

The Canadian Journal.

TORONTO, MARCH, 1855.

The Solar Eclipse of May 26th, 1854.

Extract from the Minutes of the Council of the Canadian Institute.

“Resolved, That Professors Cherriman and Irving be appointed a Committee to draw up instructions for general distribution relative to the approaching Solar Eclipse.”

Supplementary Report of the above Committee.

Read before the Institute, January 13th, 1855.

The Committee, appointed by the Council of the Canadian Institute to draw up suggestions for observers of the Solar Eclipse of May 26, 1854, having received from several stations in Canada accounts of observations made with reference to the instructions published by order of the Institute, have thought it advisable to lay them before the Institute in a connected form, and at the same time, as several of the phenomena mentioned in their former report have escaped observation, it appeared desirable to enter at some length into the grounds on which these phenomena were expected to occur and to examine the probable cause of their not having been observed. Many of the points thus involved are of considerable general interest, and the explanation of them is in some cases not easy and even doubtful; neither is information regarding them very accessible: your Committee, therefore, will claim the indulgence of the Institute while discussing these points with a minuteness, which might be tedious and superfluous were they addressing professed astronomers, but which may not be deemed improper in offering to amateur-observers the received or probable explanations of the points in question.

Notices of observations have been received from the following stations:—

1. Kingston, by Lieut. Col. Baron de Rottenburg and Fred. J. Rowan, Esq., from a position contiguous to Murney's tower. Mr. Rowan used a small telescope, by Troughton & Sims, attached to a transit theodolite; Baron de Rottenburg a telescope by Dolland, three and a quarter feet focal length, with an object glass two and a quarter inches. The mean time was obtained from several double altitudes of the sun taken on the days preceding the eclipse and continued up to the day itself by Mr. Rowan. The watches used were of a description to be depended upon, with a probable error of three or four seconds only. The register of the thermometers was carefully attended to by the Messrs. Williams, of Kingston; one thermometer was placed in sunshine, the other kept in the shade; the one placed in sunshine had its bulb blackened. The day throughout was most serene and cloudless, and highly favourable in all respects.

2. At St Martin, Isle Jesus, Montreal, by Dr. Chas. Smallwood, who contributes a series of physical observations made at intervals of fifteen minutes. It is to be regretted that the day was unfavourable, and thus diminished the importance which the excellence of the instruments and Dr. Smallwood's well known experience and skill would have given to such a series. He observes, “Clouds (Cum. Strat.) had been somewhat heavy for some hours previous, but a few minutes before four o'clock they cleared away and left the first contact visible, and remained so

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with light clouds occasionally passing over the sun's disc until after the greatest obscuration. The final contact was obscured by dense (Stratus) clouds which continued until 6h.45m., when the sun re-appeared under its usual aspect.”

3. Toronto, the Observatory, by Sergeant Jas. Waller, Corporal A. Stewart, and Gunner James Lily, R.A. Physical observations were taken every five minutes with the Observatory instruments, under the usual precautions. The small portable Azimuth-transit telescope was used for noting the times of contact, which were given by the Observatory Chronometer (2393), whose error and rate were known. The day was in every respect favourable.

4. Prescott, C.W., by the members of the sub-committee, Sergeant Thos. Menzies, R.A., Mr. Ed. Fitzgerald, B.A., and Mr. William Cooper. The telescopes employed were a two-foot Gregorian reflector, by Watkins & Hill, four inches diameter, and a three and a half feet refractor, by Dunn, with two and three quarter inches aperture. The magnifying power employed in each was forty. The time was given by an excellent portable chronometer by Arnold, whose error and rate for Toronto were known, an approximate allowance of 15m. 20s. being made for the difference of longitude between Prescott and Toronto. The observations were made on the West Bastion of the Fort which is situated on a gentle rising ground to the east of Prescott. The day was very favourable, the sky being perfectly cloudless, though a boisterous wind interfered with the steadiness of the telescopes.

5. Observations were also attempted at Montreal, by Lieut. A. Noble, R.A., but were prevented by clouds.

The following table gives the times of occurrence of the various phases at the stations named.

Local times of	Kingston Lat. 44° 5' N, Long 76° 49' W			Toronto Lat. 43° 39' 4" N, Long 79° 21' W			Prescott,* Lat. 43° 42' N, Long 75° 31' 58" W					
	h	m	s	h	m	s	h	m	s			
Commencement of Eclipse	3	37	18	3	44	42.5	(1) 4	03	17	(2) 4	03	19.5
Com of Annularity	5	12	58				(1) 5	17	09.2	(2) 5	17	09.0
End of Annularity	5	15	42				(1) 5	21	02.5	(2)		
End of Eclipse	6	22	25	6	14	07.7	(1) 6	27	05.5	(2) 6	27	05.8

The astronomical application of these times is to furnish, by comparison of numerous other stations, corrections to the tables of the sun and moon, and also to give approximately the differences of longitude of the stations themselves; but to enter into these particulars does not fall within the scope of the present paper.

The following tables embrace the Meteorological Observations forwarded from the different stations:—

* No. (1), Refracting telescope, J. B. C.; No. (2) Reflector, G. C. I.
† This observation is too late, a violent gust of wind at that time shaking the telescopes so as to render distinct vision impossible.