FIRST
ANNUAL REPORT OF THE SEISMOGRAPH STATION AT WOODBRIDGE HILL, GUILDFORD.

YEAR 1910.

THE SEISMOGRAPH at Woodbridge Hill, Guildford, is designed on Prof. Milne's principle: but it differs from the standard type of Instrument, in order to make it easily workable during my absences from home. It stands in a detached observatory, on the London Clay, at a horizon perhaps 50 ft. below the summit of that homogeneous rock. A cement-concrete column 3 ft. square runs down 5 ft. into the clay, and rises another 3 ft. above the ground-level. It is, further, based on 6 ins. of rammed gravel. Well sunk into the top of this column, and projecting $4\frac{1}{2}$ ft. from it, is a cast-iron mast 4 ins. in diam., with walls $\frac{3}{4}$ in. thick. A platform at the mast-top supports two lateral adjusters, one raised so as to clear the other. They secure piano-wires which descend to stirrups, whose spindles support the ends of the two booms and also pass through the 100 lb. lead weights. One boom faces North, and the other West, a meridian having been established by the transit-telescope of an adjoining astronomical observatory. Hardened tool-steel pencils pass through the mast 4 and 5 ins. above the horizontal top of the concrete, and their sharp points bear in agate cups fixed into the inner ends of the booms. The mast was cast by the Oxford Iron Foundry; and the remainder of the foregoing parts (except the agate cups) was built by Messrs. Moore & Son, Oxford, whose many practical suggestions contributed largely to the successful issue.

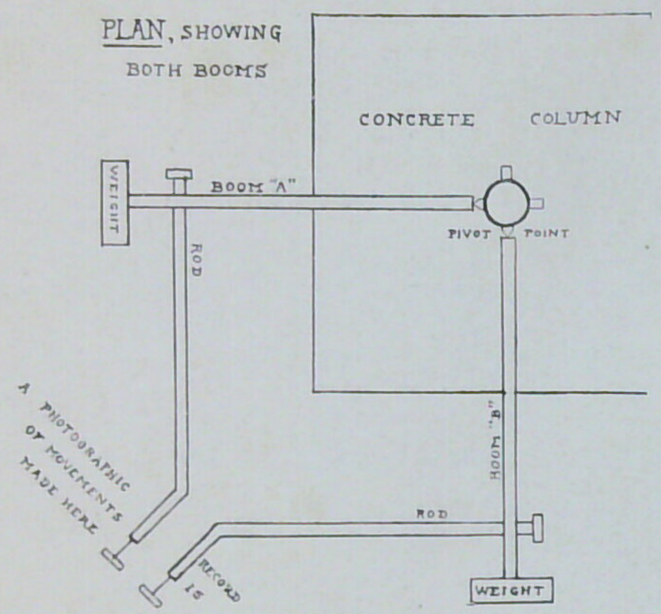

FIG. 1.

FIG. 2.

Fig. 1 shows the relative position of the dark box (where photographic records are made) to the booms. It rests on a separate isolating column, and the standard slits, mirrors and lamps, made by Mr. R. W. Munro, are used. The record cylinder, whereon the photographic paper is fixed, is of aluminium, 16 ins. long, and about $5\frac{1}{2}$ ins. in diameter, and is driven by a collar on an elongation of the spindle, somewhat like the one in Prof. Omori's instrument. A further elongation of the spindle, at the opposite end, is deeply threaded; and steel rollers, running in this thread, draw the spindle sideways while it revolves. The cylinder runs for $3\frac{1}{2}$ days. For the first seven months of the year a brass cylinder with friction-drive was tried, but it was too heavy. Both sets of mechanism were constructed by Mr. F. E. Salsbury, of Guildford, whose patient wisdom has levelled many obstacles, and provides a notable example of the insight, experience, and skill of a practical jeweller in a country town.

At every hour, a circuit is opened which draws two vanes between the illuminating lamps and the slits, causing a break 9 secs. long in the record of each boom. The circuit is controlled by a very clever and reliable electric time-keeper, invented by Mr. A. E. Conrady, F.R.A.S.

THE OBSERVATORY (Fig. 2) was designed by Messrs. Murray & Delves, London, and built by Messrs. Tribe & Robinson, Guildford. Both floor and underfloor are separated from the concrete columns, and air is free to circulate above and below, and up the gap between floor and column. During October a heating pipe was erected by the builders, to try and heat up the air as it rises besides the columns. The Instrument is enclosed in a large glass case, and the products of combustion of the lamps pass through the heating-pipe to a vent at the top of the case.

