

1865, November 21. The hanging level was suspended from the telescope of the Mural Circle, and the following readings taken:

Mic. A.	Mic. B.	Level.	
		N. end.	S. end.
"	"	d.	d.
16.8	21.1	32.7	84.5
26.9	31.2	20.5	72.3
40.3	45.1	5.2	57.2
14.9	19.4	34.4	86.3
41.5	46.1	4.0	55.9
35.7	40.6	10.2	61.1 62.1(?)
30.2	35.2	16.4	68.3
24.2	29.0	22.8	74.9
18.6	23.8	29.2	81.2
13.2	17.8	36.2	88.2
42.9	47.7	2.0	54.1

Temperature 53°. From which is concluded

$$\text{One division} = 0''.872 = 0s.058.$$

The three readings preceding the last seem to indicate a diminution of the value as we approach the end of the scale, but the diminution is no greater than what may be due to errors of the microscopes.

(53) *Difference of collars of collimators.*—It is requisite that we know the difference between the true level of the axis of the collimator and the readings of the spirit level set upon the collars on which the collimators turn. This is effected by reading the level when the collimator is in its regular position, and when reversed, end for end, around a vertical axis, the operation being repeated a number of times in succession to eliminate the possible changes of level during the operation.

The following are the level indications of the two collimators in different angles of position. The angle of position of the collimator indicates its position as it is turned upon its Ys, without being raised from them. They are used only in those four positions in which one of the wires is horizontal; and, in practice, the positions are almost entirely confined to two, which are designated as 0° and 180°. The angle is measured by the position of the clamp which binds the eye-piece, being called 0° when this clamp points horizontally to the right of an observer looking into the eye end of the collimator, and 90° when it points upward.

The collimator is said to be direct when the collimator points toward the Transit Circle; reverse when it points from it. The level readings are positive when the pivot farthest from the Transit Circle is too high.

COLLIMATOR A.

First series.—Position changed from 0° to 180°, and the collimator reversed alternately one pair level readings between each change.

	Position 0°.		Position 180°.	
	Direct.	Reverse.	Direct.	Reverse.
Level A . . .	+ 3.84	+ 1.35	+ 3.71	+ 1.26
	+ 2.91		+ 2.60	
Level B . . .	- 0.45	- 0.78	+ 1.02	- 0.90
	+ 0.62	- 0.98	+ 0.55	- 1.08

$$\text{Mean, D-R. } \begin{array}{l} d. \\ +1.32 \end{array} \quad \begin{array}{l} d. \\ +1.80. \end{array}$$