to the three different methods outlined above. In Table III will be found a comparison between the gravity obtained for Ottawa in 1902 and in 1914. The difference of .014 dynes is probably due in part to the situation of the two stations. The 1902 station was near the bank of the Ottawa river; the bank at this point rising about one hundred feet from the water in an almost perpendicular direction. The 1914 station is distant from the river about one and a half miles, and the country around the station is fairly level.