THE EARTHQUAKES registered during the year are given in the British Association circulars; and minute details of the best record from each of the larger quakes are given below, including those of the sharp, irregular waves which precede the principal phase, and are here called the Warning Phase. The period of swing has been $17\frac{1}{2}$ secs., giving 0·532 m.m. displacement for a tilt of 1″ of arc. Movements of the North boom are marked N., and those of the West boom W. Columns headed "a" give *full* range of motion in millimetres, and when this is too small to measure it is given as "mic."

No.	Date 1910	Preliminary Phase					Second Phase					Warning Phase					Principal Phase					Aftershock			Total Duration		Notes
		Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Maximum		a			
		H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	MM	H	M	
1	Jan. 1	11	9·0	11	12·6	0·1	11	17·6	11	24·2	Q 25	11	31·3	11	33·5	0·75	11	48·1	11	51·8	1·2						
														11	42·6	1·0			11	54·5	1·2	12	18·4	0·25			
																			11	59·2	2·2	12	26·7	0·25	3	18·5	N.
																			12	0·3	2·3	12	31·9	0·3			
																			12	2·7	2·5	13	9·0	0·1			
																			12	7·2	1·3						
2	Jan. 8	15	15·1	15	16·5	Mic	15	21·5	15	29·5	0·1	15	34·4	15	34·9	0·1	15	35·6	15	38·0	1·1				1	38·0	W. (N. com. 15 13·7)
																						9	3·0	27·7			
3	Jan. 22	8	54·4			0·3						8	58·0			14·0	9	0·9	9	2·0	29·2	9	4·4	25·6	2	30·0	N.
																						9	5·3	18·7			
																						9	6·0	16·1			
																						9	7·2	11·8			
																						9	8·9	10·8			
																						9	10·0	10·7			
																						9	10·9	10·3			
																						9	12·2	7·8			
																						9	14·8	6·0			
																						9	15·8	5·4			Paper changed, 9 17·5 till 9 25·6
																						9	25·6	1·0			
																						9	43·1	0·7			
																						9	50·0	0·35			
																						9	54·6	0·35			
																						10	3·4	0·7			
																						10	14·7	0·7			
																						11	10·7	0·15			
4	Jan. 23	19	3·4	19	7·2	0·05	19	10·1	19	10·4	0·25	19	15·2	19	17·7	0·3	19	18·0	19	22·7	1·1	19	27·5	1·0	2	24·0	W. (N. com. 19 1·3)
																						19	30·2	0·9			
																						19	41·8	0·8			
																						20	21·0	0·15			
5	Jan. 30	5	0·5	5	1·7	0·1	5	5·5	5	20·2	0·2	5	23·1	5	24·0	0·25	5	27·8	5	32·9	2·0	5	47·7	0·5	1	35·0	W.
														5	26·3				5	37·1	1·75	5	58·7	0·3			
7	Feb. 4	15	18·0	15	21·5	0·1	15	26·3	15	48·7	0·5	16	5·1	16	8·7	0·7	16	10·4	16	16·4	1·0	16	57·1	0·4	2	33·0	W.
									16	0·8	0·4																
														18	32·6	0·2											
10	Feb 12	18	23·2	18	29·8	0·05	18	32·0	18	45·0	0·6	19	1·6	19	4·7	0·25	19	7·6	19	11·6	0·4				1	58·0	W.
									18	52·2	0·3								19	7·7	0·5						
11	Feb. 18	5	5·7	5	7·7	0·2	5	16·6	5	20·5	0·4						5	26·4	5	30·0	0·6				0	48·0	N.
14	Feb. 28	21	16·6	21	18·8	0·05	21	19·9	21	33·7	0·25	21	39·4	21	42·3	0·2	21	44·1	21	46·3	0·55	22	5·0	0·2	1	5·5	W.
17	Mar. 25	16	14·5				16	19·1	16	23·0	0·3	16	29·0	16	32·0	0·1	16	35·4	16	38·8	0·3				0	48·0	W.
																			16	49·4							

