

XXVI. *A Letter to the Astronomer Royal, from John Canton, M. A. F. R. S. containing his Observations of the Transit of Venus, June 3, 1769, and of the Eclipse of the Sun the next Morning.*

London, June 9, 1769.

S I R,

Read June 15, 1769. **I** TAKE the liberty of sending you, inclosed, my observations of the transit of Venus, and of the Sun's eclipse; which, if you think proper, you may lay before the Royal Society. Those of Venus were made under the disadvantageous circumstances of being at the top of a house, and seeing through smoke; however, I hope they will not differ very widely from yours. I was just prepared to find the difference of declination between the Sun and Venus by your method, which appears to me to be a very good one, when the Sun was covered by a cloud, and I saw it no more. The magnifying power of the telescope I made use of was 95.

About half a minute before the total ingress, when the bright cusps of the Sun were at some distance from each other, there appeared a faint light between them, a little lower than the cusps, or nearer
to

to the center of the Planet: this I observed to increase till the time of the internal contact; which fully convinced me that there is an atmosphere about Venus.

I had the good fortune to take several correspondent altitudes of the Sun on the day of the transit, and also on the day before.

The longitude of Spital Square, west of the Royal observatory, I formerly found by Rocque's survey, to be $16''\frac{3}{4}$ of time; and lately, by observing with you the explosions of rockets, it was found to be $17''\frac{1}{10}$. I therefore add $17''$ to my time, to bring it to yours.

I am, Sir,

Your humble servant,

John Canton.

Spital Square, June 3, 1769.

OBSERVATIONS OF THE TRANSIT OF VENUS.

	h	'	"	
1st external contact at	7	8	$28\frac{1}{2}$	} mean time.
1st internal contact at	7	26	$59\frac{1}{2}$	

Duration of the ingress	18	31
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Equation of time	2	$15\frac{3}{4}$	add
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	h	'	"	
1st external contact at	7	10	$44\frac{1}{4}$	} apparent time.
1st internal contact at	7	29	$15\frac{1}{4}$	

The diameter of the Sun, from 3 observations, was $31\ 35\frac{1}{2}$
of Venus, from 4 observations, 59

At $7^h\ 38'\ 31''$, apparent time, the right ascension of ♀ was greater than that of the ☉ by $8'\ 7''$.

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OF THE SUN'S ECLIPSE.

	h	'	"	
The beginning at	18	36	40	} mean time.
End at	20	21	7	

Duration	1	44	27
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	'	"
Equation of time	2	10 $\frac{3}{4}$

	h	'	"	
Beginning at	18	38	50 $\frac{3}{4}$	} apparent time.
End at	20	23	17 $\frac{3}{4}$	

	o	'
Digits eclipsed	6	14 $\frac{1}{2}$

	h	'	"		dig.	'
At 19	20	45 $\frac{3}{4}$	apparent time.	6	1 $\frac{1}{2}$	eclipsed.
19	52	45 $\frac{3}{4}$		4	37 $\frac{1}{4}$	
20	—	44 $\frac{3}{4}$		3	33 $\frac{1}{2}$	