

From which  $x = +5.0$ ,  $y = 0.379$ . The resulting speed is  $2.638 \pm 0.105$  miles, or  $4245 \pm 168$  meters per second. If the correction for the systematic error has a value approximately that which has been derived from the comparisons of the stopped clocks with well determined times of particular localities, or not less than one-fifth the amount, the corrected speed would be from 5100 to 5200 meters.

We may now proceed to combine the results of the first three groups and obtain from them a single mean. The probable error of the fourth group being uncertain it is necessary to omit it. Taking the weights inversely as the squares of the probable errors we have:

|              |                    | W't. |
|--------------|--------------------|------|
| Group I,     | $5205^m \pm 168^m$ | 2    |
| Group II,    | $5192^m \pm 236^m$ | 1    |
| Group III,   | $5171^m \pm 116^m$ | 4    |
| Mean result, | $5184^m \pm 80^m$  |      |

It remains to inquire whether the data indicate any variation of the speed. The answer is in the negative. The data are inconsistent with any variation of a systematic character and there is no apparent means of detecting an unsystematic one. A small irregular variation, such as might be caused by varying density and elasticity of the propagating medium, would not be inconsistent with the data; but the evidence of it cannot be separated from the errors of observation.