No.	Date 1910	Preliminary Phase					Second Phase					Warning Phase					Principal Phase					Aftershock			Total Duration		Notes
		Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Maximum		a			
		H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	MM	H	M	
																						18	52·9	0·9			
																						19	3·3	1·0			
18	Mar. 30	17	14·9	17	16·4	0·3	17	28·9	17	40·2	0·6	18	18·8	18	23·7	0·3	18	25·8	18	36·3	1·8	19	16·0	0·9	3	48·0	W.
				17	20·6																	19	27·5	0·6			
19	Mar. 31	18	42·5	18	51·0	0·1	18	53·6	19	1·3	0·2	19	7·4	19	19·0	0·8	19	20·8	19	22·6	1·1	19	54·3		3	20·0	N.
																						20	0·7				
																						20	9·2				
																						20	36·6				
																						20	56·0				
																						21	9·0				
																						21	30·0				
																						21	36·0				
																						21	56·0				
																			1	15·7		1	32·2	0·8			
22	April 12	0	41·7	0	44·7	0·2	0	47·8	0	48·3	0·8	1	0·6	1	2·9	0·7	1	6·7	1	18·1	1·7	1	38·0	0·4	1	37·0	N.
				0	46·0				0	56·0	0·3								1	21·8	1·6	1	48·0	0·4			
									0	58·0	0·4																
24	April 20	22	38·0	22	41·1	0·05	22	42·0	22	47·9	0·1	23	2·7	23	3·6	0·1	23	6·4	23	8·8	0·2				1	48·0	W.
																			23	17·5							
									19	7·1	0·15								20	16·5	0·5						
27	May 1	18	48·9	18	51·5	0·05	18	59·2	19	25·8	0·2	19	47·5	20	2·0	0·25	20	5·0	20	28·0	0·5				3	15·3	N. d. of Prelim. Phase =8·3 min.
									19	45·7	0·1								20	36·8	0·75						
																			19	0·8	0·2						
37	May 10	18	7·5			Mic	18	23·0	18	30·5	0·05	18	49·0	18	51·1	0·1	18	52·4	19	13·0	0·25	19	21·0	0·15	2	16·5	W. d. of Prelim. Phase =8·0 min.
									8	22·9												8	58·7	0·65			
39	May 13	8	10·6	8	15·8	0·05	8	17·2	8	31·8	0·15	8	40·8	8	42·7	0·15	8	43·5	8	47·8	1·0	9	2·8	0·9	4	47·4	W. (N. com. 8 9·8)
																			8	52·6	0·85	9	11·0	0·7			
																						9	32·0	0·35			
																						10	58·1	0·2			
46	May 20	12	27·6	12	30·7	0·05	12	38·4	12	45·5	0·15	12	49·8	12	53·0	0·2	12	55·6	12	58·9	0·35	13	17·0	0·15	1	7·0	N. d. of Prelim. Phase =8·6 min.
									6	52·0									7	18·2	1·5	7	34·1	2·0			
47	May 22	6	23·2			Mic	6	37·9	6	55·2	0·2	7	7·0	7	13·7	0·35	7	15·7	7	26·8	2·8	7	36·7	1·3	4	6·8	W. d. of Prelim. Phase =10·5 min.
									7	0·2												7	39·2	1·0			
																						7	44·5	1·0			
																						8	10·5	0·25			
54	May 23	18	55·1				18	59·1				19	37·0	19	41·3	0·15	19	42·5	19	44·2	0·2	20	5·0	0·15	1	57·0	N.
62	May 31	5	11·7	5	15·8	0·05	5	25·6	5	29·0	0·25	5	41·1	5	41·8	0·5	5	46·7	5	52·0	1·0				1	50·3	W. d. of Prelim. Phase =9·8 min.
																			7	29·6	0·3						
64	June 1	7	0·2	7	3·9	0·05	7	7·0	7	15·0	0·05	7	17·4	7	22·6	0·2	7	23·4	7	36·3	0·45	8	21·5	0·25	2	3·8	N.
																			7	46·2	0·55						
																			7	51·7	0·6						

