

Propagation of the Charleston Earthquake.

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Locality.	State.	Distance.	Time.	W't.	Remarks.
Brooklyn.	N. Y.	643	54 ^m 30 ^s	3	mean of 4 good obs.
New York,	N. Y.	646	54 12	6	mean of 10 obs.
Hackensack,	N. J.	654	54	1	
Warwick,	N. Y.	661	56	1	
Gowanda,	N. Y.	666	55	1	
Detroit,	Mich.	675	55 12	3	mean of 5 obs.
Valparaiso,	Ind.	705	53	1	
London,	Ont.	706	55	1	
Peoria,	Ill.	710	55	1	
New Haven,	Conn.	711	55 30	2	mean of 2 obs.
Port Huron,	Mich.	712	55	1	
Hudson,	N. Y.	747	57	1	
Hartford,	Conn.	747	54 45	2	mean of 2 good obs.
Stuyvesant,	N. Y.	760	57	1	
East Saginaw,	Mich.	766	58	1	
Albany,	N. Y.	770	56 40	1	
Fonda,	N. Y.	775	55	1	
Saratoga,	N. Y.	797	53	1	
Greenfield,	Mass.	799	55	1	
Keokuk,	Iowa.	810	56	2	2 obs.
Dighton,	Mass.	812	56	1	
Davenport,	Ia.	827	55	1	
Lake Placid,	N. Y.	827	55	1	
Jamaica Plain,	Mass.	828	57	1	
Blue Mt. Lake,	N. Y.	830	56	1	
Bellows Falls,	Vt.	832	53	1	
Boston,	Mass.	832	55 30	1	2 obs.
Dubuque,	Ia.	878	57	1	
Prairie du Chien,	Wis.	924	56 30	1	

Taking these in groups in the manner just indicated we have:

		Weight.	Residuals.
Centrum	$x + 0y = 0$	2	+ 4.06
0 to 155	$x + 111y = 39$	9	+ 1.90
203 to 284	$x + 240y = 84$	8	- .28
302 to 377	$x + 342y = 122$	7	- 4.43
405 to 491	$x + 462y = 158$	16	- .60
501 to 588	$x + 542y = 184$	18	- .05
608 to 675	$x + 647y = 217$	20	+ 1.80
705 to 799	$x + 744y = 255$	15	- 4.00
810 to 924	$x + 837y = 278$	11	+ 3.85

The normal equations are:

$$106x + 55768y = 18940.$$

$$55768x + 34474772y = 11668675.$$

The solution gives $x = + 4.06 \pm 1.7$ seconds, $y = 0.3319 \pm 0.0029$. The resulting speed is, 3.013 ± 0.027 miles or 4848 $\pm$ 43 metres per second. To this result some correction must be applied for the systematic error, which, as already stated, there is reason to believe probably lies between one-tenth and one-twentieth of the mean time-interval and therefore of the speed. Suppose it be taken at one-fifteenth of the amount, with a probable error of one third of the correction. This