Summary of distances, time intervals, and measurements of differential earth movements.

Pairs of stations.	Direct distance.	Distance in direction S. 27° W.	Interval between dates of measurements.	Change in relative height.	Change per 100 miles per century.	Probable errors of quantities in last column.
	Miles.	*Miles.*	*Years.*	*Feet.*	*Feet.*	*Feet.*
Sacketts Harbor and Charlotte	86	76	22	0.061	0.37	0.18
Port Colborne and Cleveland	158	141	37	.239	.46	.11
Port Austin and Milwaukee	259	176	20	.137	.39	.09
Escanaba and Milwaukee	192	186	20	.161	.43	.06
Mean					0.41	
Weighted mean					.42 ± 0.05	

The stations of the several pairs are at different distances apart, the directions of the lines connecting them make various angles with the theoretic direction of tilting, and the time intervals separating the measurements are different. To reduce the results to common terms, I have computed from each the rate of tilting it implies in the theoretic direction, S. 27° W. In the sixth column of the preceding table the rate is expressed as the change in relative height of the ends of a line 100 miles long during a century.

Compared in this way, the results are remarkably harmonious, the computed rates of tilting ranging only from 0.37 foot to 0.46 foot per 100 miles per century; and in view of this harmony it is not easy to avoid the conviction that the buildings are firm and stable, that the engineers ran their level lines with accuracy, that all the various possible accidents were escaped, and that we have here a veritable record of the slow tilting of the broad lake-bearing plain.

The computed mean rate of tilting, 0.42 foot per 100 miles per century, is not entitled to the same confidence as the fact of tilting. Its probable error, the mathematical measure of precision derived from the discordance of the observational data, is rather large, being one-ninth of the whole quantity measured. Perhaps it would be safe to say that the general rate of tilting, which may or may not be uniform for the whole region, falls between 0.30 and 0.55 foot.

While the credit of formulating the working hypothesis or geologic prediction which has thus been verified by measurement belongs to Spencer, it is proper to note that the fundamental idea of modern differential earth movement in the Great Lakes region was announced much earlier by G. R. Stuntz, a Wisconsin surveyor. In a paper communicated to the American Association for the Advancement of Science in 1869, he cites observations tending to show that in 1852–53 the water of Lake Superior stood abnormally high at the west end, while it was unusually low at the east, and he infers that the land is not stable.

The geographic effects of the tilting are of scientific and economic importance. Evidently the height of lake water at a lake's outlet is regulated by the discharge and is not affected by slow changes in the attitude of the basin, but at other points of the shore the water