No.	Date 1910	Preliminary Phase					Second Phase					Warning Phase					Principal Phase					Aftershocks			Total Duration		Notes
		Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Maximum		a			
		H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	MM	H	M	
																			7	34·0							
		7	0·0	7	5·5	0·05	7	7·8	7	16·0	0·2	7	18·6	7	21·0	0·35	7	25·1	7	41·8	0·35	8	16·0	0·2	>2	7·0	W. d. of Prelim. Phase =7·1 min.
																			7	45·0		8*	35·0	0·35			* Possibly a separate quake.
																			7	56·7							
67	June 7	2	8·8	2	9·9	0·05	2	10·5	2	11·0	0·07	2	11·7	2	12·4	0·1	2	12·6	2	14·2	0·75				0	35·0	W.
73	June 14	19	45·4	19	48·1	Mic	19	54·9	19	59·1	0·25	20	1·1	20	1·8	0·15	20	2·5	20	6·0	1·0	20	13·8		0	58·0	W.
74	June 16	4	17·3	4	18·8	0·07	4	19·9	4	22·5	0·1	4	24·5	4	25·3	0·07	4	25·9	4	27·0	1·6	4	37·4	0·2	0	46·0	N. Portugal (W. com. 4 14·9)
																						4	47·4	0·15			
																						4	56·7	0·15			
75	June 16	6	40·4	6	44·4	0·1	6	51·2	6	52·9	0·1	7	52·6	7	53·1	0·3	8	2·7	8	4·9	0·9	8	29·0	1·05	3	41·0	W.
				6	48·6				6	55·3	0·9			7	54·5	0·4			8	10·2	1·15	8	31·6	1·2			
									6	57·2	0·4			7	55·7	0·4			8	15·8	2·0	8	33·8	1·1			
									7	0·2	0·25			7	59·0	0·35			8	18·2	2·4	8	37·7	1·6			
									7	5·9	1·0			8	2·1	0·85			8	20·1	2·85	8	52·1	0·9			
									7	12·1	0·5								8	22·8	2·6	8	55·0	0·95			
									7	14·3	0·85											9	2·6	0·3			
									7	18·6	1·15											9	53·0	0·05			
									7	22·3	0·95											10	10·0	0·05			
									7	24·6	0·35																
									7	27·0	0·8																
									7	33·9	1·1																
									7	38·0	1·2																
									7	49·1	0·95																
79	June 16	16	27·2	16	28·1	Mic	16	30·3	16	33·0	Mic	...		...		...	16	35·1	16	36·0	0·1				0	15·5	N.
83	June 24	13	31·4	13	35·1	0·05	13	35·9	13	36·1	0·2	13	36·4	13	36·6	0·75	13	36·8	13	37·6	6·6	13	43·3	4·2	2	0	N.
																			13	39·2	5·7	13	44·7	3·3			
																			13	40·6	5·1	13	46·1	3·2			
																						13	49·7	2·3			
																						13	51·6	2·1			
																						14	16·8	0·5			
																						15	11·5	0·15			
84	June 25	19	21·1	19	25·2	0·05	19	29·7	19	31·1	0·07	19	31·9	19	33·9	0·3	19	34·4	19	37·1	1·2				1	7·0	W.
																			19	38·9	2·2						
																			19	41·0	2·0						
																			19	52·2	1·85						
97	June 29	11	9·1	11	14·4	0·05	11	20·7	11	34·5	0·3	12	8·8	12	13·3	0·3	12	20·0	12	25·0	2·5	12	37·0	0·8	3	38·9	N. d. of Prelim. Phase =8·5 min.
														12	16·0	0·6						12	45·3	0·9			
														12	18·6	1·0						12	48·6	1·25			
																						12	59·2	1·05			
																						13	21·9	0·2			
																						13	31·1	0·2			
																						13	43·6	0·15			

