	Second series.				
	Mic. I.	Mic. III.	Mic. VI.	Mic. VIII.	Mean.
r. r.	"	"	"	"	"
31.25 — 31.75	7.54	7.69	7.51	7.36	7.52
31.75 — 32.25	7.54	7.98	7.73	8.02	7.82
32.25 — 32.75	7.75	7.65	7.86	7.86	7.78
32.75 — 33.25	7.51	7.49	7.24	7.22	7.36
33.25 — 33.75	7.37	7.50	7.64	7.71	7.56
33.75 — 34.25	7.57	7.76	7.66	7.61	7.65
34.25 — 34.75	7.94	7.64	7.75	7.85	7.79
34.75 — 35.25	7.49	7.57	7.62	7.60	7.57

The mean of the odd measure is 7″.66, and of the even ones, 7″.60.

From the differences 0″.16 and 0″.06 of the half revolutions the screw would seem to be affected with the error

$$0''.04 \cos u + 0''.02 \sin u;$$

an error so small that it has been neglected, especially as the screw is used about equally through several revolutions for every class of observations, by which the periodic errors will disappear from the final result of the observations. After double wires were placed in the collimators, measurements of successive half revolutions of the micrometer were made, which gave for the periodic correction,

$$0''.07 \cos u - 0''.05 \sin u.$$

(57) *Value of a Revolution of the Micrometer Screws.*—1866, June 12.—The telescope was set on collimator B. The record does not state whether it was north or south. The microscopes, however, indicate that it was south.

The following readings of the microscopes and zenith distance micrometer were taken successively in different positions of the telescope. Each micrometer reading is the mean of nine; three for coincidence of collimator image with each wire, and three for a position midway between wires:

Minute of circle division.	Readings of microscopes—				Mean.	Corr. for—		Corrected circle reading.	Microm. reading.
	V.	VI.	VII.	VIII.		Ineq.	Div.		
′	r. ″	″	″	″	″			′ ″	r.
56	9 19.5	20.3	21.2	23.7	21.18	— .15	— .04	55 50.99	28.408
54	16.5	18.0	19.2	21.8	18.89	— .14	— .12	53 48.63	20.392
58	21.4	22.8	23.2	26.0	23.35	— .12	+ .16	57 53.39	36.377
54	15.8	17.9	18.9	21.2	18.45	— .14	— .12	53 48.19	20.373
58	21.6	22.8	23.4	25.9	23.43	— .12	+ .16	57 53.47	36.393
56	19.0	20.6	21.4	23.7	21.18	— .15	— .04	55 50.99	28.395

These readings give from 20 r. to 28 r., 1 rev. =15″.286,
28 r. to 36 r., 1 rev. =15 .337.

An increase in the value of a revolution as the turns increase seems to be indicated.

In the great majority of observations the micrometer is used between 26 and 34 revolutions; a determination of the value between those limits was therefore made which gave 15″.296. The value actually adopted was the mean of the two determinations, or 15″.303.

A third determination, made on September 3, 1866, gave

From 26 r. to 34 r., 1 rev. =15″.311;
34 r. to 45 r., 1 rev. =15 .375;

which seems to confirm the suspicion of an increase in the value of a revolution as the screw is advanced.