No.	Date 1910	Preliminary Phase					Second Phase					Warning Phase					Principal Phase					Aftershocks			Total Duration		Notes
		Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Maximum		a			
		H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	MM	H	M	
103	June 29	15	39·0	15 15	41·0 45·0	0·07	15	46·1	15	48·2	0·1	15	50·0	15	51·0	0·15	15	53·3	15 16	59·6 19·0	0·65	16	31·2	0·2	1	20·0	N.
107	July 5	12	3·7	12	7·0	0·05	12	8·2	12	11·0	0·05	12	12·2	12	12·8	0·05	12	13·4	12	19·8	0·25	12	36·5	0·1	1	0	N.
108	July 7	8	36·4	8	42·3	Mic	8	46·3	8	57·8	0·1			9	22·0	0·3	9	23·9	9 9	28·8 32·0	0·9 1·0	9 9	39·5 58·6	0·55 0·25	2	36·6	W.
110	July 10	15	36·3	15	39·2	0·05	15	43·3	15	45·0	0·08	15	47·0	15	47·9	0·07	15	48·6	15	57·0	0·3				1	1·6	N.
111	July 11	15	22·0	15	24·3	Mic	15	25·7	15	27·9	0·05	15	30·0	15	30·9	0·07	15	31·9	15	35·0	0·2	15	48·0	0·1	0	45·0	N.
114	July 12	22	30·1	22	32·6	Mic	22	35·1	22 22	39·2 43·6	0·07 0·1	22	44·8	22	45·9	0·1	22	47·2	22	54·0	0·4	23	3·9	0·25	1	15·0	N.
116	July 15	13	6·1	13	9·1	Mic	13	11·1	13 13 13 13	14·4 29·0 31·2 35·8	Mic 0·05 0·05 0·07	13	38·7	13	39·0	0·07	13	39·9	13 13	44·8 47·0	0·25	14 14 14	13·0 21·4 31·0	0·1	1	33·4	N.
123	July 24	?16	7·5	16	10·3	0·1	16	14·3	16	27·3	0·2	16	48·0	16	49·7	0·2	16	51·0	17	1·0	0·7	18	27·5	0·25	2	8·0	N.
125	Aug. 5	1	51·2	1	53·0	0·07	1	58·1	2	3·7	0·15	2	8·2	2	10·2	0·2	2	12·7	2 2	16·2 20·3	0·6	2	45·7	0·3	1	31·0	W.
128	Aug. 7	20	53·9	20	55·0	Mic	20	56·0	20	58·1	Mic	20	59·9	21	0·8	0·15	21	1·2	21	5·0	0·2	21	14·3	0·1	0	34·5	W.
131	Aug. 11	16	43·3	16	46·5	0·05	16	53·2	16 17	56·6 6·3	0·07	17	9·0	17	10·3	0·1	17	12·2	17	21·9	0·8	18 18 18 18	3·0 10·0 21·5 42·0	0·05 0·05 0·07 0·07	2	7·0	N.
136	Aug. 21	16	8·8	16	9·8	0·05	16	11·5	16	18·0	0·1	16	30·0	16	30·7	0·1	16	32·0	16	35·0	0·2	16	53·0	0·07	0	53·0	N.
392	Nov. 10	13	26·3	13	29·8	Mic	13	39·0	13 13	43·0 44·2	0·05	13	45·3	13	45·9	0·05	13	46·7	13	52·7	0·3	14 14 14 14 14 14 14 14 15	3·1 6·0 8·9 12·8 16·8 28·0 41·6 48·6 2·0	0·25 0·25 0·15 0·1 0·07 0·05 0·05 0·07 0·07	1	37·0	N.
396	Nov. 10	20	54·1	20	58·5	0·1	21	6·1	21	24·0	0·15	21	32·3	21	36·1	0·07	21	38·8	21	44·0	0·5	21 22 22 15	54·5 15·0 28·0 30·1	0·1 0·1 0·1 1·0	1	40·0	N.
482	Nov. 15	14	32·5	14	38·4	0·05	14	41·3	14 14 15 15 15	49·3 56·1 3·2 7·5 13·2	0·1 0·15 0·6 0·7 0·2	15	14·1	15	16·9	0·5	15	17·8	15	22·0	1·25	15 15 15 15 16 16	31·4 34·0 38·0 50·5 2·3 10·5	1·0 0·8 0·7 0·15 0·15 0·2	1	53·0	N.

No.	Date 1910	Preliminary Phase					Second Phase					Warning Phase					Principal Phase					Aftershock			Total Duration		Notes
		Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Commencement		Maximum		a	Maximum		a			
		H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	H	M	MM	H	M	MM	H	M	
653	Nov. 26	4	45·0	4	47·3	Mic	4	56·0	5	23·7	0·2	6	2·9	6	5·5	0·45	6	12·1	6	15·4	0·7	6	56·8	0·35	3	53·0	N.
									5	30·5	0·3			6	9·8	0·7			6	20·6	0·7	7	15·8	0·25			
									5	53·4	0·3								6	26·3	0·3	7	45·5	0·2			
									5	55·5	0·25								6	32·6	0·55	7	55·5	0·2			
																			6	40·0	0·35	8	6·7	0·1			
																			6	44·5	0·85	8	36·3	0·05			
687	Nov. 29	2	54·7	2	57·0	0·1	3	4·0	3	5·6	0·1	3	16·0	3	16·7	0·1	3	17·8	3	19·7	0·35	3	48·3	0·15	1	10·0	N.
									3	10·4	0·07								3	23·4	0·8						
																			3	26·8	1·1						
701	Dec. 1	16	35·9	16	37·5	Mic	16	42·7	16	48·2	0·3						17	3·1	17	9·0	0·3				0	51·0	N.
									16	54·6																	
724	Dec. 10	9	58·3	10	3·0	0·2	10	6·2	10	9·3	0·35	10	34·7	10	38·4	0·3	10	40·0	10	45·0	0·7	11	12·4	1·1	2	27·0	W.
									10	13·3	0·3								10	49·0	1·1	11	32·3	1·15			
									10	22·7	0·45								10	54·2	2·7	11	36·9	1·2			
																			10	59·1	2·0	11	46·1	0·7			
																						11	57·9	0·25			
734	Dec. 13	11	48·1	11	55·6	0·25	11	57·2	12	4·4	1·05	12	9·6	12	11·1	0·8	12	12·1	12	13·7	2·0	12	35·2	3·9	3	44·5	W. Sea-bed South of Zanzibar.
																			12	14·7	3·5	12	37·2	3·9			
																			12	19·0	10·3	12	46·1	2·0			
																			12	20·2	10·0	12	54·4	1·0			
																			12	22·0	8·7	13	24·8	0·8			
																			12	23·1	8·7	13	40·4	0·6			
																			12	24·3	8·5	13	55·0	0·3			
																			12	25·2	8·5	14	32·0	0·65			
742	Dec. 16	14	34·2	14	35·3	0·1	14	48·0	15	16·5	0·8						15	38·9	15	46·4	5·5	16	6·5	2·3	4	8·0	N. New Guinea.
									15	24·0	0·85								15	53·0	7·7	16	11·8	1·65			
									15	34·5	1·05								15	56·0	9·3	16	20·2	1·05			
																						16	31·7	0·75			
																						16	44·0	1·1			
																						16	50·0	1·0			
																						17	9·0	0·75			
743	Dec. 17						7	1·5	7	6·0	0·07						7	24·5	7	29·0	0·25				1	1·0	N.
									7	20·0	0·1								7	39·8							
744	Dec. 18	2	46·9	2	53·3	Mic	2	58·4	3	2·5	0·1	3	33·5	3	37·1	0·07	3	40·0	3	47·0	0·3				1	45·0	N. Java.
									3	26·1	0·15								3	56·5	0·6						
745	Dec. 18	5	20·0	5	23·7	0·05	5	27·2	5	38·0	0·05	5	45·0	5	46·8	0·07	5	48·2	5	49·8	0·2	5	56·0	0·1	1	5·0	N.
747	Dec. 18	16	18·9	16	23·8	0·05	16	30·0	16	42·0	0·07						17	8·4	17	17·0	0·1				1	14·0	N.
									16	45·6	0·1																
751	Dec. 29	13	47·7	13	49·7	0·1	13	53·0	13	55·2	0·2						14	12·0	14	16·8	0·5	14	35·3	0·15	1	1·0	W.
									14	10·0																	
755	Dec. 31	11	4·2	11	5·9	Mic	11	9·2	11	12·3	0·1	11	19·5				11	20·5	11	24·0	0·5				0	44·0	W

A COMPARISON of the registers in the British Association circular shows that this station on the London Clay picks up the commencements very promptly, whereas the maxima are habitually later than at other observatories.

"AIR TREMORS" have been a subject of experiment during the year. They appear to relate to a lowering of the temperature of air entering the glass case from out of doors by way of the underfloor, generally at night. Tables A and B give the results of observing a number of nights, the North boom alone being considered.

A.

		DROP IN TEMPERATURE.			
		Heavy.	Moderate.	Small.	Negligible.
TREMORS.	Heavy ...	14	3 (oscillation of temp.)	.....	.....
	Moderate	82		6	.....
	Small ...	28		33	1
	Negligible	.....	10	12	7

B.

		DROP IN TEMPERATURE.			
		Heavy.	Moderate.	Small.	Negligible.
TREMORS.	Heavy ...	.....	.....	.....	.....
	Moderate	3		.....	.....
	Small ...	9		5 + 3 (oscillation of temp.)	1
	Negligible	5		5 + 4 (oscillation of temp.)	6

Table A shows the effect of air entering the case practically at the outdoor temperature: viz., that moderate tremors correspond with a moderate or large drop in temperature, small tremors with a moderate or small drop. Table B shows the effect of partially heating the air before it enters the case: viz., that the tremors are now almost all small, while a considerably greater proportion of nights are free from movement. Tremors caused definitely by high wind have been omitted from the tables.

It is also noticed that if no current of air is allowed to run through the case, very heavy tremors and much damp ensue.

Jan. 1st, 1911.

F. EDWARD NORRIS.